

## **The Moderating Role of Privacy Concern on the Relation between Artificial Intelligence and Consumer Purchase Intention: An Applied Study on Telecommunication Sector in Egypt.**

Hala Mahmoud Sayed Afifi <sup>1</sup>

Samaa Taher Morsy Attia <sup>2</sup>

### **Abstract**

Due to recent technological advancements, the number of intelligent websites and mobile applications has increased. In order to create value for both businesses and customers, the novel technological application of Artificial Intelligence is being introduced in many sectors, particularly in the telecommunications sector. With the help of Artificial Intelligence, potential customers can virtually interact with various products on online marketplaces, saving time and effort on the decision-making process. The present study aims to provide light on how privacy concerns affect the relation between Artificial Intelligence and Purchase Intention.

This study employs a survey questionnaire to gather information for its comprehensive descriptive, quantitative examination. The study aims to generalize its findings across the field and investigates the moderating role of customers privacy concerns in the relation between Artificial Intelligence and Purchase Intention by statistically evaluating Purchase Intention, Artificial Intelligence using the Technology Acceptance Model (TAM), and customers privacy concerns. In order to conduct the research, 233 participants who are all Egyptian telecom customers are surveyed.

---

<sup>1</sup> Teaching Assistant- Canadian International College.

<sup>2</sup> Professor of Marketing – Dean Faculty of Business informatics – Egypt University of Informatics

The Moderating Role of Privacy Concern on the Relation between Artificial Intelligence and Consumer Purchase Intention: **An Applied Study on Telecommunication Sector in Egypt.**

---

---

As for the samples, the non-probability sample for the study was selected. The study's conclusions indicate that the relation between Artificial Intelligence and consumer purchase intention is mitigated by privacy concerns.

**Keywords:** Artificial Intelligence, Purchase Intention, Privacy Concerns, Telecommunication, TAM, Perceived Usefulness and Perceived Ease of Use

دور مخاوف الخصوصية في العلاقة بين الذكاء الاصطناعي ونية الشراء للمستهلك:  
دراسة تطبيقية على قطاع الاتصالات في مصر

نظرًا للتطورات التكنولوجية الحديثة ، زاد عدد مواقع الأنترنت الذكية وتطبيقات الهاتف المحمول. من أجل خلق قيمة لكل من الشركات والعملاء ، حيث يتم استخدام تكنولوجيا الذكاء الاصطناعي الجديدة في العديد من القطاعات ، تحديدًا في قطاع الاتصالات. بمساعدة الذكاء الاصطناعي ، يمكن للعملاء المحتملين التفاعل مع العديد من المنتجات في الأسواق عبر الإنترنت ، مما يوفر الوقت والجهد في عملية صنع القرار. لذلك تهدف الدراسة الحالية إلى إلقاء الضوء على كيفية تأثير مخاوف الخصوصية على العلاقة بين الذكاء الاصطناعي ونية الشراء.

أستخدم هذه الدراسة استقصاء آراء العملاء لجمع المعلومات و فحصها الوصفي والكمي الشامل. تهدف الدراسة إلى تعميم نتائجها في علي قطاع الاتصالات والتحقق في دور مخاوف خصوصية العملاء في العلاقة بين الذكاء الاصطناعي ونية الشراء من خلال التقييم الإحصائي لنية الشراء والذكاء الاصطناعي باستخدام نموذج قبول التكنولوجيا (TAM) ومخاوف خصوصية العملاء .

من أجل إجراء البحث ، تم استقصاء 233 عميلًا من عملاء شركات الاتصالات المصرية . اما بالنسبة للعينات ، قد تم اختيار العينة غير الاحتمالية للدراسة حيث كان من الصعب الحصول على إطارات أخذ العينات من العديد من الشركات في مصر . بالمقارنة مع العينات الاحتمالية ، عادةً ما تكون تكلفة العينات غير الاحتمالية أقل وتستغرق وقتًا أقل للتجميع. وأشارت استنتاجات الدراسة إلى أن نية شراء المستهلك تقل عند استخدام خدمات شركات الاتصالات عبر الأنترنت التي تستخدم تقنية الذكاء الاصطناعي و ذلك بسبب مخاوف الخصوصية.

الكلمات المفتاحية: الذكاء الاصطناعي، نية الشراء، مخاوف الخصوصية، الاتصالات، TAM، الفائدة المتصورة وسهولة الاستخدام المتصورة.

## **1. Introduction**

Since 1995, numerous agencies have begun to develop and research the idea of offering robotic or autonomous vehicle applications, speech recognition, autonomous planning scheduling, game playing, spam fighting, logistics planning, robotics, and machine translation (Russell and Norvig, 2010). An intriguing question to investigate since the invention of computers has been how to allow machines to emulate human intelligence (Chen, Liu, Sun & Tsai, 2022). Although many new discoveries and inventions have resulted from the rapid and constant growth of science and technology, Artificial Intelligence (AI) has been regarded as the pioneer among them since its inception till now (Yin & Qiu, 2021).

Moreover, AI enables computers to execute tasks that would ordinarily need human intelligence. To explain, AI development begins by feeding the system existing data and allowing the system to learn; this learning experience helps AI to comprehend, infer, communicate, and make decisions that are comparable to, or better than, humans (Crossnohere, Elsaid, Paskett, Bose-Brill, & Bridges, 2022). Therefore, the industry standards will increase across the field thanks to this innovative technology. For instance, chatbots, linguistic structures like essay writing, asking questions, summarizing lengthy texts, translating, and languages can all be handled by AI without the need for human assistance (Kurian & Rohini, 2021).

It is noteworthy to mention that the consumption behaviors of customers have undergone significant shift as a result of this technological innovation. In addition to changing consumers' awareness, AI is essential to marketing. This is especially true for e-retailing, which is characterized by frequent customer interaction and generates a significant amount of data about the characteristics and transactions of its customers.

Based on this, AI examines these data and instantly offers customers customized recommendations (Jarek & Mazurek, 2019). These customized suggestions help customers choose a product since they give them the most practical product, suggestion, service, payment method, and shopping time (PwC, 2017). Because AI is dependent on a number of factors, including machine learning, natural language processing, rule-based expert systems, neural networks, deep learning, physical robots, and robotic process automation, it offers customers an accurate and interactive experience (Davenport, Guha, Grewal, & Bressgott 2020).

Despite the difficulty of understanding consumer Purchase Intention, AI assists in evaluating and anticipating customer attributes because consumers express their needs and wants in a variety of ways, including search, comments, blogs, Tweets, likes, videos, and face-to-face discussions (Court, 2009). This assistance is also due to the fact that artificial intelligence is a user-friendly technology that benefits customers while they are making a purchasing decision when obtaining services or products (Yoo et al., 2010).

According to Li (2020), Artificial Intelligence facilitates a precise and effective understanding of a consumer's preferences. Additionally, research has shown that ease of use supported by Artificial Intelligence makes consumer purchase intentions much simpler and more lucrative (Ma and Sun, 2020). When consumers use e-retailing to make a purchase decision, artificial intelligence serves as a crucial guiding factor (Luo, 2019).

Businesses must always be aware of new facts about their customers. Consequently, Artificial Intelligence enables them to identify more precise customer data. As previously noted, artificial intelligence relies on gathering, evaluating, and learning from the data that has been accumulated.

Customers consequently worry about the privacy of their private information (Davenport, Guha, Grewal, & Bressgott 2020). Several studies have been done over the years to determine the importance of privacy and trust when using any e-services, social media, or e-retail, and they have found that customers are constantly concerned about their privacy and the degree to which these companies will protect their personal information (Chen, Sun, & Liu, 2022). Furthermore, "one of the most crucial concerns in marketing right now" is data protection and consumer trust (Wang, 2022). Because it is challenging for the law to foresee potential data exploitation, especially in light of the development of artificial intelligence, which has made these moral conundrums more complicated (Carmody, Shringarpure, & Van de Venter 2021).

## **2. Literature Review**

### *2.1 Purchase intention*

Purchase Intention has been identified as a key component to predict customer behavior across numerous studies in a variety of domains, including entrepreneurial behavior (Kautonen 2013; Shirokova, 2016), health-related behaviors, online purchase behavior, or ethical decisions (Rausch & Kopplin, 2021). Understanding purchase intention is crucial because it is one of the key aspects that influences consumer behavior, and doing so will allow any organization retain and expand its customer base (Thapa, 2011). When evaluating whether a new product or service deserves continued development after being introduced to the market, managers can use this information to gauge its impact (Morwitz, 2007). However, in a cross-sectional study self-reported past behavior may not be entirely correct, and the future cannot be foreseen (Thapa, 2011).

Additionally, the creators of strategies and commercial professionals use Purchase Intention as one of the key indicators to forecast which aspects in a certain consumer group will influence their tendency (Halim & Hamed, 2005). The tendency of consumers to purchase the required good or service (Younus, Rasheed, & Zia, 2015).

Likewise, purchasing intention is seen as a person's capacity and propensity to engage in transactions and make purchases (Pavlou, 2003). To put it another way, it's a method of decision-making that concentrates on the rationale behind choosing a particular brand (Shah, 2012). Hence, purchase intention can be used to evaluate how much a consumer plans to purchase a particular product. Knowing that the more a customer intends to buy a product, the more a customer want to buy that product (Hsinkuang Chi, Huery Ren Yeh, Yi Ching Tsai, 2011). Customers who intend to buy a specific product will have greater actual purchasing rates than customers who have no intention to buy (Brown, 2003).

Purchase intention, on the other hand, is frequently tied to consumer perceptions and attitudes (Mirabi, 2015). It may be influenced by a variety of elements, including the product's pricing, design, packaging, product expertise, quality, celebrity endorsement, fashion, and, in certain cases, family ties (Shafiq, 2011).

Furthermore, one of the most essential aspects that stimulate customer's intention and has a positive connection with their conduct is attitude. It is the level to which a person evaluates behavior as positive or negative. Moreover, it is an individual's positive or unpleasant feelings about engaging in a particular behavior (Buabeng-Andoh, 2018).

Subjective norms are also dependent on the motivation acquired by the customer and the customer's view of the reward or punishment that will be earned following the decision-making process (Kim,2013). Aside from that, the effect of Perceived Behavior Control (PBC) on customer purchase propensity. PBC refers to the degree to which a person has control over a situation as perceived by a consumer over external elements during the process of purchasing.

## *2.2 Artificial intelligence*

Issac Asimov, an American science fiction author, published a short story in the 1940s that inspired a generation of researchers in the fields of Robotics, Artificial Intelligence, and Computer Science. Runaround is a brief fiction by engineers Gregory Powell and Mike Donovan about a highly developed robot. It develops three main rules for robot behavior: (1) a robot won't allow any human to suffer harm; (2) a robot obeys human commands if they do not cause harm to any other humans, which is applicable to rule number one; and (3) a robot must defend its own existence so long as it does not break the first or second rules. Nearly an entire generation of scientists, mathematicians, and philosophers have considered the possibility of Artificial Intelligence. Alan Turing, an English mathematician and computer scientist, used less fiction at the same time. Over time, Turing begins to question whether it is possible for robots to possess intelligence. At Dartmouth College, Alan Turing and a group of scientists and mathematicians discussed how to make machines mimic human learning and other types of intelligence. They then performed the Turing Test, which involved developing a chess-playing computer programmer, to determine whether a machine could be intelligent.

Thus, when Alan Turing wrote "Intelligent Machinery" in 1948 and "Computing Machinery and Intelligence" in 1950, those works served as an inspiration for later artificial intelligence researchers (Haenlein & Kaplan, 2019).

Examining the definition of intelligence is the first step in studying Artificial Intelligence. There is no official definition of intelligence, despite a number of research and discussions on it. The capacity to solve issues and adjust to changing circumstances using one's memory, knowledge, experience, understanding, reasoning, imagination, and judgement might also be considered a definition of it. Effective intelligence adaptation therefore relies on a precise balancing act between a number of processes, including perception of one's surroundings, problem solving, reasoning, learning, memory, and acting to attain goals. (Wang, Goertzel, 2007) The ability to learn, adapt to new situations, understand and manage abstract concepts, and use knowledge to interact with one's surroundings are all characteristics of intelligence (Kietzmann, Paschen, and Kietzmann, 2019). The term "artificial intelligence" was first used in 1956 by John MCarthy, who defined it as "the science and engineering of creating intelligent machines." Although Issac Asimov, Alan Turing, and other researchers inspired generations of scientists, robotics, artificial intelligence, computer science, mathematicians, and philosophers to define the term, it was actually John MCarthy who first used it (Hamet, Tremblay, 2017). Artificial intelligence also refers to the replication of human cognitive capacities to meet objectives using technology tools while taking into account potential limits. (Haenlein and Kaplan, 2019; McCorduck, 1977; Benko and Lanyi, 2009).

Additionally, computational agents that operate intelligently are what is meant by artificial intelligence, according to current conceptualizations (Poole and Mackworth, 2010). "Technology designed to perform activities that normally require human intelligence" is the general definition of Artificial Intelligence (Luxton, 2014). The ability of a system to operate appropriately in an unpredictable environment is what Bernauer, Zitzmann, and Joda, (2021), described as Artificial Intelligence. A system will be successful if it achieves the behavioural subgoals that support its main aim.

The technology that combines big data, artificial intelligence, neural networks, chatbots, machine learning, deep learning, and virtual assistants to act as humans and possibly outperform human actions in terms of speed and relevance has advanced Artificial Intelligence significantly since the early 2000s (Buchanan, 2005; Pwc, 2019; Yoav Shoham, 2018). Thus, these technologies change how organizations interact with their environments and how they conduct research and development, maintenance, operations, sales, and marketing, among other things. With the help of Artificial Intelligence, companies will be able to develop stronger customer relationships and maximize those ties, add new features to their products and services, and boost the efficiency of operations, maintenance, and supply chain operations (CIGREF, 2018; Kuzey, 2014; Pwc, 2019).

Additionally, it gives organizations tremendous opportunities, but in order to take advantage of these opportunities, organizations must adapt their cultures, attitudes, and talents (Di Francescomarino and Maggi, 2020; Lee , 2018; Sikdar,2018). These significant advances have already had an impact on some industries and services or will shortly (Buchanan, 2005; Pwc, 2019;Yoav Shoham, 2018).

For instance, machine learning and deep learning technologies have considerable impact on the health and disease sectors. They have programmes for identifying cancers and other diseases (Jiang, 2017, Koh and Tan, 2011). Additionally, conversational agents are used in customer relationship services (Rubin Victoria, Chen and Thorimbert Lynne, 2010). Additionally, there is automatic email processing by virtual robots that uses natural language (Gabrilovich and Markovitch, 2009). Likewise, marketing strategies have changed as a result of significant advancements in Artificial Intelligence, which uses a variety of technologies to give computers the ability to think, act, and behave like people (Awalegaonkar, 2019). Artificial Intelligence can be employed in a variety of industries, including the military, healthcare, aerospace, and telecommunications. In current era, the line separating humans from computers has blurred in many industries that are changing, notably in marketing.

Strategic decision AI is anticipated to enable decisions on what business models to employ, strategies to pursue, markets to target, communication channels to use, and pricing and competitive positioning tactics to adopt (Preethi, 2020). Furthermore, changes in marketing in the realm of personal selling were brought about by Artificial Intelligence. As Artificial Intelligence develops, sales managers now use increasingly powerful information support systems. In some cases, they combine these systems with response management systems to provide more efficient client targeting, prospecting, and management. Additionally, because online platforms make it easier to provide purchasing incentives like coupons, discounts, and other incentives, sales promotions may now be monitored faster than before. Choosing the promotion that is suited for the section, for instance.

As a result, using Artificial Intelligence in marketing has additional advantages such as accelerating decision-making, facilitating responses to new information, locating missing data, and establishing a consistent basis for decision-making. Those studies include (Stone, Aravopoulou, Ekinci, Evans, Hobbs, Labib, and Machtynger 2020). Additionally, AI has taken a major role in the digital transformation of the telecom industry since it helps deliver superior performance over the short and long term. Communications service providers (CSPs) nowadays must meet rising demands for improved customer service and higher-quality services. Telecom companies are taking advantage of these opportunities by leveraging the enormous volumes of data that have been gathered over the years from their sizable client bases.

### *2.3 Privacy Concerns*

Customer privacy is a subset of privacy and can be thought of as both a continuum dependent on the experience of the particular consumer and a two-dimensional entity including physical space and information (Caudill, & Murphy, 2000). Internet consumer data is used by marketers to more precisely and profitably target their customers (Milne, 2017). To better serve their customers, they make use of this personal information. Customers are worried about businesses knowing too much about their personal information and how they might use it irresponsibly as a result (Lee, 2004). As nothing more than a consequence, these privacy issues may prevent the advantages from being realized through influencing acceptance and effective use (Milne, 2017). Use of information that customers perceive to be confidential and personal raises privacy concerns.

Customers are frequently concerned about the collection of data that contains their personal information, and the main cause of these problems is because businesses are collecting this data without offering any protection or guarantee. (Lin, Nguyen, & Cheng, 2021).

The terms "personal information" and "invasion of privacy" are used to describe the collection, disclosure, or other use of personal information without authorization as a direct result of electronic commerce, particularly at the beginning of the electronic market place. (Lee, Wang, & Wang 1998). A negative manifestation of modern technology development is privacy concerns (Kim, 2013; Lee & Hong, 2016; Lin & Kim, 2016). Consumers are now more anxious than ever that businesses like manufacturers, marketers, and websites are keeping an eye on their personal information (Armantier, Doerr, Frost, Fuster, & Shue, 2021). As of today's development, manufacturers, other databases software, and other associated sources, etc. can monitor, trigger, and even videotape consumers using credit cards, sending emails, making phone calls, or even browsing the internet. To put it another way, customer privacy is being breached, and this may be considered a self-disclosure (Joinson, & Paine, 2007). Consumers' concerns about a possible loss of privacy as a result of information exposure are known as "self-disclosure" (Abbas, 2014; Ball, 2012; Benson, 2015; Jones, 2017).

It is worth mentioning that there are a lot of positive aspects to the exposure of Artificial Intelligence, but there are also negative aspects to its application. Regarding the urge to seek out customer information, the potential misuse or annoying of execution during the acquisition of consumer information, as well as many other drawbacks that come with striving to create the ideal Artificial Intelligence.

Therefore, these drawbacks must be taken into account if we want to design an AI-related system that is best and has the fewest privacy concerns.

#### *2.4 The relation among the variables*

##### **2.4.2 The relation between Artificial intelligence and purchase intention**

In the background, Artificial Intelligence (AI) plays a vital role in monitoring the emotional responses of consumers on the internet and social media. These social listening tools make use of AI systems to make it simple for customers to locate their demands and preferences (Shiju and Tharakan, 2021). Customers gain from the accuracy of AI since it saves their inputs, including words, sounds, and even images, and analyses them to figure out what they are genuinely looking for. The interaction between humans and machine learning is also important in today's development of AI customer service because it can be used to comprehend customer language and communicate with customers using this natural language. As a result, AI customer service can replay humanly, respond to all customer inquiries, assist businesses in using all marketing and sales services, as well as record customer behaviors and preferences, and this is referring to interactive experience.

Today, online platforms are used for the majority of purchases. Customers are given virtual experiences while remaining in the comfort of their own homes, which aids in making a final decision. Customers are saved by Artificial Intelligence, a cutting-edge technology that uses combinations to choose the safest alternative from a variety of possibilities available with a plethora of data (Pantano, 2017). AI's innovative technology aids consumers in clearly understanding their preferences.

Automated support is provided to customers using artificial intelligence throughout their service journey (Bhagat, Chauhan, & Bhagat, 2022). For instance, in online shopping platforms, intelligent customer service has been used to apply communication between artificial machines and customers, particularly in answering common questions about products, inventories, invoices, logistics, returns, etc. As a result, websites and applications like Amazon, Jingdong, Alibaba, and other platforms have developed the technology of smart speakers like Echo, Dingdong, and Tmall genie.

As a result, these technologies can help consumers with complex purchase decisions (Yin & Qiu 2021). To put it another way, AI enables users to effortlessly find the best product or service by conducting research online, comparing costs, and reading customer reviews (Tharakan, & Shiju, 2021). The objective of Artificial Intelligence, according to numerous earlier studies, is to create algorithms with human-like problem-solving skills that improve decision-making skills about purchase intention (Liu et al., 2019; Astawa and Sukawati, 2019; Qian and Xu, 2019).

The Technology Acceptance Model serves as the foundation for the majority of studies on the use of new innovations (TAM). Since AI is regarded as a new breakthrough in the telecom industry, TAM will be used to comprehend changes in consumer purchase intentions (Sohn & Kwon, 2020). It stands for one of the explanatory models that has had the most impact on theories of human behavior (Venkatesh, Morris, Davis, & Davis, 2003). It has been widely used up until recently, but the Davis technology acceptance model is a powerful resource that explains the influencing elements when users adopt new devices or technologies for data communication in the field (Na, Heo, Han, Shin, & Roh, 2022).

This fundamental model of acceptance (TAM) is widely used in investigations on the intention to use behavior of new technology (Gansser & Reich, 2021; Kim and Shin, 2015; Karahanna and Straub, 1999; Subramanian, 1994; Adams et al., 1992). The TAM model highlights the fundamental components of acceptance that represent user behavior, such as perceptions of perceived usefulness and usability. Perceived usefulness measures how much someone believes adopting new technology would improve his own performance, and perceived usability measures how much they believe the new technology will be simple to adopt without requiring a lot of physical work or a steep learning curve (Alhashmi, Salloum, & Mhamdi, 2019).

#### **2.4.3 The relation between Artificial intelligence and privacy concerns**

Consumers' worries about the privacy of sensitive personal data are frequently not immediately apparent because they do not fully understand the technology or the data that has been collected, but over the past few years, Artificial Intelligence technology has rapidly advanced, necessitating what businesses gather, store, combine, and exchange customers' personal information (Donahoe and Metzger, 2019). Artificial intelligence analyses any data that has been obtained without the assistance of humans, confirming the relationship between AI and customer data. Due to the availability of a vast quantity of private records in the public domain, the Internet of Things (IoT), and the collection of personal information through social media that customers interact with, privacy concerns are consequently emerging with technologies that are getting better every day (Van de Venter, Shringarpure, & Carmody, 2021).

#### **2.4.4 The relation between Artificial intelligence, purchase intention and privacy concerns**

The use of Artificial Intelligence modifies consumer behavior. It has the ability to uncover customer insights that foster loyalty. Digital consumers worry about the never-ending selection of inappropriate products, so they are constantly searching for an online solution that recommends the particular, desired things that they appreciate; if this solution is found, customers are more likely to continue with it. In the current era of technological transformation, AI has the capacity to satisfy every client need. In addition to enhancing the user experience through the usage of the data gathered, businesses may provide customers more of what they want by accurately adjusting their marketing and business strategies (Tharakan & Shiju, 2021).

### **3. Methodology**

#### ***3.1 Research problem:***

Understanding target customers and providing better service to them is one of the main struggles in marketing today. It becomes necessary to undergo the digital transformation in order to compete in dynamic markets. Artificial intelligence (AI) is one of these technologies that enables marketers to comprehend and offer target customers more effectively. AI fundamentally alters how marketing functions. As a result, a significant number of technological advancements that are released into the market today are driven by AI. An increasing public debate about the hazards and advantages that these technologies can bring to issues as diverse as privacy has accompanied the arrival of AI in our lives.

Therefore, the purpose of this study is to determine whether privacy concerns affect how artificial intelligence and consumer purchase intention.

### **3.2 Research variables:**

#### **3.2.1 Dependent Variable**

The researcher's outcome or primary interest is represented by the dependent variable (Marczyk, et al., 2005). Purchase intention is the only dependent variable in the suggested theoretical framework (PI). Purchase Intention is a construct that is based on consumers' propensity to use any intelligent platform to make a purchase of the required product or service (Younus, Rasheed, & Zia, 2015).

Purchase Intention, as defined by Pantano (2017), is when employing intelligent platforms, the consumer's level of willingness to pay as well as his/her attitude and orientation toward purchasing a specific commodity or service. Additionally, Naseri (2021) uses the concept of purchasing intention to highlight what consumers expect they will buy in the future to meet their needs and wants.

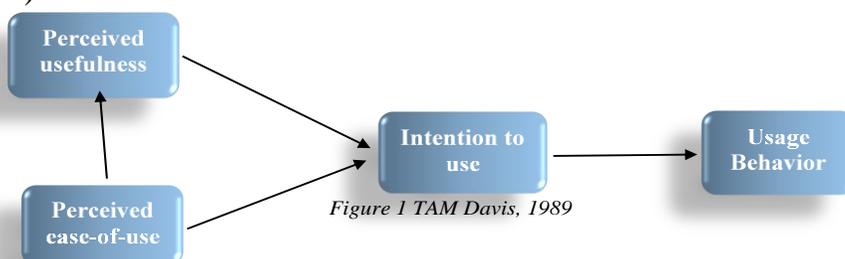
#### **3.2.2 Independent Variable**

The elements that directly influence buying intention are the independent variables. They are the variables that are changed in order to evaluate the dependent variable's reaction (Marczyk, 2005). Artificial Intelligence is the only independent variable in the proposed theoretical framework. In researches on the intention, the Technological Acceptance Model (TAM) for AI is frequently used, according to Gansser (2021). The TAM has been used to explain the adoption of wearable devices (such as the smart watch), intelligent tourism (Venkatesh and Davis, 2000), smart in-store technology (Kim, 2017), intelligent health

monitoring systems (Tseng, 2013), the smartphone credit card (Ooi and Tan, 2016), business intelligence systems, among many other types of information technology (Wang, 2016). This study will evaluate how consumer acceptance of AI affects consumers' purchase intentions.

### **Technological Acceptance Model (TAM)**

TAM is used to better understand user acceptance of information systems (Sohn & Kwon, 2020); it is the model most frequently used to explain customer behavior with reference to innovative technologies (Lee, 2003). TAM is the most effective technique for illuminating the motivating factors behind user adoption of new technology (Na, Heo, Han, Shin, & Roh, 2022). Perceived Usefulness (PU), which measures how much someone considers using a particular system would improve his performance, and perceived ease-of-use (PEOU), which measures how much someone likes to think using a particular system would be effortless, are the two factors that determine TAM, according to several studies (Bou-Ghanem, 2020).



### **3.2.3 Moderating Variable**

Privacy Concerns (P) may be a significant factor among the many others that influence the relationship between Artificial Intelligence (AI) and Purchase Intention (PI) (Mussa, 2020).

The Moderating Role of Privacy Concern on the Relation between Artificial Intelligence and Consumer Purchase Intention: **An Applied Study on Telecommunication Sector in Egypt.**

According to Alzaidi & Agag (2022), consumer's buying intentions are significantly impacted by the privacy concerns. As an illustration, the ability to manage and restrict physical, interpersonal, psychological, and informational access to oneself or one's group is their definition of privacy.

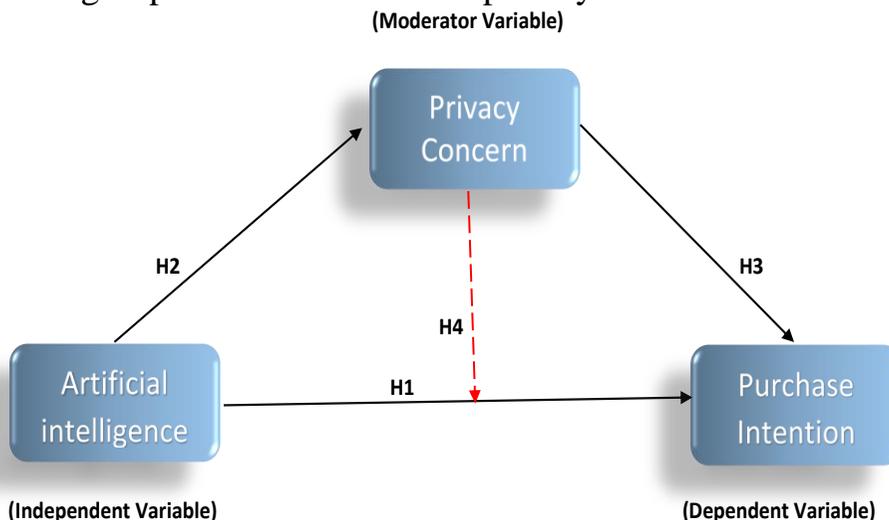


Figure1 Theoretical Framework

### 3.3 Research hypotheses

The following hypotheses are used in the current study:

H<sub>1</sub>: There is a significant statistical relation between Artificial Intelligence and Purchase Intention.

H<sub>2</sub>: There is a significant statistical relation between Artificial Intelligence and Privacy Concerns

H<sub>3</sub>: There is a significant statistical relation between Privacy Concerns and Consumer Purchase Intention

H<sub>4</sub>: Privacy Concerns moderates the relation between Artificial Intelligence and Purchase Intention.

### 3.4 Research objectives

In order to achieve the research aim, it can consist of specific objectives:

1. To explore the relation between artificial intelligence and consumer purchase intention.
2. Describe the relation between artificial intelligence and privacy concerns.
3. Describe the relation between privacy concerns and consumer purchase intention.
4. To test the role of privacy concern as a moderator on the relation between AI and purchase intention.

### ***3.5 Measures***

Descriptive research is chosen as the research design to accomplish the aforementioned study objectives. The quantitative research methodology is a requirement for the study. To collect data, the primary data is used. The online survey that is designed to examine the relation between variables and determine whether Privacy Concerns moderated the relation between Artificial Intelligence and customer Purchase Intention among Egyptian telecommunications companies is used to gather primary data. In situations where "trends or explanations need to be developed," quantitative research design is applied (Creswell, 2008). It can also be used to contrast various groups. Additionally, the majority of earlier research on these factors (AI, purchase intention, and privacy concerns) is quantitative. In order to describe the relation between artificial intelligence and consumer purchase intention, the relation between artificial intelligence and privacy concerns, the relation between privacy concerns and consumer purchase intention, and to determine whether privacy concerns moderate the relation between artificial intelligence and consumer purchase intention, a quantitative approach was adopted for this study.

### ***3.6 Population and Sampling***

#### **3.6.1 Population**

All Egyptian companies' telecomm. customers from any of the businesses are included in the research population. The primary data will be gathered from the research participants through self-administered surveys since this approach will be acquiring quantitative methodology. The distribution of these surveys to customers will take place online via [www.docs.google.com](http://www.docs.google.com) on several social media platforms.

#### **3.6.2 Sampling**

For the purpose of determining if there is a relation between the variables, the sample contains sampling units from each of Egypt's telecommunication companies. The study's non-probability sample was chosen since it was very challenging to get sampling frames from the plethora of companies around Egypt. Non-probability samples generally cost less and take less time to collect than probability samples. Therefore, 233 telecommunication customers from four Egyptian companies make up the sample size.

### ***4. Data analysis and hypotheses testing***

This section examines the validity of the developed hypotheses concerning the moderating role of privacy concerns on the association between artificial intelligence and consumer purchase intention. Thus, this section presents respondents' demographic information, data reduction and factor analysis, descriptive statistics, validity and reliability, diagnostic statistics, and hypotheses testing. Moreover, SPSS 28, STATA 17, and SmartPLS 4 are used to conduct all the statistical analyses necessary for the developed hypotheses' validity.

#### 4.1 Respondents' demographic information

Table (1) presents the sample characteristics for 233 questionnaires collected for the study.

		Freq.	Percent
Age	18-24	106	45.49
	25-34	90	38.63
	35-44	19	8.15
	45-54	12	5.15
	55+	6	2.58
Gender	Female	119	51.07
	Male	114	48.93
Education	Bachelor's Degree	86	36.91
	College	93	39.91
	High school diploma	5	2.15
	Master's Degree	34	14.59
	Ph.D. degree	15	6.44
Religion	Christian	11	4.78
	Muslim	216	93.91
	Other	3	1.30
Cell phone service provider	Etisalat	92	39.48
	Orange	2	0.86
	Orange	21	9.01
	Vodafone	107	45.92
	We	11	4.72
<b>Total</b>		<b>233</b>	<b>100.00</b>

Table (1) reveals that data was collected from both males and females, with a roughly balanced gender distribution: 51% (n = 119) of respondents were females, and 49% (n = 114) were males. Regarding age, the largest proportion of the sample is aged from 18 to 24 years old, with a percentage of 45.5% (n=106), followed by 25 to 34 years old with a percentage of 38.6% (n=90). According to the age distribution, 84% of the units chosen for the sample are young adults. Most respondents fall in the bachelor's degree and college stage (36.9%, n=86; 39.9%, n=93), respectively. Concerning education, the largest proportion of the sample in the college stage was 39.9% (n=93), followed by the bachelor's degree stage, 36.9% (n=86).

The Moderating Role of Privacy Concern on the Relation between Artificial Intelligence and Consumer Purchase Intention: **An Applied Study on Telecommunication Sector in Egypt.**

Regarding Cell phone service providers, most questionnaires were obtained from individuals who used Vodafone and Etisalat cell phone services, 45% (n=107) and 39.5% (n=92), respectively. Approximately 94% of questionnaires are collected from Muslim respondents.

#### 4.2 Reliability and validity

*Table 2 reliability and validity*

First-order reliability and validity				Second-order reliability and validity			
Dimension	CA	CR	AVE	Construct	CA	CR	AVE
Attitude	0.952	0.924	0.838	Consumer purchase intention	0.909	0.891	0.526
Perceived behavioral controls	0.938	0.963	0.843				
Subjective norms	0.919	0.956	0.925				
Awareness	0.904	0.954	0.912	Artificial intelligence	0.858	0.856	0.508
Perceived usefulness	0.940	0.961	0.893				
Perceived ease of use	0.942	0.963	0.896				
Trust	0.933	0.957	0.882	Privacy concerns	0.799	0.924	0.499
Commitment	0.944	0.964	0.900				

- Cronbach's alpha (CA) and composite reliability (CR) are the measures of internal consistency in scale dimensions, CA assume that factor loadings of all dimensions are the same while CR does not, 65% or greater is the benchmark for good internal consistency measured by CA and CR. CR are preferred to alpha coefficients when using multidimensional scales (Raykov, 2001).
- As shown in Table (4.5) all constructs are valid and reliable based on Cronbach's alpha, composite reliability since all coefficients are higher than 0.60. all observed CA and CR are greater than 90.4%, for the first-order dimensions and 79.9% for the second-order constructs, which illustrates a strong internal consistency between the items of each construct.
- all constructs have explained variance greater than acceptable level 50%; the minimum observed explained variance 83.8% for the first order and 49.9% for the second order.

- In conclusion, all constructs, and their dimensions at the first and second order are reliable and valid based on Cronbach's alpha (CA), composite reliability (CR), and average variance extracted (AVE).

### 4.3 The impact of demographic characteristics on the research variable

#### 4.3.1 By gender

*Table 3 two sample t-test*

By gender	obs1	obs2	Mean1	Mean2	dif	St Err	t value	p value
AI AW	119	114	3.063	3.119	-.056	.148	-.35	.708
AI PU	119	114	4.292	4.216	.075	.108	.7	.488
AI PEOU	119	114	4.064	4.161	-.097	.102	-.95	.346
PI ATT	119	114	4.125	4.061	.063	.085	.75	.46
PI SN	119	114	4.530	4.478	.052	.084	.6	.539
PI PBC	119	114	4.514	4.353	.162	.083	1.95	.053
P Trust	119	114	3.457	3.534	-.077	.128	-.6	.546
P Commit	119	114	4.247	4.252	-.005	.096	-.05	.959
AI	119	114	4.247	4.252	-.005	.096	-.05	.959
PI	119	114	4.340	4.243	.097	.047	2.05	.042
P	119	114	3.720	3.773	-.053	.099	-.55	.591

Two sample T-tests is used to test the significant difference between females and males. Table(3) shows an insignificant difference between females and males for all constructs and their dimensions since the p-value exceeds 0.05. thus, no need to analyze the moderating role of privacy concerns on the association between artificial intelligence and consumer purchase intention for females and males separately.

The Moderating Role of Privacy Concern on the Relation between Artificial Intelligence and Consumer Purchase Intention: **An Applied Study on Telecommunication Sector in Egypt.**

### 4.3.2 By age

*Table 4 ANOVA for age groups*

		Sum Squares	Df	Mean Square	F	Sig.
<b>AI_LAW</b>	Between Groups	13.440	4	3.360	1.692	.153
	Within Groups	452.751	228	1.986		
	Total	466.191	232			
<b>AI_PU</b>	Between Groups	1.707	4	.427	.322	.863
	Within Groups	302.046	228	1.325		
	Total	303.753	232			
<b>AI</b>	Between Groups	3.231	4	.808	.989	.414
	Within Groups	186.100	228	.816		
	Total	189.330	232			
<b>PI_ATT</b>	Between Groups	8.039	4	2.010	1.758	.138
	Within Groups	260.649	228	1.143		
	Total	268.689	232			
<b>PI_SN</b>	Between Groups	2.432	4	.608	.592	.668
	Within Groups	234.006	228	1.026		
	Total	236.438	232			
<b>PI_PBC</b>	Between Groups	2.188	4	.547	.551	.698
	Within Groups	226.171	228	.992		
	Total	228.359	232			
<b>PI</b>	Between Groups	3.115	4	.779	1.186	.318
	Within Groups	149.648	228	.656		
	Total	152.763	232			
<b>P_Trust</b>	Between Groups	10.940	4	2.735	1.585	.179
	Within Groups	393.307	228	1.725		
	Total	404.247	232			
<b>_Commit</b>	Between Groups	1.200	4	.300	.199	.939
	Within Groups	343.133	228	1.505		
	Total	344.333	232			
<b>P</b>	Between Groups	3.316	4	.829	.917	.455
	Within Groups	206.079	228	.904		
	Total	209.396	232			

As shown in Table (4), there is no significant effect or difference between different age groups for all constructs and their dimensions since the ANOVA test has a p-value greater than 0.05. Therefore, no need to analyze the moderating role of privacy concerns on the association between artificial intelligence and consumer purchase intention for each age group separately.

### 4.3.3 By education

*Table 5 ANOVA for education groups*

		Sum of Square	df	Mean Square	F	Sig.
<b>AI_AW</b>	Between Groups	3.405	4	.851	.419	.795
	Within Groups	462.786	228	2.030		
	Total	466.191	232			
<b>AI_PU</b>	Between Groups	6.378	4	1.594	1.222	.302
	Within Groups	297.375	228	1.304		
	Total	303.753	232			
<b>AI</b>	Between Groups	3.002	4	.751	.918	.454
	Within Groups	186.328	228	.817		
	Total	189.330	232			
<b>PI_ATT</b>	Between Groups	6.992	4	1.748	1.523	.196
	Within Groups	261.697	228	1.148		
	Total	268.689	232			
<b>PI_SN</b>	Between Groups	2.096	4	.524	.510	.729
	Within Groups	234.342	228	1.028		
	Total	236.438	232			
<b>PI_PBC</b>	Between Groups	.252	4	.063	.063	.993
	Within Groups	228.107	228	1.000		
	Total	228.359	232			
<b>PI</b>	Between Groups	2.226	4	.556	.843	.499
	Within Groups	150.537	228	.660		
	Total	152.763	232			
<b>P_Trust</b>	Between Groups	7.108	4	1.777	1.020	.398
	Within Groups	397.139	228	1.742		
	Total	404.247	232			
<b>P_Commit</b>	Between Groups	4.819	4	1.205	.809	.521
	Within Groups	339.514	228	1.489		
	Total	344.333	232			
<b>P</b>	Between Groups	2.836	4	.709	.783	.537
	Within Groups	206.559	228	.906		
	Total	209.396	232			

As shown in Table (5), there is no significant effect or difference between different education groups for all constructs and their dimensions since the ANOVA test has a p-value greater than 0.05. Therefore, no need to analyze the moderating role of privacy concerns on the association between artificial intelligence and consumer purchase intention for each education group separately.

The Moderating Role of Privacy Concern on the Relation between Artificial Intelligence and Consumer Purchase Intention: **An Applied Study on Telecommunication Sector in Egypt.**

### 4.3.4 By religion

*Table 6 ANOVA for religion groups*

		Sum of Square	df	Mean Square	F	Sig.
<b>AI_AW</b>	Between Groups	.497	2	.249	.123	.884
	Within Groups	465.694	230	2.025		
	Total	466.191	232			
<b>AI_PU</b>	Between Groups	2.722	2	1.361	1.040	.355
	Within Groups	301.031	230	1.309		
	Total	303.753	232			
<b>AI</b>	Between Groups	.148	2	.074	.090	.914
	Within Groups	189.182	230	.823		
	Total	189.330	232			
<b>PI_ATT</b>	Between Groups	5.337	2	2.668	2.330	.100
	Within Groups	263.352	230	1.145		
	Total	268.689	232			
<b>PI_SN</b>	Between Groups	3.799	2	1.899	1.878	.155
	Within Groups	232.639	230	1.011		
	Total	236.438	232			
<b>PI_PBC</b>	Between Groups	5.579	2	2.790	2.880	.058
	Within Groups	222.779	230	.969		
	Total	228.359	232			
<b>PI</b>	Between Groups	1.598	2	.799	1.215	.298
	Within Groups	151.165	230	.657		
	Total	152.763	232			
<b>P_Trust</b>	Between Groups	10.049	2	5.024	2.932	.055
	Within Groups	394.198	230	1.714		
	Total	404.247	232			
<b>P_Commit</b>	Between Groups	2.750	2	1.375	.926	.398
	Within Groups	341.582	230	1.485		
	Total	344.333	232			
<b>P</b>	Between Groups	1.002	2	.501	.553	.576
	Within Groups	208.394	230	.906		
	Total	209.396	232			

As shown in Table (6), there is no significant effect or difference between different religion categories of respondents for all constructs and their dimensions since the ANOVA test has a p-value greater than 0.05. Therefore, no need to analyze the moderating role of privacy concerns on the association between artificial intelligence and consumer purchase intention for each religion group separately.

### 4.3.5 By cell phone provider

Table 7 ANOVA for cell phone providers

		Sum of Squares	df	Mean Square	F	Sig.
AI_AW	Between Groups	5.273	3	1.758	.873	.456
	Within Groups	460.918	229	2.013		
	Total	466.191	232			
AI_PU	Between Groups	1.822	3	.607	.461	.710
	Within Groups	301.931	229	1.318		
	Total	303.753	232			
AI	Between Groups	.556	3	.185	.225	.879
	Within Groups	188.774	229	.824		
	Total	189.330	232			
PI_ATT	Between Groups	2.440	3	.813	.699	.553
	Within Groups	266.249	229	1.163		
	Total	268.689	232			
PI_SN	Between Groups	1.908	3	.636	.621	.602
	Within Groups	234.530	229	1.024		
	Total	236.438	232			
PI_PBC	Between Groups	3.700	3	1.233	1.257	.290
	Within Groups	224.658	229	.981		
	Total	228.359	232			
PI	Between Groups	.361	3	.120	.181	.909
	Within Groups	152.402	229	.666		
	Total	152.763	232			
P_Trust	Between Groups	5.698	3	1.899	1.091	.354
	Within Groups	398.549	229	1.740		
	Total	404.247	232			
P_Commit	Between Groups	1.525	3	.508	.340	.797
	Within Groups	342.807	229	1.497		
	Total	344.333	232			
P	Between Groups	.939	3	.313	.344	.794
	Within Groups	208.457	229	.910		
	Total	209.396	232			

As shown in Table (7), there is no significant effect or difference between different cell phone providers for all constructs and their dimensions since the ANOVA test has a p-value greater than 0.05. Therefore, no need to analyze the moderating role of privacy concerns on the association between artificial intelligence and consumer purchase intention for each cell phone provider separately.

The Moderating Role of Privacy Concern on the Relation between Artificial Intelligence and Consumer Purchase Intention: **An Applied Study on Telecommunication Sector in Egypt.**

### 4.4 Correlation

Table 8 correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) PI	1.000										
(2) P	0.280** *	1.000									
	(0.000)										
(3) AI	0.399** *	0.266** *	1.000								
	(0.000)	(0.000)									
(4) AI_AW	0.193** *	0.233** *	0.677** *	1.000							
	(0.003)	(0.000)	(0.000)								
(5) AI_PU	0.354** *	0.184** *	0.769** *	0.299** *	1.000						
	(0.000)	(0.005)	(0.000)	(0.000)							
(6) AI_PEOU	0.324** *	0.181** *	0.771** *	0.298** *	0.369** *	1.000					
	(0.000)	(0.006)	(0.000)	(0.000)	(0.000)						
(7) PI_ATT	0.852** *	0.307** *	0.364** *	0.201** *	0.279** *	0.320** *	1.000				
	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)					
(8) PI_SN	0.670** *	0.234** *	0.323** *	0.099 *	0.339** *	0.258** *	0.417** *	1.000			
	(0.000)	(0.000)	(0.000)	(0.133)	(0.000)	(0.000)	(0.000)				
(9) PI_PBC	0.753** *	0.095 *	0.239** *	0.111* *	0.245** *	0.164** *	0.349** *	0.433** *	1.000		
	(0.000)	(0.149)	(0.000)	(0.091)	(0.000)	(0.012)	(0.000)	(0.000)			
(10) P_Trust	0.205** *	0.771** *	0.145** *	0.132** *	0.063 *	0.133** *	0.239** *	0.101 *	0.086 *	1.000	
	(0.002)	(0.000)	(0.027)	(0.045)	(0.342)	(0.043)	(0.000)	(0.124)	(0.192)		
(11) P_Commit	0.215** *	0.724** *	0.257** *	0.221** *	0.219** *	0.139** *	0.220** *	0.255** *	0.055 *	0.119 *	1.000
	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.034)	(0.001)	(0.000)	(0.404)	(0.069)	

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

As shown in *Table (8)*,

- Consumer purchase intention (PI) has a positive and significant correlation with artificial intelligence index (AI) (r=0.280 p-value=0.000).
- Artificial intelligence (AI) has a positive and significant correlation with privacy concerns (P) (r=0.266 p-value=0.000).
- Consumer purchase intention (PI) has a positive and significant correlation with awareness as a dimension of the artificial intelligence index (AI\_AW) (r=0.193 p-value=0.000).
- Consumer purchase intention (PI) has a positive and significant correlation with perceived usefulness as a

- dimension of the artificial intelligence index (AI\_PU) ( $r=0.354$   $p\text{-value}=0.000$ ).
- Consumer purchase intention (PI) has a positive and significant correlation with perceived ease of use as a dimension of the artificial intelligence index (AI\_PEOU) ( $r=0.324$   $p\text{-value}=0.000$ ).
  - Consumer purchase intention (PI) has a positive and significant correlation with privacy concerns index (P) ( $r=0.280$   $p\text{-value}=0.000$ ).
  - Consumer purchase intention (PI) has a positive and significant correlation with trust as a dimension of the privacy concerns index (P\_Trust) ( $r=0.205$   $p\text{-value}=0.000$ ).
  - Consumer purchase intention (PI) has a positive and significant correlation with commitment as a dimension of the privacy concerns index (P\_Commit) ( $r=0.215$   $p\text{-value}=0.000$ ).
  - In conclusion, all constructs and their included dimensions are significantly correlated, and the significant correlation among the constructs validates the suggested theoretical model. In addition, the correlation coefficient between all independent constructs is less than 0.90; therefore, there is no potential multicollinearity problem.



### 4.5.3 Multicollinearity assessment of the research variables

*Table 10 Multicollinearity assessment of the research variable*

Items / dimension / construct	VIF
AI_AW1	3.122
AI_AW2	3.213
AI_PEOU1	4.448
AI_PEOU2	4.007
AI_PEOU3	4.781
AI_PU1	4.506
AI_PU2	4.518
AI_PU3	4.27
PI_ATT1	4.521
PI_ATT2	3.465
PI_ATT3	4.358
PI_ATT4	4.365
PI_ATT5	4.271
PI_PBC1	3.563
PI_PBC2	4.208
PI_PBC3	4.403
PI_PBC4	3.675
PI_SN2	3.591
PI_SN3	3.816
P_Commit1	4.068
P_Commit2	4.07
P_Commit3	3.656
P_Trust3	4.543
P_Trust4	4.295
P_Trust5	4.974

As shown in Table (10), all items are checked for the potential collinearity problem in order to determine if any variables should be eliminated, merged, or simply have a second-order construct developed. The variance inflation factor(VIF) scale is used to measure the tolerance level between items, dimensions, and constructs to ensure the lack of high correlation. The accepted level of VIF value is above 0.20 and less than 5.0 (hair et al., 2014). Thus, there is no multicollinearity problem in the research variables.

### 4.5.4 The predictive power of the research model:

*Table 11 the predictive power of the research model*

	R-square	R-square adjusted
Consumer purchase intention	0.242	0.232

Predictive power is the explanation of the target endogenous variable variance and the coefficient of determination ( $R^2$ ). Table (4.22) reveals that consumer purchase intention has  $R^2$  of 0.242. thus, the research model can explain 0.242 of the consumer purchase intention.

#### 4.5.6 The moderating role of privacy concerns on the association between artificial intelligence and consumer purchase intention:

<i>Table 12 hypotheses testing</i>				
Path	Coefficient	t-value	P values	Results
AI → P	0.263***	3.670	0.000	Supported
AI → PI	0.323***	3.942	0.000	Supported
P → PI	0.170***	2.444	0.015	Supported
P × AI → PI	-0.179***	2.881	0.004	Supported
*** $p < 0.01$ , ** $p < 0.05$ , * $p < 0.1$				

After the measurement model has been assessed, hypotheses testing is conducted using bootstrapping procedure to test the significance of the hypothesized associations, the p-value should be less than 0.05, and the t-value should be higher than 1.96 in order to accept a specific impact of the proposed exogenous variables on the endogenous variable. In conclusion:

- Artificial intelligence has a significant positive impact on privacy concerns.
- Artificial intelligence has a significant positive impact on consumer purchase intention.
- Privacy concerns has a significant positive impact on consumer purchase intention.
- Finally, privacy concerns mitigate the association between artificial intelligence and consumer purchase intention.

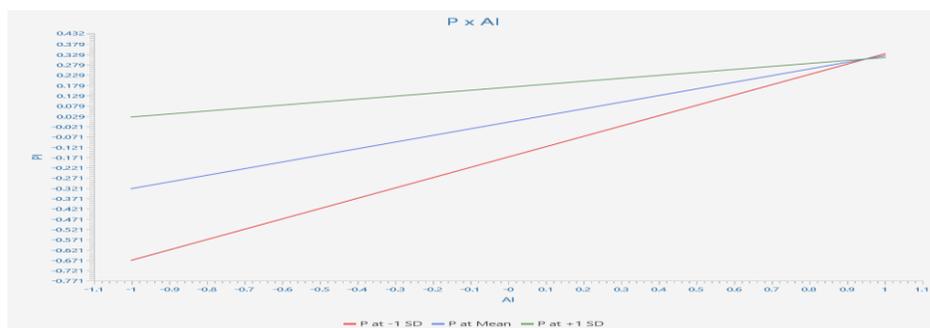


Figure 4 the moderation effect

Table 13 Summary of Hypotheses Testing

Hypotheses	Accepted/ Rejected	Findings
H1: Artificial intelligence has a significant effect on consumer purchase intention.	Supported	Positive significant impact
H2: Privacy concerns has a significant effect on consumer purchase intention.	Supported	Positive significant impact
H3: Artificial intelligence has a significant effect on privacy concerns intention.	Supported	Positive significant impact
H4: privacy concerns moderates the association between Artificial intelligence and consumer purchase intention.	Supported	Negative significant impact

## 5. Result's discussions and conclusions

### 5.1 Results' Discussion

The following hypothesis is used in the current study to explore the relation between the independent variable (Artificial Intelligence) and the dependent variable (consumer purchase intention), as well as the moderating effect of privacy concern on that relation.

**H<sub>1</sub>** stated that “*There is a significant statistical relation between artificial intelligence and purchase intention*”

Accordingly, preliminary findings indicate that artificial intelligence (AI) has a considerable impact on purchase intention (PI). Meaning that the adoption of AI technology by customers through telecom's websites and mobile applications has a substantial impact on PI. The data analysis came to the conclusion that Consumer Purchase Intention (PI) and Artificial Intelligence Index (AI) had a strong and positive association ( $r=0.280$ ,  $p\text{-value}=0.000$ ). H1 is approved as a result since it is consistent with the findings of the study conducted by Mussa, Mona (2020) and Khan, Tomar, Fatima, and Khan, (2022).

### **Moderating Variable**

In this study, it was predicted that **H<sub>4</sub>** “*Privacy concerns moderates the relation between artificial intelligence and purchase intention*”

Therefore, **H<sub>2</sub>** “*There is a significant statistical relation between Artificial Intelligence and Privacy Concerns*” and **H<sub>3</sub>** “*There is a significant statistical relation between privacy concerns and consumer purchase intention*” were developed to account for privacy concerns effect. To study the role of privacy concerns between the independent and dependent variables, it is necessary to discuss the relation between each variable. Accordingly, the following conclusions regarding the variables are tackled:

### **The relation between Artificial Intelligence (AI) and Privacy Concerns (P)**

There are numerous positive aspects to the introduction of artificial intelligence in a variety of fields, including healthcare, education, finance, etc., but there are also negative aspects. Regarding the need to obtain consumer information and any potential abuse or annoying execution during that process (Li & Zhang, 2017).

Using Artificial Intelligence has possible hazards and concerns. This study has demonstrated a connection between privacy concerns and Artificial Intelligence indicating that users of telecom services are concerned about their privacy when using this technology. The data analysis came to the conclusion that there is a significant and positive link between privacy concerns and Artificial Intelligence (P) ( $r=0.266$   $p\text{-value}=0.000$ ). H2 is therefore accepted.

### **The relation between Privacy Concerns (P) and Purchase Intention (PI)**

The type of information employed by marketers can have an impact on consumers' purchase intentions, according to a study by Phelps, D'Souza, and Nowak from 2001. Kim (2020) also noted that a customer's likelihood to make a transaction, decreases as privacy concerns rise. This study came to the same conclusion. Purchase Intention and Privacy Concerns are directly related. Meaning that customer purchase intentions are significantly and positively impacted by privacy concerns. Regarding telecom customers, the more personal information telecom businesses have about them, the more concerned they are about it and the more it may influence their decisions. The data analysis came to the conclusion that there is a significant and positive association between purchase intention and P ( $r=0.280$ ,  $p\text{-value}=0.000$ ). H3 is therefore approved.

### **The relation between Artificial Intelligence (AI) and Purchase Intention (PI) in the presence of Customers' Privacy Concerns (P)**

According to several studies, the relation between the acceptance of a new technology and purchase intention might be negatively moderated by consumers' privacy concerns (Brill, Munoz & Miller, 2019).

Kim (2020) also noted that privacy concerns have an impact on the relation between the factors of motivation and open-market purchase intention. This study demonstrates that the relation between Artificial Intelligence and customer purchase intention is mitigated by privacy concerns. The results of the data analysis show that there is considerable association between each construct and each of the dimensions that make up that construct, which supports the proposed theoretical model. There is also no potential multicollinearity issue because the correlation coefficient between all independent constructs is less than 0.90. H4 is therefore accepted.

### ***5.2 Conclusion***

- Statistical Results show that the value of standardized coefficient clarifies that Artificial Intelligence has a significant positive impact on consumer purchase intention.
- Artificial Intelligence has a significant positive impact on consumer purchase intention.
- Privacy concerns has a significant positive impact on consumer purchase intention.
- Finally, privacy concerns mitigate the association between Artificial Intelligence and consumer purchase intention

### ***5.3 Research Limitation***

There are some limitations despite the advancements this study makes in this field. L1: the study focuses on Egyptian telecom. customers only.

L2: the findings are generally applicable to Egyptian consumers.

### ***5.4 Recommendations***

Although trying to change and grow is not always simple, doing so is regarded as a positive indicator of progress and development. These are some of the key recommendations that this study suggests Egyptian telecommunication companies follow in order to be able to draw in a sizable consumer base for the use of such a technology.

- 1) look for methods to use cutting-edge Artificial Intelligence technologies to increase consumer purchasing intention without making customers feel sensitive regards their personal data.
- 2) disclose the elements that influenced their intentions like the effect of website design, economic factor, availability of products, and customer satisfaction.
- 3) they should pay close attention to the demographics of their customers (gender, age, education levels, and annual income), which should be analyzed.
- 4) it is important to understand how customers' perceptions of the AI systems used in the online services and websites they use will affect their decision-making in the future.

### ***5.5 Future Research***

Future studies should look into how trust and attitudes about AI mediate the relation between those two factors and customer purchasing behavior in a variety of industries, including Egypt's healthcare and education. Additionally, the moderating effect the price has on future purchasing decisions.

## References

### *Bibliography*

- Chen, M. K., Liu, X., Sun, Y., & Tsai, D. P. (2022). Artificial Intelligence in Meta-optics. *Chemical Reviews*.
- Crossnohere, N. L., Elsaid, M., Paskett, J., Bose-Brill, S., & Bridges, J. F. (2022). Guidelines for Artificial Intelligence in Medicine: Literature Review and Content Analysis of Frameworks. *Journal of Medical Internet Research*, 24(8), e36823.
- Yin, J., & Qiu, X. (2021). AI technology and online purchase intention: Structural equation model based on perceived value. *Sustainability*, 13(10), 5671.
- Wamba-Taguimdje, S. L., Wamba, S. F., Kamdjoug, J. R. K., & Wanko, C. E. T. (2020). Influence of artificial intelligence (AI) on firm performance: the business value of AI-based transformation projects. *Business Process Management Journal*.
- Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*, 48(1), 24-42.
- Khan, N., Sarwar, A., & Tan, B. C. (2020). Determinants of purchase intention of halal cosmetic products among Generation Y consumers. *Journal of Islamic Marketing*.
- Chen, X., Sun, J., & Liu, H. (2022). Balancing web personalization and consumer privacy concerns: Mechanisms of consumer trust and reactance. *Journal of consumer behaviour*, 21(3), 572-582.
- Mirabi, V., Akbariyeh, H., & Tahmasebifard, H. (2015). A study of factors affecting on customers purchase intention. *Journal of Multidisciplinary Engineering Science and Technology (JMEST)*, 2(1).
- Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*, 48(1), 24-42.
- Carmody, J., Shringarpure, S., & Van de Venter, G. (2021). AI and privacy concerns: a smart meter case study. *Journal of Information, Communication and Ethics in Society*.
- Wamba-Taguimdje, S. L., Wamba, S. F., Kamdjoug, J. R. K., & Wanko, C. E. T. (2020). Influence of artificial intelligence (AI) on firm performance: the business value of AI-based transformation projects. *Business Process Management Journal*.

- Di Francescomarino, C., & Maggi, F. M. (2020). Preface to the Special Issue on Artificial Intelligence for Business Process Management 2018.
- Wamba-Taguimdje, S. L., Wamba, S. F., Kamdjoug, J. R. K., & Wanko, C. E. T. (2020). Influence of artificial intelligence (AI) on firm performance: the business value of AI-based transformation projects. *Business Process Management Journal*.
- Mirabi, V., Akbariyeh, H., & Tahmasebifard, H. (2015). A study of factors affecting on customers purchase intention. *Journal of Multidisciplinary Engineering Science and Technology (JMEST)*, 2(1).
- Lee, J. E., Goh, M. L., & Noor, M. N. B. M. (2019). Understanding purchase intention of university students towards skin care products. *PSU Research Review*.
- Lin, M. Y. C., Do, B. R., Nguyen, T. T., & Cheng, J. M. S. (2021). Effects of personal innovativeness and perceived value of disclosure on privacy concerns in proximity marketing: self-control as a moderator. *Journal of Research in Interactive Marketing*.
- Bandara, R., Fernando, M., & Akter, S. (2020). Explicating the privacy paradox: A qualitative inquiry of online shopping consumers. *Journal of Retailing and Consumer Services*, 52, 101947.
- Carmody, J., Shringarpure, S., & Van de Venter, G. (2021). AI and privacy concerns: a smart meter case study. *Journal of Information, Communication and Ethics in Society*.
- Donahoe, E., & Metzger, M. M. (2019). Artificial intelligence and human rights. *Journal of Democracy*, 30(2), 115-126.
- Alzaidi, M. S., & Agag, G. (2022). The role of trust and privacy concerns in using social media for e-retail services: The moderating role of COVID-19. *Journal of Retailing and Consumer Services*, 68, 103042.
- Explicating the privacy paradox: a qualitative inquiry of online shopping consumers  
*J. Retailing Consum. Serv.*, 52 (2020), Article 101947
- Peer privacy concerns: conceptualization and measurement *Manag. Inform. Syst. Quarterly*, 46 (1) (2022), pp. 491-530
- Int. J. Hospit. Manag.*, 91 (4) (2020), pp. 102-679
- Armantier, O., Doerr, S., Frost, J., Fuster, A., & Shue, K. (2021). *Whom do consumers trust with their data? US survey evidence* (No. 42). Bank for International Settlements.

The Moderating Role of Privacy Concern on the Relation between Artificial Intelligence and Consumer Purchase Intention: **An Applied Study on Telecommunication Sector in Egypt.**

---

Peña-García, N., Gil-Saura, I., Rodríguez-Orejuela, A., & Siqueira-Junior, J. R. (2020). Purchase intention and purchase behavior online: A cross-cultural approach. *Heliyon*, 6(6), e04284.

Al Amin, M. (2022). The Influence of Psychological, Situational and the Interactive Technological Feedback-Related Variables on Customers' Technology Adoption to Use Online Shopping Applications. *Journal of Global Marketing*, 1-24.

Lavuri, R., Jindal, A., & Akram, U. (2022). How perceived utilitarian and hedonic value influence online impulse shopping in India? Moderating role of perceived trust and perceived risk. *International Journal of Quality and Service Sciences*, (ahead-of-print).

Broeder, P., & Schouten, M. (2022). The Impact of Product Tagging on Trust and Purchase Intention: A cross-cultural perspective in visual e-commerce. *CBR-Consumer Behavior Review*, 6(1), 250595.

Al Asheq, A., Tanchi, K. R., Akhter, S., Kamruzzaman, M., & Islam, K. A. (2022). Examining university students' behaviors towards online shopping: an empirical investigation in an emerging market.

Faqih, K. M. (2022). Internet shopping in the Covid-19 era: Investigating the role of perceived risk, anxiety, gender, culture, and trust in the consumers' purchasing behavior from a developing country context. *Technology in Society*, 101992.

Nghia, H. T., Olsen, S. O., & Trang, N. T. M. (2020). Shopping value, trust, and online shopping well-being: a duality approach. *Marketing Intelligence & Planning*.

Anastasiadou, E., Lindh, C., & Vasse, T. (2019). Are consumers international? A study of CSR, cross-border shopping, commitment and purchase intent among online consumers. *Journal of Global Marketing*, 32(4), 239-254.

Buabeng-Andoh, C. (2018). Predicting students' intention to adopt mobile learning: A combination of theory of reasoned action and technology acceptance model. *Journal of Research in Innovative Teaching & Learning*.

Rausch, T. M., & Kopplin, C. S. (2021). Bridge the gap: Consumers' purchase intention and behavior regarding sustainable clothing. *Journal of Cleaner Production*, 278, 123882.

Henseler, J., Hubona, G. and Ray, P.A., 2016. Using PLS path modeling in new technology research: updated guidelines. *Industrial management & data systems*.

Alhashmi, S. F., Salloum, S. A., & Mhamdi, C. (2019). Implementing artificial intelligence in the United Arab Emirates healthcare sector: an extended technology acceptance model. *Int. J. Inf. Technol. Lang. Stud.*, 3(3), 27-42.

Sohn, K., & Kwon, O. (2020). Technology acceptance theories and factors influencing artificial Intelligence-based intelligent products. *Telematics and Informatics*, 47, 101324.

Huang, M. H., & Rust, R. T. (2021). A strategic framework for artificial intelligence in marketing. *Journal of the Academy of Marketing Science*, 49(1), 30-50.

Brill, T. M., Munoz, L., & Miller, R. J. (2019). Siri, Alexa, and other digital assistants: a study of customer satisfaction with artificial intelligence applications. *Journal of Marketing Management*, 35(15-16), 1401-1436.

Li, X., & Zhang, T. (2017, April). An exploration on artificial intelligence application: From security, privacy and ethic perspective. In *2017 IEEE 2nd International Conference on Cloud Computing and Big Data Analysis (ICCCBDA)* (pp. 416-420). IEEE.

Kim, S. S. (2020). Purchase intention in the online open market: Do concerns for e-commerce really matter?. *Sustainability*, 12(3), 773.