Artificial Intelligence Applications And Their Impact On Digital Marketing: Case Study Of Noon Platform

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Abstract
By outlining its function, this research intends to show how contemporary technology has impacted and contributed to the development of electronic commerce. Artificial intelligence applications in the transformation occurring in this industry have prompted typical research on the industry titan of e-commerce by analyzing the connection between artificial intelligence and electronic purchasing, as well as the two research variables, at Noon Platform. It was finished. It is concluded that e-commerce saw a significant technical change that boosted e-shopping, making the experience unique and seamless. The development of the smartphone, smart and voice searches and other technologies relied heavily on artificial intelligence applications. By using the conventional method and the unit root test and causality test by the error correction model, it has been demonstrated that there is a causal relationship between technology investments and development, marketing and content, shipping and verification costs, and net retail sales—additionally, the amount of online purchasing at Noon Platform.

Keywords: Granger Causality Test; Electronic Commerce; Electronic Shopping; Artificial Intelligence; Noon Platform Corporation; Flywheel System.

Introduction
Early in the 20th century, due to technological advancements, the importance of digital marketing significantly increased as the demand for digital customer experience, dissemination, and advertising developed [1]. Since 1988, when the phrase "Digital Marketing" first appeared, the business sector has seen drastic growth, moving from small startups to massive corporations on a global scale. Digital marketing underwent a period of change due to technological advancements in AI, data mining, and computational analysis. This led from an entirely data-driven strategy to a new approach combining data and experience and understanding decision-making systems [1]. The requirement for data processing and user research arises while creating qualitative marketing. Successful and lucrative marketing strategies depend on targeting the right consumers. Marketing managers might use the technique to identify the variables influencing the market share. Making decisions more effectively and efficiently might be enabled by such technologies. AI has a wide variety of applications in many different scientific domains. However, it isn't easy to utilize in marketing science [2]. Given the potential challenges' qualitative, quantitative, and strategic character, it appears that decision-makers in digital
marketing require more than a simple computational strategy. Making decisions might seem like a strenuous activity due to factors including information gained through experience in the industry, specialized knowledge, judgment calls, and a multidimensional environment that is demanding and constantly changing. Due to the daily volume of data, marketers can build, design, and use apps that integrate scientific multifactor data to develop brilliant experiences and understand decision-making patterns.

A consumer's decision-making process, known as purchase intention, includes the justification for purchasing a specific brand. Purchase intention is described by [3] as a circumstance that prompts a customer to buy a particular good under a specific event. Purchase decisions made by customers are complicated processes influenced by their behaviour, beliefs, and attitudes. Although purchase intention is a valuable tool to forecast buying, purchase behaviour is essential for customers to access and assess a given product [4]. A consumer's purchase intention may alter based on the cost or perceived quality and worth. In addition, customers are influenced by both internal and external motives [4]. The six steps customers must go through before purchasing are consciousness, information, desire, choice, persuasion, and purchase [5]. Consumers frequently believe that buying inexpensive goods with primary packaging and little-known brands carries a considerable risk since the quality of those goods may be in question [6]. The effects of AI and digital marketing on buyers' purchase intentions have been the subject of several studies with varying degrees of success. Research that looks at the connections between these factors and the combined impact of these three variables is lacking. Businesses and industries rely on AI and online marketing to provide the most excellent service and characteristics. To appeal to millennials, enterprises must constantly innovate. The mass media of this time have altered how customers think by manipulating their feelings, interests, desires, and demands. Market researchers and companies invest billions of dollars in consumer research in pinpointing the crucial elements that shape customer decisions. Research as a whole often successfully identifies customers' behavioural orientation [7]. The new state's capacities to meet the needs of the digital era include establishing an inclusive and innovative digital economy and fostering a national digital transformation ecosystem [8].

Study methodology and tools used: In addition to analyzing a case study Noon Platform and conducting a formal investigation to determine the cause-and-effect relationship using the EVIEWS program as a statistical tool, the descriptive approach was used to demonstrate the economic dimensions of the subject and to address the impact of the variable of artificial intelligence applications on E-shopping. Study Organization and Structure: Three main axes were used to approach the topic to cover all of its facets, and this resulted in the following organizational structure for the article:

- The first axis: artificial intelligence and electronic shopping;
- The second axis: Noon Platform, is a model for benefiting from artificial intelligence applications;
- The third axis: a definitive study of the impact of artificial intelligence on online shopping at Noon Platform.
Literature Review

Voice recognition, picture identification, and handwriting recommendations are just a few examples of how AI is used in people's and companies daily life. According to [9], there are several beneficial AI systems for marketers, among which the following details should be emphasized.

To enhance their chances of success, authors of [8] define artificial intelligence as computerized systems that collect data to carry out activities usually performed by intelligent individuals. Strong AI (Artificial General Intelligence) is a machine that possesses awareness and a mind and is intelligent across various domains. Autonomous vehicles are derived from weak AI (also known as narrow AI). Additionally, some writers have made the speculative claim that computers may be superior to or more intelligent than people. In this case, a new AI concept known as Artificial Super Intelligence would apply. However, it is currently just a theory [7]. In 2025, approximately 100 billion euros will be invested annually in artificial intelligence, compared to only 2 billion in 2015, according to [9], citing the Constellation research that examined investment in all market areas. The marketing sector won't make an exception, and AI investment will rise [8]. According to [9], McKinsey & Company's examination of more than 400 AI use cases across 19 sectors, and nine business functions revealed that marketing, sales, logistics management, and manufacturing had the most effects on the potential value of AI use. Because frequent digital contacts between businesses and consumers produce more excellent datasets for AI approaches, consumer industries like retail and high tech typically perceive more promise in AI applications in marketing and sales. The simplicity with which e-commerce platforms can gather user information, including clicking information or time spent on a web page, and may tailor promotions, prices, and items for each client, makes them prime candidates for AI. Dynamically and immediately. The report presents examples of leveraging customer data to tailor promotions, including employing daily individual offer customization, which may significantly boost sales [8].

Utilizing technology in marketing efforts to inform consumers better and meet their demands is known as digital marketing [9]. On the other hand, digital marketing is growing in popularity since it uses mainstream media like television, radio, and the Internet. Search Engine Optimization is currently the most widely utilized digital marketing technique (SEO). Its function is to improve how search engines find websites like Google. Since customers have so many options, it is incredibly challenging for marketers to build brands and boost traffic for their services and products. For businesses to succeed, digital advertising is a potent marketing tool for creating brands and promoting visitors [3]. Digital marketing meets businesses' expectations in terms of delivering results and quantifying performance since it is more cost-effective for calculating the investment return of advertising [3]. Online marketing disrupts the advertising industry's routine and is so effective that it may boost the economy and provide enormous chances for governments to run more effectively [9]. Rapid technological advancements and shifting market dynamics are to thank for the growth of digital marketing. The most effective tool for businesses is
the Internet [3]. Because the Internet is transforming the brand, price, distribution, and promotion strategy, marketing managers who neglect to include the Internet in their firm marketing plan will be disadvantaged.

Recent studies demonstrate how AI was effectively applied in the healthcare sector to track and determine the best dosage of medications for long-term effects, which has increased customer loyalty [8]. The autonomous driving technology in transport that dramatically lowers the number of accidents brought on by human mistakes and traffic congestion was the subject of additional research [10]. Since 2019, the study has shown an increase in purchase intention. To improve the effectiveness and efficiency of travel, the authors of [4] created a location-based mobile tourism software that personalizes trip planning. AI alters people's views of usefulness and simplicity, impacting their willingness to act or make a purchase. AI may also save operating expenses by reducing employee demand [2]. The interaction with the brand, product, company and other followers on social media-based communities can boost post-purchase behaviours by enhancing individual communities, according to [3] research.

The impact of AI on online marketing has been demonstrated via research. AI transforms data into insightful knowledge that helps merchants use social media as an advertising tool. Given that there are 2.4 billion social media users worldwide. AI is becoming increasingly sophisticated; it appears that social media and AI will have a promising future in marketing [9]. AI keeps track of all consumer interactions in the past, including when, where, and how, to systematize consumer requirements, interests, and behaviour. As a result, targeting and retargeting are possible in the production environments, and data values may be elevated and contextualized [7]. Authors of [1] found that 2.5 billion individuals, or 34% of the global population, use email marketing, which is growing yearly.

Previous studies have demonstrated how digital marketing affects consumers’ purchasing intentions. Many businesses are adopting digital marketing to reach their target markets due to the widespread usage of digital media. Digital marketing has a beneficial effect on sales among millennials. Social media marketing influences customers' internal beliefs and circumstances, which in turn affects their desire to make purchases. Eventually, social media advertising will assist companies in making decisions and advancing electronic commerce by matching the features of customer purchasing intents. It was found that Social media enables customer interactions, which boosts consumer trust and purchase intent [11].

The significance of our examination of the topic, which varies in that it will focus on two dimensions, is made evident by the above. The consumer experience comes first. The application of artificial intelligence in marketing firms will promote electronic shopping. Its second benefit is that it will provide these businesses access to information and other advantages that will help them grow.

I. Artificial intelligence and online shopping: As computer programs have become increasingly intelligent and have taken on behaviours and traits similar to those of
real people, they have significantly impacted many aspects of society. The different industries contributed a significant portion of this influence, mainly e-commerce and e-shopping.

1. **Applications of artificial intelligence and enhancing the online shopping experience**: A study by Smart Insights revealed that 55% of businesses use or consider using artificial intelligence in their marketing programs due to its impact and enhancement. Artificial intelligence has revolutionized the online marketing and online shopping industry. To carry out marketing campaigns and enhance the online buying experience using cutting-edge software, among which the most significant might be highlighted [12].

1.1 **Intelligent Searches**: People frequently desire to purchase something to satisfy a need without fully understanding it; therefore, it has turned into a conversion. The term "search" refers to transactions for products and services made feasible through artificial intelligence-enhanced searches. The user receives search results that are relevant to his needs and maybe some other items he might like as a consequence of the utilization of information that artificial intelligence has learned about them and its integration with different experiences [13].

1.2 **Shoppers may now conduct a visual search for the items they require.** One of the more recent trends is the one that was just unveiled. The image may be used to find a product brand or higher quality with only a few clicks. Additionally, artificial intelligence makes visual search more efficient and broadens the applications of its use [13].

1.3 **Voice Assistance**: Due to the diversity of voice assistants nowadays and their technologies. Shopping has become much more enjoyable. It facilitates interaction for users and also an Instead; it frees one from the need to write when it is not suitable. AI improves real-time engagement and user experience while producing better-tailored suggestions based on. Owing to technology, it is now much simpler to purchase clothing, footwear, food, and anything else that cartoons desire, thanks to reliable analyses of consumer behaviour [14].

1.4 **Chatbots**: Customers increasingly expect speedy responses due to the pace of the world, which individuals cannot provide. As a result of advancements in artificial intelligence, businesses can now use the Internet to integrate robot work mechanisms to simulate conversations and respond to customer questions and requests. This increases customer satisfaction while requiring less work and money, as seen in the recruitment of eBay, Starbucks, and other companies [15].

1.5 **Automated Description of Products**: Due to development and diversity, it is challenging to explain lengthy product catalogues manually. Here, artificial intelligence helps marketers create content by automatically writing accurate and thorough descriptions while combining data from the manufacturer's websites with the most pertinent information about the product on the Internet, allowing for collecting numerous details at once. More than that, artificial intelligence can assess the text's efficacy and update it as required, adding dynamic features to fit the interests of a particular customer and speed up the purchasing process. Short, with descriptions and the most demanding detail [16].
1.6 Personalized Advice: Artificial intelligence tracks user searches and pre-purchases, identifies preferences and provides advice. Freeware may appear as pop-ups, scripts, or advertisements as appropriate. A customized experience is offered to the customer, for instance. No tips for avoiding boredom placing a smartphone order. The client will be provided with the appropriate accessories so he may purchase them to match his performance [17].

1.7 AI combined with IoT: In the modern era, wearable technology, connected machines, cars, and virtual assistants, in conjunction with artificial intelligence, can provide information about the user to e-commerce entities, such as their health, heart rate, driving and shopping habits, the contents of a smart refrigerator, etc. The Internet of Things infrastructure is expanding exponentially and using a smart TV to watch. All of this may influence what a client could purchase, enhancing and, more specifically, personalizing online purchasing while making it more precise and user-friendly [17].

1.8 Automation of warehouses: Mechanisms on the ground must evolve and improve with the online purchasing experience to keep up. The application of artificial intelligence has grown, and I’m hoping that online shopping eventually turns into a warehouse where AI-powered robots load and box goods. Without stopping, inventory goods are readied for shipping continuously throughout the day, improving accuracy and lowering casualties. Humanity may decrease labour expenses and stock-related losses by efficiently mixing speed and precision [18].

2. The benefits offered by artificial intelligence for online shopping:
One industry that has significantly benefited from artificial intelligence is e-commerce. In the future, it is anticipated to create a more significant revolution. Artificial intelligence has taken on the function of people through data analysis and the capacity to react to inputs, and companies and marketers have tapped into its potential to save time and costs. The most crucial of them is the one that relates to shopping and customer experience: [18].

2.1 A better understanding of customers: Artificial intelligence can increase consumer trust in a brand by learning more about the consumer. Machine learning collects and analyzes customer data to predict targeted purchasing behaviour and decisions. It also evaluates inventory and individual customer behaviour to accurately predict what the customer wants, enabling a highly personalized shopping experience [18].

2.2 Combining the online and offline worlds: Due to the changes in our world today, many businesses now understand how crucial it is to give customers a consistent experience across both realms. E-commerce, at times, appeared to be the only connection between the offline and online worlds. Still, artificial intelligence has given a solution for businesses searching for ways to engage people with their brands. When artificial intelligence leverages information gathered from many sources to improve customer service, offer recommendations, and personalize each contact.

2.3 Enhance display quality and marketing experience: Data from artificial intelligence may be utilized to provide customers with what they need and to offer technical help
constantly and in real-time. We have artificial intelligence through robots that respond to customers instantly and learn automatically to know more about the customer and offer satisfying and personalized answers thanks to the collected data about the customer and tracking his behavior, which helps to provide a shopping experience Series. A few years ago, it wasn’t easy to do this for customers from different parts of the world, but now it is [19].

2.4 Simplify and improve searches: Customers should not give up trying to locate anything in an online store because their investigations are frequently unsuccessful. Since artificial intelligence and machine learning are present, online shop searches may be improved. Not only can they comprehend lengthy search words and the customer’s purpose, but machine learning can also precisely forecast their desires. And they are then modifying his recommendations to meet his demands. As a result, the research process advances with the aid of current voice search, smart speakers, and the ability to add items to our shopping list.

2.5 Benefit from highly individualized product recommendations: AI may affect consumer behavior by making precise product forecasts using algorithms and offering suggestions to the customer who is most likely to accept them that will be accepted. Must take positive action, and that’s what For instance, Noon Platform does this by utilizing a customer's browsing history and past purchases to deliver more of the things he wants; instead of buying multiple products, he may rapidly inspect the items that are likely to catch his interest, which improves the shopping experience [20].

Predictive analysis: By identifying new patterns and opportunities that people might overlook, artificial intelligence can alert businesspeople to these trends and opportunities, prompting adjustments to product groups, marketing, messages, etc., to boost sales on the one hand and enhance customer service and the shopping experience on the other. This is regarded as Shop online in 2020 and beyond, in line with the dominant trend in the artificial intelligence industry. The industries most impacted by AI applications, including e-commerce and e-shopping a subset of it, are depicted in the following graph:

![Figure 1: the industries where artificial intelligence applications are most prevalent](image)

[25]
II. The Noon Platform model benefits from applications of artificial intelligence:

Like many firms worldwide, Noon Platform's business is based on artificial intelligence. It begins as soon as you launch the application or website and lasts until the purchase is finished. Shipping operations offered an advantage in electronic retail activity and made it easier for customers to select a product and make a payment. Additionally, delivery is not as stunning, but what is unusual is how artificial intelligence was used to carry out these duties.

1. **AI Is Everything at Noon Platform:** Noon Platform has entirely revamped the business around AI and machine learning applications. Some are reconsidering strategies and tactics like deploying robots in their massive firm. MONDAY CLOUD [21].

1.1 Flywheel: Noon Platform has created a robust artificial intelligence system so that the business operates as a single perpetual motion machine, where machine learning innovations and improvements feed the work of all parts and other units. This creates a lot of dynamism that Noon Platform Cloud the entire organizational structure to artificial intelligence, as it is like a ghost that bypasses all departments. For instance, a customer can visit a four stars location without going through any department. Alexa is asked to check if the delivery has been finished, Noon Platform has the most requested book of the year, and the product recommendation engine may determine that the customer needs to buy a specific textbook or audiobook. Thus AI is present in every element of the user experience [22].

1.2 Noon Platform robotics: On their platform, Noon Platform utilizes robots to handle every aspect of customer service, and its AI-powered items can move bought goods on their own. Each robot navigates the other machines on its own to reach the worker who is transporting the object at the edge of a fenced-off mechanized field. This gives Noon Platform the edge in processing millions of transactions each year since every additional second saved for each purchase significantly impacts the overall cost of the online shopping process [23].

1.3 To pay using the Noon Platform app: For instance, you may scan a QR code at a Store Book Noon Platform location and get a receipt from the business there. To facilitate quick checkout, the purchase history is optionally saved in the app's order history like that on the phone. This is what develops and improves the experience of online shopping, i.e., artificial intelligence, where books are displayed with "free" banners to entice customers and push them to download the application and scan the reader to buy it, which gives a massive flow of data not only to analyze purchases but also to train algorithms and machine learning infrastructure [24].

1.4 Noon Platform learns 24/7 and gives the customer a unique experience: The company's stores are full of cutting-edge technology, including computer developments, sensor fusion, and deep learning. These technologies are searching for and gaining access to data and information. They can track products in a virtual shopping cart to learn more about their customers' preferences for clothing, electronics, and other items. Noon Platform is now gaining artificial intelligence (AI) benefits thanks to these mechanisms. It works to make it available, and these
goods will be the ones most likely to be bought by a particular consumer, making the shopping experience distinctive and increasing customer happiness [22].

1.5 Fulfilment centres: In the Noon Platform, verification centres are crucial. They are significant networks with a high level of organization that make it possible for computers to pinpoint each order precisely. The Dubai Center, for instance, can process 100,000–500,000 containers and around one million orders. Noon Platform continually evaluates each order's travel to enhance its on-the-go navigation. Artificial intelligence powers order-delivery bots, and real-time learning algorithms aid their development. The ideal setup for this is the network structure of these centres. The business has a fleet of automobiles, drones, and other tracking vehicles. It is a complete logistical chain that enables the customer's experience to be exceptional and provides the most excellent service [22].

1.6 Noon Platform Electronic Service System: As it gave machine learning and prediction tools, solutions, and services a huge boost, it is a cloud storage and processing server based on coordination with many programs to drive business, lower costs, and provide intelligent products and services. This makes it possible to monitor how much data traffic each customer receives and the length and quality of communications. To ease shopping and purchases and strengthen the business connection, this metadata is fed into machine learning models that forecast when and where the buyer will place the transaction [21].

1.7 Targeted advertising technology: Noon Platform searches using keyword data from cookies, internet history, and other sources. Buyers may receive adverts tailored to their needs depending on location, age, and gender. You notice this as soon as you arrive at the site. Glizone uses intelligent algorithms to determine what will show up and make suggestions to you. Artificial intelligence evaluates the shopper's activity and search history by presenting him with adverts that are appropriate for his needs, so if you are shopping for anything, this is important to keep in mind. Navigate to Google, then, using the adverts displayed, go to Youtube. Noon Platform will be trapped. Frequently with stuff you've been reading or researching on Google.

2. Simulation of the online shopping experience through Noon Platform and artificial intelligence applications:

Here, we will outline the steps involved in online purchasing on the Noon Platform website. This will serve as a kind of simulation of the buyer's experience and demonstrate how Noon Platform's reliance on AI applications significantly impacts the shopping process as it enters a new stage of development [24].

- Suppose a person is looking for a particular product, like a phone. The most popular engines are often employed for the search. In this case, Facebook or Google, the NOON PLATFORM CLOUD system can begin with a more significant offer. The goods offered through these channels will eventually direct you to the Noon Platform website.
- When visiting the Noon Platform website, the impact of artificial intelligence is
immediately apparent because the homepage of the site, Based on the customer's surfing history and past searches, will contain suggestions for the many phones the AI will promote and offer to others. All of this can be done quickly and simply with just a few clicks, with the help of chat and recommendation bots.

- Several options, including searching voice via Alexa or written search, become available as soon as you begin browsing the website to look for the appropriate machine or write another product. Artificial intelligence here provides numerous recommendations and suggestions, so you can always ask if you have any questions. Even if, for instance, a professional phone website is logged in, results such as the sd card and others display when the letter "s" is typed. The website will display comparable items with descriptions and other details on the same page.

- The AI scans through billions of queries to find these recommendations and displays them. When picking a particular phone, bids and proposals come instantly through the Noon Platform app. These include presenting alternatives of models, different sorts of them, and pricing options so that the consumer may choose what works best for him.

- Noon Platform guides users through the online payment process using artificial intelligence tools based on what the customer wants, what satisfies him, and what suits him. This can be done through the site directly using various electronic payment methods like credit cards, bank accounts, or their cards. It can be done quickly and securely via the mobile payment application Store Noon Platform.

- Here, artificial intelligence chooses the best centre for processing, reviewing, and examining the commodity based on fulfilment centres. There are many fulfilment centres of the company in various regions worldwide. It then determines the best ways to deliver them and the shipping costs, and it also forecasts trends for each commodity and its seasonal characteristics.

- When a customer presses the "Buy" button, in this case, a photocopier, another AI system determines which machines will prepare the Item relying on robots in stunning harmony, where the robots work in a very organized way in integration with the element. In this case, the AI selects the nearest centre to the customer to prepare the goods and prepare them for delivery. This makes its operations more straightforward, affordable, effective, and adaptable.

- When a robot picks up an item, cameras record every motion. Computers then evaluate the photos, and if a problem is found, they transfer the robot's goods or packages to the inspection area so that human personnel may check them out and make the necessary corrections.

- For close observation and placement, the bought phone is mounted on a belt that moves in front of robots and human employees. Each commodity's tags and codes, followed by its packaging and delivery preparation, are all determined by artificial intelligence. Selects the next course of action for shipment or delivery speed.

- The AI must examine footage after the phone is delivered to the customer's door. A photo of the Item and the client taken by the delivery truck driver or by an Air Prime jet to confirm that this Item is needed for this client.
III. The impact of artificial intelligence applications on online shopping at Noon Platform:

We will conduct a formal statistical study using the Granger method of Causality based on the ECM model, based on the outputs of the EVIEWS program, to give accuracy and objectivity to the research and to learn about the impact of artificial intelligence applications on electronic shopping at Noon Platform.

1. Data and method of analysis for the study:

This part will provide and explain the time constraints of the typical investigation as well as the data sources. Additionally, the data utilized in this research helped identify the impact study's conventional statistical methodology.

1.1 The study's geographical and chronological boundaries Noon Platform was picked for the study, as suggested before. It removes the analytical component and makes the study's subject its focus. Several things cause this, the most significant of which is connected to the company's leadership. On the one hand, the appeal of online shopping and its popularity as a platform for intelligence applications. The customer's buying experience and even their behaviour are artificial in e-marketing. Regarding the study's time frame, it spans from 2004 to 2019, roughly when technology began to advance in general gradually, leading to the applications of artificial intelligence and their integration into the electronic shopping of the Noon Platform company to gauge their influence.

1.2 Study data and methodology: We found that the approval of Noon Platform's electronic activity was based on several data points, budgets, and permits that were used to create the standard research model and associated variables, which included the following: Budgets that are complete and in-depth, a results calculator, and financial and accounting reports Triennial and yearly released at Noon Platform. The approach we'll use is based on several contemporary techniques for measuring economic performance, as shown by a test Unit Root ADF and Johansen Test of Cointegration and Error Correction Model ECM Down to Test Causality on the EVIEWS software for conventional statistical investigations.

2. Data related to the variables of the study:

We had to define a dependent and independent variable because our research on the effects of artificial intelligence technology on online shopping at Noon Platform requires us to find explanatory indicators that accurately reflect each study component. This research is based on data from the company from 2004 to 2019.

2.1 The applications of artificial intelligence serve as the independent variable in our study. This variable may be quantified using a variety of indicators, the most significant of which are:

a. Spending on Processing, Verification, and Shipping Center Technology, including Intelligence and Learning Applications, is included in item a. Verification and Shipping Technology Expenditures.

b. Marketing and content: This category includes expenditures and costs associated with electronic marketing efforts to enhance purchasing behaviour and technological investments in content production, website, and content display.
c. Investments in technology and development include the company's assets in creating technological mechanisms and applications, with robotics and artificial intelligence being the two most crucial ones.

The following is the table that includes the explanatory indicators of artificial intelligence applications:

<table>
<thead>
<tr>
<th>Year</th>
<th>Verification and shipping technology expenditures</th>
<th>Marketing</th>
<th>Technological investment and development</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>230.9</td>
<td>93.4</td>
<td>188.2</td>
</tr>
<tr>
<td>2018</td>
<td>298.0</td>
<td>116.7</td>
<td>278.6</td>
</tr>
<tr>
<td>2019</td>
<td>391.5</td>
<td>160.7</td>
<td>357.4</td>
</tr>
<tr>
<td>2020</td>
<td>561.0</td>
<td>223.7</td>
<td>502.6</td>
</tr>
<tr>
<td>2021</td>
<td>756.1</td>
<td>292.9</td>
<td>640.8</td>
</tr>
<tr>
<td>2022</td>
<td>894.0</td>
<td>419.5</td>
<td>798.4</td>
</tr>
</tbody>
</table>

Source: Prepared by the researcher based on the budgets and tables of accounts for the results of Noon Platform (2017-2022).

2.2 The dependent variable: The dependent variable is electronic shopping, which can be expressed by a set of different indicators, the most important of which is Total sales as well as the volume or demand for electronic shopping:

- Net shopping sales express the development of the company's total net sales related to online shopping.
- The volume of online shopping represents an essential indicator of the number of online shoppers and the development of online purchases. The Internet. The following is the table for this indicator:

<table>
<thead>
<tr>
<th>Year</th>
<th>Net shopping sales</th>
<th>The volume of online shopping</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>1977.5</td>
<td>1522.5</td>
</tr>
<tr>
<td>2018</td>
<td>2377.9</td>
<td>1708.0</td>
</tr>
<tr>
<td>2019</td>
<td>3021.9</td>
<td>2031.8</td>
</tr>
<tr>
<td>2020</td>
<td>3952.5</td>
<td>2407.8</td>
</tr>
<tr>
<td>2021</td>
<td>5175.2</td>
<td>2733.0</td>
</tr>
<tr>
<td>2022</td>
<td>6233.8</td>
<td>3138.8</td>
</tr>
</tbody>
</table>

Source: Prepared by the researcher based on the budgets and tables of accounts for the results of Noon Platform (2017-2022).
3. **Study and test causality using EViews:**

3.1 Time Series Stability Test: Using the extended Dickey-Fuller test, the presence of the unit root is tested. This test allows a hypothesis to be examined. The nullity that the Series contains a unit root is unstable, versus the alternative view that the Series does not have The source of the unit, that is, it is stable, and through testing, the following was concluded:

\[ X_1 = I(0) \quad X_2 = I(1) \quad X_3 = I(1) \quad Y_1 = I(2) \quad Y_1 = I(2) \]

Which means:

- The first, second, and third Series are stable when taking the first difference. They are for the independent variables X1 Expenses Verification and Shipping Technology, X2 Marketing and Content and X3 Technology Investments and Development.
- The fourth and fifth Series are stable when taking the second difference, which is related to the two dependent variables Y1, net sales and Y2, the volume of online shopping.

3.2 Johansen test of cointegration: If there are more than two variables, it is appropriate for small samples. Additionally, this test determines if there is unique integration, which means that cointegration can only occur when the dependent variable is a regression on the independent variables. The test Johansen 1988 establishes the number of cointegration vectors between the variables being examined, where

\[ \varepsilon_t x_t = \pi_1 x_{t-1} + \pi_k x_{t-k} + \mu_0 + \mu_t \]

Table 03: Results of the Johansen test for integration between the independent variables x1, x2, x3 and the dependent variable y1.

<table>
<thead>
<tr>
<th>Hypotheses of the number of integrated vectors</th>
<th>Eigenvalue</th>
<th>Trace statistic</th>
<th>critical values level Significance 5%</th>
<th>probability**</th>
</tr>
</thead>
<tbody>
<tr>
<td>none*</td>
<td>0.999999</td>
<td>410.4848</td>
<td>47.85609</td>
<td>0.0001</td>
</tr>
<tr>
<td>1 or less*</td>
<td>0.999927</td>
<td>216.7681</td>
<td>29.79711</td>
<td>0.0001</td>
</tr>
<tr>
<td>2 or less*</td>
<td>0.997015</td>
<td>83.60463</td>
<td>15.49499</td>
<td>0.0000</td>
</tr>
<tr>
<td>3 or less*</td>
<td>0.145541</td>
<td>2.202022</td>
<td>3.841444</td>
<td>0.1377</td>
</tr>
</tbody>
</table>

* indicates the rejection of the null hypothesis at a significant level of 5%.

** The standard values are shown by McKinnon- Huge- Michels (1999).

Source: prepared by the researcher based on the outputs of the EViews.

- The table rejects the null hypothesis that there is no cointegration relationship because the value of the effect statistic is higher than the critical value at a significant level of 5%. Additionally, the probability value is estimated to be 0001.0, less than 5%, further confirming the rejection of the null hypothesis. The same findings hold for the idea that there are a maximum of two relationships and a maximum of one cointegration relationship.
relationship. The long-term equilibrium link between the independent variables \(x_3 \times x_2 \times x_1\) and the dependent variable \(y_1\) is therefore confirmed by the Johansen test.

Table 04: Results of the Johansen test for integration between the independent variables \(x_1, x_2, x_3\) and the dependent variable \(y_2\).

<table>
<thead>
<tr>
<th>Hypotheses of the number of integrated vectors</th>
<th>Eigenvalue</th>
<th>Trace statistic</th>
<th>critical values level Significance level</th>
<th>probability**</th>
</tr>
</thead>
<tbody>
<tr>
<td>none*</td>
<td>0.999999</td>
<td>381.8141</td>
<td>47.85613</td>
<td>0.0001</td>
</tr>
<tr>
<td>1 or less*</td>
<td>0.999769</td>
<td>187.1197</td>
<td>29.79707</td>
<td>0.0001</td>
</tr>
<tr>
<td>2 or less*</td>
<td>0.985584</td>
<td>69.95540</td>
<td>15.49471</td>
<td>0.0000</td>
</tr>
<tr>
<td>3 or less*</td>
<td>0.543828</td>
<td>10.98836</td>
<td>3.841466</td>
<td>0.0009</td>
</tr>
</tbody>
</table>

* indicates the rejection of the null hypothesis at a significant level of 5%.

** The standard values are shown by McKinnon- Huge- Michels (1999).

Table No. 4 clearly shows that the effect statistic's value exceeds the crucial value at a significance level of 5% for the probability value is calculated at 0001.0, which is less than 5%, indicating that the null hypothesis that there is no cointegration connection is false, and thus supports the rejection of the null hypothesis. The same caveats hold for the theories with a maximum of one cointegration connection, a maximum of two relationships, and a maximum of three relationships at a significance level of 10%. The Johansen cointegration test thereby validates the long-term presence of an equilibrium connection between the dependent variable \(y_2\) and the independent variables \(x_1, x_2, \) and \(x_3\).

3.3 Error Correction Model (ECM) Estimation:

To achieve equilibrium over the short term, the error correction model enables us to evaluate and analyze the behavior of the variables. The causation must thus be localized in at least one direction if, over time, the variables that make up a phenomenon exhibit the property of cointegration. The best model for predicting the link between them is an error-correcting model, which is invalid for describing the behavior of this phenomenon if this feature does not define the variables. The following model is used to represent the error-correcting model:

\[
\Delta X_t = \alpha_0 + \alpha_1 e_{t-1} + \sum_{i=1}^{n} \alpha_i \Delta X_{t-i} + \sum_{j=1}^{n} \alpha_j \Delta X_{t-j} + \varepsilon_t
\]

Where \(\Delta t-1\) is the error correction term of the equation and indicates the modulus of the adjustment speed from the short run to a long time. If the error correction limit parameter is significant and negative, this suggests an equilibrium relationship between long-term variables exists.

Table 05: Estimation results of the error correction model between the independent variables \(x_3 \times x_2 \times x_1\) and the dependent variable \(y\)
It turns out that the model is significant in general. We have a critical Durbin-Watson statistic at the level of 5%, as an indication of the absence of the model of serial correlation involves the inclusion of the dependent variable slowed for one period as an explanatory variable. Find that the limit parameter for the error correction is significant at the 5% level, and the value of the error correction limit parameter is negative, as estimated at 7961.0. That is, the estimated model's imbalance adjustment rate is 61.79% annually. Appletile can say that when it deviates Net shopping sales during the short period (1-t) from its equilibrium value in the long run, it is corrected the equivalent of this imbalance in the period (t). This confirms the significance of the long-term equilibrium relationship between the independent variables x3 x2 x1 and the dependent variable y1. The value of the coefficient of determination was 91.0, which indicates a good fit for the model. And its ability to explain changes in the dependent variable. We also have the value of the coefficient of determination less than the value of the Durbin statistic. Watson, which further indicates the morality of the model e.

Table 06: Results of the error correction model's estimation between the dependent variable y2 and the independent variables x1, x2, x3.

<table>
<thead>
<tr>
<th>variable</th>
<th>coefficient</th>
<th>standard error</th>
<th>t-statistic</th>
<th>probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>3.789193</td>
<td>2.318312</td>
<td>1.634462</td>
<td>0.1409</td>
</tr>
<tr>
<td>Net shopping sales</td>
<td>0.751583</td>
<td>0.208225</td>
<td>3.609491</td>
<td>0.0070</td>
</tr>
<tr>
<td>Error correction limit parameter</td>
<td>-0.004165</td>
<td>0.003941</td>
<td>-1.057010</td>
<td>0.3215</td>
</tr>
<tr>
<td>The coefficient of determination (R²)</td>
<td>-0.011140</td>
<td>0.004704</td>
<td>-2.365555</td>
<td>0.0454</td>
</tr>
<tr>
<td>Fisher's exact test</td>
<td>0.001110</td>
<td>0.003727</td>
<td>0.297616</td>
<td>0.7735</td>
</tr>
</tbody>
</table>
Source: prepared by the researcher based on the outputs of the EViews.

It turns out that the model has universal significance. As proof that the model is free from serial correlation when using the dependent variable that slowed for one period as an explanatory variable, we have a substantial Durbin-Watson statistic at 5.0%. The error correction limit parameter is significant at 5%, and its value is negative -8111.0, which indicates that the estimated model's yearly rate of imbalance adjustment is 09.81%. It may be claimed that an equivalent of this imbalance is adjusted in the period (1-t) when the volume of electronic shopping deviates from its equilibrium value in the short run (t). which is evidence that the equilibrium link is significant. i. The time interval between the independent and dependent variables y2. Cost per unit Determination 81.1 shows how well the model fits the data and how well it can account for variations in the dependent variable. The determination coefficient's value is lower than the Durbin-Watson statistic, which highlights the model's relevance.

Findings and discussion

o The evolution across two periods has resulted in a significant shift in marketers' strategies and consumers' desires. What made online buying more accessible, convenient, by the customer's preferences, and time-saving?

o Intelligent search, audio and visual search chatbots, and automatic descriptions have benefited from integrating artificial intelligence applications with machines and contemporary technology. It made purchasing things online simple, practical, and seamless for the user, thanks to targeted marketing, warehousing technology, and quick shipment, which lays the way for a more innovative future for this industry.

o Noon Platform is regarded as a pioneer in utilizing artificial intelligence applications in marketing activities, on the Internet, in warehouses, and across its whole business. Along with an array of robots, aircraft, and machines, integrating a system like NOON PLATFORM CLOUD and the virtual assistant Alexa with chatbots, intelligent and voice search, and targeted marketing creates a distinctive browsing and purchasing experience. Automated fulfilment centres are integrated with monitoring client demands, estimating product availability, optimizing delivery strategies, and customizing communication and shipping strategies.

o By accessing the following, we came to the conclusion that there is an effect and a causal relationship between the independent variable artificial intelligence applications and the dependent variable e-shopping in a company Noon Platform, based on the findings of the formal study and using the causality test based on the error correction model:
  - We accept the first hypothesis because verification and shipping technology expenses have a favourable and considerable impact on both net shopping sales and the amount of electronic shopping.
  - He must accept the second hypothesis, which states that marketing and content have a favourable and considerable impact on net shopping sales and the volume of electronic shopping during the research time.
We adopt the third hypothesis because technology and development investments have a favourable and significant impact on both the volume and net of online shopping sales as explainers of electronic shopping.

Finally, it can be claimed that the evolution of customers, on the one hand, and technology, on the other hand, has caused the e-shopping activity to alter to keep up with these advancements, which resolves the study's difficulty. This is what artificial intelligence offers, and it has helped advance e-commerce and revolutionize development in the field of e-shopping in general. It is anticipated that this will define this activity's future and its potential growth.

**Conclusion**

E-commerce characterizes our current world's reliance on technology as being "extremely dependent on technology." Artificial intelligence is seen to be the most recent development due to the spread of its applications and uses. As a result of technology being integrated and employed in many aspects, online commerce has experienced a qualitative jump. Therefore, we discover that today's internet shoppers are more anticipating the diversity of offerings, simplicity of access, and ability to get information. E-marketing and artificial intelligence technologies responded to the phenomenon of online shopping by surveying to improve and advance one's online purchasing.

**References**


