Spring 6-15-2024

Private Sector's Perceptions and Adoption of the E-invoicing System in Egypt

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A Thesis Submitted to the

Public Policy and Administration Department

PRIVATE SECTOR'S PERCEPTIONS AND ADOPTION OF THE E-INVOICING SYSTEM IN EGYPT

in partial fulfillment of the requirements for the degree of

Master of Public Administration

By

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Spring 2024

Abstract

This study explores the private sector's perceptions and adoption of the mandated e-invoicing system, a key component of Egypt's digital tax system. Twenty-three qualitative semi-structured interviews with the private sector to answer the research question: How does the private sector perceive the mandatory e-invoicing system adopted by the Egyptian government? Furthermore, the study explored the perceived impact of the Unified Theory of Acceptance and Use of Technology (UTAUT)'s four aspects on the private sector's perceptions and adoption of the system, including performance expectancy, effort expectancy, social influence, and facilitating conditions. The study's findings show that all respondents confirmed the four aspects' high influence in forming their perceptions, especially social influence and facilitating conditions. Furthermore, the system's acceptance level correlates positively with the enterprises' size and financial resources, with larger enterprises adapting more effectively than micro, small, and medium enterprises (MSMEs). Performance expectancy concerns stem from user control, time-saving aspects, and financial implications. Effort expectancy issues are due to technical errors and lack of system integration. Social influence concerns include the system's limited geographic and sectoral coverage, fast-paced implementation process, absence of digital culture, and resistance to change. The facilitating conditions are critiqued for the system's inadequate infrastructure, fears of security and data protection mechanisms, public servants' insufficient digital capacity, and the government's linear communication. Despite the concerns, there is an optimistic outlook for the system. To achieve this, the study provides policy recommendations to bridge the gap between the public and private sectors and enhance the system's quality of services.

Keywords: e-invoicing, government, public servants, private sector, MSMEs, public administration, digital tax systems, Egypt, qualitative, UTAUT.

To our angels in Jannah

Mohamed Soliman

and

Youssef Usama

Acknowledgments

I am immensely grateful to Allah for His infinite blessings and grace, which have made all forms of goodness possible in my life.

My heartfelt appreciation goes to the Yousef Jameel Leadership Fellowship for their invaluable support in reaching this significant achievement. I am especially thankful to Dr. Laila El Baradei for her exemplary leadership of the fellowship, her inspirational role, and for instilling hope and light in our paths toward the future. My sincere thanks also to Amira El Biltagy and Reem Khedr, Yousef Jameel's Managers, for their unwavering support throughout this journey. Furthermore, I am profoundly thankful to my supervisor, Dr. Shahjahan Bhuiyan, and readers, Dr. Ghada Barsoum and Dr. Noura Wahby for their guidance and support.

I owe a deep sense of gratitude to my mother, my in-laws, my husband, my siblings, and my brother-in-law for their faith in me, their relentless support, their prayers, wise counsel, and encouragement, which have been pivotal in overcoming obstacles and realizing my aspirations. They have been with me every step of the way, offering their help and managing the highs and lows alongside me.

A special word of gratitude to my friends, who have been a constant source of encouragement and companionship through every challenge and celebration, despite the long distances between us.

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Abbreviations

API	Application Programming Interfaces
E-Invoicing	Electronic Invoicing
E-Signature	Electronic Signature
EDI	Electronic Data Interchange
EE	Effort Expectancy
ERP	Enterprise Resource Planning software
ETA	Egyptian Tax Authority
FC	Facilitating Conditions
G2B	Government-to-Business
G2C	Government-to-Citizen
GPC	Global Product Classification
GS1	Global Standard 1
IMF	International Monetary Fund
ICTs	Information and Communication Technologies
IT	Information Technology
ITIDA	Technology Industry Development Agency
MCIT	Ministry of Communication and Information Technology
MoF	Ministry of Finance
MSMEs	Micro, Small and Medium Enterprises
NGOs	Non-governmental Organizations
OECD	Organization for Economic Co-operation and Development
PE	Performance Expectancy
POS	Point of Sale
PDF	Portable Document Format
RTF	Real Time Financing
SI	Social influence
UNSDGs	United Nations Sustainable Development Goals
UUID	Universally Unique Identifier
XML	eXtensible Markup Language

Chapter 1: Introduction

1.1 Introduction

The rapid expansion of information technology (IT), coupled with the increasing growth of electronic commerce, pushed governments to experience a new phase in IT development across the world (Abdallat, 2016; Averweg, 2008). In the digital era, paperless and electronic technologies are increasingly becoming the norm, shaping the trajectory of both social and economic life (Bellon et al., 2022). This trend is impacting many important monetary activities, including invoices, which are printed documents issued by a seller to a customer, detailing transaction information of sold goods or services (Salmony et al., 2010). Traditional paper-based invoicing has inherent limitations, including limited accessibility, slow processing, high costs as well as high security and error risks. It is increasingly seen as out of step with the evolving landscape of tax information management and the broader progression toward a more information-centric society.

The advent of electronic invoicing (e-invoicing) marks a significant transformation in the financial transaction landscape, reshaping the way public and private sectors interact and transact in the global economy (Barreix et al., 2018). As a digital solution to the traditional invoicing's barriers and limitations, e-invoicing replaces traditional paper-based methods with electronic processes, offering enhanced efficiency, accuracy, and cost-effectiveness.

The adoption of e-invoicing started in the Scandinavian countries, and then became a global phenomenon, reflecting a shift towards more streamlined, digitalized financial systems (Lian, 2015). Many countries worldwide have been integrating e-invoicing into their economic structures, recognizing its potential to modernize financial transactions, improve regulatory

compliance, and facilitate smoother business operations (Barreix et al., 2018). This transition is supported by advancements in information and communication technologies (ICTs), making e-invoicing a more accessible and practical option across different economic contexts.

However, the progress towards the widespread adoption of e-invoicing is not without its challenges, particularly within the private sector. Perceptions and acceptance of e-invoicing vary significantly. The private sector's hesitancy and resistance stem from various concerns, depending on each government's method of implementation and the country's general socio-economic conditions. Despite its broad implementation and the different users' reactions toward it, empirical data on the perceptions about the e-invoicing impact remains largely limited (Bellon et al., 2022).

The e-invoicing system presents a compelling case in Egypt. The Egyptian government started mandating the e-invoicing system in 2020, recognizing its potential to bolster the efficiency of financial systems and contribute to national development objectives. Nonetheless, the response from Egypt's private sector, especially self-employed professionals and MSMEs, was mixed, influenced by factors such as readiness to adapt to new technologies, cost-benefit considerations, and the extent to which e-invoicing aligns with existing business practices (Aljazeera, 2022).

The perception of the Egyptian private sector seemed to vary from the public sector, which motivated the author to conduct this study. This study aims to explore the Egyptian private sector's perceptions and adoption of e-invoicing and bridge the gap between the public and private sectors with regard to the e-invoicing system.

By analyzing the factors influencing the private sector's perceptions and adoption of the e-invoicing system and its congruence with the Egyptian government's developmental aspirations, the study seeks to shed light on the role of digital financial practices in shaping the future of

business transactions in an increasingly digital global economy. Besides, it investigates the e-invoicing system's perceived impact on the private sector's perceptions and adoption to bridge the gap between the government and the private sector. Furthermore, analyzing the private sector's perceptions and adoption can help in setting policy recommendations that ensure this new system's sustainability and the successful implementation of other digital policies in the future.

The e-invoicing system is not tackled as needed in the Middle East and Africa region; besides it is not tackled at all in Egypt. Furthermore, the e-invoicing system is covered in the literature from the public sector's perspective, and very few address the private sector's perceptions, which is important as both sectors work hand-in-hand to achieve the success of the government's developmental initiatives. Therefore, this study's contribution is filling the literature gap and addressing the perceptions of the private sector about the e-invoicing system and the factors influencing these perceptions.

1.2 Research Aim and Objectives

1.2.1 Research Aim

Due to the Egyptian government's need to explore the private sector's needs and demands while utilizing the e-invoicing system, the research aim of this study is the following:

To investigate the private sector's perceptions and adoption of the newly mandated e-invoicing system, compared with the traditional in-person method.

1.2.2 Research Objectives

To achieve the aim, the study intents to achieve the following objectives, including addressing the influencing factors that are encountered by the private sector in Egypt while

adopting the e-invoicing system, besides, understanding the compliance versus the acceptance of the mandatory e-invoicing system, which would help in gauging the system's long-term sustainability.

1.3 Research Questions

According to the research objectives, the study seeks to provide answers to the following measurable question.

How does the private sector in Egypt perceive the mandatory e-invoicing system?

This question entails some sub-questions, which are:

- How does the Egyptian government respond to the private sector's needs and meet their expectations from the e-invoicing system?
- How is the private sector assessing the Egyptian government's efforts in the policies and implementation process of the e-invoicing system?
- How do the private sector's perceptions of the e-invoicing system influence their adoption?

1.4 Policy Relevance

E-invoicing holds significant policy relevance to the United Nations Sustainable Development Goals (UNSDGs), particularly in fostering sustainable economic practices, promoting innovation, and ensuring environmental sustainability. As a digital solution, e-invoicing aligns with UNSDG 9 (Industry, Innovation, and Infrastructure) by driving advancements in digital infrastructure and fostering innovation in the public and private sectors. It supports UNSDG 12 (Responsible Consumption and Production) by reducing paper waste and contributing to more

sustainable consumption patterns. Additionally, by enhancing transparency and efficiency in financial transactions, e-invoicing contributes to UNSDG 16 (Peace, Justice, and Strong Institutions), promoting accountable and transparent institutions. Its role in streamlining processes also aligns with UNSDG 8 (Decent Work and Economic Growth), driving economic efficiency and growth.

E-invoicing in Egypt is well-aligned with Egypt Vision 2030, a strategic framework aimed at sustainable development and economic prosperity. By adopting e-invoicing, Egypt is embracing digital transformation and technological innovation, core tenets of its Vision 2030. This move towards digitalization in financial transactions enhances economic efficiency, supports transparency, and modernizes the financial sector, all of which are crucial objectives of the vision. The shift also reflects the commitment to developing a more accountable and efficient public administration system, reinforcing the governance and transparency goals. Additionally, by reducing paper-based processes, e-invoicing echoes the vision's emphasis on environmental sustainability, making it a strategic fit for Egypt's long-term developmental aspirations.

1.5 Structure of the Thesis

This study is built up into seven chapters, and each one of these chapters tackles a distinctive stage in conducting the research process. The following is an outline of the chapters included in this study:

Chapter 1 introduces the research scope and problem, which is the analysis of the Egyptian private sector’s perceptions and adoption of the mandatory e-invoicing system. Besides, it shows the research aim, objectives, and questions. It ends with providing a brief outline of the study.

Chapter 2 provides background information that the study is based upon, including definitions of the main terms related to the topic, and a holistic analysis of the literature, including the e-invoicing implementation methods and e-invoicing from the perspectives of the public and private sectors in developed and developing countries. The chapter ends by showing the literature gap in this area of research.

Chapter 3 focuses on the local context in Egypt and goes through the government's current developments in this arena of e-invoicing as well as the published public opinion on the government's steps towards e-invoicing implementation.

Chapter 4 analyzes various assessment conceptual frameworks that were used for technology adoption, and it shows the selected framework that is utilized for this study, justifying the reasons behind its selection. Finally, it lists down the main themes and questions of the study that were inspired by the reviewed conceptual frameworks.

Chapter 5 tackles the methodology; including the research design, sampling, data collection, and analysis tools. The chapter discusses the approaches that are utilized in examining the private sector's responses. Besides, the chapter explains the ethical considerations and study limitations that affect the results' generalization on the whole population.

Chapter 6 analyzes the findings, which are based on the responses from the business owners and accountants about the e-invoicing system in Egypt. It discusses the findings based on different themes to ensure covering the main issues related to the topic.

Chapter 7 summarizes the study and concludes the study findings. Finally, it gives policy recommendations for the government officials in Egypt and other developing countries who seek to improve e-invoicing systems for the private sector.

Chapter 2: Literature Review

Chapter 2 provides a comprehensive review of the literature on the e-invoicing system, and its adoption by the private sector. It presents numerous topics correlated with the assessment of e-invoicing systems. The literature encompasses a range of materials, including articles from peer-reviewed journals as well as reports from various international development organizations, such as the International Monetary Fund (IMF), and the Organization for Economic Co-operation and Development (OECD), as well as international tax-specialized consulting agencies such as KPMG, Ernst & Young (EY), and PWC.

The chapter provides definitions of the value-added tax (VAT), invoicing, as well as the e-invoicing system and its components. The chapter also describes the barriers and enablers of e-invoicing from the public sector's perspective, and then explores the influencing factors for adopting the system from the private sector's perspective. Then, the chapter showcases the global landscape of e-invoicing. Finally, the chapter presents the literature gap regarding this area of research and how this study attempted to fill this gap.

2.1 Introduction to E-Invoicing

2.1.1 Concept of VAT, Invoicing, and E-Invoicing

Value Added Tax (VAT)

VAT is a tax levied on all sales of commodities at every stage of the supply chain, from production to point of sale (IMF, 2003). The IMF (2003) stated that VAT is based on invoices issued by the seller to verify sales and credit for tax on purchases by the buyer, and it necessitates accurate tracking and reporting of VAT for both purchases and sales. According to Ebrill et al. (2001), VAT was first introduced less than 50 years ago and has since been adopted by most countries, contributing to about 25% of their tax revenue. Abd Mansor et al. (2016) confirmed that

this tax model was effective in increasing government revenue in the majority of cases where it was adopted.

Invoicing

Invoicing is a crucial aspect of commercial exchanges, serving as an integral part of both physical and financial supply chains, accompanied by the corresponding information flow (Salmony et al., 2010). Traditionally, this process involves the creation of a physical paper invoice by a seller, such as Company "A," which is then sent to the buyer, Company "B," using postal services or a courier (Kommerskollegium, 2010). Company "B" is responsible for reviewing and approving the invoice, completing the payment as specified, and subsequently filing the invoice for record-keeping purposes (Olaleye et al., 2019).

E-Invoicing

E-invoicing, essentially a dematerialized form of invoicing, involves the creation, transmission, and receipt of invoices in a structured data format (Salmony et al., 2010). Contrasting sharply with traditional paper-based invoicing, e-invoices are machine-readable, enabling direct integration into accounts payable systems and facilitating sharing with third parties, including tax authorities (Bellon et al., 2022). Initially championed by the private sector, governments have increasingly adopted e-invoicing to establish more efficient tax systems (Koch, 2017). In the context of Government-to-Business (G2B) services, e-invoices play a crucial role in enhancing government income, increasing transparency, and reducing administrative burdens for companies (Panayiotou et al., 2021). However, it is noteworthy that among small and medium-sized enterprises (SMEs), a more traditional approach of manual handling and email exchange of invoices is still common (Koch, 2012).

E-invoicing systems are adapting to accommodate VAT by allowing automated calculation, reporting, and compliance, thereby streamlining the tax process, and improving transparency and efficiency in tax collection (Bellon et al., 2022), besides, numerous potential benefits, such as improved VAT compliance, increased business formality, and enhanced firm productivity (Salmony et al., 2010).

2.1.2 Components of E-Invoicing

Businesses exchange invoices in various methods (Keifer, 2011). These include 1) paper-based invoices sent through the mail, 2) electronic mail (e-mail) attachments like Portable Document Format (PDF), 3) scanning using Optical Character Recognition (OCR); which transforms files into editable and searchable, structured data in the form of eXtensible Markup Language (XML) - a flexible text format used for structuring and storing data -, or EDI (Electronic Data Interchange), which standardizes the information communicated in business documents in an electronic format (Tiwari et al., 2023).

Email exchanges, especially in PDF, are preferred over EDI, with SMEs finding it more convenient (Tiwari et al., 2023). Combining PDF and XML formats is becoming a trend, reflecting evolving invoice transmission methods (Koch, 2017).

EDI, dating back to the 1970s, evolved as a standard for e-invoicing (Haag et al., 2013). Marinagi et al. (2015) pointed out that EDI is crucial for e-invoicing, facilitating automatic processing, especially in XML format. XML plays a vital role in structuring e-invoices for readability across electronic systems (Marinagi et al., 2015). True e-invoices, as opposed to scanned image files, are structured for automatic processing (Marinagi et al., 2015; Koch, 2014).

Digital signatures on PDF or XML invoices ensure their authenticity, recognized as valid signatures by tax authorities (Marinagi et al., 2015).

Many organizations use Enterprise Resource Planning (ERP) software like Oracle, SAP, or Microsoft for e-invoicing compatibility (Olaleye et al., 2019). ERP systems, facilitating electronic data interoperability, are integral to direct e-invoicing and EDI adoption (Salmony et al., 2010; Tenhunen et al., 2010). Investing in ERP-compatible payment and accounting systems is crucial for streamlined buyer-supplier transactions (Salmony et al., 2010). Besides, the web portal and mobile application where the users can access to import, modify, or delete the data, as well as distribution networks among the users and tax authorities and digital archiving of the e-invoices and users' profiles (Avalara, 2023).

2.2 E-invoicing from the Public Sector's Perspective

In exploring the e-invoicing system, the public sector's viewpoint reveals a complex interplay of factors that both facilitate and hinder its implementation. This section delves into the key enablers and barriers from the public sector's perspective. Enablers in the public sector are factors that facilitate the adoption, implementation, and sustained operation of innovations, policies, or practices (Cameron & Green, 2019). Barriers, on the contrary, are obstacles that hinder the effective application and management of public sector projects (Heeks & Stanforth, 2017).

2.2.1 Enablers

The rise in the adoption of e-invoicing and the escalating interest in this area stem from various factors that enable public entities to enhance their solutions, yielding both direct and indirect advantages (Hill, 2015; Caluwaerts, 2010).

The digital era's advancement, marked by widespread smartphone and internet use, necessitates e-invoicing adoption for administrative cost reduction, process transparency, and operational efficiency (Maina, 2023; Fasheng, 2016; Tenhunen et al., 2010; Agostini et al., 2009). Federal Reserve Bank of Minneapolis (2016) emphasizes its role in optimizing cash management and improving data quality. It significantly reduces manual data entry and the likelihood of errors (European Commission, 2014; Penttinen et al., 2011).

The evolution from traditional invoicing to e-invoicing is driven by a quest for efficiency and transparency, and it mitigates fraudulent tax invoices and enhances tax data clarity as well as enhanced working capital and better engagement with the users (Olaleye et al., 2023; Shim et al., 2016; Dan et al., 2015).

Penttinen et al. (2009) concluded that a significant advantage of adopting e-invoicing is the enhancement in the exchange of information, which in turn fosters increased trust, collaboration, and dedication within organizations. Nienhuis et al. (2013) added that e-invoicing facilitates the Real-time Financing (RTF) model by allowing for the instant exchange of payment status information, which is crucial for enabling quick and informed financing decisions.

2.2.2 Barriers

Despite the advantages of transitioning to e-invoicing, several challenges remain that public entities need to confront in the adoption process.

Adopting e-invoicing globally faces several challenges, including legal, technological, and psychological barriers among public servants as well as the targeted users from the private sector (Linh et al., 2020). Besides, confusion over market transparency and the discouragement of some businesses from complying due to their trading partners' resistance to the system (Koch et al.,

2019). The governments need to deal with challenges including resistance in financial administration, updating legacy systems, misconceptions about e-invoicing complexity and high costs, interoperability issues, digital signature requirements, lack of universal standards, and communication challenges (Lu, 2016; Salmony et al., 2010).

2.3 Private Sector's Adoption of E-invoicing

E-invoicing's benefits are not limited to the public sector, they also extend to the private sector through improved firm productivity, managerial duties, and competitive edge (Zhang et al., 2017; Cuylen et al., 2016). Various studies were conducted around the world to analyze the private sector's perceptions and adoption of e-invoicing. The perceptions varied from the public sector and the influencing factors were identified based on, but not limited to, the enterprises' sizes, digital capacity, their countries' cultural aspects, and their governments' policies regarding the adoption whether mandated or voluntary (Koch, 2017).

Salmony et al. (2010) and Lempinen et al. (2009) highlighted that some companies choose to adopt it without any obligations from the government due to its role in market competitiveness, and supply chain efficiency, besides environmental benefits. On the other hand, some companies were reluctant to register in the system despite their governments' mandates (Penttinen et al., 2009). This section dives into the factors that influenced the private sector's perceptions and adoption to the e-invoicing system around the world.

The level of the system's complexity influenced the private sector's adoption as the users are discouraged from exerting more effort in establishing a new complicated system (Olaleye et al., 2017; Lian, 2015; Penttinen et al., 2008).

Many scholars also realized that the users evaluated the system based on the perceived benefits to their business operations such as increased efficiency and productivity, and it was one of the main accelerators (Tiwari et al., 2023; Qi and Azmi, 2020; Olaleye et al., 2017; Kreuzer et al., 2013; Penttinen et al., 2009)

Poel et al. (2016) mentioned that one of the businesses' main concerns is the high initial costs of registering in the system and receiving IT support, even though they recognized the cost benefits during the system's operations. The authors recommended giving incentives would help increase the companies' acceptance of the new system and its costly registration fees (Poel et al., 2016). Shim et al. (2016) mentioned that South Korean businesses did not see the e-invoicing's positive perceived impact on the cost reduction of their business operations.

It was agreed upon among different scholars that large-sized enterprises had more positive feedback about e-invoicing than MSMEs, and that small businesses believed the benefits did not outweigh the costs and efforts to revamp their systems (Tiwari et al., 2023; Poel et al., 2016; Marinagi et al. 2015; Lumiaho et al., 2011; Adam, 2007; Edelmann et al., 2006; Fairchild, 2004). Sandberg et al. (2009) explained further that organizational readiness, such as the availability of efficient technological and financial resources, could highly impact the perceptions of MSMEs to adopt e-invoicing. Therefore, the service ecosystem needs to offer flexible tools that better cater to the SMEs' needs to encourage them to adopt e-invoicing (Lumiaho et al., 2011).

Lumiaho et al. (2011) said that large corporations and government entities that mandate e-invoicing influence SMEs' adoption to a greater extent, suggesting that e-invoicing benefits are more significant when a company has larger clients. The legal framework was one of the businesses' motivators to adopt (Kreuzer, 2013; Keifer, 2011).

A main influencing factor is social pressure including the companies' customers and other competitive companies (Marinagi et al., 2015; Keifer, 2011; Penttinen et al., 2009; Sandberg et al., 2009). Bellon et al. (2023) found that firms with e-invoices adopting partners were more likely to adopt e-invoicing voluntarily, particularly when these partners were downstream buyers. Furthermore, e-invoicing impacts companies' networks as they might lose partnerships with other companies in case of non-compliance with the system (Bellon et al., 2023). Olaleye et al. (2019) added another perspective from the private sector as one of the companies' factors in joining the system was maintaining a good image and prestige.

One of the common factors among businesses was the digital capacity among the businesses, adding that many businesses fear technological solutions (Olaleye et al., 2019). Dyrenfurth et al. (1991) mentioned that a common misunderstanding is the confusion between computer literacy and technological literacy, adding that computers are just one aspect of digital literacy. Other examples of technological literacy are internet navigation, e-mail communication, mobile applications, etc. Dow (2006) stressed on the importance of ensuring that everyone has a basic understanding of technology to be able to cope with the technological era. Poel et al. (2016) and Shim et al. (2016) added that sharing practical IT solutions and maintaining efficient customer service could encourage more businesses to transition to e-invoicing.

Lian (2015) found that the level of trust in the government was effective in pushing the private sector to adopt the e-invoicing system, adding that having negative experiences with the governmental policies implementation could affect their willingness to adopt their new ones. Shim et al. (2016) added that the system's transparency and equity among businesses was a factor influencing their adoption. Penttinen et al. (2008) also said that the government's communication methods with the private sector highly influenced their willingness to adopt the system.

Santa et al. (2019) and Marinagi et al. (2015) realized the importance of businesses' trust in online systems and IT infrastructure. Tiwari et al. (2023) confirmed that providing a test environment (a demo phase) is an effective solution to increase this trust as businesses can try the system without officially submitting any e-invoices.

Poel et al. (2016) revealed that security issues negatively influence the private sector's perceptions, and they suggested that the government can give the private sector confidence in the security levels of the new system by setting itself as an example and registering the governmental agencies in the system, so business-to-government (B2G) transactions can be shown to these companies which can later diffuse the system within the business-to-business (B2B) transactions.

2.4 E-invoicing Global Landscape

E-invoicing was initially driven predominantly by the private sector, particularly medium and large-sized enterprises (Olaleye et al., 2023). Afterward, the government's influence became increasingly significant, with the VAT gap becoming a major accelerator for the digitization of business fiscal reporting, inventory trade, and logistical documents (Koch, 2017).

Scholars had different conclusions about mandating electronic systems. On one hand, Kreuzer et al. (2013) said that institutional pressure and political commitment highly affect the system adoption. Shim et al. (2016) realized that the comprehensive application of the South Korean e-invoicing system to all corporate taxpayers was key to its successful implementation. Also, Maina (2023) confirmed that Kenyan businesses expressed their satisfaction with the mandated system due to the efficiency and cost reduction. On the other hand, Ojiako et al. (2012) examined the users' attitudes toward a newly mandated technology in Nigeria, and the results showed that a post-adoptive attitude regarding obligatory digital solutions can worsen over time.

It is necessary to understand the different approaches that were mainly adopted in the global landscape, including the type of mandate, methods, and timelines of implementation, as well as the penalties for non-compliant companies.

Participation in the e-invoicing system is voluntary in the United States (US) due to the decentralized tax system, as well as the lack of standardized solutions and IT resources (Federal Reserve Bank of Minneapolis, 2016; Linh et al., 2020). The US does not have a federal VAT or GST system, as sales taxes are levied, reported, and administered at state and local levels, resulting in a complex web of taxing jurisdictions (Avalara, 2022). Mainly large companies issued e-invoices for efficiency and cost-saving purposes, not for legal mandates (Olaleye et al., 2018). Canada has also a similar system, therefore, the Canadian tax authorities allow both printed and e-tax filing (Sage, 2021).

The European Union (EU) published many directives starting in 2001 to promote e-invoicing among B2B and business-to-consumer (B2C) voluntarily (Koch et al., 2019). In 2014, the EU established a standard on e-invoicing for any transactions between businesses and European governments (G2B) to be digitalized by 2019, however, there was no mandate for the transactions between B2B and B2C (Koch et al., 2019). The European national governments had the right to separately take steps further than this legislation (Marinagi et al., 2015). Based on this, EU countries differed in their national legislations. They all unified the B2G, but some kept the B2B and B2C voluntary such as the Netherlands, Luxemburg, and Belgium (EU, 2023). Some mandated it already for all transactions such as Italy (EU, 2023). Other countries are currently planning to include more transactions under the e-invoicing system such as Greece (EY, 2023), France (KPMG, 2023), Spain (OECD, 2022), and Poland (EY, 2023).

The e-invoicing full mandate was implemented in various countries, especially in Latin America such as Mexico and Peru, besides others from different continents like South Korea, Australia, and Kenya. Furthermore, some countries mandated the system on self-employed professionals and considered them sellers such as in Argentina, Chile, Mexico, Peru, and Uruguay, while it is voluntary in other countries including Ecuador (Barreix et al., 2018). Bellon et al. (2023) realized that mandatory e-invoicing in Peru led to a significant increase in reported taxable sales and purchases, particularly among SMEs. The perceived impact was more pronounced in sectors with traditionally low compliance, such as construction and business services. Additionally, the research observed an increase in firm exits following the announcement of e-invoicing requirements, indicating a preference by some firms to exit rather than comply to the system.

The pace of implementation varied across the countries. Some countries mandated the system on all transactions in relatively short periods of time such as Kenya (Kenyan Revenue Authority, 2023), and Saudi Arabia (Saudi Gazette, 2023), which set the deadlines for all the waves within almost one year (Saudi Gazette, 2021; EY, 2023). Other countries had longer stretches in the implementation period that ranged around three or four years such as Australia (2022 – 2025) (Australian Tax Authority, 2021), and India (2020 – 2023) (Tiwari et al., 2023).

In contrast, some countries implemented the system in more than ten years, such as Argentina, which phased the implementation process over twenty years, as the initial pilot program started in the early 2000s with large companies and specific sectors, then started to gradually expand and replace the paper invoice until it was fully mandated in 2015 (Barreix et al., 2018).

Also, Chile started the system in 2003 and kept it voluntary for all except some large enterprises until 2014 (OECD, 2022). Since then, it started the gradual mandate for all B2B through

four years (2014 – 2018) (OECD, 2022), and it further extended the mandate to B2C in 2021 (Strorecove, 2023).

Furthermore, Peru allowed voluntary participation in mid-2000s, but the participation was low, so it started the gradual mandate in 2014 through phases that ended in 2019 (Bellon et al., 2022). To ease the transition, the tax authority offered various options for issuing e-invoices, including developing in-house systems, using third-party services, or adopting the authority's free software, which was mainly used by MSMEs (Bellon et al., 2022). Bellon et al. (2022) analyzed that the gradual rollout, starting with larger firms and sectors, gave a chance to smaller enterprises to adapt to the system and provided a framework to evaluate the causal effects of e-invoicing. Also, Brazil was one of the pioneers in e-invoicing as it started introducing it in 2008 until it gradually reached the full mandate to all businesses in 2023 (Storecove, 2023).

South Korea, which first introduced it in 2001, then mandated it to all taxpayers in 2011 (Shim et al., 2016). To facilitate this step for SMEs who couldn't have their e-invoicing system, the authority allowed them to submit their e-invoices on the government's website "e-seros" (Shim et al., 2016). Shim et al. (2016) said the South Korean tax authority postponed the system's implementation by one year for corporate taxpayers and two years for some individual taxpayers. This was crucial to allocate an adjustment period for taxpayers to get wider acceptance on the model (Shim et al., 2016).

Another example is Vietnam, which developed the e-invoicing system in 2010, and then the Ministry of Finance launched a pilot program in major cities (2015 – 2017) (Linh et al., 2020). Afterward, the Ministry of Finance worked on overcoming the system's inconsistencies to streamline its processes (2018 – 2019), and it set the mandate deadline to 2020 (Linh., 2020).

Taiwan instituted a pioneering test system for e-invoicing in 2000, then the transition was executed in three phases, beginning with a transition phase providing paper printouts, followed by an expansion phase promoting the adoption of e-receipt methods, and culminating in a final phase where e-invoices become the norm, eliminating the need for paper versions (Lian, 2015).

Finally, the Ministry of Finance made it obligatory in 2018 for national and foreign companies for cross-border transactions (Ministry of Finance, 2018). Also, Denmark mandated e-invoicing in B2G transactions in 2005 (EU, 2023), then gradually expanded it until it is mandated for all in 2022 (Danish Parliament, 2022).

Regarding non-compliance, the governments varied in their level of strictness. Some countries used incentives to encourage the private sector to comply such as Japan which made the Japanese Consumption Tax credits limited to the companies that comply with the Qualified Invoice System (Deloitte, 2023). On the other hand, many governments used strict penalties that differed based on each case, whether absent or incorrect e-invoices (Storecove, 2023). The penalties could range between criminal offenses, and/or 100%, up to 200% of the VAT value such as in Brazil (Shim et al., 2016), Kenya (Kenyan Revenue Authority, 2023), Poland, Belgium, Saudi Arabia (Storecove, 2023), and India (Indian Tax Authority, 2023). Some countries established structured penalty systems, like Chile which has four stages, from lenient to strict penalties reaching 300% of the transaction value, besides, Mexico (Barreix et al., 2018), Spain, France, and Italy (Storecove, 2023). In Argentina, businesses could be completely withheld from the VAT and deducted from the income tax in case of fraudulent accusations until their next tax declarations are reviewed (Barreix et al., 2018). Finally, some countries use lenient penalties such as South Korea which set penalties ranging between 0.5-1.0% of the tax e-invoice value (Shim et al., 2016).

2.5 Literature Gap

E-invoicing is evolving and spreading around the world, it is a topic of interest to many researchers in Europe, China, and Latin America. However, it is not tackled as much in the Middle East and Africa (MENA) region, and it is not tackled at all in Egypt after mandating the system to the private sector. Therefore, this study is investigating this new system. Additionally, there exists a lot of research that is evaluating the system from the government's perspective, and there is a notable research gap in the private sector's perception. This study seeks to bridge this gap by delving into the perceptions of the private sector in Egypt about the compulsory adoption of e-invoicing, and the public sector's knowledge-sharing mechanism for successful adaptation by the private sector. By this means, the study contributes new insights to the field, which can be reflected in the surrounding regions that share commonalities with Egypt. This can also support the policymakers in Egypt to understand the private sector perceptions while setting new digitalization policies to ensure the successful implementation of the initiated policies and programs.

Chapter 3: E-Invoicing in Egypt

Egypt's score is 35 out of 100 and rating is 108 out of 180 in the 2023 Corruption Perceptions Index (CPI) by Transparency International. This ranking and score reflect the ongoing challenges Egypt faces in combating corruption within its public sector. Therefore, the Egyptian authorities started taking new policies to combat corruption and increase the transparency levels. Digitalizing the public administration's initiatives and systems increases the transparency levels (Rongzhou et al., 2016; Dan et al., 2015). The Egyptian authorities targeted enhancing the transparency levels by shifting to the VAT system, then digitalizing the tax system and introducing e-invoicing to replace the traditional invoicing system (ETA, 2023).

3.1 Shift to the VAT

Egypt introduced the VAT system in 2016 by Law No. 67 of 2016, replacing a 10% Sales Tax (PWC, 2016). The law covers electronic transactions, requiring amendments to contracts to reflect new taxes imposed. The VAT rate was initially set at 13% for the fiscal year 2016/2017 and increased to 14% from the fiscal year 2017/2018 onwards (EY, 2023). Some goods and services are subject to a Schedule Tax in addition to VAT, particularly luxury items and certain commodities like cigarettes and oil products (PWC, 2016).

Businesses with an annual revenue exceeding EGP 500,000 are required to register for VAT within 30 days of reaching this threshold (EY, 2023). Importers and distributors of taxable goods or services must register for VAT, regardless of whether they reach the registration threshold. Non-resident companies providing taxable goods or services to Egypt must appoint a representative in Egypt to handle VAT obligations (EY, 2023).

The private sector, especially the tourism sector, had concerns about the VAT law (DNE, 2016). There were demands to reevaluate the tax's value, the revenue levels that would determine who was subject to the tax, and the scope of individuals and entities that the tax would affect (DNE, 2016).

3.2 Establishing the E-invoicing System and its Components

The e-invoicing system became an integral part of the Egyptian government's journey towards digital transformation, and it aims to enhance the formal economy, support economic growth, and improve the digital experience for taxpayers (ETA, 2023). It aligns with Egypt Vision 2030 for Digital Transformation, aimed at enhancing governmental services (MoF, 2023). It is part of the Egyptian Tax Authority (ETA) Reform Program, which entails creating a central solution that allows the ETA to monitor all B2B trading transactions through the instant exchange of invoice data in a digital format (MoF, 2023). The ETA is also implementing the e-receipts project, which allows the ETA to monitor the B2C transactions electronically (ETA, 2022).

The e-invoicing platform is set to revolutionize the management of tax information (ETA, 2021). In the short term, taxpayers can expect significant improvements (ETA, 2021). This includes the pre-issuance validation of invoice and receipt data, elevating a company's tax profile to a low-risk category, streamlining VAT settlement between companies, modernizing methods of invoice and receipt exchange, aiding in financial statement preparation through Certified Public Accountant (CPA) review, and facilitating rapid, precise analysis for decision-making (ETA, 2021). Additionally, this platform will be instrumental in identifying fraudulent activities through advanced data analysis (ETA, 2021).

Looking toward the long-term impacts, the platform promises to alleviate administrative burdens and reduce transaction costs, making the transition from paper-based to digital records (ETA, 2021). This shift not only simplifies audit procedures, potentially enabling remote audits, but also eases tax refund processes and the preparation and filing of declarations (ETA, 2021). A key aspect of this transformation is the elimination of traditional review and reconciliation procedures with companies (ETA, 2021). Furthermore, it effectively supports the integration of the informal economy into the formal sector, promoting tax justice and increasing transparency in tax affairs (ETA, 2021). This system also establishes a channel for addressing taxpayer complaints, further enhancing the transparency and efficiency of Egypt's tax system (ETA, 2021).

The major users of the e-invoicing system are the ETA as well as the taxpayers, which can be divided into e-invoices issuers and e-invoices receivers (ETA, 2021). Some of the major features of the new system are 1) having a unified format for e-invoices, and each of them has a Universally Unique Identifier (UUID), 2) having a unified coding system following the Global Standard 1 (GS1) as well as local coding of products that are not in the GS1 and linking these codes with the Global Product Classification (GPC), 3) setting the notification option about any updates in the implementation timeline, and issuance of e-invoices, and 4) utilizing the e-seal and e-signature instead of printed signatures (MoF, 2023).

Both e-signatures and e-seals serve to authenticate and secure electronic documents (ITIDA, 2020). Based on Law No. 15 for the Year 2004, e-signatures are associated with individuals, whereas e-seals are associated with corporate entities. Taxpayers can get their e-signatures through Egypt Trust Company, one of the affiliated organizations of the Information Technology Industry Development Agency (ITIDA), which is affiliated with the Ministry of Communication and Information Technology (MCIT) (MCIT, 2022).

The e-invoicing system's components include a website and mobile application access, system integration, e-signature and e-seal, notifications and alerts through mobile text messages or e-mails, reports and dashboards, validation, and alerts of B2B, administration control, and advanced analytics (ETA, 2021).

To establish an account on the e-invoicing system, taxpayers must first create a digital profile with the ETA (ETA, 2021). This profile provides access to a web application for managing representatives and systems (ETA, 2021). Taxpayers then receive an invitation to set up an administrator account, which is essential for managing their digital profile (ETA, 2023). They can also add other representatives and integrate their ERP and Point of Sale (POS) systems with the e-invoicing APIs (Application Programming Interfaces). API access credentials are issued for configuration in the ERP and POS systems, essential for the login process (ETA, 2023). For companies without an ERP system, registration on Egypt's e-invoicing SDK portal is required (Storecove, 2023). Additionally, taxpayers receive an e-seal X.509 certificate, a digital certificate for cyber security, for digitally signing documents submitted through their ERP and POS systems (ETA, 2023).

On a regular basis, users need to interact with the identity management system to obtain a session token, also known as an access token (ETA, 2021). This token is crucial for connecting with various system APIs during a session (ETA, 2021). These connections can include submitting documents, retrieving documents, and receiving notifications, ensuring smooth and secure operations within the e-invoicing system (ETA, 2021).

The Egyptian Ministry of Finance (MoF) (2023) explained that the ETA's role is to conduct workshops with companies participating in the system to provide the necessary support and awareness, besides, providing users support through the hotline and e-mail to receive the users'

inquiries, respond to them, and assist in solving any problems that may arise during implementation. Besides, the ETA provides necessary information on its official website and social media platforms including YouTube, Facebook, and others.

3.3 E-Invoicing Implementation

The ETA introduced the e-invoicing system in 2020. Drivers behind mandating e-invoicing were 1. limiting fraud and reducing the VAT gap, 2. including the informal sector, and 3. creating faster processing and streamlined workflows. It was phased based on a company's invoice volumes. The decrees started with the first phase of this rollout on November 15, 2020, obligating 134 companies to issue e-invoices, and ended with the eighth phase for all businesses to register in the system on December 15, 2022. This included individual establishments, along with self-employed professionals, encompassing various sectors like commerce, industry, services, or professionals (including medical doctors, legal practitioners, artists, certified accountants, engineers, and consultants).

Table 1: Timeline of the E-invoicing Mandate in Egypt

Phase	Decree	Date	Context
1	No. 386 of 2020	November 2020	134 Large Taxpayers
2	No. 518 of 2020	February 2021	347 Large taxpayers
3	No. 85 of 2021	May 2021	Rest of large taxpayers (> 100 million EGP) – 80% of taxes transactions
4	No. 195 of 2021	September 2021	Medium taxpayers and large self-employed professionals
5	No. 443 of 2021	December 2021	First group of companies registered as investors in Cairo
6	No. 619 of 2021	February 2022	Second group of companies registered as investors in Cairo

7	No. 208 of 2022	June 2022	All registered companies in Cairo, Giza, and El-Qalubiya
8	No. 323 of 2022	September – December 2022	Four sub-phases to cover all demographic areas

Source: Developed by the author based on the information from the ETA, 2023

Lawyers, doctors, and dentists in Egypt demonstrated and went on strike against the e-invoicing system because they believed it imposed additional financial stress on them without justification (Ahram Online, 2022). They felt that the government was treating them like commercial traders rather than professionals, which they argued was incorrect (MEMO, 2022).

As a result of the protests, the deadline got extended to April 30, 2023 due to professional businesses' demonstrations (MoF, 2022). This extension was granted to address the concerns voiced by self-employed professionals and to find solutions for any difficulties that could emerge during the registration process (MoF, 2022). The ETA held meetings with the syndicates of the different professions to discuss their concerns (Al Masry Al Youm, 2023). Based on the discussions, the ETA published special guidelines for self-employed doctors, accountants, and engineers (ETA, 2023). The ETA did not publish anything related to the lawyers, but the Syndicate of Lawyers announced on April 28, 2023, that they held a meeting with MoF and ETA, and concluded that corporate lawyers and self-employed lawyers that deal with individuals or work at law firms are not obliged to join the system.

The ETA (2023) announced the launch of its incentive system, "Your Invoice, Your Protection and Your Reward". This system aims to create a new tax culture that encourages citizens to request e-receipts or e-invoices by granting them incentives and benefits (ETA, 2023). This is within the framework of the state's plan to integrate the informal economy into the official system (ETA, 2023).

Starting July 1, 2023, the Egyptian MoF mandates that all companies involved in importing or exporting goods must use an e-invoicing system, which is also integrated with Egypt's electronic customs platform (NAFEZA) to streamline the customs declaration process (Deloitte, 2023). This includes registering in the system and using GS1 codes on e-invoices for customs processes (Deloitte, 2023). For imports, these codes must be included on e-invoices and uploaded to CargoX platform (Deloitte, 2023). For exports, e-invoices must be linked to export invoices and verified by customs (Deloitte, 2023).

By July 2023, paper invoices were no longer acceptable for VAT deduction in Egypt, and all companies had to transition to the e-invoicing system (ETA, 2023). Non-compliance with the e-invoicing mandate can result in penalties, including fines ranging from EGP 5,000 to EGP 50,000, suspension of the taxpayer's activity, and potential imprisonment (Storecove, 2023). Non-compliant businesses may also face increased scrutiny from the ETA, leading to potential audits and further legal consequences (Storecove, 2023).

Chapter 4: Conceptual Framework

4.1 Introduction

This chapter discusses the conceptual framework of this study, which analyzes the perception of the private sector about the newly mandated e-invoicing system in Egypt. The chapter starts by reviewing the related theories, including the Diffusion of Innovation Theory by Roger (2003), SERVQUAL by Parasuraman et al. (2002), the Technology Acceptance Model 3 (TAM 3) by Venkatesh et al. (2008), the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003), and Barriers-Enablers Model by Gilbert et al. (2004). Afterward, the chapter explains the reason behind choosing the UTAUT theory for analyzing the private sector's perceptions of the e-invoicing system in Egypt. Finally, the chapter ends by showing the data collection's themes and questions that were inspired by the list of theories explained.

4.2 The Models of Evaluation

4.2.1 Diffusion of Innovation Theory

Diffusion of Innovation theory, popularized by Everett Rogers in 1962, is a comprehensive framework that explains the spread of new ideas and technologies across cultures (Rogers, 2003). The framework is built upon several key elements, including innovation itself, which refers to any idea, practice, or object that is perceived as new by individuals or groups (Rogers, 2003). It is important to note that an innovation does not necessarily have to be a recent invention; it is the perception of newness that counts in the context of diffusion (Rogers, 2003). Then, there are the communication channels, which are the means through which information about innovation is transmitted within a social system (Rogers, 2003). Effective communication is essential for the

widespread adoption of innovations, as it helps spread knowledge and understanding about a new idea or technology (Rogers, 2003).

The third element is time, which encompasses the duration it takes for an innovation to be adopted, the rate of adoption, and the innovation decision process (Rogers, 2003). This process involves several stages, from initial knowledge of the innovation to forming an attitude towards it, deciding to adopt or reject it, implementing the new idea, and finally confirming this decision (Rogers, 2003). The social system is the network of interconnected individuals, organizations, or units that jointly aim to solve problems or achieve a common goal (Rogers, 2003). The structure and dynamics of this social system can significantly impact the diffusion of innovations (Rogers, 2003).

The adopters are different groups based on their propensity to adopt innovations: innovators are the first to adopt and are willing to take risks; early adopters are social leaders and more integrated into their social systems; the early majority adopts new ideas just before the average member of a social system; the late majority is skeptical and adopts after the average member; and laggards are the last to adopt, often due to economic constraints or resistance to change (Rogers, 2003).

The factors influencing the adoption rate of an innovation, include 1) Relative Advantage, which is the innovation’s benefits compared to the tradition; 2) Compatibility, which is the consistency with existing values and practices; 3) Complexity, which is the ease of the innovation’s understanding and use; 4) Trialability, which is the degree to which the innovation can be experimented with, and 5) Observability, which is the visibility of the innovation's results to others (Rogers, 2003).

4.2.2 SERVQUAL

The SERVQUAL model is a prominent framework that was developed by Parasuraman et al. in 1988 and redefined in 2002 for assessing service quality. It hinges on the concept of measuring the gap between customer expectations and the actual service delivered (Parasuraman et al., 2002). The model's name, SERVQUAL, is a combination of 'service' and 'quality,' indicating its focus on these two aspects (Parasuraman et al., 2002).

SERVQUAL identifies five key dimensions of service quality, including 1) Tangibles, which pertain to the physical aspects of the service, such as the website appearance; 2) Reliability, emphasizing the consistency and accuracy of service delivery; 3) Responsiveness, which deals with the promptness and willingness of the staff to assist customers; 4) Assurance, which encompasses factors like competence, courtesy, credibility, and security, all crucial in building customer trust and confidence; 5) Empathy, which reflects the personalized care and attention given to customers, highlighting the importance of understanding their individual needs (Parasuraman et al., 2002).

4.2.3 Technology Acceptance Model (TAM)

The TAM was developed by Davis et al. (1989) and developed by Venkatesh et al. (2008). It became a critical framework in the field of information systems, designed to predict and explain how users come to accept and use a technology. The model is grounded in the theory of reasoned action, a psychological theory that links intentions with behavior (Venkatesh et al., 2008).

At the heart of TAM 3 are two key concepts: Perceived Usefulness and Perceived Ease of Use (Davis et al., 1989). Perceived usefulness refers to the degree to which a user believes that using a particular technology will enhance their job performance (Davis et al., 1989). On the other hand, perceived ease of use is about how effortless a user feels it is to use the technology (Davis

et al., 1989). These two factors collectively influence a user's attitude toward using technology (Davis et al., 1989). This attitude, together with perceived usefulness, shapes the user's behavioral intention to use the system (Davis et al., 1989). This intention is a predictor of actual system use, indicating that the more positive the intention, the higher the likelihood of actual usage (Davis et al., 1989). The model expanded to include antecedents to the perceived ease of use and perceived usefulness (Venkatesh et al., 2008). They include social factors that influence perceived ease of use and perceived usefulness, which are subjective norm and voluntariness (Venkatesh et al., 2008). Besides, cognitive instrumental processes impacting perceived usefulness, including job relevance, output quality, and result demonstrability (Venkatesh et al., 2008). Finally, individual traits and attitudes are added as antecedents to perceived ease of use including computer self-efficacy, perceptions of external control, computer anxiety, playfulness, and perceived enjoyment (Venkatesh et al., 2008).

4.2.4 Unified Theory of Acceptance and Use of Technology (UTAUT)

Venkatesh et al. (2003) developed the UTAUT. It includes four key elements that play a crucial role in the adoption of technology (Venkatesh et al., 2003):

1) Performance Expectancy (PE); which refers to the degree to which an individual believes that using the technology will help them to achieve gains in job performance (Venkatesh et al., 2003). It is influenced by factors like perceived usefulness from the TAM theory and relative advantage from the Diffusion of Innovation theory.

2) Effort Expectancy (EE); which is the degree of ease associated with the use of the technology (Venkatesh et al., 2003). Technology that is easy to understand and use is more likely to be accepted and adopted. It encompasses aspects like perceived ease of use from the TAM theory and complexity from the Diffusion of Innovation theory.

3) Social Influence (SI); which involves the degree to which an individual perceives that important others (such as peers, superiors, or societal norms) believe they should use the new system (Venkatesh et al., 2003).

4) Facilitating Conditions (FC), refer to the degree to which an individual believes that organizational and technical infrastructures exist to support the use of the technology (Venkatesh et al., 2003). It includes aspects like the legislative framework, public servants' alliance with the system, and availability of reliable resources, support, and knowledge necessary to use the technology effectively (Venkatesh et al., 2003).

Additionally, UTAUT integrates gender, age, experience, and the level of voluntariness as moderating factors that can influence the intention to use technology (Venkatesh et al., 2003). This theory consolidates previous models on information technology adoption, highlighting not just the individual-level determinants of technology adoption, but also emphasizing the factors that either limit or enhance the impact of these determinants (Venkatesh et al., 2010).

4.2.5 Barriers-Enablers Model

Gilbert et al. (2004) developed the Barriers and Enablers Model to identify and analyze the relative benefits and obstacles impacting individuals' intentions to use e-government services.

The enablers are factors that positively influence the adoption of e-government services (Gilbert et al., 2004). They include 1) Avoid Personal Interaction, which is the ability to access public services without needing to interact with service provider staff; 2) Control, which refers to users' ability to control how and when they receive services (Gilbert et al., 2004). This aspect of empowerment is significant in the user experience, allowing for a more personalized interaction with government services; 3) Convenience, which is the flexibility in receiving services according

to the user's preferences, such as time and place; 4) Cost Savings, associated with the electronic delivery of public services, including direct costs and indirect costs such as time and effort saved; 5) Personalization, which is the ability to tailor the delivery of services to meet individual needs; and 6) Time, which means the efficiency gains from obtaining services electronically, including time saved in queues and faster response times (Gilbert et al., 2004).

The barriers are the factors that hinder the adoption of e-government services (Gilbert et al., 2004). These include 1) Safety, which includes the risks of data breaches and fraud; 2) Confidentiality, which encompasses issues related to the privacy and confidentiality of personal information shared online; 3) Reliability, which refers to the dependability and consistency of the e-government service's performance (Gilbert et al., 2004). Users need to trust that the system will be available and functioning properly whenever they need it; 4) Ease of Use, which is related to the complexity or user-friendliness of the e-government platforms; and 5) Visual Appeal, which means the aesthetic and design aspects of the e-government platforms, which can impact user satisfaction and acceptance (Gilbert et al., 2004).

4.3 Selected Conceptual Framework

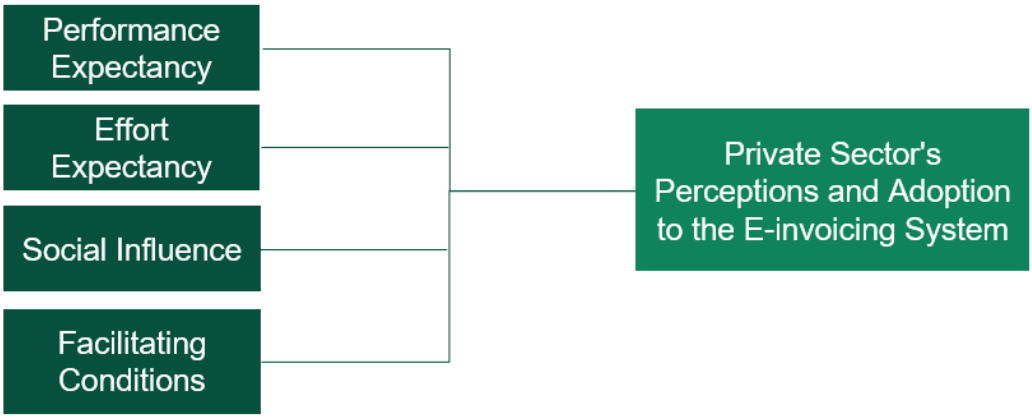
The UTAUT emerges as a comprehensive and integrative model in the realm of academic research focused on the adoption of new technologies. This model skillfully merges key elements from eight well-established technology adoption theories, encompassing TAM and its successors TAM 2 and TAM3, Diffusion of Innovation Theory, Social Cognitive Theory, Theory of Reasoned Action, Theory of Planned Behavior, Motivational Model, Expectation-Confirmation Theory, and the Model of PC Utilization. The UTAUT model distinguishes itself through its robust ability to explain technology acceptance and usage across varied contexts and diverse settings. This

versatility is evidenced in its successful application across a wide array of domains, and its effectiveness in both developed and developing nations.

In the context of the study on the private sector's perceptions of the e-invoicing system in Egypt, UTAUT serves as an ideal conceptual framework. Its comprehensive nature, which integrates multiple perspectives on technology adoption, provides a holistic understanding of the factors driving technology acceptance. Its integrative approach is particularly pertinent in the context of Egypt, where cultural, economic, and technological factors play a crucial role. Furthermore, the UTAUT model showed its applicability across different industries, making it well-suited to address the unique aspects of technology adoption within the private sector. It focuses on practical factors critical to business decisions, like the ease of using new technology, the support provided, and the influence of social factors. This focus aligns closely with what businesses prioritize when considering new technologies. Additionally, UTAUT provides deep insights into the thought processes that the Egyptian private sector undergoes when deciding whether to adopt e-invoicing, thereby serving as a powerful tool in deciphering the complex interplay of technological and human factors in this decision-making process.

However, the author had to modify the framework by removing the age, gender, and experience variables because they could mainly apply to individuals, not businesses, besides, removing voluntariness of use variable because the system was mandated to all the private sector in Egypt.

Figure 1: Conceptual Framework of the Study



Source: Developed by the author based on UTAUT's model (Venkatesh et al., 2003).

4.4 Data Key Themes and Questions

The author aimed to explore and understand the private sector's perception and adoption of the e-invoicing system. This exploration was guided by the four primary themes derived from the UTAUT model. The author was inspired by the remaining above-explained theoretical frameworks, including the Diffusion of Information Theory, TAM, Barriers-Enablers Theory, and SERVQUAL, and used them in identifying more specific questions under the umbrella of UTAUT's four main themes. Table 5 details these key dimensions, outlining the specific areas of focus for the questions within the context of the e-invoicing system and its acceptance in the private sector.

Table 2: Key Themes and Questions

Theme	Questions
PE	• How did the system impact your time? • How did the system impact your costs? • How did the system impact your level of control?
EE	• How did the testability option impact your perception about the system? • How do you think the system impacts the personal interaction with ETA's staff? • How did the e-invoicing system impact the level of complexity? • What do you think of the personalization feature?

SI	• Does the society/other companies or media influence your decision to adopt it? • How does the system align with the society's conditions? • How does digital literacy impact the perceptions about the system?
FC	❖ **Administrative Aspect** • What do you think of the system's legislative framework? • What do you think of the digital capacity of the public servants? • What do you think of the public servants' alignment with the new system? • What do you think of the public servants' level of responsiveness? • How do you think the system is impacting the level of corruption? • What do you think of the government's methods of communication? ❖ **Technological Aspect** • What do you think of the system's reliability? • What do you think of the reliability of the internet? • What do you think of the system's efficiency? • What do you think of personal data confidentiality? • What do you think of the system security?

Source: Developed by the author based on the reviewed literature

Chapter 5: Research Methodology

5.1 Introduction

This section outlines the research methodology used in this study, detailing the design of the study, the selection of respondents, methods of data collection and analysis, challenges encountered during the study, ethical considerations, and study limitations.

5.2 Research Design

This study is an exploratory study aiming to understand the private sector's perceptions and adoption of the newly mandated e-invoicing system in Egypt, including the performance expectancy, effort expectancy, social influence, and facilitating conditions.

In this research, the exploratory method was chosen as the primary approach. Neuman (2014) explains that this approach is best suited for new and uncharted topics. It encourages the researcher to be inventive, open-minded, and adaptable, to adopt a probing attitude, and to utilize diverse information sources (Neuman, 2014). This method is particularly fitting for this study for several reasons. Firstly, the recent push towards e-invoicing and government digitalization in Egypt requires a flexible approach in engaging with private sector stakeholders about their views, especially given the nascent stage of digitalization and e-government services in the country. Furthermore, in order to effectively guide policy decisions for better integration of the private sector in the government digitalization process, it is crucial to generalize the specific qualitative data obtained from respondents into broader concepts and themes. Additionally, the exploratory approach's inclusiveness in gathering all relevant information will aid this study by enabling the justification of the private sector's attitudes towards the transition to the e-invoicing system, drawing on established theories that encompass overlapping paradigms. Based on Neuman (2014),

the exploratory approach is used to assess new topics that were not assessed before. It also encourages creativity, open-mindedness, and flexibility (Neuman, 2014).

In an attempt to understand these perspectives, the qualitative methodology was used by holding comprehensive, in-depth one-on-one semi-structured interviews with business owners and accountants which provided an opportunity for an extensive examination of the actual perspectives of the private sector in Egypt.

The qualitative research method was chosen for its ability to delve into the intricacies of the policy implementation process and identify its shortcomings (Neuman, 2014). Utilizing semi-structured in-depth interviews with elicitation techniques proved most effective for gaining insights into the diverse viewpoints of accountants and business owners on the e-invoicing system. This approach enabled the researcher to start with broad, exploratory questions and progressively focus on more specific topics, uncovering new aspects during the conversations. It also enhanced the understanding of the interviewees' perspectives. The research followed a non-linear trajectory, as recommended by Neuman (2014), which aligned well with its nature and was more effective in addressing the research questions. Furthermore, the individual interviews were conducted to achieve triangulation, ensuring that data was collected from various perspectives, thereby reinforcing the validity of the research findings.

The interviews' duration was around 50 minutes with each interviewee. The interviews took place over 16 days, starting on May 22, 2023, and ending on June 6, 2023. The interview questions for accountants and business owners were crafted by the researcher, focusing on open-ended questions. These questions were developed following a thorough review of existing literature. Each interview began with a brief introduction to the subject, coupled with efforts to establish rapport, acknowledging, and appreciating the interviewees' readiness to contribute to the

study. Initially, broad questions about the topic were posed, followed by more probing inquiries for detailed exploration of the points raised. The interviews were carried out in Arabic, after which they were translated into English.

Assessing the perceptions of the impact of the e-invoicing transition in a crucial country like Egypt revealed intriguing outcomes. These findings could be valuable for other regions and nations with comparable political and economic conditions, particularly in their electronic and digital transformation efforts.

5.3 Sampling and Data Collection

Initially, the author used personal connections to identify business owners and accountants to be interviewed. Subsequently, the author employed the snowball sampling method, where interviewees recommended other potential respondents who possessed pertinent knowledge and experience related to the study's focus. This approach provided the necessary flexibility in sampling, enabling the research to engage with individuals who could offer significant insights and experiences, especially concerning evolving discussion points. Consequently, this approach enhanced the depth and comprehensiveness of the study's results.

In total, the author reached out to twenty-three individuals, but seven out of them expressed their unawareness about the topic. However, the remaining sixteen interviewees showed high knowledge and understanding of the topic, and they expressed their willingness to participate in the interviews.

The author tried to diversify the interviewees' sectors and reached out to interviewees from the secondary and tertiary sectors. Based on Revathi et al. (2019), business sectors are typically categorized into three broad types: 1) Primary Sector, which involves the extraction and production

of raw materials, such as farming, fishing, mining, and forestry. 2) Secondary Sector, which includes industries that produce a finished, usable product or are involved in construction (Revathi et al., 2019). Examples include manufacturing, processing, and construction industries. Finally, 3) Tertiary Sector, also known as the service sector, involves the provision of services to businesses and consumers (Revathi et al., 2019). It includes a wide range of services like retail, entertainment, financial services, health care, and education.

Some of the interviewees worked independently such as business owners, independent lawyers, and chartered accountants, and others worked in organizations such as corporate lawyers and accountants.

The size of the organizations differed from MSMEs as well as large enterprises, based on the Central Bank of Egypt's categorization (2015). Also, some of the organizations were international and others were national companies. Five out of the twenty-three interviewees were females, while the remaining nineteen interviewees were males. Thirteen of the interviewees are working as independent or business owners, while ten of them are staff members in companies. Eleven of the interviewees work in the field of management and administration, ten of them work in the accounting field, and two work in the law field. Among the sample were seven large enterprises, and sixteen MSMEs. Eighteen national enterprises, and five international enterprises. Thirteen working in the tertiary sector, and ten enterprises in the secondary sector.

The purposive selection of diverse sectors, sizes, and backgrounds was aimed at gaining a broad understanding of perceptions across various types of private sector activities towards the e-invoicing system. This approach was taken to enable a more comprehensive extrapolation of realities and recommendations across the board.

All interviews were conducted virtually through the Zoom application to give more flexibility to the interviewees.

Table 3: List of Interviewees

#	Position	Size	N/I	Sector	Gender
1	Business owner	Small	National	Secondary	Male
2	Corporate Lawyer	Large	International	Tertiary	Female
3	Accountant	Large	International	Tertiary	Male
4	Business Owner	Micro	National	Tertiary	Male
5	Accountant	Small	National	Secondary	Male
6	Accounting Manager	Large	International	Secondary	Male
7	Manager of a Company Branch	Large	National	Tertiary	Male
8	Chartered Accountant (Self-employed)	Micro	National	Tertiary	Male
9	Senior Accountant	Large	International	Secondary	Female
10	Business Owner	Small	National	Secondary	Male
11	Accountant	Large	National	Secondary	Male
12	Accountant	Large	International	Tertiary	Male
13	Chartered Accountant (Self-employed)	Micro	National	Tertiary	Male
14	Independent Lawyer	Independent	National	Tertiary	Male
15	Chartered Accountant (Self-employed)	Independent	National	Tertiary	Male
16	Business Owner	Micro	National	Secondary	Male
17	Accountant	Micro	International	Tertiary	Female
18	Business Owner	Micro	National	Secondary	Female
19	Business Owner	Micro	National	Secondary	Male
20	Business Owner	Micro	National	Secondary	Female
21	Self-employed Professional	Micro	National	Tertiary	Male
22	Self-employed Professional	Micro	National	Tertiary	Male
23	Business Owner	Micro	National	Tertiary	Male
Total	13 independent / businesses owners 10 employees	7 large 16 MSMEs	18 national 5 international	13 tertiary 10 secondary	18 males 5 females

Source: Compiled by the author

5.4 Data Collection and Analysis

The interviews were conducted with the consent of the respondents, translated into English, and then transcribed to facilitate data analysis. The information was handled with strict confidentiality, accessible solely by the researcher, and stored on a device secured with a password. This analysis blended grounded theory with directed content analysis, incorporating insights from both the literature review and the interviews.

Respondents' responses to identify trends regarding the mandate of the e-invoicing system. Directed content analysis allowed the examination of data based on pre-existing theoretical concepts, using existing literature to guide the analysis and identify themes (Hsieh et al., 2005). The study utilized literature on e-invoicing adoption by the private sector to structure the interview data analysis. Additionally, grounded theory was employed as an inductive method, forming theories from emerging data themes, which suited the study's exploratory nature. The author engaged in multiple coding rounds of the interview transcripts, identifying, and validating new themes to understand perceived trends.

5.5 Ethical Considerations

Regarding ethical considerations, the study and its interview guide received approval from the American University in Cairo’s Institutional Review Board (IRB) on May 14, 2023, ensuring compliance with ethical standards. Interview data was maintained confidentially throughout the research and anonymized in the final report and transcripts to prevent any sort of conflict or harm that may happen to the respondents after publishing the report.

The research's purpose, strictly academic, was clearly communicated to respondents. The author received the respondents’ verbal approval for conducting the interviews and confirmed with

each of them the information to be shared. The final report was later shared with the interviewees, and they confirmed the validity of the information and acceptance to publish. The study also included a comprehensive report of the interview results.

Additionally, respondents were provided with the author's contact details. This was done so they could reach out for any follow-up queries or to report any issues or harm resulting from their involvement in the study.

5.6 Study Limitations

This study has five primary limitations. Firstly, it concentrated solely on e-invoicing services. For broader insights, future research could extend this model to various e-government services and analyze any commonalities or disparities. Secondly, the study relied exclusively on data from Egypt, suggesting the need for future research to include samples from diverse countries to assess the perceptions of the impact of cultural differences and generalize the analysis to the non-Egyptian private sector as well. Thirdly, there is a need for a more in-depth exploration of the factors leading to the positive and negative feedback on e-invoicing. Another limitation was the selection of interview respondents might have introduced sample bias, potentially affecting the generalizability of the study's conclusions. This research encompasses a broad range of business sectors as its sample population, yet it notably focuses on the secondary and tertiary sectors and excludes the primary sector. Finally, the respondents from the secondary and tertiary sectors had different backgrounds, which could complicate the formulation of clear, actionable policy recommendations, as each company's unique situation could affect its approach to transitioning to e-invoicing. It primarily concentrates on the resistance and adoption of e-invoicing, particularly given its relatively recent introduction in the Egyptian market. Future studies could address these limitations by broadening their sample to include a wider array of the private sector and examining

both the initial and ongoing usage of e-invoicing in Egyptian companies and self-employed professionals. Such an expanded study would offer deeper insights into the evolution of e-invoicing in Egypt, helping to bridge the gap between the government and private sector and to ensure the sustainability of the governmental policies towards digitalization.

Chapter 6: Findings and Discussion

6.1 Introduction

This chapter outlines the findings from the semi-structured interviews. The findings are organized by themes that are based on the UTAUT's variables; performance expectancy, effort expectancy, social influence, and facilitating conditions, as well as the overall opinion compared with the traditional offline service. Each theme encompasses responses to a sub-research question, while also capturing additional insights that emerged during the interview process, which were not initially anticipated. This organization of data helps to delve into and assess the varying opinions on the e-invoicing system, enabling a comparison of views to attain a multifaceted comprehension. Furthermore, this approach simplifies the analysis for readers, allowing them to easily identify areas of consensus and contention.

6.2 Data Findings and Discussion

6.2.1 Performance Expectancy

Time

Some respondents expressed that the e-invoicing system once understood and after some training, saves time. Respondent 3 said:

"It saves time, especially after learning how to operate its coding system."

(Respondent 3, accountant at a law firm, June 2023)

There is a clear correlation between familiarity with the system and the perceived time-saving benefits. As users adapt to the new e-invoicing system, they tend to appreciate its efficiency. However, this highlights the need for comprehensive training and IT support provision during the

transition phase to mitigate the learning curve as advised by Poel et al. (2016) and Shim et al. (2016).

Other respondents found that learning the coding system was a burden for them and they expressed their dissatisfaction with the system as it consumes so much time in learning the coding, which was not needed before. Additionally, some complained of the system's technical issues which consumed so much time and effort to be fixed. Respondent 9 had a negative experience, which she explained:

"In many cases, we cannot depend on the website only because it gets down, so we start communicating with our company's IT department and paying in-person visits at the ETA offices along with submitting e-invoices, so it is time-consuming. The solution is to assign a technical support team."

(Respondent 9, senior accountant, May 2023)

The above statement shows that technical errors sometimes make the process that is supposed to be streamlined by digital transformation into one that consumes valuable time and resources. This shows that the respondent does not see a positive impact on the efficiency levels after using the system, unlike the conclusion that Maina (2023) and Olaleye et al. (2018) have reached through their communication with businesses that showed satisfaction about the e-invoicing efficiency.

It is worth mentioning that Respondent 9 is working at a large company, which has more financial and technical facilitations than SMEs, however, she did not express her satisfaction from the system like the large companies did in the studies of Tiwari et al. (2023) and other scholars.

This means that not all large companies are satisfied, sometimes they could go through the challenges despite all the facilitations they got.

Many of the respondents said that the system would be more time-saving if it is linked with the VAT system. Respondent 11, an accountant at a large-sized company, said:

"The website needs to be linked with the VAT system to avoid resubmitting the data. I believe this can happen in the near future when the system becomes fully operational."

(Respondent 11, accountant, June 2023)

This statement underscores a critical operational inefficiency. The lack of integration creates repetitive tasks, leading to inefficiency and potential errors. A unified system would significantly save time, and boost productivity and user satisfaction. Respondent 14 had a different point of view:

"It is not saving time because it is an added obligation."

(Respondent 14, independent lawyer, June 2023)

Some users, especially the self-employed professionals, believed the same because the previous printed system was simpler and did not require all the data that they are now obliged to submit.

While the e-invoicing system's intention is to enhance time efficiency, the current experience varies among users. The majority acknowledges the system's potential benefits, especially after familiarization. However, there are clear areas for improvement, such as providing better training resources and IT support, integrating the system with other platforms like the VAT website, having a reliable digital infrastructure, and effective contingency plans.

Cost

Some respondents believed that there would be benefits to this system. Respondent 1 explained:

"It can be beneficial when it comes to exporting goods as the business owners can receive tax refunds through utilizing their e-invoices."

(Respondent 1, business owner, May 2023)

Respondent 1 acknowledged the incomplete state of the e-invoicing system but highlighted a specific advantage for exporters. This suggests that while the system is not yet ideal, it holds potential benefits that could be realized once fully implemented.

The users need to pay for the token fees as well as the point of sale, and other software and hardware equipment. If the user has less than 200 e-invoices per month, then he/she can submit these e-invoices through the ETA's free website. If he/she has more than 200 e-invoices, then an ERP system connected to the ETA must be set on their hardware to reflect any e-invoices. Additionally, some businesses did not need to hire IT specialists nor accountants because they were able to report their taxes independently. However, this is not the case with many businesses now because they would need IT specialists to assist with the technical aspects, or accountants to guide them about their obligations and rights in light of this new system.

All the respondents from large businesses did not mind the costs, while the MSMEs are complaining about the financial burden. Respondent 8 expressed the MSMEs' suffering from the high costs related to the system including the electronic token fees, the IRP, hiring accountants, or / and technical support staff, while they used to do everything on their own without any expenses. Respondent 8 said:

"Many MSMEs are suffering from the costs of getting into the system, as well as the technical support as they cannot depend on themselves anymore."

(Respondent 8, chartered accountant, May 2023)

Respondent 8 brought to light the struggle of smaller businesses with the overhead of transitioning to e-invoicing, suggesting a need for a more supportive framework that considers their limited resources. Also, Respondent 4 added:

"The cost for a small shop like mine shouldn't be the same for a big hypermarket like Carrefour."

(Respondent 4, business owner, May 2023)

Respondent 4 voices a common concern among MSMEs, indicating that the cost structure of e-invoicing does not scale fairly between small and large enterprises, putting undue pressure on smaller entities, and this is aligned with what Lumiaho et al. (2011) concluded from the businesses he contacted.

Additionally, the respondents explained that there is a gap in the system's design because of the inequities faced by self-employed professionals such as lawyers and doctors who cannot fully transition to e-invoicing due to the nature of their expenses. On the other hand, Respondent 15 highlighted the government's efforts to ensure equity among the businesses in the different regions. He said:

"To support the MSMEs, the biggest two companies that sell the token provide three options for the token, either a three-, two-, or one-year contract, which enables MSMEs to contract with the price that they can afford. They do not have to pay for the three-year contract at once. Also, the government made the e-invoices submission on the portal for free if they are less than 200 e-invoices per month. Furthermore, the government made the tokens' price cheaper in the

governorates away from Cairo like Red Sea and Sohag because the revenues in Cairo are usually more than the other governorates."

(Respondent 15, chartered accountant, June 2023)

The respondents' comments point to the government's nuanced approach to the e-invoicing implementation that accounts for the size and capabilities of businesses to ensure a fair and equitable transition. The free website is almost the same like Peru's free software which was praised by Bellon et al. (2022) as it supported MSMEs and lessened the financial burden on them.

Control

Several respondents expressed their lack of control over the data submitted to the website, compared to the previously printed version. Respondent 13, a business owner, compared between printed and electronic versions of invoices, saying:

"I do not feel in control because the e-invoices are not easily edited nor removed now. It became another long process, which was not the case with the printed invoices."

(Respondent 13, chartered accountant and business owner, June 2023)

Also, the respondents expressed their concern about the lack of flexibility and increase of limitations as they were used to being in control over the printed invoices. With the printed version, the users used to have a month before submitting the monthly tax declaration, or a year before submitting the annual tax declaration. During that time, they were able to amend, delete or redraft the invoices whenever they wanted. This is not the case after adopting the e-invoicing system as all e-invoices are instantly reflected on the system to the ETA as well as the e-invoice receiver. To make any amendments, the e-invoice issuer needs to go through a longer process, and they need the involvement of the e-invoice receiver instead of doing it independently.

Some of the users started a new strategy by not issuing any e-invoices until the work or product purchase is finalized and everything is 100% settled. Postponing the e-invoicing step would save them from wasting time and effort on the amendment process.

Furthermore, several respondents believed that the control became more in the hands of the ETA. Respondent 6 said:

"The ETA is now having more control, not the users."

(Respondent 6, accountant, May 2023)

There is a general feeling that the users are now under more control from the ETA. The ETA easily set regulations and put more limitations on the timing of e-invoices submission as well as the means of amendments. At the start of the e-invoicing system, the ETA gave the users some time to make their amendments before the e-invoices were finally added to their and the second parties' accounts. Then, the ETA removed this feature and let the e-invoices be added to the website on the spot because it believed that the users became more knowledgeable of the system and wouldn't need all that time for editing as before.

The users experience and adaptability remain crucial factors for the system's acceptance and effectiveness. The ETA can update the website to respond to the user's concern about the system's rigidity and constraints. The updates can include allowing more flexibility for the users to edit and amend e-invoices after submission, within a reasonable timeframe. Besides, adding an 'e-invoice draft' feature where users can save a draft, review it, and then finalize the submission.

6.2.2 Effort Expectancy

Level of Personal Interaction

Most of the respondents agreed that the new system would help in decreasing the in-person visits to ETA's offices and decrease personal interaction with public servants. However, they also

highlighted that it does not yet cover all tax-related services and there are also technical errors that lead to more personal interaction with public servants, middleware companies, and IT personnel, so the users still need to finish some procedures face-to-face. Respondent 6 mentioned:

"The new system may have decreased the personal interaction by 20% now and the company's accountants do not have to bring as many documents as before, however, they must do in-person visits because this new system does not cover the other tax aspects. Maybe in two or three years, there won't be in-person visits to the offices, and everything will be done online."

(Respondent 6, accountant, May 2023)

The observed reduction in personal interaction and document handling points to increased efficiency and potential cost savings. However, the continued need for in-person visits indicates that the system has not yet fully encapsulated all tax-related functions, suggesting room for further development. The large enterprises as well as the MSMEs are having the same experience. The speaker's forward-looking expectation expresses optimism about the future, where further advancements in the system when it is fully implemented could lead to a complete digital tax process.

Complexity

Opinions on the user-friendliness of the e-invoicing website varied. Some found the guidelines and instructions clear and straightforward, adding that the interface was designed based on high standards, and close to what is being used by well-established large companies.

While others thought the navigation was not clear, and the interface was challenging and confusing, emphasizing the burden of additional steps such as visiting the ETA offices to review the submitted data.

Respondent 6 highlighted some positive and negative aspects, saying:

"The system is becoming easier over time and there is no need to print out invoices and other documents like before because they are already shared electronically. However, there is still some complexity because the users get lost in the long lists of options for every question. The lists are mixed up with all the options for the different fields such as commercial, services, manufacturing, communication, logistics, etc. This can be improved by updating the system through organization, filtration, and separation between these fields."

(Respondent 6, accountant, May 2023)

Respondent 6's insight points to potential improvements in the system's interface that could streamline the user experience, indicating that while there are usable aspects, there is a need for automated data entry solutions and better organization and customization based on industry types.

In conclusion, there is a diverse range of experiences with the e-invoicing system's complexity. While there are certainly more challenges, particularly for those who are less technically inclined or for MSMEs without the resources for a smooth transition, there are also many who find the system manageable or even user-friendly after an initial period of adaptation. The insights suggest that continuous updates, tailored support, and robust infrastructure could further enhance the user experience across the board.

Personalization

Most respondents appreciated the personalization offered by the system, and the interconnected services as they provide a streamlined user experience. Respondent 3 mentioned:

"The system gives an opportunity to create personalized profiles that can be accessed only by its owner, and the services are tailored to support each profile based on its owner's information."

(Respondent 3, accountant at a law firm, June 2023)

The personalization feature helped the accounts' owners to save their personal and financial information as well as their products' codes, which helped in saving their time instead of filling in the information every time they sign in, gives more autonomy for the users to represent themselves and their documents online, and maintains the accounts security so that no one else could add any updates except the account's owners. Additionally, it connects the account's owner with services related to their profile.

However, Respondent 10 expressed his fears of repeating the negative experience that he had with another governmental invoicing system. He said:

"In the previous taxation system, the historical data was removed after one year of usage, which frustrated me because I lost my invoices. It was difficult for the companies to create their profiles and all data from scratch."

(Respondent 10, business owner, June 2023)

He used to trust and upload all invoices without keeping a printed backup. Then, he was shocked by the loss of his and his clients' data. He learned the lesson and is now keeping a printed and electronic backup for all invoices to mitigate the risk of losing them again.

Fears about long-term historical data storage indicate that while the system offers personalization, it needs to make sure that it backs up the users' profiles and historical data in terms of long-term data management.

Testability

The majority of respondents found value in having access to a trial phase. It helped the users familiarize themselves with the interface and the process, reducing errors and confusion when the real system was implemented a couple of months later. Respondent 5 hailed this feature, saying:

"Our company joined the system before it became obligatory because we wanted to benefit from the trial phase. It gave us an opportunity to learn about the system."

(Respondent 5, accountant, May 2023)

The trial phase led to a smoother transition when the system became obligatory, including the large and MSMEs, which also aligns with what Tiwari et al. (2023) mentioned about the perceived positive impacts of the testability feature. However, the duration of the trial phase might not have been sufficient for all users, and they suggested the need for a longer or more flexible trial phase in similar future rollouts.

6.2.3 Social Influence

Lack of E-Invoicing Implementation in All Governorates

There is a challenge in implementing the e-invoicing system, particularly in small, unregistered businesses in different areas of Egypt. Respondent 1's business includes distributing goods in Upper Egypt. He highlighted a significant challenge in this process:

"Unlike the large, registered enterprises, most unregistered businesses are small enterprises located in different areas in Egypt such as Upper Egypt. The new e-invoicing system has not fully covered their areas yet as it is more focused on the Greater Cairo and Alexandria areas. It would be better if the new system covers all the businesses because I am directly impacted by this issue. I need to deal with these businesses, and I cannot receive any e-invoices from them."

(Respondent 1, business owner, May 2023)

The slow adoption of e-invoicing in smaller enterprises located in governorates other than Cairo and Alexandria can be attributed to a lack of infrastructure, awareness, and technical capabilities in rural areas and among SMEs. This suggests the need for a more inclusive and

gradual approach to implementation until the system is fully implemented in the Egyptian governorates.

The digital divide between large, registered enterprises in urban areas and smaller, unregistered businesses in rural regions is creating a challenge for the users' adoption as many businesses in Cairo and Alexandria are not limiting their work to these two governorates only. They have business deals and connections all over the country, but they are not able to register their transactions because their counterparts are not registered yet. This shows the importance of providing equal access opportunities to all areas a like and ensuring the basic digital skills are acquired by everyone as Dow (2006) has advised.

Tax Implications

Several respondents expressed their dissatisfaction because many of their counterparts are not registered, therefore they couldn't submit e-invoices. Respondent 1 noted that many small businesses dislike e-invoicing because it leads to more accurate documentation, potentially resulting in higher tax payments. However, some larger companies see the system's benefits, which may improve tax compliance. Respondent 1 cannot limit himself to dealing with large companies only. He mentioned:

"This is negatively impacting me because I need to work with these small businesses to purchase goods, but I cannot submit these transactions on the e-invoicing system, so there is no balance between my income and expenses."

(Respondent 1, business owner, May 2023)

Resistance to e-invoicing due to tax implications is a common concern globally. The system's ability to provide more transparent and accurate financial records is seen as a double-edged sword, especially for smaller businesses that may aim to underreport their income for tax

purposes. This results in a lack of balance between income and expenses for those who need to transact with such businesses. This is aligned with the conclusion of Penttinen et al. (2009) in their study where they discovered that the reluctance of the businesses' partners could lead to less compliance to the system.

The Egyptian authorities faced this challenge for years. The non-compliance rates were high, which led to a huge VAT gap, therefore the authorities decided to implement the e-invoicing system and set strict regulations with this regard. At this stage, the ETA needs to work on raising awareness about the ETA's policies that ensure equity among all businesses and educating them about the system and legal consequences of non-compliance with the aim of achieving its goal and diminishing the VAT gap. The ETA can set higher auditing measurements with the help of the new e-invoicing system, provide incentives for accurate reporting, and strengthen penalties and enforcement. The ETA can also set whistleblower programs to encourage employees or individuals to report underreporting activities.

Gradual Adoption

Despite starting the e-invoicing with large companies, the transition to MSMEs was fast-paced. There was a need for a more gradual approach to implementing e-invoicing. Respondent 8 is a chartered accountant who supports different business owners in adopting the e-invoicing system. Based on his experience with these businesses, he said:

"I believe it needed more time to be obliged on all the companies through gradual implementation from large to medium-sized businesses, then small, and micro-small businesses."

(Respondent 8, chartered accountant, May 2023)

He emphasized that this approach may mitigate the challenges faced by smaller enterprises in adapting to the digital system. Egypt implemented the system in two years. Longer stretches in

the deadlines and gradual adoption can help businesses acclimatize to the new system without overwhelming them. It also allows authorities to identify and address issues before imposing the system on smaller businesses. As mentioned in the literature review, this is a pragmatic approach achieved by many countries to achieve wider acceptance including Taiwan, Peru, Denmark and more.

Barriers and Challenges in Specific Professions

The regulations pushed companies to register in the system, however, it also led to resistance, particularly among professional associations like lawyers and doctors syndicates, who argued that the system did not align with their practices.

Respondent 14 touched on the unique challenges faced by lawyers in adopting e-invoicing. He argued that registering laweyers' daily practices is very challenging due to the different pricing based on the clients and the task, which cannot be generalized through a one single code in the system. Besides, there are so many informal expenses that cannot be registered. He shared his point of view:

"Our work cannot be simply coded into the system. Every case that we work on is unique and needs different pricing, so it is hard to code this into the system. There are a lot of miscellaneous expenses in our work that are difficult to be registered such as dealing with the staff at the courts, printing, operating an office, transportation, and other expenses."

(Respondent 14, independent lawyer, June 2023)

Respondent 14 expressed the lawyers' financial stress due to the new system, and explained that lawyers are subject to income tax, VAT, stamps and fees collected on lawsuits, declarations and applications, as well as costs for reviewing rulings or submitting documents, some of which go to the state treasury and some to various funds in various parties. This is at a time when the

lawyer and their association are committed to professional development and its costs without any support. Therefore, it is difficult to increase the financial burden on self-employed lawyers.

On the other hand, Respondent 15 had experience working for lawyers and doctors. He explained the reason behind the resistance of the lawyers. He thought that the ETA was already trying to reach a common ground with the Syndicate of Lawyers, in specific. He said:

"Regarding the Syndicate of Lawyers' demonstrations, they have a strong stance because their syndicate is united and empowering the lawyers against the government. The government postponed their deadline a bit. However, they will have to join anyway."

(Respondent 15, chartered accountant, 2023)

Respondent 15 praised the ETA's continuous efforts to reach a common ground with the syndicates, besides its flexibility to change the guidelines and extend the deadlines to give a chance to the businesses to adjust and register in the system.

Respondent 15 also added his point of view about the doctors based on his experience. He mentioned:

"Not all doctors have the same conditions, there are different types of contracts between the doctors and their hospitals, besides, various cases that need certain transactions between doctors and patients. Additionally, some doctors face technical problems during a patient visit and they need to get them an e-receipt. The website sometimes takes two or three hours to be normally operating again, and the patient cannot wait all this time."

(Respondent 15, chartered accountant, 2023)

Respondent 15 explained the doctors' critical situation because a doctor can have multiple types of contracts with different parties or the same party. So, the e-invoices need to be inclusive of all these types of contracts. Additionally, the doctors need a reliable system that would not break

down while they are dealing with patients as patients cannot wait for a doctor to issue an e-invoice, they would leave after they finish their session. This is a challenge for many doctors while issuing e-invoices and e-receipts.

In conclusion, lawyers complain that the system is not well designed to fit the lawyers' practices and is not applicable. Doctors face administrative challenges as well as system downtime and lag issues. This shows that different professions may have specific challenges and constraints when transitioning to e-invoicing. Both syndicates were able to express their objection and resistance to change. They also had meetings with the ETA to demand changes to the new system to fit their members' type of work. As a conclusion, the resistance of professional organizations underscores the need for tailored approaches and effective communication to address their concerns.

Resistance to Change

Many Egyptian businesses are accustomed to traditional payment methods and are resisting any changes that disrupt their established routines and processes. This results in business limitations to the registered companies. Respondent 12 had to stop working with many of his clients because they were not registered in the e-invoicing system. He said:

"Many organizations resist change, just because they are unfamiliar with it. This feeling increases when they experience technical and administrative issues. However, I believe that it is a matter of time, and we will all be satisfied with the e-invoicing system when the system is finally completed, this can take maybe 2 or 3 years."

(Respondent 12, Accountant, May 2023)

Resistance to change happens with new technologies because many refuse to get out of their comfort zone. Respondent 12 confirms that this increases with the increase of administrative

and technical issues in the process. This confirms the finding of Olaleye et al. (2019) that businesses fear changing their legacy systems and approaches towards technological solutions. Therefore, it is importance to provide proper tax education and support for businesses during the transition, besides, providing incentives for accurate reporting which would encourage more business owners to adopt the new system. These incentives can be lower tax rates, deductions, or credits. Also, the ETA can simplify tax codes because complex tax systems can inadvertently encourage non-compliance, as businesses may find it challenging to understand and adhere to the regulations.

Furthermore, business owners and accountants can discourage each other from adopting the system by discussing its negative aspects and perceived impacts on their daily practices. Respondent 9, a Senior Accountant at a large-sized company, added another insight to the issue, saying:

"The acceptance of the new system is highly impacted by the maturity and size of the company. Word of mouth also makes a difference as the businesses discuss together their feedback on the system, which is not always positive, especially after each problem or error."

(Respondent 9, senior accountant, May 2023)

This statement shows the perceived impact of social influence and especially the word of mouth in shaping the businesses' perceptions about the system. This informal communication is usually more trusted than official statements from the governments. Therefore, it is necessary to maintain a positive impression by the businesses that highly impact the diffusion of the system among their peer companies.

Also, Respondent 6 shed light on the registered companies' confusion after they registered because they did not know what to do with the partner organizations. He said:

"At first, the accounting team was overwhelmed and confused about the system and partner companies that didn't adopt the e-invoicing system. Therefore, there was a bit of resistance, but the team got used to it and accepted it over time."

(Respondent 6, accountant, May 2023)

The statement shows that resistance does not only take place prior to adopting the new system. The users sometimes resist due to facing challenges in this system. Large companies can worry less about the system as they have sufficient accounting and IT staff that can work on it, and IRP systems that would easily link with the ETA's website, besides, they won't be impacted by the financial aspect. Also, multiple large companies rely on middleware companies. This reliance underlines an indirect complexity within the e-invoicing ecosystem. While middleware companies provide the necessary support, their role suggests that the e-invoicing system might be too complex or specialized for companies to use independently, leading to additional costs and potential points of failure.

On the other hand, smaller companies may comprise one person or more, and are not financially capable of assigning a middleware company, so they are more independent in finalizing all the procedures on their own, which makes them feel it is a financial, administrative, and technological burden.

This shows that the system needs to provide both theoretical knowledge and practical hands-on training to smaller companies to register in the system smoothly, as well as to the large companies to know how to deal with the different cases including unregistered businesses.

Market Pressure to Align with Partner Companies

The interconnectedness of businesses within an ecosystem plays a significant role in the adoption of the e-invoicing system. When larger partner companies are mandated to use e-

invoicing, their collaborators and suppliers are often compelled to follow suit to maintain a smooth business relationship. This was confirmed by Respondent 5:

"The surrounding society is encouraging because our company is working with large companies that were already obliged to use it. So, the company wanted to be aligned with their partner companies."

(Respondent 5, accountant, May 2023)

Respondent 5 showed that their company was encouraged to register in the system due to the compliance of their partner companies. The statement is aligned with the findings of Bellon et al. (2023) and Lumiaho et al. (2011) who thought e-invoicing helps in diffusing the system, and it may impact companies' networks as they may push each other to adopt the system or lose partnerships with other companies in case of non-compliance with the system. When companies can no longer do business with those who do not adopt the system, and their tax declarations are not accepted anymore by the ETA, this often accelerates the transition and pushes the companies to join the system.

Some companies set mechanisms to deal with unregistered companies and add them to the e-invoicing system. Respondent 11, an accountant in a large-sized company, experienced some challenges in submitting e-invoices while working with unregistered companies. His company joined in the first phase. So, many of their counterparts were not obliged yet to join. These companies were able to work and register on the system. Respondent 11 explained:

"We decided that we would accept financial transactions from the unregistered companies when they provided a declaration that proved they were not obliged to join the system. Not all the organizations accepted this rule and didn't have the awareness of the importance of adopting the

new system, and many of them were confused about creating that declaration or adopting the new system. However, things got clearer over time."

(Respondent 11, accountant, May 2023)

The company found a way to keep its business going. They faced many challenges and there were question marks from their counterparts. However, they were able to get through these challenges by strong communication and guidance provision. This surely put more burden on the company's staff to adopt the e-invoicing system.

The case also depends on the field such as the construction field or others that depend on exporting and importing goods. Respondent 10 is a business owner in the construction field, and he explained:

"I joined the new system despite that I was not obliged to because I needed to align with my counterparts. In the construction field, most of the companies are already registered, so I had no other option. I must get the work done."

(Respondent 10, business owner, June 2023)

The above statements underscore the influence of partner companies, stating their decision to adopt e-invoicing is driven by the need to align with large companies already obligated to use the system, emphasizing the interconnectedness of businesses and the perceived impact of regulatory compliance in driving widespread adoption.

The market pressure is transferred also to some of the MSMEs. Respondent 4, an owner of a micro-sized business, had an active role in this regard as he decided to stop working with unregistered companies. He stated:

"Most of the companies are already registered in the e-invoicing system. Whoever does not register, I stop working with them. I also provide e-receipts with my individual clients, even if they do not ask for it"

(Respondent 4, business owner, May 2023)

Respondent 4 highlights the strong market pressure for e-invoicing adoption, with most companies already registered, and non-registration leads to the loss of business opportunities with compliant firms.

Also, companies that provide services to their clients like accountancy and legal services need to have first-hand experience to be able to support their clients in dealing with the e-invoicing system. Respondent 3's firm is leading by example to increase its credibility and build trust with its clients.

"We started adopting the e-invoicing system one and a half years ago because we support micro-sized businesses with their legal issues, and they needed some advice regarding the e-invoicing system. We cannot give advice without trying it ourselves."

(Respondent 3, accountant at a law firm, June 2023)

Respondent 3's firm emphasizes the importance of experiential knowledge, having begun adopting the system to provide informed advice to their clients to be aligned with the government's agenda. They benefit from a supportive societal environment where businesses encourage each other to align with the government's agenda.

Users' Digital Capacity

Many business owners suffer from digital illiteracy, therefore dealing with the online system became a challenge for them. Respondent 8 said:

"The deadline got extended because the business owners are not ready yet for this step."The digital culture is almost not there in many areas in Egypt."

(Respondent 8, chartered accountant, May 2023)

The deadline extension indicated a fundamental gap in digital literacy among businesses, particularly MSMEs. The difficulty in adapting to formalized digital communication methods points to a lack of digital basic skills. Large enterprises have the financial capacity to hire digitally advanced staff and provide them with the needed training programs.

Many of the respondents, who were digitally capable of managing their e-invoices independently, self-assessed their digital capacity, and they thought they needed more training to be more confident while using the website. This underscores a common challenge where users are aware of their shortcomings and feel the need for further training to effectively navigate digital systems. Respondent 15 said:

"Since e-invoices and e-receipts are becoming obligatory for all businesses including the micro businesses. Many of them are not digitally advanced and will need support, and here comes a new role of the accountants."

(Respondent 15, chartered accountant, June 2023)

Respondent 15's statement suggests that the mandate for e-invoices and e-receipts may be outpacing the readiness of businesses, especially those at the micro-level. Therefore, the role of accountants is evolving to fill this gap. He also indicated a market response to the digital skills deficit.

To overcome this challenge and ensure a more inclusive transition process to e-invoicing, the ETA can empower all users to participate fully in the digital economy and ensure the system supports rather than hinders business operations. The ETA can 1) Provide structured digital

literacy programs in collaboration with the MCIT. These programs should cover basic digital skills, e-invoicing procedures, and data management; 2) Simplify the e-invoicing system interface to be more intuitive and accessible for users with varying levels of digital expertise. This includes clear instructions, language localization, and responsive design for various devices; 3) Enhance the helpdesk support and troubleshooting guides, and this can be through the ETA offices, not only digital communication methods; 4) Establish partnerships with professional bodies, such as accounting and commerce organizations to facilitate the role of accountants as intermediaries who can assist micro-businesses with their digital transition; 5) Provide incentives for businesses that actively participate in training programs and successfully implement digital tools. This could include tax breaks or subsidies for purchasing necessary hardware or software.

6.2.4 Facilitating Conditions: Administrative Aspect

Public Servants' Digital Capacity

There is a disparity in digital literacy among public servants. While some public servants are well-equipped to assist users, some are not very advanced and cannot provide sufficient help, and others are digitally illiterate and not aligned with the digital transformation at all, leading to an inconsistent user experience at the large enterprises and MSMEs. Respondent 9 said:

"Sometimes, they guide us on how to debug the errors, other times, I feel I understand the system more than them. They need to develop their digital skills and their understanding of the system to give more adequate and consistent support to the users."

(Respondent 9, senior accountant, June 2023)

Some users were able to solve their issues through online communication, while others had to pay in-person visits to finalize their tax files manually, instead of doing them electronically because the public servants couldn't support in fixing the errors.

Based on the respondents, the government-affiliated organizations, that provide digital solutions to the government, are highly advanced if compared with the public servants at the ETA offices. Many respondents also highlighted that geography and age are some of the main factors in public servants' digital literacy. Most of the older generations and the ones located in governorates away from the main offices in Cairo are not coping with the digitalization process and are following the traditional methods.

On the other hand, Respondent 6 delivered a hopeful note on the improvements being made by the ETA, saying:

"The ETA is trying to solve this by hiring younger generations and training them to be digitally capable of handling the users' questions and complaints."

(Respondent 6, accounting manager, May 2023)

This statement shows the ongoing efforts to enhance the responsiveness and problem-solving capacity of public servants by renewing the blood of the staff and hiring new personnel, besides, giving the youth more government positions. Furthermore, it is providing training opportunities to enhance their skills.

To enhance the service, the ETA needs to further develop its personnel's digital skills in general, and about the system in specific. The ETA shall ensure a uniformly high level of digital literacy among all its personnel. Besides, the ETA shall expand its expertise coverage to the ETA offices in the different governorates all over Egypt.

Responsiveness

The level of responsiveness was a point of discussion in the interviews. Most of the respondents believed the public servants were responsive, however, others thought they were not

responsive as needed and were not capable of helping with the errors debugging, therefore the individuals started self-learning and sharing their knowledge and experiences informally to resolve the errors. Respondent 6 hailed the public servants' responsiveness, saying:

"The staff is responsive when I call them for technical support, and they can debug the errors and give me the right advice. The hotline is the quickest method of communication."

(Respondent 6, accountant, May 2023)

The respondent reiterated the good quality of services, especially from the hotline, as the public servants were able to respond timely and debug the errors. In addition to this, all respondents appreciated the prompt updates via email and SMS, suggesting that when the communication channels are utilized properly, they function efficiently and enhance the user experience.

On the other hand, Respondent 8 disagreed with the above statement, saying:

"The level of responsiveness is not satisfying. Sometimes, the ETA cannot provide customer service or resolve an issue."

(Respondent 8, chartered accountant, May 2023)

Contrasting with the other respondents, this suggests that there are inconsistencies in the responsiveness and problem-solving capabilities of the ETA, which can lead to user frustration. Therefore, it is recommended to focus on ensuring the responsiveness of the public servants, conducting consistent training for the public servants, implement regular assessments of customer service for quality assurance, and establish a feedback system.

Legislation

Most of the respondents did not follow the legislation because they were not interested and they had no access anyway, they were mainly following the timeline, and announcements by the ETA. This shows that it has no major perceived impact on the users' adoption or sustainability of adoption.

However, a few checked the legislation because it is part of their job like lawyers and accountants. Some respondents expressed their skepticism about the application of legislation and its ability to reach all business sizes fairly. Respondent 1 was one of the individuals who read the related legislation, and he said:

"Regarding the legislation, they are not supporting the business owners. They are vague, and many loopholes allow corruption and manipulation."

(Respondent 1, business owner, May 2023)

This comment points to a lack of clarity and support in the legislation for business owners, suggesting that the laws may be complex, leading to potential misuse and unfair practices. Therefore, it is important to 1) Address the vagueness in legislation and close loopholes to prevent corruption and manipulation; 2) Tailor legislation to be inclusive of all business sizes; 3) Ensure that micro businesses and informal sectors are not disproportionately disadvantaged; and 4) Ensure that legislative updates are easily accessible to all.

On the other hand, several respondents mentioned that companies have been compelled to adopt e-invoicing due to legal requirements and the threat of ceasing business transactions with non-compliant organizations. Respondent 13 said:

"Unregistering is not an option anymore. Starting 1st of July 2023, all companies must register whether they are dealing with e-receipts with clients or dealing with other large companies that have the e-invoicing system already."

(Respondent 13, chartered accountant and business owner, June 2023)

The ETA also added sanctions to whoever did not register in the system to push more companies into the system. Respondent 15 said:

"A new law was approved in 2021 to unify the procedures of the VAT. Its articles mentioned that whoever does not provide their tax declarations through the online system would receive stringent fines."

(Respondent 15, chartered accountant, June 2023)

The above statements show that legal and regulatory pressure is a successful tactic to ensure e-invoicing compliance. This is aligned with the conclusion of Keifer (2011) and Kreuzer (2013) who believed that the legal framework was one of the businesses' motivators to adopt. Egypt is not the first country to apply strict penalties in this regard as there are countries that did the same such as Kenya, India, Poland, Belgium, etc.

Combatting Corruption

Several respondents expressed a hopeful outlook toward the e-invoicing system as a tool for combating corruption and including the informal sector in the system through robust checks and balances. Respondent 5 said:

"It is a stricter method of financial oversight to combat corruption and tax evasion, besides, it can help in including the informal sector."

(Respondent 5, accountant, May 2023)

Despite the optimism, some respondents raised concerns about the system's full-proof efficacy. Respondent 3 shared his thoughts, saying:

"It can minimize the ratio of corruption but won't stop it. Whoever does not want to accurately pay the taxes will find a way or another to play with his/her documentation."

(Respondent 3, accountant at a law firm, June 2023)

This statement captures the notion that while technology can aid in curbing corruption, it isn't a complete solution, especially when human ingenuity is involved. The need for a comprehensive approach, in conjunction with technological solutions, is needed. This approach can include 1) Education and awareness programs by holding awareness campaigns for the public and training for government officials; 2) Strengthening the legal frameworks by adding clearer guidelines, penalties, and rewards; 3) Increasing transparency through third-party audits and reporting as well as making more data accessible to the public; 4) Increasing public participation through feedback mechanism about corruption, as well as community watchdogs establishments; and 5) Boosting public-private partnerships to share best practices in Egypt and internationally.

Government Communication

There is a disparity in how different businesses experience the government's communication methods, with some finding them quite effective. The discrepancy may stem from varied expectations, digital literacy levels, or the specific needs and capacities of each business to engage with the resources provided.

Seven out of the twenty-three respondents were not aware of the new system, which shows that the communication did not reach all business segments, especially the micro businesses. Large enterprises are aware of the system because they were obliged by the government in the early

phases to adopt the system. Also, some respondents believed the communication methods were not effective. Furthermore, the communication methods were not engaging all sectors of the business community. Respondent 13 pointed out:

"So many people, including accountants, haven't heard about the system. There is a huge awareness campaign through social media platforms, but it didn't reach all business owners."

(Respondent 13, chartered accountant and business owner, June 2023)

Respondent 13 acknowledged the extensive efforts to raise awareness but noted that these have not been fully effective, particularly for those less digitally savvy.

On the other hand, some respondents believed that the government used different means of communication to reach out to digitally illiterate business owners. Respondent 14 said:

"They communicated with people through television, radio, and newspapers, besides social media platforms and webinars."

(Respondent 14, independent lawyer, June 2023)

All respondents expressed a clear need for a two-way communication strategy. Respondent 12 said:

"The communication is almost linear because no one has ever asked about our feedback on the system, and they are not supporting nor following up on any questions or complaints."

(Respondent 12, accountant, May 2023)

The respondents had a concern that their only way of communication was receiving the guidelines and timeline updates of the system. There is no user feedback or sufficient responsive support.

Also, some respondents believed the in-person and online seminars were helpful in explaining how to register into the system. However, many of them thought it did not communicate enough to support the steps after completing the registration. Respondent 5 said:

"The ETA exerts great efforts in bringing experts, holding in-person seminars and online webinars, besides, posting all needed details on the different social media platforms."

(Respondent 5, accountant, May 2023)

While there are instances of effective communication and support, many respondents feel that the government's approach to implementing the e-invoicing system is lacking, particularly in technical support, problem resolution, and engagement with user feedback. The linear communication method, lack of follow-up, and insufficient reach of awareness campaigns are recurrent issues.

Penttinen et al. (2008) mentioned the high perceived impact of the government's methods of communication on the ratios of the system's adoption. Therefore, it is important to maintain a more responsive and dialogical approach to ensure successful system adoption and user satisfaction, besides, a more comprehensive campaign that would reach MSMEs from different regions, digital capacities, and conditions.

6.2.5 Facilitating Conditions: Technological Aspect

System's Efficiency

1. System Performance and Website Lagging

Almost all respondents reported the e-invoicing system's lagging. Respondent 5 said:

"The website is problematic because it stops loading for half a day and sometimes for a whole day"

(Respondent 5, accountant, May 2023)

This complaint highlights a significant reliability issue with the e-invoicing system. This problem, particularly noted during high-traffic periods such as the days leading up to monthly deadlines, indicates a severe perceived impact on business operations. Other respondents added that they had to wait to re-log onto the website, which further emphasizes the need for enhancing the technical infrastructure to manage the high demand. It is necessary to enhance the system performance to maintain the users' trust in the online system as advised by Santa et al. (2019) and Marinagi et al. (2015).

2. Errors and Bugs in E-invoices and Token

Respondents encountered various errors and bugs related to e-invoices and the token system. Respondent 13 experienced:

"I had an issue with the token, When I entered it, the website kept loading with no success in submitting the e-invoices. I had to visit the ETA office a couple of times to get it fixed."

(Respondent 13, chartered accountant and business owner, June 2023)

Respondent 12 also said:

"May e-invoices are not reflected onto the system."

(Respondent 12, accountant, May 2023)

The difficulties the respondents faced with e-invoices and tokens imply a flawed authentication process, backend integration problem, or database synchronization delays, which could lead to

substantial disruptions in completing transactions. The fact that office visits were often required as a workaround indicates a critical area for improvement in system accessibility and reliability. This shows the need for better error-handling mechanisms.

3. Functioning Notification System

Despite various issues, the hotline and notification system of the e-invoicing platform were commended. Respondent 6 mentioned:

"The hotline is the quickest method of communication. Also, I receive emails and SMS notifications to keep me updated, which are better and faster than the mail system."

(Respondent 6, accountant, May 2023)

This points out a well-functioning aspect of the e-invoicing system. However, others preferred e-mail and believed it was more sufficient. The reliable hotline and e-mail services, as well as notifications via email and SMS can provide timely updates and communication, which is crucial for user engagement and trust in the system.

4. Coding Issues

The coding issues were a common complaint by almost all respondents, whatever their digital capacity. Their comments touch on the system's adaptability to new materials and products. Respondent 9 said:

"The coding is a challenge because many materials are new, so they appear invalid on the system."

(Respondent 9, senior accountant, June 2023)

The coding issues mentioned by Respondent 9, and echoed across various respondents' experiences, point towards a fundamental problem within the e-invoicing system's ability to handle diverse and evolving product data.

This quote clearly indicates that the e-invoicing system is not sufficiently agile to accommodate new entries. The core of the problem seems to be a rigid coding structure that cannot validate or incorporate materials that have not been pre-coded or anticipated by the system designers. This rigidity can lead to several problems including disruption in business operations and increased administrative burden to find workarounds or wait for system updates. To address this issue, the system needs to update and expand the coding database, implement flexible coding algorithms, and streamline the updated process.

Confidentiality

All respondents did not have concerns about sharing their information online because it used to be shared with the ETA through traditional paper means anyway. Some mentioned that they couldn't reject submitting their information, even if they wanted to. Respondent 12 elaborated more on this point:

"We do not mind sharing the information online as we used to share it on paper. In case the government uses the company's data for other purposes, what would we do? Nothing, we have no other choice other than to give them the information they asked for anyway. I am afraid some international companies won't like the idea and be discouraged from opening branches in Egypt due to the data protection concerns."

(Respondent 12, accountant, May 2023)

Respondent 12's statement reflects a sense of vulnerability towards government data practices, suggesting businesses lack of recourse. This sentiment is coupled with concerns about Egypt's international reputation, implying that perceived tax data protection could deter foreign investment. Overall, the quote underscores deeper issues of trust and transparency between businesses and governmental entities.

System Security

There seems to be a divided sentiment about the new system's security mechanisms. Some respondents expressed caution due to potential early-phase issues or past experiences. Respondent 14 mentioned:

"I won't use my debit card to pay for the annual taxes I am afraid the website would leak my bank information. I will use the credit card instead to keep my bank account secure."

(Respondent 14, independent lawyer, June 2023)

Some showed confidence in the system's security, and downplayed the significance of the data they share, viewing it as non-sensitive. Respondent 4 said:

"I am confident of the system's security levels. I believe the information is not useful for any hacker and is publicly available."

(Respondent 4, business owner, May 2023)

While others did not consider potential security threats. This could reflect a lack of awareness. Respondent 8 said:

"No one thought of the hacking issues."

(Respondent 8, chartered accountant, May 2023)

There was no incidents of the governmental e-system's hacking, however, it is necessary to set high security measurements to ensure the sustainability of the system. Poel et al. (2016) mentioned that it is always important to ensure the security of the user's data for higher adoption rates. Furthermore, the data security also reflects the country's national e-security levels.

6.2.6 Assessment of E-invoicing Versus Traditional Offline Services

Most respondents said that e-invoicing can be better if compared with offline services. Respondent 11 said:

"The offline services were hectic and caused so many headaches. The e-invoicing can help the private sector avoid bureaucratic administrative procedures for the government."

(Respondent 11, accountant, May 2023)

This sentiment underscores the potential of digital solutions in saving time, reducing bureaucratic hurdles, streamlining complex governmental processes, and avoiding the unprofessional mistreatment of some of the uncooperative public servants.

Some respondents hold a positive view regarding the system's potential for improvement. Respondent 13 said:

"I am not worried about this system even if we are facing challenges, and I am sure it will get better when it is completed."

(Respondent 13, chartered accountant and business owner, June 2023)

This reflects a forward-looking attitude and trust in the progression and refinement of the system over time, even if there are current challenges to the users, and downfalls in the system. This progression can be achieved by addressing the factors influencing their perceptions, which

are proven to be the four aspects of UTAUT; performance expectancy, effort expectancy, social influence, and facilitating conditions, especially the latter two factors.

The performance expectancy is a concern for some respondents because of the lack of users' control, lack of time-saving benefit, and increased financial burden, especially for the MSMEs and self-employed professionals. The ETA can increase the users' control through giving more time and flexibility for editing and deleting e-invoices after submission, besides the ETA can add the 'e-invoice draft' feature to the website. To save the users' time, the ETA can develop the website's services through the procedures mentioned below in the technical facilitating conditions. To tackle the financial burden issue, the MSMEs and self-employed professionals can be motivated through providing them with financial incentives to mitigate the initial costs associated with transitioning to e-invoicing.

Effort expectancy represents a worry for some respondents because they still need to pay in-person visits due to the online system's technical errors and lack of integration with all tax-related systems. Therefore, the system can be enhanced through implementing full integration with the tax system and developing the IT infrastructure. Additionally, some respondents thought the website's navigation was complicated and confusing, so it is important to make the website user-friendly. The testability feature was of positive value to the respondents, and some expressed their need to extend the trial phase's duration for a smoother transition to the system.

Social influence is a main concern as the system did not cover all governorates, and does not include all businesses, which affect the respondents negatively as they cannot register all their transactions. So, it is important to cover all geographical areas and ensure equal adoption policies for all entities. Additionally, self-employed professionals believe the system is not tailored based on their jobs' conditions, so the ETA is working on bridging the gap to fit each sector's needs. The

MSMEs also felt the implementation process was fast paced, therefore longer stretches in the implementation phases are suggested.

The administrative facilitating conditions can be developed through enhancing digital literacy and infrastructure. Expanding digital literacy programs, particularly in rural areas and the informal sector, is essential to bridge the existing digital divide. The training programs should also include public servants to develop their digital skills and ensure their responsiveness and adequate IT support for the users. This involves utilizing clear reporting mechanisms and setting legislations for whistleblowers protections and combat corruption and noncompliance. Establishing a robust feedback mechanism and providing timely responses will also bridge the gap between both sectors.

Simultaneously, the technical facilitating conditions need improvements, including the system's IT infrastructure. There is a need to continuously update it can handle high traffic, lessen the website and coding errors and ensure its reliability. Furthermore, ensuring the system's security and data protection mechanisms are aligned with international standards as this can build trust among users, especially foreign private entities.

Chapter 7: Conclusion and Policy Recommendations

7.1 Conclusion

The Egyptian government experienced a great challenge with the VAT gap over many years. Therefore, it launched a new e-invoicing system in 2020 with the aim of limiting fraud, including the informal sector, and creating faster processing and streamlined workflows. The government conducted different methods of communication with the private sector through social media platforms and online and in-person training sessions, besides, establishing a gradual approach over two years by starting with large enterprises, moving down towards MSMEs, and collaborating with experienced and digitally advanced organizations to set up the technological aspects and provide technical support to the staff and users. Despite the government's efforts, the private sector's perceptions were not always positive. This study focused on exploring the Egyptian private sector's perceptions and adoption of the e-invoicing system.

The author conducted an extensive literature review, mainly about the concepts of the VAT, e-invoicing, and its components, as well as its barriers and enablers from the public sector's perspective. Then, the author explored the perceptions of the private sector about e-invoicing around the world and the influencing factors on their adoption. Furthermore, the author studied the e-invoicing global landscape to analyze the different approaches that were adopted by the countries including the full mandate to all companies or mandates to specific sectors like G2G and G2B only. Besides, the timeline of the systems implementation and the methods adopted whether immediate or gradual. Finally, the study compared the penalties and incentives approaches among the countries. So, the literature review helped in identifying the research themes and trends around the world. The study then moved to the local context in Egypt by explaining the shift to VAT, then the introduction of the e-invoicing system and its mandate through the eight phases for two years.

Major conceptual frameworks in the technology adoption arena were analyzed. They include the Diffusion of Innovation Theory, TAM3, SERVQUAL, UTAUT, and the Barriers and Enablers Model. The UTAUT theory was chosen to analyze the collected data due to its high accuracy in analyzing the users' perceptions of new technologies. Twenty-three semi-structured interviews were conducted in Greater Cairo to understand the respondents' perceptions about the system. The respondents were chosen through snowballing sampling. They shared deep insights into the perceived impact of UTAUT's variables, including performance expectancy, effort expectancy, social influence, and facilitating conditions, on the creation of their perceptions of the system.

The acceptance level of the e-invoicing system correlates positively with the size and financial resources of enterprises, with larger enterprises adapting more effectively to initial challenges than MSMEs. However, all enterprises showed almost similar opinions about the UTAUT's aspects, reiterating their high influence in forming their opinions, but they put more weight on social influence and facilitating conditions.

More specifically, performance expectancy is a concern because of the lack of users' control, lack of time-saving benefit, and increased financial burden, especially for the MSMEs and self-employed professionals. Effort expectancy represents a worry for some respondents because they still need to pay in-person visits due to the online system's technical errors and lack of integration with all tax-related systems. Additionally, some respondents thought the website's navigation was complicated and confusing. The testability feature was of positive value to the respondents, and some expressed their need to extend the trial phase's duration for a smoother transition to the system.

Social influence was a main concern as the system did not cover all governorates, and does not include all businesses, which affect the users negatively as they cannot register all their transactions. Additionally, self-employed professionals believe the system is not tailored based on their jobs' conditions such as lawyers, doctors, dentists, and consultants. The MSMEs also feel the implementation process was fast paced and they cannot adjust as fast.

Regarding the administrative facilitating conditions, the users addressed the law digital capacity of the public servants, which resulted in inadequate technical support, especially in the rural and remote areas. The lack of communication between the public and private sectors is a concern for the users as they want to share their feedback about the system instead of just receiving the ETA's guidelines on operating the system. Furthermore, a big ratio of the MSMEs are still not aware of the e-invoicing system, despite the ETA's offline and online media campaign to promote its adoption.

The technical facilitating conditions need improvements due to the lack of IT infrastructure's reliability, which leads to website lagging, and increased technical and coding errors. There are fears from the security and data protection mechanisms due to previous negative experiences, so some users tend to save the invoices in the electronic and printed versions to keep themselves in the safe side and avoid any information loss.

Nonetheless, many respondents showed a positive future outlook of the system when it is fully implemented within the coming years, expecting the government to overcome the current challenges and enhance the quality of the service.

7.2 Policy Recommendations

The following policy recommendations cover the four main factors of the UTAUT model, namely, performance expectancy, effort expectancy, social influence, and facilitating conditions, The recommendations are based on the interviews' findings and literature review. They aim to bridge the gap between the public and private sectors to ensure the success and sustainability of the system and the future initiated policies as well.

To enhance the performance expectancy, it is recommended to allow e-invoices amendment and deletion after their submission and introducing an 'e-invoice draft' feature. This would increase users' control to adjust based on their practices. Besides, providing financial incentives to registered MSMEs to mitigate the transition costs to e-invoicing. This would motivate MSMEs to register and achieve equity among enterprises.

To develop the effort expectancy, it is suggested to integrate the e-invoicing system with the tax system and other related services. This would avoid the overlapping of efforts, especially while providing tax declarations. Furthermore, the ETA can extend the test environment for longer periods of time. It allows users to learn by submitting imaginary e-invoices without worrying about legal or financial consequences.

To boost the positive social influence, it is proposed to tailor the system based on the different practices and conditions, especially for self-employed lawyers and consultants of various sectors. This would need opening dialogue with sectors' representatives to understand and respond to their needs.

To address the technical facilitating conditions, it is crucial to upgrade the IT infrastructure would lessen website and coding errors, handle high traffic, and ensure its reliability. Also, it is

important to broaden the system’s coverage in all geographical areas, especially the rural and remote areas, to register their financial transactions with registered businesses.

To improve the administrative facilitating conditions, it is necessary to bridge the gap between the public and private sectors and increase trust among them through setting a robust feedback mechanism and ensuring timely responses to the users. Furthermore, the ETA shall target increasing digital literacy programs for public servants to enhance their technical support levels, as well as the users, particularly in rural areas, to bridge the digital divide and join the system smoothly with fewer errors.

By addressing these recommendations, the ETA can improve the e-invoicing system's adoption and supports Egypt Vision 2030’s goals regarding economic growth and digital transformation.

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Appendices

The full list of interview questions

Part I: General Information

- Can you tell me about your role?
- Can you tell me about your organization? Its field? Its size? Is it national or international?

Part II: Egyptian Tax Authority's Portal

- Did you join? If yes, when? If not, why not?

First: Performance Expectancy

- How did the e-invoicing system impact the time if compared with the in-person visits?
- How did the e-invoicing system impact the costs if compared with the in-person visits?
- How did the e-invoicing system impact your level of control if compared with the in-person visits?

Second: Effort Expectancy

- How did the testability option impact your perception about the e-invoicing system if compared with the in-person visits?
- How do you think the e-invoicing system impacts the level of personal interaction with the public servants if compared with the traditional system?
- How did the e-invoicing system impact the level of complexity if compared with the traditional in-person visits?
- What do you think of the personalization feature at the e-invoicing system if compared with the in-person visits? (Does it allow creating personal profiles, and connects you with other needed services?)

Third: Social Influence

- Does the society/other companies or media influence your decision to adopt it?
    - Did you register voluntarily or due to the mandate?
    - What does your surrounding community mention about the portal?
- How does the new system align with the current conditions in the society?
- How does the level of digital literacy impact the users' perceptions about the system?

Fourth: Facilitating Conditions

❖ **Administrative Aspect**

- How does the legislative framework impact your opinion about the e-invoicing system?
- What do you think of the digital capacity of the public servants?
- What do you think of the public servants' alignment with the new system?
- What do you think of the public servants' level of responsiveness if compared with the in-person visits?
- Do you feel this is impacting the level of corruption?

❖ **Technological Aspect**

- What do you think of the system's reliability?
    - Reliability of the Internet?
    - System's Efficiency? (No errors – output as requested – committed to sending notifications – updated information – well-designed and organized – accessible)
    - How does the government communicate with you? Their FB page, website, public servants? What do you think of their methods and level of communication?
- What do you think of personal data confidentiality?
- What do you think of the level of data security (from any hacking)?

- What do you think of the Egyptian Tax Authority's offline services at their offices based on your experience from the in-person visits? (Reliable? Responsive? Convenient and easy? Time-saving? Maintaining the confidentiality and privacy of your personal and financial information?) Is this impacting your impression about the online system?
- Other than the points mentioned, do you have any other comments?