

Antecedents of intention to use electronic auctions in Jordan: Empirical study on the mediating role of users' attitudes

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ABSTRACT

The present study attempted to determine the elements affecting users' opinions about using electronic auctions in Jordan. The study's target audience was Jordanian university students. We randomly selected 600 students from three public universities in Jordan after 600 users from each of the three universities responded to the surveys. The primary data for this study were gathered using a specially created questionnaire that was based on earlier research. SEM software (smart PLS 4.0.8.3) was employed in the evaluation of data. This study looked into the factors that led Jordanians to use electronic auctions and found four indirect significant relationships and ten direct significant relationships. First, user attitudes and independent variables (usefulness, awareness, ease of use, and techno trust) are directly significant antecedents of utilizing e-auctions in Jordan. The use of e-auctions is related to the independent variable in five direct and significant ways: usefulness, awareness, ease of use, digital divide, and techno trust. Thirdly, there are direct and statistically significant correlations between user attitudes and the independent variables (usefulness, awareness, ease of use, and techno trust). Fourthly, there appears to be a clear and significant link between user attitudes and the intention to use e-auctions. Fifth, there are four mediated meaningful indirect correlations between the intention to use e-auctions and the independent variable. The findings of the current study are based on a number of factors that affect the demand for e-commerce in Jordan. They also include some recommendations for academics and decision-makers in e-marketing affairs. The current study also contributes in identifying challenges and suggestions that would overcome obstacles related to shopping operations through e-auctions. The factors examined in this study have been the subject of prior research. The data gathered in this study are valuable to Jordanian decision-makers and web developers, as the data can be used to create efficient policies and strategies to launch work on electronic auction platforms.

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1. Introduction

Information technology (IT) and the Internet have dramatically progressed. At present, both are the source of communication, information, and entertainment. Not only that, but commercial transactions today are also increasingly relying on IT and the Internet. Furthermore, today's consumers are increasingly engaging themselves with online shopping sites and e-commerce when selecting and purchasing goods and services due to the convenience offered (González & Ferencz, 2018; Al-Okaily et

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al., 2023). Further, with the increased number of Internet users, it becomes much easier and less costly for companies and consumers to communicate and engage in commercial transactions, particularly with Electronic Commerce (Chalyuk et al., 2021; Al-Okaily, 2022; Almajali et al., 2023; AL-Sous et al., 2023). The dynamics of purchasing behavior of customers have been changed by the internet, and shopping via the internet or online shopping is increasingly a norm today. Online shopping offers countless benefits as opposed to traditional shopping, and for this reason, this form of shopping has been perceived as a heavy challenge to the traditional retail institutions (Zuniarti et al., 2020). In Jordan, the number of Internet users has dramatically increased since the past decade, which has opened a lucrative opportunity to the e-marketers. A survey by Arab Advisors group carried out in 2019 found that 21.4% of Internet users in Jordan used e-commerce to pay their bills or purchase goods or services, and in the following year (2020), the percentage had increased to 30.2%, and this implies the readiness of people in Jordan to spend money on the Internet through e-commerce transactions.

Understanding the factors affecting online purchasing decisions of customers and how these decisions are made by these customers will facilitate e-marketers in designing the methods that could motivate customers to purchase their goods and services online (Albarq, 2021). With considerable increase in the benefits of using e-commerce in making online purchases (e.g., lower costs in transaction and search compared to the traditional shopping method), customers could have more options, purchase faster, and enjoy lower price of goods and services (Kumar & Ayodeji, 2021; Almajali et al., 2022; Haan et al., 2018; Al-Okaily et al., 2021). The most current e-commerce standards are e-auction websites which are fast taking over the traditional e-shops and online catalogs. Accordingly, "auction" is a term that means selling (bidding to purchase) and purchasing (offering to sell) (Lange, 2022). Relevantly, online auction offers customers a new type of data exchange (C2C) which expands very fast. Consequently, the physiology of online auctions has been scrutinized through a novel theoretical and scientific domain (Wongkitrungrueng et al., 2020; Ogilvie et al., 2018 Al-Kofahi et al., 2023). E-auction is increasingly popular and more and more organizations globally have begun to accept this type of e-commerce (Dai & Kauffman, 2012). The use of e-auction decreases the purchase price of products, and makes the process of bidding more efficient, and faster (Dai & Kauffman, 2012). Furthermore, e-auction allows organizations to extend their product pool by way of bidding process streamlining (Pawar & Aital, 2017).

In Jordanian context, the first online auction service was launched by the Justice Ministry in 2019, and since then, various means have been used to execute electronic auctions in the country. Through e-auctions carried out by authorized government institutions, Jordanian citizens could partake in the buying by placing bids on the offered items. Jordanian Ministry of Justice has accordingly indicated the need to ascertain the factors affecting e-auction usage, considering that today, e-commerce, e-services and e-auctions play a major role in the lives of Jordanian citizens (<http://www.moj.gov.jo>/Jordanian Ministry of Justice). Alongside the dramatic global technological revolutions for instance, e-commerce, online shopping, and e-services, are various hurdles and challenges facing the people or users. E-auction is not a new term to some developed countries like the USA and China. However, in the Arab nation, it is a rather new and unfamiliar concept. In Jordan, various apps for transactions between actual customers and sellers are available, for instance, the open souq app, but apps like e-auction are still unavailable (Jailani et al., 2020). Meanwhile, there are several popular auction apps and websites for product display and selling that are being regularly used in developed countries, for instance, GoodWill, UBid, and eBay. However, e-auction apps are still very few. The use of e-auction apps is comparable to the use of online shopping apps as it is easy and fast (Shannak, 2013). In Jordan, e-commerce applications have been on the rise, but the use of e-auction apps or sites is still poor. Notably, COVID-19 pandemic outbreak has increased the use of e-auction, in addition to other online apps, to facilitate consumers in managing their daily affairs. Consequently, several elements have been reported as major determiners in e-auction adoption. Specifically, these elements may motivate or impede the process of adoption. Various factors impacting intention to use electronic auction in Jordan and the choice between traditional shopping (e.g., from retail stores) and e-shopping have been examined by several scholars (e.g., Hasbullah et al., 2016; Thomas & Sharma., 2015; Blagoeva & Mijoska., 2017; AlSharif., 2013; Rasool et al., 2017; Ai Ping et al., 2023b). Additionally, other relevant factors have also been examined including the factors associated with credibility of purchasing, awareness and ease of use, techno trust, digital divide, attitudes of individuals, and the factors associated with the usefulness. The aforementioned factors may hinder e-auction usage, as e-auction is part of e-commerce. Still, it should be noted that the attitudes of Internet users towards online auction appear to vary, owing to their concern about sharing their sensitive information (e.g., credit card information and personal information) online. Indeed, the citizens of Jordan still do not trust the Internet use for shopping, as evidenced by the small percentage of online shoppers in this country. As such, understanding the factors affecting e-auction use among the people in Jordan is important.

Accordingly, the chief reason for conducting this study was to explore the factors affecting the acceptance of e-auction apps / websites among Jordanian citizens. Indeed, the factors that impact the intention to use electronic auction have been mostly explored in the settings of developed nations, but in the Arab domain, such studies have been scarce. There are a few that covered the Arab domain such as Alrousan and Jones (2016), but the studies were not as comprehensive, especially within the context of Jordan. Hence, this study attempted to fill this research gap.

2. Related works

2.1 Electronic Auction

The use of online auctions is increasingly common among businesses in selling their goods. Online auction allows participants to immerse themselves in a challenging environment, in which they attempt to counter other bids to compete and ultimately win – this experience can offer winning participants with exhilarating feelings of social competence. Auctions are distinct from fixed-price offers as they present participants with exciting purchases, like high-level arousal during the process of auction. In their study, Bei and Chen (2015) indicated that the gained eudemonic value from such pleasure and excitement could lead to the success of internet auctions. Relevantly, sites of consumer internet auction are often designed in a manner that will produce enthusiasm in bidders. Auction is originally a Latin verb 'auctio' (from the word 'augere') that carries the meaning 'to increase,' and interestingly in Arabic language, this could be referred to as “Almazayadah” which is a derivative from the core word “Zayadah” that also carries the meaning “to increase” (Hultmark et al., 2002; Academy, 2004). Comparable to negotiations, auctions also involve the utilization of a flexible pricing system in sale price decisions by potential buyers. As reported by Ali (2002), auction was very commonly used during the pre-Islamic era in slave trade, the prophet Muhammad (SAW) also employed auction in selling a cup and a rug that belonged to one of his companions. Notably, the increasing popularity of electronic commerce since the past two decades has positively affected e-auction as it could reach large numbers of prospective customers and suppliers, at lower cost and in less time (Lieber & Syverson, 2012). For instance, eBay, a highly popular auction site, reported fourth-quarter sales amounting to USD2.88 billion in 2019.

2.2 Benefits of online auction

The COVID-19 outbreak in 2020 has prompted many auctioneers to perform live and online auctions as a way to effectively serve their customers. Accordingly, several benefits of online auction are accordingly discussed in this section, as below:

1- **More buyers:** Online auctions allow more people to participate, because online auctions, which are launched over the internet, allow people from various locations to take part. Hence, online auctions could gather different types of buyers with different purposes of joining the auction, such as, young buyers, home bound buyers, buyers who seek to purchase single items, and so forth (Guo & Hao, 2021).

2- **Larger reach:** Online auctions could attract more buyers because auctions that are held online could reach buyers from everywhere around the world providing that there is internet connection and the right device. Taking part in online auctions allows the right buyer to find their sought-after items (Guo & Hao, 2021).

3- **Convenience:** Online auction allows buyers to bid at the time of their convenience, and simultaneously bid in as many auctions as they desire (Guo & Hao, 2021).

4- **Exposure:** Online auction allows potential buyers to locate their sought-after items easily. The catalogue provided eases the item search.

5- **Instant engagement from marketing:** Online auction allows instantaneous engagement after bidding, and this is regarded as the most vital positive factor of online auction (Guo & Hao, 2021).

6- **Longer bidding window:** Online auction allows longer window of bidding, and this criterion has been regarded as a very important factor to auction participants, and so, participants of online auction could have more opportunities to find their sought-after items and then make informed decisions (De Silva et al., 2008).

7- **No moving:** Online auctions allow participants to view and sell their items from just one location, removing the need for them to change places.

8- **Provide more details:** One auction allows sellers to review the descriptions of online items to assure accuracy (De Silva et al., 2008).

9- **Less onsite activities:** Online auction reduces onsite activities and pick up is by appointment (De Silva et al., 2008).

3. Literature review and hypothesis development

3.1 Awareness

When deciding whether to use a technology, it is crucial to be knowledgeable about its features and advantages. This is so that those considering its adoption can make educated choices. Accordingly, people should be informed of a digital currency's uses and advantages prior to utilizing it (Almajali & Dahalin, 2010; Almuraqab, 2017; Jasimuddine et al., 2017; Aws et al., 2021; Ai Ping & Al-Okaily, 2023a). In terms of digital money use, awareness is not a factor that directly influences citizens'

intentions. Albaity and Rahman (2019) in their study, reported that all the respondents had a high level of awareness, even though the level of awareness would vary based on their income, years of experience, and gender. The authors further reported that the awareness of and attitudes regarding Islamic banking affected consumers' intentions to use it. Awareness and the intention to establish an account in Islamic banking were adversely correlated but this association subsequently turned out to be favorable as the respondents' attitudes toward the practice had an impact on their intentions. These studies discovered a clear connection between awareness and motivation to use. As such, this study proposed the hypothesis below:

H₁: *Awareness has a positive impact on the intention to use e-auction.*

Additionally, other findings indicate that understanding considerably affects attitudes regarding smart homes, which in turn affects a person's desire to use a smart home. Accordingly, there are many factors found to significantly impact attitudes toward using smart homes. For example, the fact that people are becoming more aware of smart homes may have a significant impact on how they feel about these smart homes. The more knowledge there is about smart homes and how they operate, the more negative attitudes there are. Notably, the direct effect of awareness on individuals within the context of smart homes has been examined. However, the awareness attitude has not been explored sufficiently in studies involving smart homes. This finding might therefore open up a significant new avenue for the associated literature. Therefore, smart home businesses should inform customers to improve their understanding of them (Shuhaiber & Mashal, 2019). As such, this study proposed a related hypothesis as follows:

H₂: *Awareness has a positive impact on users' attitudes towards e-auction.*

3.2 Digital divide

The digital divide has been linked to different potentials in information and internet communication technologies adoption among communities, provinces, or countries (Leal, 2008). It was also linked to measurement differences in countries, both developed and developing (Dewan & Riggins, 2005; Chinn & Fairlie, 2007), or the factors leading to the digital divide development (Liaw et al., 2007; Wei et al., 2011; Wong et al., 2015). Meanwhile, usage skills of IT have been examined (see: Peral et al., 2015), to explore technological or physical access level of each region, while differences between countries in the matter were compared through index comparisons (Vicente Cuervo & López Menéndez, 2008; Billon et al., 2010; Weber & Kauffman, 2011; Corrocher & Raineri, 2013).

At the global level, the digital divide has been measured using several indicators and scales. In this regard, Van Dijk and Hacker (2003) and Van Dijk (2006) presented four categories of indicators namely access motivators, material access, access tools, and access to use. Demographic data and macroeconomic statistics were referred to in the construction of these indicators, with access to technology and social access as the two considered factors (Ghobadi & Ghobadi, 2013; Van Deursen & Van Dijk, 2013). In particular, access to technology is the access that a person has in society to some hardware and software, while social access has been linked to socioeconomic circumstance that impacts usage of these technologies. The aforementioned factors have been employed in studies that measure the number of populations for each hundred in possession of home computers and/or internet connections or operative internet networks (Warschauer, 2003; Dewan & Riggins, 2005; Wei et al., 2011). E-commerce appears to be adversely affected by the digital divide, but Landau (2012) found that a country and its digital divide level will significantly affect e-commerce usage.

Burinskienė (2012) reported that the development of e-commerce is affected by government policies. Examining developing countries, Akintola et al. (2011) found that weak governance caused by the lack of effective leaders could result in many economic challenges including the problems relating to politics, economy and society. For Jordan, among the major issues include poverty, economic negligence, and political unrest (Jobodwana, 2009). Furthermore, in most developing countries, Anzaki (2014) reported that the progress of e-commerce has been slow because the existing government policies were ineffective. In fact, problems in government policy development and execution have been a major hurdle in developing countries (Agwu & Emeti, 2014).

The use of ICT requires special knowledge and skills, otherwise, the system cannot be operated and tasks cannot be effectively accomplished (Van Dijk, 2006). Relevantly, personal skills and knowledge are main behavior antecedents (Pavlou & Fygen-son, 2006). Equally, skills can significantly affect the effective use of ICT (International Telecommunication Union, 2020). Also, the use of the Internet is positively affected by ICT-related skills (Ferro et al., 2011). Access divide, skill divide and innovativeness divide are the three elements of the digital divide with significant effect on e-government use intention, with access divide as the strongest element affecting e-government use intention, while innovativeness divide being the weakest element in terms of effect (Gupta, 2020). As such, this study proposed the hypothesis below:

H₃: *The digital divide has a negative impact on the intention to use e-auction.*

3.3 Perceived ease of use

The ease of use of a given technology can be understood as the degree to which the technology in question is effortless to use, and it alludes to how that technology is viewed, including web interfaces, online services, and websites, as explained by Moslehpour et al. (2018). The authors found that the technology is more likely to be helpful than other options if it is frequently

used by online shoppers. The possibility that a website will be used is also influenced by the perception of the apparent difficulty of the use of technology. such, this study proposed the hypothesis below:

H4: *Perceived ease of use has a positive impact on intention to use E-auction.*

Additionally, a prior study found that the usability of technologies can significantly affect the choices that customers make in their process of acquiring goods and services (Suleman & zuniarti, 2019). The findings show how consumers view ease of use as a factor in their e-commerce decision-making, highlighting the necessity for online marketing operations to consider customer attitudes, the two most important of which are trust and usefulness. The study's primary goal was to understand how consumers perceive internet marketers and how they perceive online buying. As a result, it may be easier to adopt a good attitude about the practice of e-commerce. Additionally, the elements that affect consumers' attitudes and decisions towards online purchasing were examined. It was discovered that consumers' decisions to purchase goods and services can be significantly influenced by how simple it is to utilize a particular piece of technology (Suleman & Zuniarti, 2019). As such, the hypothesis below was proposed:

H5: *Perceived ease of use has a positive impact on users' attitudes towards e-auction.*

3.4 Techno trust

Trust in technology affects the levels of orientation, adoption and use of electronic services, considering the negative impact of reluctance, anxiety, and fear towards electronic services use on user's satisfaction level towards these services. Users are particularly concerned about the security and privacy level of these services because these services often require users to reveal their personal information during use. As a result, reduced confidence in technology will reduce adoption, use, and orientation of electronic services. Additionally, Ejdys (2018) stated that in creating technology trust inside an organization (e.g., creating technology trust in ICT application at a university), several different elements should be considered, including the element of trust in institutions, as this may have an impact on how a business develops its technology trust. In addition, other elements like organizational size and culture may also have an impact on how trust in technology develops. As such, this study proposed the hypothesis below:

H6: *Techno trust has a positive impact on the intention to use e-auction.*

Additionally, Chakraborti and Bardhan (2017) explored the impacts of the factors of entertainment, sociality, information, and trust on attitudes of users toward WeChat usage. In addition, the authors attempted to determine the impact of the attitudes and trust of WeChat users on positive word-of-mouth. The findings support the route effects showing how entertainment, social interaction, knowledge, and trust all influence WeChat users' attitudes positively, and how attitudes and trust have a major impact on growing techno trust. As such, this study proposed the hypothesis below:

H7: *Techno trust has a positive impact on the users' attitudes towards e-auction.*

3.5 Perceived Usefulness

Almahamid et al. (2019) found that individuals' opinions on the usefulness of e-government are positively connected with their intention to use it to acquire information. Abass and Tahan (2020) found that usefulness is a strong determiner of user satisfaction towards the electronic services presented to them, considering that users' use requires comprehensive, diverse, simple and satisfying e-services. As such, this study proposed the hypothesis below:

H8: *Perceived usefulness has a positive impact on the intention to use e-auction.*

In their study, Zuniartie et al. (2020) showed how usefulness affects attitude, in examining the relationship between usefulness and customer purchasing choices when they shop for fashion items online. The authors obtained data through a survey involving 90 residents of Jakarta. The study's findings showed that usefulness influences consumer attitudes and that merchants value usefulness as a critical component in assisting customers in making wise selections when it comes to purchasing goods and services. As such, this study proposed the hypothesis below:

H9: *Perceived usefulness has a positive impact on users' attitudes towards e-auction.*

3.6 The impact of users' attitudes on intention to use E-auction

Phang and Ming (2018) found that users' purchasing intentions are influenced by the quality of the information they get. The relationship between actual use and intention to utilize social media has also been examined in a number of research. For instance, a 2017 study by Dumpit and Fernandez found that user's reasons for using a social networking site can affect their plans to make purchases. According to a study done in 2015 by Nadeem and colleagues, user attitudes can affect their intent to buy. As such, this study proposed the hypothesis below:

H10: *Users' attitudes have a positive impact on the intention to use e-auction.*

3.7 The mediating effect of users' attitudes on the relationship between awareness, Ease of use, Techno trust and usefulness, and intention to use e-auction

Findings from several studies (e.g.: Alassaf & Szalay, 2022; Almajali, 2021; Alassaf et al., 2020; Shayganmehr & Montazer, 2021) suggested that awareness impacts how e-auctions are utilized through the users' attitudes. Hence, this study also examined the effects of users' attitudes and the impact of awareness on using e-auctions. Additionally, recent research suggests that ease of use influences technology use through the attitudes of users. Previous similar studies (see: Bataineh & Al Mutawa, 2016; Zamil et al., 2020; Bahaj et al., 2019) supported this study's conclusion. Furthermore, prior research suggested that user attitudes influence how technology is used and adopted. The findings of this study were corroborated by earlier research in the same area, for instance, Al-Rabiaah et al. (2020), Matveieva et al. (2022) and Upamannyu and Kaur (2015). Additionally, these findings were supported by earlier research (see: Pleger & Brüesch, 2020; Li et al., 2021; Alassaf & Szalay, 2022) which suggested that usefulness influences how technology is used through the attitudes of users. As such, this study proposed the hypotheses below:

H₁₁ - H₁₄: *Users' attitudes mediate the impact of awareness, ease of use, techno trust and Usefulness on users' intention to use electronic auctions.*

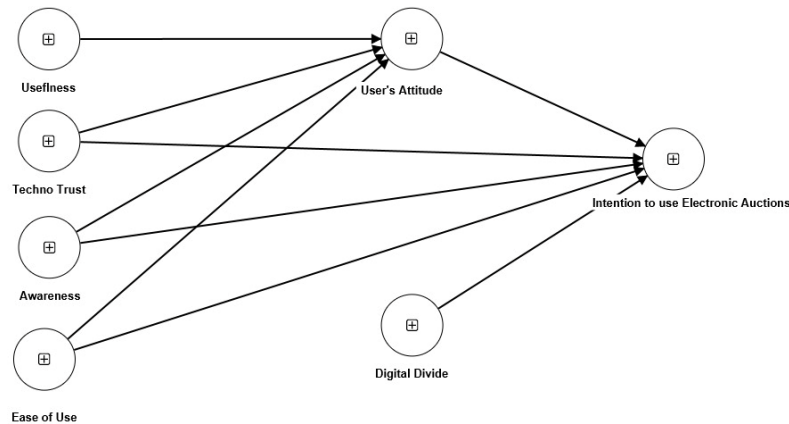


Fig. 1. Research Model

4. Research Methodology

This quantitative study employed a questionnaire to obtain data which was then used in conceptual model validation and hypothesis testing. The questionnaire was sent to the study respondents via Google Drive. In other words, this was an online survey, which, according to Saunders et al. (2009), allows researchers to reach the respondents from different regions easily, to gather the study data. Another advantage of online surveys is that the study can easily be replicated. The respondents were chosen through a probability sampling method, which, according to Vehovar et al. (2016), allows all population members a similar opportunity to be chosen. The respondents chosen were those between 20 and 29 years old who frequently use Facebook. In Jordan, Napoleoncat (2020) reported that there were roughly 6 million Facebook users. A total of 700 respondents were sent the survey link, and 650 of them voluntarily responded (93% response rate). Due to incompleteness, 50 responses had to be excluded, and so, the number of usable responses was 600. Following the recommendations of Podsakoff et al. (2003), all study respondents anonymously responded to the questionnaire, and they could abandon the study whenever they wish to. Table 1 presents the questionnaire items.

Table 1

Measurements of factors

Factor	Code	Measurement of Dimensions of Factors
Digital divide Van Deursen & Van Dijk (2013) Ghobadi and Ghobadi (2013)	Dd1	I feel that internet access is expensive.
	Dd2	I feel that the internet tools (computers, tablets, smart phones, etc.) are incredibly expensive.
	Dd3	I feel that I am using low quality internet connection because I have problems in connecting, downloading, and navigating.
	Dd4	I feel that my internet expense takes a large percentage of my monthly budget.
Awareness (AW) (Bilgin, 2018)	AW1	I am aware of the latest developments of E-auction technology.
	AW2	I talk with others about Internet related security problems.
	AW3	I know very well the malicious software that breaks into the computers of Internet users
	AW4	I use computer web sites or magazines to find information relating to E-auction products.
	AW5	I understand the problems and consequences of E-auction.

Table 1
Measurements of factors (Continued)

Factor	Code	Measurement of Dimensions of Factors
Perceived Usefulness (PU) Won-Jun (2018); Arias-Oliva et al. (2019); and verified by Sohaib et al. (2019).	PU1	I feel that I can buy items faster with E-auction.
	PU2	I feel that I can buy items easier with E-auction.
	PU3	I feel that I can successfully buy items with E-auction.
	PU4	I feel that I can buy items more efficiently with E-auction.
	PU5	I feel that I am a good buyer with E-auction.
Techno trust (TR) (Jahan et al., 2020)	TR1	I feel that E-auction use is fun.
	TR2	I feel that E-auction use is pleasant.
	TR3	I feel that E-auction use is enjoyable.
	TR4	I feel that that I can flexibly buy items with E-auction.
	TR5	The e-seller seems honest to me.
	TR6	The e-seller seems devoted in fulfilling my needs and wants.
	TR7	The e-seller seems to be true to his/her promises and commitments.
	TR8	eBay is a trusted e-marketplace.
	TR9	eBay is an e-marketplace that will always do what is right.
	TR10	eBay is an e-marketplace that aims to serve the best interests of customers.
Perceived Ease of Use (PE) Davis (1989).	PE1	I feel that it will be challenging to learn the technology.
	PE2	I feel that E-auction will effortlessly do the task that I want.
	PE3	I feel that E-auction use will be easy.
	PE4	E-auction contact becomes more flexible with technology.
User Attitude (UA) Walton & Johnston (2018); Mazambani & Mutambara (2019); and verified by Abbasi et al. (2021).	UA1	I feel that E-auction purchase is a good idea.
	UA2	Using E-auction in financial transactions is clever.
	UA3	E-auction can become a suitable currency.
	UA4	The use of E-auction makes me feel good.
	UA5	I feel excited about using E-auction.
Intention to Use E-auction (IU) Won-Jun (2018); Arias-Oliva et al. (2019); Mazambani & Mutambara (2019); and verified by Nadeem et al. (2021).	IU1	E-auction will be my other currency source when I buy or sell products in the future.
	IU2	The use of E-auction will significantly help me promptly perform my tasks.
	IU3	I plan to habitually use E-auction.
	IU4	I will promote the use of E-auction to others, as a method of exchange.
	IU5	I feel that E-auction is more appropriate for gaming.

4.1 Demographic description

Table 2 displays the study respondents' demographic information. As shown, men made up the remaining 25% of respondents, as women were the majority (75%). Only 15% of those surveyed were over 40, while the majority (65%) were below 40 years of age. The data showed that 42% of respondents had a bachelor's degree, while 0.58% had a master's degree and 0.3% had additional paper certificates. Demographic information was computed using IBM SPSS Statistics, version 23.

Table 2
Demographic information of respondents

	Categories	Frequency	Percentage
Gender	Female	450	75%
	Male	150	25%
	Total	600	100%
Age	18-28	380	0.63%
	29 -39	120	0.20%
	40 -49	90	0.15%
	others	10	0.02%
	Total	600	100%
Education level	Bachelor degree	250	0.42%
	Master degree	348	0.58%
	Others	2	0.3%
	Total	600	100%
Type of Technology to Use E-auction	Personal Computer	100	0.16%
	Smartphone	400	0.67%
	other	100	0.17%
	Total	600	100%

5. Data analysis

5.1 Evaluation of the Outer Measurement Model

The outer model of the study was examined in terms of its reliability and validity. A number of statistics were employed for the purpose. Following the recommendation of Hair et al., 2019 , this study employed composite reliability (CR), internal

consistency reliability (Cronbach's alpha), convergent validity and discriminant validity. Results of the aforementioned statistical measures are displayed in Table 3. As shown, Cronbach's alpha (α) values were from 0.864 to 0.949 while composite reliability (CR) values were from 0.868 to 0.95. Based on Kline (2023), the scale has satisfactory internal reliability. Also, the results showed the Standardized Factor Loading (SFL) values scored by all factors, and all values were more than 0.70, denoting reliability of satisfactory level. AVE values were ascertained in this study, based on Hair Jr et al. (2021). Here, the sought after value is 0.5 at minimum, to ascertain the presence of convergent validity. Further, discriminant validity was checked on the scale using three criteria as proposed by Leguina (2015), namely, cross loading matrix (see Table 3, Figure 2), Fornell-Larcker, 1981 criterion, and Heterotrait-Monotrait (HTMT) ratio, and corresponding results can be viewed in Table 3. Specifically, discriminant validity is affirmed when the outer-loading (in bold) of each latent unobserved variable is larger than the cross-loading (with other measurements). As shown in Table 4, the diagonal AVE values in bold appear to be larger compared to the inter-variable correlation coefficient, which, as construed by Hair et al. (2021), denotes discriminant validity of high level. Meanwhile, HTMT values should not be greater than 0.90 (Leguina, 2015) and the obtained HTMT values shown in Table 4 are all lower than the reference value. Hence, scale reliability, discriminant validity, and convergent validity were affirmed. The study then proceeded with the scrutiny of the structural outer model, to test the study's proposed hypotheses.

Table 3
Outer-Loading and Convergent Validity

	Item Loading	Cronbach's alpha	Composite reliability	AVE
Awareness		0.886	0.913	0.679
AWA01	0.837			
AWA02	0.872			
AWA03	0.781			
AWA04	0.830			
AWA05	0.795			
Digital Divide		0.921	0.922	0.809
DD01	0.906			
DD02	0.901			
DD03	0.916			
DD04	0.875			
Ease of Use		0.891	0.892	0.753
EOU01	0.852			
EOU02	0.885			
EOU03	0.878			
EOU04	0.856			
Intention to Use Electronic Auctions		0.864	0.868	0.648
IUEA01	0.802			
IUEA02	0.817			
IUEA03	0.856			
IUEA04	0.782			
IUEA05	0.765			
Techno Trust		0.92	0.93	0.579
TT01	0.719			
TT02	0.855			
TT03	0.689			
TT04	0.763			
TT05	0.781			
TT06	0.812			
TT07	0.699			
TT08	0.779			
TT09	0.731			
TT10	0.767			
Users' Attitude		0.949	0.95	0.831
UA01	0.918			
UA02	0.932			
UA03	0.926			
UA04	0.897			
UA05	0.884			
Usefulness		0.87	0.917	0.649
USF01	0.801			
USF02	0.790			
USF03	0.714			
USF04	0.831			
USF05	0.881			

Table 4
Discriminant validity Heterotrait-Monotrait ratio (HTMT) - Matrix

	AW	DD	EU	IU E-Auctions	TT	UF	UA
Awareness							
Digital divide	0.237						
Ease of Use	0.857	0.411					
Intention to Use Electronic Auctions	0.071	0.673	0.066				
Techno Trust	0.583	0.117	0.499	0.213			
Usefulness	0.179	0.314	0.231	0.329	0.091		
User's Attitude	0.213	0.783	0.335	0.726	0.233	0.280	

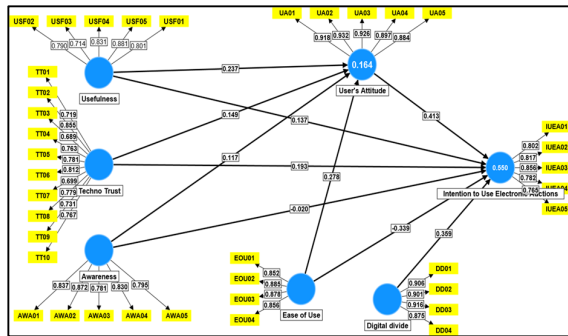


Fig. 2. Items loading R square and Path coefficient

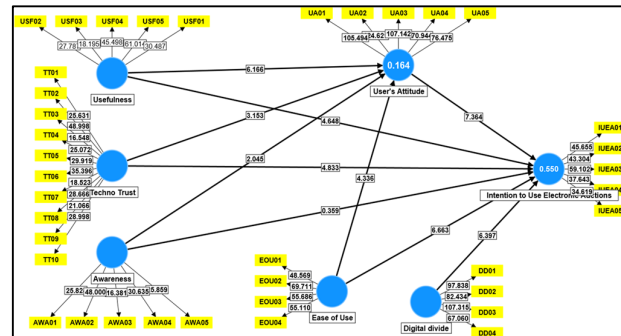


Fig. 3. T value

5.2 Assessment of the Structural or Inner Model

The inner model was assessed to ascertain the variation within the endogenous variables caused by the exogenous variable (Hair Jr et al., 2021). A satisfactory model fit is achieved with R2 value of 0.10 at minimum (Chin, 1998), and the results showed that intention to use electronic auctions (DV) scored R2 value of 0.55, which is larger than the acceptable minimum value (see Figure 2), and so, a satisfactory model fit was achieved. As for the SRMR value, 0.08 should be the maximum value, whereas for NFI, the minimum acceptable value is 0.90, so that a good model fit to the data could be affirmed (Hair et al, 2017; Henseler et al., 2009). The obtained results were as follows: SRMR value was 0.073 while NFI value was 0.925; and so, a good of fit (GoF) was affirmed. As the last step, the path coefficient and its corresponding t-value was determined for both the direct and mediating relationships with the application of bootstrapping (refer to Fig. 3).

A total of fourteen (14) hypotheses were proposed in this study. Of these, ten were demonstrating direct relationships, while the remaining four were demonstrating indirect relationships. From the obtained results, four direct relationships on users' attitude were positive and significant with the following details: awareness ($\beta = 0.117$, t-value = 2.045); ease of use ($\beta = 0.278$, t-value = 4.336); techno trust ($\beta = 0.149$, t-value = 3.153); and usefulness ($\beta = 0.237$, t-value = 6.166). Further, the user's attitude appeared to be significantly and positively linked to the user's intention to use electronic auction, and so, hypotheses, H3, H2, H4, and H5 were supported. In contrast, techno trust and usefulness showed positive and significant link with users' intention to use electronic auctions and the detailed results are as follows: techno trust ($\beta = 0.255$, t-value = 6.074); usefulness ($\beta = 0.234$, t-value = 6.381). Meanwhile, awareness showed insignificant values with no positive linkage as follows: ($\beta = 0.028$, t-value = 0.464) and ease of use ($\beta = -0.225$, t-value = 3.55). Hypotheses H7 and H8 were therefore not supported. Furthermore, the results showed positive and significant direct relationship of digital divide on users' intention to use electronic auctions where, $\beta = 0.359$ and t-value = 6.397, and therefore, H6 was supported (refer Table 5).

Table 5
Results

Hypotheses	Path coefficient	T value	P values	Results
Awareness → Intention to Use Electronic Auctions	0.028	0.464	0.643	Not Supported
Awareness → User's Attitude	0.117	2.045	0.041	Supported
Digital divide → Intention to Use Electronic Auctions	0.359	6.397	0.000	Supported
Ease of Use → Intention to Use Electronic Auctions	-0.225	3.550	0.000	Not Supported
Ease of Use → User's Attitude	0.278	4.336	0.000	Supported
Techno Trust → Intention to Use Electronic Auctions	0.255	6.074	0.000	Supported
Techno Trust → User's Attitude	0.149	3.153	0.002	Supported
Usefulness → Intention to Use Electronic Auctions	0.234	6.381	0.000	Supported
Usefulness → User's Attitude	0.237	6.166	0.000	Supported
User's Attitude → Intention to Use Electronic Auctions	0.413	7.364	0.000	Supported

The mediation effects of users' attitude were also examined, and this involved the relationship between users' attitude and awareness, ease of use, techno trust, usefulness, and the intention to use electronic auctions – the four dimensions examined in this study – and the results are displayed in Table 6. The specific indirect effects appeared to be positive and significant,

except for the relationship between awareness and the intention to use electronic auctions, as the relationship (based on the results) was not mediated by users' attitude.

Table 6
Mediation Results

Mediation hypotheses	Path coefficient	T value	P values	Results
Awareness → Intention to Use Electronic Auctions	0.048	1.922	0.055	Not supported
Ease of Use → Intention to Use Electronic Auctions	0.115	3.548	0.000	Supported
Techno Trust → Intention to Use Electronic Auctions	0.062	2.759	0.006	Supported
Usefulness → Intention to Use Electronic Auctions	0.098	5.292	0.000	Supported

6. Discussion

TAM was utilized in this study to analyze the factors impacting E-auction use in Jordan, and data were collected from 600 study samples through an online poll. SEM was utilized in data analysis. Results showed that awareness had insignificant impact on Intention to Use E-auction, and H1 was thus rejected. In general, awareness of users is vital in increasing the intention of employees as users, to utilize the e-government project. However, this result was inconsistent with previous studies, for instance, Jung (2012) found a significant effect of awareness on the intention towards the use of a given system. Additionally, in examining e-government, Meftah (2015) also found a significant impact of awareness on the use intention of e-government. Dourish and Bellotti (1992) stated that awareness is possession of knowledge toward the activities of others, which in turn provides a context for one's own activity. The findings suggest that the establishment of the awareness should not be emphasized when implementing e-auction, implying that the increase in awareness will not result in a rise in e-auction usage in Jordan. Additionally, this study's empirical results show that awareness and users' attitudes towards e-auction have a substantial and favorable association. As a result, hypothesis H2 was confirmed. Relevantly, Al Enezi et al. (2022) and Dogra and Kaushal (2020) concluded in their study that awareness impacts e-auction consumers' views in Jordan based on H9 as it is supported. In other words, the findings suggest that while examining e-auction consumers' views, it is important to emphasize the development of awareness. This study concluded from the results that greater awareness will result in better user attitudes in Jordan. Therefore, improving e-auction consumers' attitudes in Jordan is more likely to be used the more favorable the awareness.

Additionally, results showed a negative effect of digital divide on the intention to use e-auction, and so, H3 was supported. Pertinently, Vicente Cuervo and López Menéndez (2008) and Billon et al. (2010) reported that countries with different levels of digital divide will show different levels of digital gaps. In countries demonstrating very low digital gaps, the use of e-auction is usually impacted by the factors of practicality, utility, and enjoyment, while in those demonstrating high digital gaps, the factors of practicality, utility, and enjoyment appear to have adverse impact on E-auction usage. Technological factors appear to be affected by the digital divide as well. Among the factors, as discussed in Sánchez-Torres et al. (2017), include access to computer equipment, access to the network, and internet technologies usage training.

Furthermore, the obtained results implied no connection between Jordanians' intention to utilize E-auction and perceived ease of use, and so, H4 was rejected. This outcome can be justified by the fact that those who had used E-auction thought that the system was challenging and required a tremendous number of efforts. However, this outcome was inconsistent with previous studies including Hansen et al. (2018), Agbesi (2020) and Filieri et al. (2020) which stated the importance of addressing the factor of ease of use when implementing e-auctions. Also, results showed support for H5, as they showed significant impact of perceived ease of use on the attitude of users towards E-auction, which agrees with Davis (1989) who mentioned that user belief in the form of perceived ease of use has a great impact on the attitude of user towards adopting certain IS.

Additionally, results showed strong and favourable correlation between techno trust and inclination to use e-auction, and therefore, H6 was accepted. This finding was consistent with Al-Hamdan (2021), Byrne (2017), Ashraf et al. (2019), Yi (2019) and Zollinger et al. (2021) who found the impact of techno trust on a country's intention to employ electronic auctions. The findings, in other words, suggest that while adopting e-auctions, it is important to emphasize the creation of technical trust. The implication of this result is that Jordan will employ e-auctions more frequently as technical trust rises, and the likelihood that e-auction users in Jordan will use the e-auctions system increases with increasing technical trust.

Additionally, this study's empirical results show that users' attitudes towards online auctions and technological trust are significantly and favorably correlated. Hence, H7 was confirmed, in agreement with Al Enezi et al. (2022) and Dogra and Kaushal (2022). As such, while examining consumers' attitudes, it is important to emphasize the development of technical trust. This study implies that a rise in technical trust will result in a rise in the attitudes of e-auction users in Jordan. Furthermore, in Jordanian context, improving e-auction users' attitudes is more likely to be used by e-auction users the more favorable the techno trust. Moreover, results showed that perceived usefulness was significantly and positively linked to the intention of the user to use e-auction, and so, H8 was supported. This outcome was consistent with that of Tung and Rieck (2005), Carter

and Belanger (2005), Hung et al. (2006) and Wangpipatwong et al. (2008). In other words, citizens are likely to seek and use the information provided in e-auction websites in their daily affairs if the information is current, correct, and valid.

The results showed the impact of usefulness on user attitudes, and so, H9 was supported. This finding was consistent with Al Enezi et al. (2022) and Dogra and Kaushal (2022). It can be concluded that PU influences Jordanian e-auction users' sentiments. In other words, the findings suggest that when examining the attitudes of e-auction consumers, the construction of PU should be emphasised. Additionally, according to this study, an increase in PU will result in the increase in Jordan's e-auction users' attitudes. Therefore, it is discovered that improving e-auction attitude in Jordan will likely be employed by e-auction users in Jordan to a greater extent the more positive the PU.

Additionally, the outcomes demonstrated a substantial influence of attitude on intention to use an online auction. As a result, hypothesis H10 was confirmed. This finding is consistent with some earlier studies including Bie and Sharp (2022), Bisset et al. (2022) and Musia-Karg and Kapsa (2019) which affirmed the influence of attitude on a person's intention to use an e-auction system in Jordan. The findings, in other words, suggest that while adopting e-auction, it is important to emphasize how attitude was formed. Such results also suggest that a change in attitude will improve Jordan's use of the electronic auction system. Therefore, the more optimistic the attitude, the more likely that users in Jordan will use e-auctions.

The study results showed no mediation of techno trust on the relationship between user awareness and intention to use E-auction, and so, H11 was not supported. This finding is a new and important addition to social commerce literature. Also, it demonstrated the value of social interactions in social commerce, whereby more developed social interactions appear to affect purchase intentions significantly and positively. Comparatively, past studies were reporting no mediation of trust on the relationship between social interactions and purchase intentions. Hence, in social commerce, social interaction is vital as it is a major determinant of purchase intentions.

In addition, it was concluded from the results that attitude mediated the relationship between perceived ease of use and the intention to use E-auction. Hence, H12 was supported. Previous similar studies (see: Bataineh & Al Mutawa, 2016; Salameh et al., 2020; Bahaj et al., 2019) supported this study's conclusion. Users are more likely to utilize electronic auctions if the services are user-friendly since this improves the user's attitude towards them (the services). Users appreciate the idea of using e-auctions and encourage others to do the same because of their positive attitudes toward the simplicity of use that these services offer. Additionally, users' attitudes play a major and advantageous role in mediating the impact of technological trust on the use of e-auctions. H13 was therefore confirmed. This finding suggests that user attitudes have an impact on how people use e-auctions, in agreement with Upamannyu and Kaur (2015), Matveieva et al. (2022), Al-Bashayreh et al., 2022 and Al-Rabiaah et al. (2020) who found that user supports the notion of utilizing e-auctions and agrees to use them again and permanently because of their good attitude toward technological confidence of e-auctions. Users will have a positive attitude towards using these sites if they are knowledgeable of electronic auctions and how to use them. If a user doesn't know how to utilize these websites, he will adopt a pessimistic mindset that will cause him to demand that e-auctions be scaled back and refuse to use them.

Additionally, the mediation effect of user attitudes on the usefulness of using e-auctions was affirmed by the results, and therefore, H14 was affirmed. This finding suggests that the usefulness influences how e-auction is used via the attitudes of the users. Pleger and Brüesch (2020), Li et al. (2021) and Alassaf and Szalay (2022) supported this study's conclusion. If electronic auctions are defined by utility through improving the user's attitude, then more people will want to utilize them. Users are supportive of the idea of employing electronic auctions due to their good attitude toward using them (the e-auctions).

7. Implication

The present study brings some theoretical implications, first of which, is associated with its exclusive research model evaluating the drivers of behavioral intention of individuals towards E-auction usage, which has resulted in an inclusive exploration of the subject at hand. In the model, TRA was expanded with the inclusion of factors with linkage to technology adoption, and in doing so, the use of this theory in expanded form, is validated. Furthermore, several previously unexplored factors were examined in this study. Equally, factors with contrasting outcomes were explored as well. This has enriched the existing theoretical knowledge on E-auction. Also, this study is among the early ones to examine E-auction in Jordanian setting, and so, this study will become a good start in the exploration of this subject, enriching the knowledge reservoir, while comparisons can also be made from outcomes from different contexts.

In terms of practical implications; firstly, this study presents information concerning the effect of the factors scrutinized in this study on E-auction use decision. E-auction usage information involving major stakeholders for instance the investors, the government, merchants, and the entire population was explored in this study, which will facilitate the evaluation and estimate the attitudes and intentions of potential E-auction users in the future. Consequently, the fitting policies and campaigns could be constructed, so that the interest in E-auction usage could be increased. Furthermore, the legal, economic and environmental impacts of E-auction usage were ascertained in this study, for short-term and also for long-term.

The results obtained may be of value to governments, especially in the development of the best legal frameworks for E-auction use, as the government could consider the factors that significantly and positively affect the use of E-auction, like the usefulness and enjoyment factors. Additionally, it would be useful to consider the factors that could decrease the impact of perceived risk. Also, there should be policies and incentives for E-auction usage. As for developers, it is their duty to design trustable platforms for transactions of E-auction, because on these platforms, merchants will teach buying and trading of goods, and payment of goods via E-auction. Customers must know the benefits of using E-auction, while for investors, they need to develop trust among potential users so that their E-auction usage could be intensified. Lastly, the interest of stakeholders in E-auction should be increased by improving the social norms towards E-auction usage to form a positive user experience.

8. Conclusion, Limitations, and Future Research

E-auction provides users with fast, secure, anonymous, and cost effective online finance without third-party authorization requirement. Globally, E-auction is increasingly accepted, but the use of this form of transaction is still limited. In developing nations, E-auction is still a new concept, and in fact, studies on E-auction in these nations are still too few, while most E-auction studies were either focusing on a developed nation or culture. Also, the outcomes of these studies have been mixed. In addition, past studies on E-auction did not include perceived risk in their technology adoption models. Meanwhile in Jordan, the use of E-auction is on the rise, and so, the system should be adequately studied.

This study quantitatively examined the factors that impact behavioral intention of Jordanian citizens towards E-auction use. Equally, this study identified several limitations. Firstly, this study employed a small sample size, without making distinction on their knowledge level on E-auction, which will adversely affect the accuracy of the findings. Hence, larger sample size with differentiated E-auction knowledge level should be used in future studies, in order that the findings would have greater accuracy level, while also improving the research model in terms of its explanatory power. Another problem with this study is the use of cross-sectional design that data were gathered from one time point, which may prevent the identification of some changes in attitudes and intentions towards E-auction usage, considering that people can change with time. Future researchers should therefore employ the longitudinal approach to detect these probable changes.

Furthermore, the quantitative approach taken in this study may make the outcomes less comprehensive, and therefore, mixed methods may be adopted in future studies, to increase the comprehensiveness of results, through the addition of interviews as a data gathering tool. Finally, considering that only one country was examined, the findings may not be generalizable to other countries. As such, future studies should also cover other countries or cultures to increase the generalizability of the findings. Not only that, comparison of results could also be performed, while the research model could be validated.

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