Can Digital Transformation Enhance Quality of Digital Services & Internal Operations: Evidence from the Egyptian Tax Authority

submitted by

Dr. Sherif Adel Abd El-Aleem Abd El-Hameed

Lecturer of Business Administration

Faculty of Commerce & Business Administration

Helwan University

sherif.abdel@commerce.helwan.edu.eg

Can Digital Transformation Enhance Quality of Digital Services & Internal Operations: Evidence from the Egyptian Tax Authority

submitted by

Dr. Sherif Adel Abd El-Aleem Abd El-Hameed

Lecturer of Business Administration

Faculty of Commerce & Business Administration

Helwan University

sherif.abdel@commerce.helwan.edu.eg

ABSTRACT

This study seeks to examine the relationship between digital transformation practices and quality of digital services & internal operations and processes within the Egyptian tax authority.

The study was applied on employees & workers working inside authority's large taxpayers' centers only, the researcher specifically addresses employees inside large taxpayers' centers located inside Cairo and Giza governorates. Tax sector was specifically chosen due to its critical role in achieving Egyptian financial inclusion strategy in light of Egypt's vision 2030. Results indicates positive significant relationship between applying digital transformation practices represented by digital technologies & clients experience and quality of digital services and internal operations within the Egyptian tax authority. The study recommends the Egyptian tax authority to deepen digital financial inclusion practices in order to enhance transparency & accountability, achieve principle of tax

justice, maximize public revenues, reduce tax evasion, and simplify tax administration & digital tracking.

Key Words: Digital Transformation, Digital Technologies, Clients Experience, Digital Services Quality, Quality of Internal Operations, Financial Inclusion.

ملخص البحث:

يهدف هذا البحث إلى دراسة وتحليل العلاقة بين تطبيقات التحول الرقمي ومستوى جودة الخدمات الرقمية والعمليات الداخلية داخل مصلحة الضرائب المصرية. تم تطبيق هذه الدراسة على الموظفين والعاملين داخل مراكز كبار الممولين بمصلحة الضرائب المصرية وتحديدا مركز كبار الممولين أول بمحافظة القاهرة ومركز كبار الممولين ثان بمحافظة الجيزة. تم اختيار مصلحة الضرائب المصرية تحديدا كمجال للتطبيق نظرا للدور الحيوي والفعال لقطاع الضرائب في تحقيق إستراتيجية الشمول المالي في ضوء رؤية مصر ٢٠٣٠. تشير نتائج البحث إلى وجود علاقة إيجابية معنوية بين تطبيق ممارسات التحول الرقمي المتمثلة في التقنيات الرقمية وتجربة العملاء ومستوي جودة الخدمات الرقمية والعمليات الداخلية داخل مصلحة الضرائب المصرية. أوصت الدراسة أنه ينبغي علي مصلحة الضرائب المصرية أن تستمر في نشر وتعميق التطبيقات المختلفة للتحول الرقمي وتعزيز مستوي الحلول الرقمية المقدمة للممولين من أجل تعزيز مستوي المساءلة والشفافية, زيادة مستوي الحصيلة الضريبية, الحد من التهرب الضريبي, إرساء مبدأ العدالة الضريبية, الحد من مستوي تعاملات القطاع غير الرسمي.

الكلمات المفتاحية: التحول الرقمي, التقنيات الرقمية, تجربة العملاء, جودة الخدمات الرقمية, جودة العمليات الداخلية, الشمول المالي.

(Datta et al., 2020; C. Li et al., 2022) insists that since the beginning of the third millennium, the world has witnessed strong and rapid changes due to tremendous technological development, which has come to represent a true technological revolution differing in intensity, speed, and breadth of its scope from other previous industrial revolutions. In business context, this revolution relied on a new technological phenomenon called digital transformation, which integrates digital technologies such as internet of things, cloud computing, big data analytics, and artificial intelligence with all aspects of organizational operations. As a result, new business models calls for transforming digital data into new economic & social values in terms of developing new products & services, introducing different work models & job processes, and formulating new management modes.

Digital transformation has become one of the main features of today's world, internet users around the world exceeded more than 5.35 billion users, representing more than 65% of the world's population in 2022. This significant increase in internet users was accompanied by the wide spread of digital technologies that incorporated in all organizational operations (Medynska & Noginova, 2022). Digitalization almost based on collecting, storing, analyzing as well as exchanging data & knowledge in all organizational areas. As a result, different economies as well as different organizations began to gradually transform into a digital economy/digital organization that relies on different business models to create wealth and value (Chin et al., 2022; Wu et al., 2023).

According to (Gurcan et al., 2023; L. Zhou et al., 2023) importance of digital transformation is based on its reliance on technological revolution, which has a huge impact on different societies & economies because of its ability to produce huge amounts of new data, improve information & knowledge transfer, support critical decisions, and

facilitate problem solving and innovation. Benefits of digital transformation includes cost & effort saving, improving quality & simplify procedures for obtaining services, creating opportunities to provide innovative &creative services, helps organizations to increase its customer's base. Therefore, digital transformation has become a necessity in improving organizational efficiency, as digital transformation helps organizations to improve operational efficiency and to improve range of products & services it offers (Mpofu & Mhlanga, 2022; Burashnikova, 2023).

With respect to Egypt, digital transformation was applied in various sectors in accordance to the financial inclusion strategy that will assist in achieving Egypt's vision 2030. One of the most critical and sensitive sectors for implementing digital financial inclusion is the Egyptian Tax Authority as Taxes considered as an important source of national income[1].

2. Theoretical Framework of Research Variables & Literature Review.

In light of efforts towards digital transformation that will assist in achieving financial inclusion strategy, the Egyptian tax system had witnessed a tremendous development during the last ten years. These efforts contributed to increasing tax revenues in recent years, tax revenues considered as the basic pillar of sustainable development processes in light of Egypt's 2030 vision, taxes represent about 76% of revenues in the Egyptian budget. In this regard, the Egyptian Tax Authority continues its ongoing efforts in order to achieve the desired digital transformation. In this regard, the Egyptian tax authority attempt to develop the Egyptian tax system through considering

(1)Egypt Vision 2030 is a national agenda launched in February 2016 that reflects the country's long-term strategic plan to achieve the principles and goals of sustainable development in all areas, and to mainstream them in the different state agencies. Egypt Vision 2030 reflects three dimensions of sustainable development: the economic, social, and environmental dimension.

five main dimensions which are developing tax procedures, technology & mechanization, legislation & laws, developing work environment & conditions, and finally developing individuals[2].

Recently, the Egyptian ministry of finance signed a cooperating agreement with IBM[3] to automate the entire tax system using artificial intelligence, which has become an integral part of digital transformation efforts as well as a successful tool for adopting a modern data strategy. Artificial intelligence technologies provide tremendous advantages in terms of collecting, analyzing, and processing large amounts of data and information.

2.1 Digital Transformation (Digital Financial Inclusion).

According to (Zaoui & Souissi, 2020; Kitsios et al., 2023) Digital financial inclusion involves using cost-effective digital means to reach financially excluded and currently underserved populations, in other words, digital transformation practices include all tools, mechanisms, and techniques used in the process of utilizing digital technologies to transform traditional business processes & services to be digitalized in order to meet and exceed customer expectations while reducing time, cost, and efforts. This can be achieved through range of formal digital services that suit their needs. Digital transformation provides huge possibilities for building effective, competitive and sustainable societies. This can be done by achieving a radical change in services provided to various parties including consumers, employees, and all beneficiaries. Digital transformation doesn't only mean the application of technology within institutions, but

---

(2) **Annual & Semiannual reports issued by the Ministry of Finance 2021 – 2022 (https://mof.gov.eg/).**

(3) **For more than a century,** *IBM* **has been a global technology innovator, leading advances in Artificial Intelligence, automation, information technology, and hybrid cloud solutions. IBM is one of the world's largest IT companies, with operations in more than 160 countries. IBM is known for its hardware and software products including computers, storage systems, servers, and networking equipment.**

rather, it is a complete comprehensive program that affects institution as well as its internal working methods (Metawa et al., 2022; Rha & Lee, 2022).

As a result, Egypt realizes the important role that digital financial inclusion can play in developing the Egyptian tax system and accordingly in developing the whole economy thorough limiting informal transactions. It is difficult to quantify values of informal transactions due to lack of integrated information system about these informal economic activities, but through digital transformation higher rates of financial inclusion are expected to be achieved in the Egyptian economic system and consequently informal transactions will start to decrease gradually.

(Kamel, 2021) insists that the real beginning of applying digital transformation in the Egyptian Tax Authority was in 2018 through enabling taxpayers to submit their income tax reports & value-added tax reports electronically using the Egyptian tax authority portal. Furtherly, the Egyptian tax authority issued about 1.5 million smart tax cards, which offer multiple range of services, the most important of which is allowing electronic signature operations to taxpayers. In the same context, during 2023 formal cooperation agreement was signed between the Egyptian tax authority and global technology giant SAP to provide powerful and fast-implemented solutions, allowing Egyptian taxpayers to start using SAP program in their digital transactions. In the light of these efforts, it is clear that, improvements in Egyptian tax system is rapidly moving to keep pace with technological progress witnessed by the world, as well as latest global tax systems (Moussa & Tarek, 2023).

Towards implementing Egyptian financial inclusion strategy in accordance with Egypt's Vision 2030[4], the Egyptian tax authority has developed exclusive strategic plan to develop the Egyptian tax system (Ismail et al., 2018; Salih et al., 2024). The aim was to build mutual confidence with taxpayers through providing advanced tax services with a high degree of professionalism. This strategic plan was primarily built upon two basic dimensions of digital transformation which are digital technologies and customer experience. Digital technologies represent a major technical transformation based on advanced internet technologies, these technologies have developed greatly since 2020, and has facilitated digital transformation of many organizations (Kim, 2020; S. Zhou et al., 2022).

In the light of digital technologies and customer experience, trend towards using financial technology recently become a dominant feature in providing tax services in Egypt, this will improve quality of tax services provided to taxpayers as well as increasing level of financial inclusion. In this context, the Egyptian tax authority introduce range of electronic services to taxpayers including electronic declarations via authorities' website (24/7), online smart investigation, and electronic invoice system (B2B & B2C).

---

(4) In alignment with Egypt Vision 2030, and Egypt's digital transformation strategy, the ministry of communications and information technology (MCIT) has embarked on building digital Egypt. Digital Egypt is an all-encompassing vision and plan, laying the foundations for the transformation of Egypt into a digital society.

2.2 Quality of Digital Services.

Traditionally, quality of service was identified through comparing actual level of service with customers' expectations, if level of services provided match or outperform customer needs & expectations, quality level is accepted (Mustapha & Obid, 2015). That's to say, service quality level was almost associated with quality gaps between expected performance and actual performance. Quality gaps might lie between customer's expectations and management's awareness of these expectations, or between management's perceptions of customer expectations and service quality specifications, or between actual performance and external communications to customers about service delivery (Vatolkina et al., 2020; Demirel, 2022).

Digital quality integrates digital technologies & practices with performance standards in order to ensure accuracy, reliability, and validity of different digital operations. In order to rasie & enhance quality of digital services offered to taxpayers, Egyptian tax authority efforts towards digital transformation weren't just limited to utilizing digital technologies and systems but also was associated with providing efficient digital customer services in order to ensure successful transformation of tax operations digitally. In this regard an interactive website (portal) was established in order to raise level of digital awareness among all taxpayers in order to transform all tax services digitally, this interactive website provide digital assistance to all taxpayers through introducing great range of digital customer services.

To provide high quality level of digital customer services, the Egyptian tax authority should start with visualizing different steps of taxpayers' experience within the new designed website in order to understand taxpayer's needs & expectations so as to meet these expectations through facilitating and redesigning customer experiences digitally (Hidayat et al., 2014; Obid & Mustapha, 2014; Dinh et al., 2015). Digital

transformation of customer service mainly aims to facilitate taxpayer's transactions within the authority through providing them with quick and efficient support systems that respond immediately to their inquiries and complaints (Ngwengeh et al., 2021).

Although customer experience transformation is the most visible area of digital financial inclusion within the Egyptian tax authority, internal operations inside the authority also realizes benefits from digital transformation. Benefits include automated core processes, integrated & connected operations, data-driven decision making, saving time & effort, and reallocating human & physical resources. Generally, applying digital transformation within Egyptian tax authority aims to achieve the following objectives (Ozretic-Dosen & Zizak, 2015; Al-dweeri et al., 2019; Wadesango & Magaya, 2020; Siagian et al., 2021):

1- Building an integrated efficient digital system to ensure accuracy and tax justice.

2- Ensuring sustainability of funding sources for state's general budget, raise number of taxpayers annually, close windows for tax avoidance, fighting corruption, and enhancing transparency.

3- Unifying, mechanizing and facilitating procedures for taxpayers.

4- Contributing to support Egyptian financial inclusion strategy through utilizing modern technology in providing electronic financial services as well as providing easier and safer ways to communicate.

5- Building trust between taxpayers and the Egyptian tax authority as well as spreading culture of tax awareness and voluntary commitment.

2.3 Literature Review.

In light of shortcomings of traditional tax systems including high cases of tax evasion, decrease in tax revenues, and expansion of informal sector; it has become an urgent necessity to replace this traditional system and try to implement digital transformation mechanisms to avoid deficiencies and weaknesses. Egyptian government has moved in the current era to bring about a major development revolution in the Egyptian tax system, and has made fruitful efforts in building an integrated digital tax system thus contributing to the implementation of the general state strategy of financial inclusion[5].

(Emara & Zhang, 2021) insists that digital technology has aided rapid development of financial sector in many developed countries. The study dealt with a new phenomenon entitled Finance Intelligence through the Internet of Things and the extent of its impact on the digitization of companies providing financial technology services. Results revealed that digital technology utilization can leads to increasing speed of transactions thus enhancing speed of transmitting financial information to investors, shareholders and other market participants, as well as supporting rational decision making process.

(Chauhan et al., 2022) aims to demonstrate digital banking's influence on customers' evaluation of service experience and develop a framework identifying the most significant variables of digital banking that influence the financial performance of banks. Customer experience is determined by functional clues (functional quality, trust and convenience), mechanic clues (website attributes, website design, perceived usability) and humane clues (customer complaint handling). The study is furthered to

---

combine customer experience with the service profit chain model. the study ends with conceptualizing a total customer experience framework that banks can use to enhance their online presence. Consequently (Lukman et al., 2022) aims to determine the effect of quality of tax services, implementation of e-registration and e-filling on taxpayer satisfaction at KPP Pratama Makassar Selatan. an associative approach for data collection was realized. reliable questionnaire was designed in order to collect primary data for this research. Results suggest that service quality, application of e-registration and application of e-filling have a positive and significant effect on individual taxpayer satisfaction. at KPP Pratama South Makassar.

(Ma'ruf et al., 2023) address taxpayer satisfaction with tax services at the tax service office KPP pratama cileungsi during the Covid-19 pandemic, researchers also examine efforts made by tax service office to enhance the quality of tax services during the Covid-19 pandemic. data was collected using interview guidelines and questionnaires. Results revealed that tax class activities are part of cooperation with the district government to ensure that the public is aware of and utilizes these tax classes as a means of learning and increasing tax obligation awareness. Creating or re-sharing tax education content through a dedicated YouTube channel serves as a contemporary education platform with easy access anytime and anywhere for taxpayers, given the extensive jurisdiction of KPP pratama cileungsi.

(Asuncion & Lacap, 2021) examine the relationship between management of service operation quality and tax client's satisfaction amongst financial consulting firms in Port Harcourt, Nigeria. Management of service operation quality was measured using the SERVQUAL model which includes tangible, responsiveness and empathy as against tax client satisfaction. Sixty senior operations management staff were purposively

sampled from various accounting/audit/tax consulting firms in Port Harcourt, Nigeria. Spearman rank correlation coefficient was used to examine the relationship between the dimensions of service operation quality and tax client's satisfaction. Findings show that all three dimensions (tangible, responsiveness and empathy) of service operation quality have a significant and positive relationship with tax client satisfaction.

(Ahmed & Faisal, 2021) tries to find out the impact of some determinants or factors which influence the overall satisfaction of the individual taxpayers of Bangladesh. quantitative data was gathered by taking personal interviews among 450 respondents and the response rate was 93.33%. The study incorporated three factors: tax rate, taxpaying system, and the behavior of tax employees. These three factors are considered to play a significant role in individual taxpayer satisfaction in Bangladesh. All the variables showed a significant and positive relationship between the independent variables and the dependent variable, taxpayers' satisfaction. The study suggests some recommendations in order to increase the effectiveness of the tax collection rate by satisfying individual taxpayers'.

Accordingly, (Artawan et al., 2020) aims at identifying & measuring importance of service quality performance to increase taxpayer trust and satisfaction in order to increase taxpayer compliance. Results show that level of service quality is meaningless if it is not able to have an effect on increasing taxpayer trust and satisfaction so as to increase taxpayer compliance. Taxpayers do need the satisfaction they feel. This finding is evidenced by the satisfaction of taxpayers mediating well the effect of service quality on taxpayer compliance, also taxpayer satisfaction is able to mediate the effect of trust on taxpayer compliance. While service quality fails to directly affect taxpayer compliance, service quality can affect trust, trust affects taxpayer satisfaction, and taxpayer satisfaction affects taxpayer compliance. The quality built by the manager of

the tax sector should be led to the creation of greater trust and satisfaction to increase taxpayer compliance.

3. Pilot Study.

In order to formulate research problem as well as identifying research gap, the researcher conduct some personal interviews[6] in order to identify to what extent practices of digital transformation are employed and applied within the Egyptian tax authority, and also in order to know the impact of applying such practices on level of service quality provided by the Egyptian tax authority. Different questions were asked & discussed with different employees in different departments. Respondents agreed that many digital initiatives have been adopted recently by the Egyptian tax authority such as e-filling & online services, tax identification numbers (TIN), and electronic invoicing.

The researcher found a very large consensus & agreement among employees inside the authority regarding recent radical changes introduced by the Egyptian tax authority in the scope of electronic services provided digitally through its main portal that facilitated greatly steps & procedures followed by taxpayers to obtain tax services efficiently & effectively.

After conducting the pilot study, the researcher has reached the following conclusions:

1- Majority of respondents agreed that digital transformation practices introduced recently through the Egyptian tax authority will lead to achieving many benefits for all parties engaged in taxes operations and transactions.

---

(6) **In this regard, the researcher chose a random sample of fifteen employees (eight managers, three researchers, two reviewers, two commissioners) working within the Egyptian tax authority. Employees was exclusively selected from large taxpayer's centers in both Cairo and Giza governorates. noting that there was no prior arrangement in the process of selecting sample items, but rather they were chosen randomly from both taxpayer's centers.**

2- Majority of respondents agreed that official website (portal) of the Egyptian tax authority continuously developed and contains various interactive forms in order to cope with latest versions of information technology.

3- There is a large discrepancy between respondents in different departments regarding their interpretation and understanding to service quality concept.

4- Majority of respondents agreed that official website (portal) of the Egyptian tax authority contain sufficient guidance and instructions to facilitate operations for users.

5- Majority of respondents agreed that digital transformation mechanisms applied by the Egyptian tax authority will have a great impact on improving brand image of the Egyptian tax authority among taxpayers.

6- Majority of respondents agreed that achieving high level of quality in digital services is a very important objective that authority's management should strive and make utmost effort in order to achieve and reach it.

8- Majority of respondents agreed that ministry of finance attempt to unify databases of taxpayers in both tax and customs authorities. This integration includes linking electronic invoice system (which tracks commercial transactions for companies) with the unified national trade platform - Nafeza (which monitors imports and exports).

Based on respondent's responses in the pilot study, the researcher was able to expect that; significant relationship might exist between digital transformation practices and quality of digital services & internal operations within the Egyptian tax authority.

4. Research Problem.

As mentioned before, Egypt has set its sights on becoming a leading player in the digital economy through its visionary strategy, Egypt vision 2030. This strategic plan places digital transformation at the core of country's development, aiming to leverage technology to drive economic growth, enhance citizen's overall quality of life, and

improve public services. After reviewing academic literature related to financial inclusion, digital transformation, and quality of digital services ((Yee et al., 2015; Al-Hawary & Al-Smeran, 2017; Rita et al., 2019; Singh, 2019; Miranda Veloso et al., 2020; Al-Shorman et al., 2022), the main problem of this research can be expressed in the following question "can digital transformation practices enhance, improve, and raise quality of digital services & internal operations within the Egyptian tax authority?".

According to Ministry of finance published reports, tax revenues play important & vital role in financing state's general budget. Accordingly, the Egyptian tax authority in cooperation with Ministry of finance, spent about 106 billion Egyptian pounds till 2023 in its tremendous efforts towards digital transformation to digitize the Egyptian tax system. This amount on digitalization spending expected to increase by three or four times by the year 2026. From this standpoint, problem of this research can be formulated & crystallized, as the researcher throughout this research seeks to determine the impact of these digital transformation efforts & practices on quality of digital services & internal processes within the Egyptian tax authority, therefore verifying the feasibility of all costs & expenses spent on digitization efforts.

Accordingly, research problem can be expressed in the following questions:

1- To what extent do Egyptian tax authority employ and utilize digital transformation tools, practices, and mechanisms.

2- Identify level of digital technologies; range of tax services provided digitally through the Egyptian tax authority.

3- Identify level of taxpayers' experience within the Egyptian tax authority?

4- Identify the impact of applying digital transformation practices on quality of digital services & internal operations within the Egyptian tax authority?

5. Research Hypotheses.

From the previous discussion, it is clear that; digitalization of tax operations is a top priority supported by Egyptian political leadership, Egyptian tax authority embraces digital transformation to revolutionize taxation processes. The primary goal of this digitalization efforts is to enhance state's financial resources. In the light of examined literature review and conducted pilot study, main hypothesis of this research was formulated as follows:

Main Hypothesis: There is a statistical significant relationship between digital transformation practices and quality of digital services & internal operations within the Egyptian tax authority. From this main hypothesis, two sub-hypotheses were derived which are:

First sub-hypothesis: There is a statistical significant relationship between digital technologies and quality of digital services & internal operations within the Egyptian tax authority.
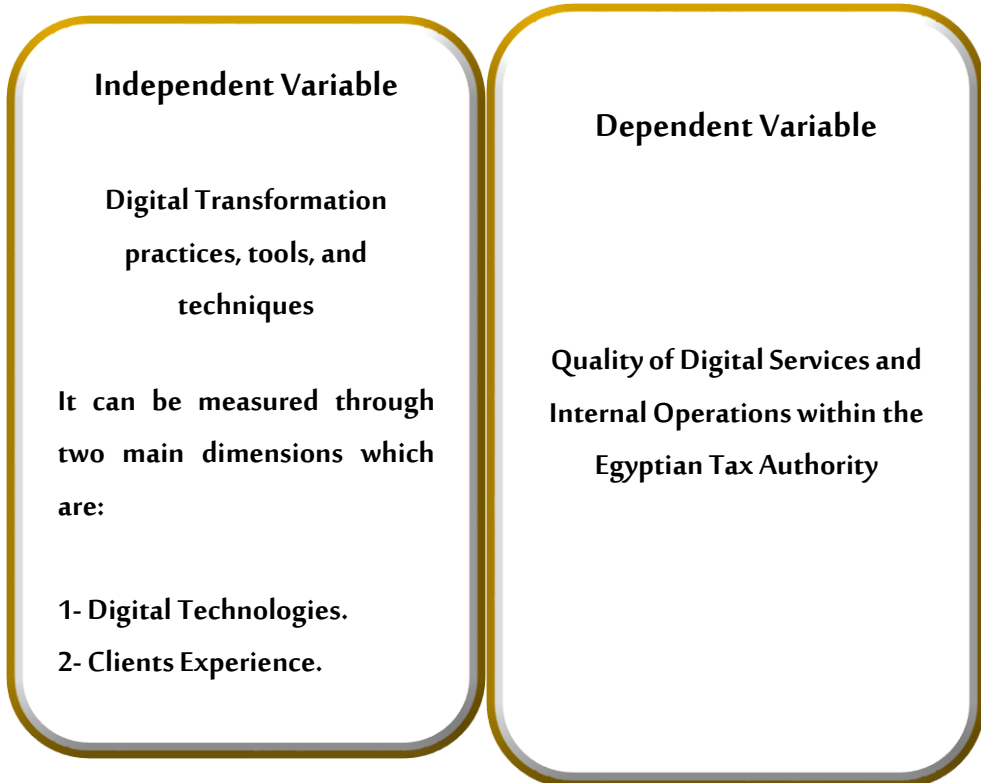
Second sub-hypothesis: There is a statistical significant relationship between client's (taxpayer's) experience and quality of digital services & internal operations within the Egyptian tax authority.

6. Research Model

As mentioned before, global landscape has experienced recently significant shift towards digitalization. Considering the Egyptian tax authority, Egypt has eagerly embraced potential for digital tools in tax collection & administration. The objective is to achieve remarkable enhancements in efficiency, effectiveness, and transparency. In the light of research hypotheses mentioned earlier, and based on work of (Cetin Gerger, 2019; A. Augustine et al., 2020; Al-Khayyal et al., 2020; Awadh Bin-Nashwan et al., 2020; Dabla-Norris et al., 2020; Jalil et al., 2021; Maulinarhadi et al., 2021; Munarko, 2022; Au

et al., 2023; Burashnikova, 2023) research model can be expressed in the following figure:

Figure (1): Research Model

Independent Variable

Digital Transformation practices, tools, and techniques

It can be measured through two main dimensions which are:

1- Digital Technologies.
2- Clients Experience.

Dependent Variable

Quality of Digital Services and Internal Operations within the Egyptian Tax Authority

7. Research Objectives.

Egypt's dedication to modernizing its tax infrastructure through digital transformation showcases the country's commitment to bolstering its financial resources and implementing financial inclusion. In the light of research problem and hypotheses stated earlier, objectives of this research can be expressed as follows:

1- Identifying digital transformation tools, mechanisms, and applications, utilized by the Egyptian tax authority recently.

2- Identifying to what extent do internal employees inside the Egyptian tax authority are aware of importance of applying digital transformation practices and its consequences on them organizationally and functionally.

3- Identifying current status of taxpayer's digital experience within digital platforms & applications offered by the Egyptian tax authority.

4- Identifying dimensions of quality of digital services provided by the Egyptian tax authority from the viewpoint of internal employees.

5- Identifying the impact of applying digital transformation practices on quality of digital services & internal operations within the Egyptian tax authority.

8. Research Significance:

8.1 Scientific Significance of the Research.

Current research derives its scientific significance from the importance of its topic. The Egyptian tax system considered to play a vital and critical role in achieving Egypt's Vision 2030. Having reviewed previous researches (Vishnevsky & Chekina, 2018; Nazarov et al., 2019; Rahayu & Kusdianto, 2023; Hesami et al., 2024), current study is considered as one of relatively recent studies to be applied on the Egyptian tax authority, it is one of recent studies in the Egyptian financial system that address digital financial inclusion practices and its impact on quality of digital tax services provided to taxpayers in Egypt. In light of researcher's knowledge, no recent studies have focused on measuring the impact of digital technologies and taxpayer's experience's on quality of digital services & quality of internal operations and processes within the Egyptian tax authority.

8.2 Practical Significance of the Research.

The Egyptian tax authority is being overhauled to conduct the majority of its operations electronically, accordingly this research derives its practical importance from results & recommendations expected to be generated after its completion. Through these

results, the researcher can suggest a typical model to support digital transformation practices implementation in the Egyptian tax authority so as to enhance & improve level of digital service quality provided to taxpayers, the matter which is totally consistent with Egypt's Vision 2030 as well as with the Egyptian Orientation Initiative for Institutional Excellence[7] (Egypt Award for Government Excellence).

9. Research Limits.

This research was conducted within the following limits:

Theoretical limits: This research is limited to examining digital financial inclusion mechanisms & practices utilized by the Egyptian tax authority, specifically inside large taxpayers' centers inside Cairo and Giza governorates. The research will examine also impact of applying such practices on quality of digital services and internal operations within the Egyptian tax authority.

Human Limits: This research is limited to studying & analyzing the impact of applying digital transformation practices on quality of digital services and internal operations within the Egyptian tax authority from the viewpoint of workers & employees working inside authority's large taxpayers' centers only, the researcher will address specifically large taxpayers' centers located inside Cairo and Giza governorates.

The reason for choosing employees inside Egyptian tax authority to analyze research variables through them is that; digital transformation practices are initially

---

(7) The Egyptian Orientation for Institutional Excellence issued an Egyptian Government Excellence Award in 2019 in order to encourage governmental agencies toward achieving highest levels of institutional excellence. Accordingly, it recommends a set of steps to guide Egyptian Governmental agencies towards best practices, this guide includes:

a) Vision, which includes the formation of an efficient & effective administrative apparatus that applies the concepts of governance and contributes, in turn, to achieving sustainable development in line with Egypt's Vision 2030.

b) Mission, which involves spreading the culture of excellence & quality within state's administrative apparatus to achieve client satisfaction, develop quality of government services, improve quality of life, and support institutional competitiveness.

applied among all taxpayers in order to secure, strengthen, accelerate, facilitate, and enhance range of services provided by the Egyptian tax authority, so through those internal employees and consequently through their direct interaction with large taxpayer's (clients), the extent of applying digital transformation practices inside the authority and its impact on quality of digital services and internal operations can be assessed and evaluated as those employees represent frontline that deals & interact directly with taxpayers.

Also, the researcher chose employees exclusively to analyze research variables through them due to ease of access to required data & information necessary to test research hypotheses, through relying on employee's research population and sample can be easily identified.

Time limits: This research was conducted during the second quarter of 2023.

Application Limits: Due to the difficulty of applying this research on all taxpayers' centers located in different Egyptian governorates, this research was exclusively applied on large taxpayers' centers located inside Cairo and Giza governorates only. Accordingly, this research was exclusively applied on employees & workers working inside first large taxpayer center located in Nasr City and second large taxpayer center located in Six of October city. The researcher exclusively chose large taxpayers centers because more than eighty percent of tax collections (tax revenues) are paid by large taxpayers[8], Egyptian large taxpayers include joint-stock companies,

---

(8) According to statements by head of the Egyptian tax authority and published financial reports issued by Egyptian tax authority & ministry of finance during 2023; tax revenues (proceeds) achieved during the fiscal year 2021/2022 exceed targeted figures, this year witnessed unexpected growth rates as target revenues was expected to be 1.67 trillion pounds, an increase over this target was achieved by 120% with amount of tax revenues reached 1.39 trillion pounds. About 80% of this amount are paid by large taxpayers. Reports indicated that electronic invoice system played a critical role in exceeding targeted figures as through applying this system transactions of informal sector begin to decrease while raising level of tax justice. (https://eta.gov.eg/ar/eta-strategy).

companies that subject to investment law or central bank law, some sovereign bodies such as the petroleum authority, treasury bills and bonds.

Large taxpayer centers in both Cairo and Giza governorates were chosen exclusively due to ease of collecting & obtaining required data from both tax centers.

10. Research Population, Sample, and Data Collection Methods.

As mentioned before, the relationship between applying digital financial inclusion practices and quality of digital services & quality of internal operations and processes within the Egyptian tax authority will be measured exclusively through considering large taxpayers' centers only. In this regard, research population can be represented by all employees & workers at various administrative levels within different departments inside all large taxpayer's centers affiliated to the Egyptian tax authority. Generally, there are four large taxpayer's centers all over Egypt, total number of employees & workers in these four centers can be represented in the following table:

Table (1): Research Population

Numbers of employees in all Large Taxpayer Centers	
First - Large Taxpayer Center (Nasr City)	384
Second - Large Taxpayer Center (Six of October City)	296
Large Taxpayer Center - Lower Egypt	168
Large Taxpayer Center - Upper Egypt	174
Total	**1022**

Due to the large size of research population, and due to difficulty of obtaining & collecting data from large taxpayer's centers located outside Cairo and Giza governorates, empirical part of this research will be exclusively applied on large taxpayers' centers located inside Cairo and Giza governorates only. In other words, this research will be exclusively applied on employees & workers working inside first large taxpayer center located in Nasr City and second large taxpayer center located in Six of

October city. Accordingly, population size of this research will consist of 680 employees as employees inside first large taxpayer center (Cairo) was 384 while employees inside second large taxpayer center (Giza) was 296 employees.

According to sample size tables & equations, a stratified random sample with a confidence level of 95% were selected[9]. Research sample will consist of 245 employees from both large taxpayer centers located in Cairo and Giza governorates. 140 employees will represent First-large taxpayer center (57%) while 105 employees will represent Second-large taxpayer center (43%). In the light of this discussion, research sample can be represented in the following table:

Table (2): Research Sample

Numbers of employees in Large Taxpayer Centers	
First - Large Taxpayer Center (Nasr City)	140
Second - Large Taxpayer Center (Six of October City)	105
Total	245

---

(9) Steven K. Thompson, (2012). Sampling. Third Edition, p:59-60. Stephen Thompson's equation is among the most popular formulas for calculating sample size from research population. The equation can be represented in the following formula:

$$n = \frac{NP(1-P)}{(N-1)\ (d^2/z^2) + P(1-P)}$$

(n) refers to sample size.

(N) refers to population size.

(Z) value = 1.96 which refers to significance level (0.05) & confidence level of (0.95)

(P) refers to probabilistic value (0.50)

(d) represent margin error (0.05)

The researcher distributes about 280 surveys in both large taxpayer's centers, data was collected through field visits & Google Form lists. After excluding incomplete & invalid surveys; Number of correct responses reached 226 forms (118 from First-Large Taxpayer Center and 108 from Second-Large Taxpayer Center), referring to a response rate of 92%.

11- Statistical Analysis & Testing Hypothesis.

As mentioned before, the researcher throughout this research will study and analyze respondents of research sample regarding to what extent do digital financial inclusion practices are applied within Egyptian tax authority, furtherly, the researcher will recognize the impact of these digital transformation practices on quality of services and internal operations within selected large taxpayer's centers. This will be done through testing research hypotheses through utilizing a number of statistical techniques that are consistent with research hypotheses and collected data. Primarily, research hypotheses will be tested through using Statistical Package for Social Sciences (SPSS) and analysis of momentum structures (AMOS) which includes reliability & validity tests, descriptive statistics for research variables, regression analysis, and structural equation modelling.

11.1 Reliability & Validity Tests.

Reliability means "the extent to which the scale is stable and doesn't contradict itself". To verify the stability of the study scale, Cronbach's Alpha coefficient will be used. While, validity means that the study tool measures what it was designed to measure. The following table represent reliability coefficient & validity coefficient for the study variables.

Table (3): Reliability & Validity Coefficients for Research Variables.

Variables		Items	Cronbach's Alpha Coefficient	Validity Coefficient
Digital Financial Inclusion Practices & Mechanisms		16	0.922	0.960
Dimensions	Digital Technologies	8	0.87	0.933
	Clients Experience (Taxpayers)	8	0.899	0.948
Quality of Services & Internal Operations and Processes		16	0.935	0.967
Dimensions	Quality of Digital Services	8	0.911	0.954
	Quality of Internal Processes	8	0.899	0.948
Total		32	0.96	0.980

It is clear from the previous table that, value of the Cronbach's Alpha coefficients for all study variables and its dimensions exceeds 0.7, which is acceptable and reflects high level of stability and internal consistency for research data. On the other hand, validity coefficient for each variable exceeds 0.8, and this value is considered acceptable and high as well. That's to say, the value of the Cronbach's Alpha coefficients and validity coefficients indicates an acceptable research tool that fits for its purpose.

Confirmatory Factor Analysis (CFA) was employed to validate hypothesized structure of research model.

Figure (2): CFA Summary.
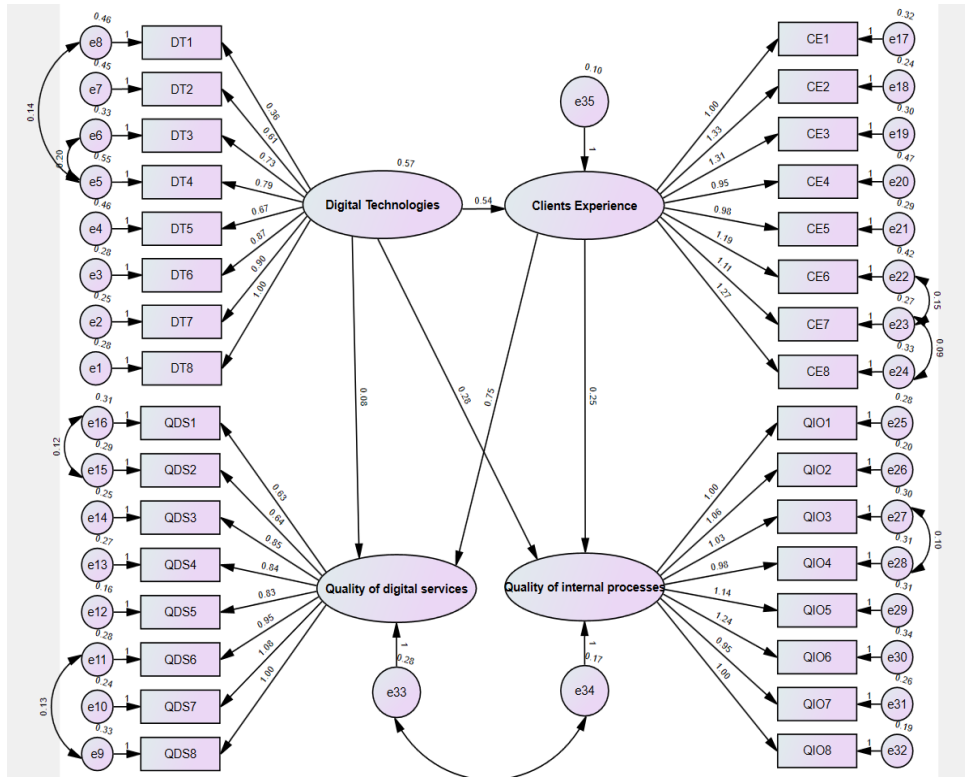
Conducted analysis yielded unstandardized estimates, illuminating direct relationships between observed & latent variables. Observed variables, denoted by DT_{1-8}, CE_{1-8}, QDS_{1-8}, QIO_{1-8}, represent diverse indicators measured in research questionnaire. These are posited to manifest underlying variables including digital transformation practices and quality of digital services & internal operations. Findings indicate that; indicators have varying degrees of association with their respective constructs, as evidenced by path coefficients. Indicators with higher coefficients (1.08) demonstrate stronger linkage to latent construct compared to those with lower coefficients (0.87).

11.2 Distribution of Research Sample.

In this section the researcher will present research data based on some personal & functional factors for employees working within the two selected large taxpayer's centers operating inside Cairo & Giza governorates. Regarding Management level, majority of sample members belong to Junior management, their number reached 106 employees representing about 46.9% of the sample size, while number of employees belonging to middle management level reached 88 employees representing about 38.9%. Regarding job title, about half of the sample size members hold the position of commissioner, their number reached 113 employees, followed by those holding position of department manager, their number reached 33 employees, representing about 14.6%. Regarding the Age stage of research sample, more than half of the sample members belong to (30-40) age stage, their number reached 117 employees, representing about 51.8%, followed by those belonging to (40-50) age stage, their number reached 54 employees, representing about 23.9%.

Regarding academic qualifications, majority of the sample members hold a bachelor's degree (BA), their number reached 147 employees, representing about 65%, followed by those holding a master's degree (MA), their number reached 42 employees, representing about 18.6%. Regarding years of experience, majority of sample members have more than 15 years of experience, their number reached 88 employees, representing about 39%, followed by those with (10 - 15) years of experience, their number reached 78 employees, representing about 35%. Regarding taxpayer center to which employees are affiliated, more than half of sample members belong to first large taxpayer center located in Cairo governorate, their number reached 118 employees representing about 52.2%, while 108 employees found to belongs to second large taxpayer center located in Giza governorate, representing about 47.8%.

11.3 Descriptive Statistics for Research Variables

In this section, the researcher will discuss some statistical measures for questions asked to measure each of research variables. This will be done in order to know the general trend of different dimensions of research questionnaire that might relate digital transformation practices & quality of services and internal operations within the two selected large taxpayer's centers.

11.3.1 Digital Transformation Practices.

Table (4): Mean & S.D for Digital Transformation Practices.

N	Questions	Mean	Standard Deviation	Importance Order	General Trend
First Dimension: Digital Technologies					
1	Digital technologies used within my tax center help to achieve a major boom in the rate of services provided to taxpayers.	4.292	0.796	1	Completely agree
2	Digital technologies used within my tax center provide more opportunities to work independently.	4.266	0.731	2	Completely agree
3	Digital technologies used within my tax center contribute to enhance the overall level of tax collection (revenues).	4.230	0.924	3	Completely agree
4	Digital technologies used within my tax center ensures safety and confidentiality of taxpayers data.	4.226	0.847	4	Completely agree

N	Questions	Mean	Standard Deviation	Importance Order	General Trend
5	Digital technologies used within my tax center ensure rapid and effective communication with clients (taxpayers).	4.204	0.958	5	Completely agree
6	Digital technologies used within my tax center are secured by a tight information security system.	4.164	0.814	6	Agree
7	Digital technologies used within my tax center contribute to enhance internal operational performance indicators.	4.066	0.849	7	Agree
8	Digital technologies used within my tax center are advanced & constantly updated.	3.889	0.844	8	Agree
Dimension Mean		4.167			Agree
Second Dimension: Customer Experience (Realistic Customer Experience)					
1	Various promotional campaigns for digital services have contributed to increasing level of clients (taxpayers) participation.	4.150	0.897	1	Agree
2	The Egyptian tax authority provides clients with technical support across various digital platforms to ensure success of the digital experiences of clients (taxpayers).	4.124	0.779	2	Agree
3	Website of the Egyptian tax authority (Egyptian Tax Portal) is characterized by development, modernization, and interaction with clients (taxpayers).	4.106	0.770	3	Agree

N	Questions	Mean	Standard Deviation	Importance Order	General Trend
4	Egyptian tax authority provides taxpayers with sufficient guidance & instructions in order to ensure successful digital experience.	4.097	0.848	4	Agree
5	Taxpayers become more confident and more secured within different digital services provided by the Egyptian tax portal.	4.004	0.877	5	Agree
6	The Egyptian tax authority's website (Egyptian tax portal) provides interactive mechanisms to ensure that customer expectations are met and exceeded.	3.987	0.882	6	Agree
7	Steps for digital transactions through the Egyptian tax authority's website (Egyptian tax portal) are smooth & easy.	3.974	0.742	7	Agree
8	Website of the Egyptian tax authority (Egyptian tax portal) contains various interactive forms that are easy to use.	3.956	0.847	8	Agree
	Dimension Mean	4.050			Agree
	The overall Mean of the Variable	4.108			Agree

Regarding the first dimension (Digital Technologies) and the second dimension (Customer Experience), it is clear that, sample members' opinions fall between completely agreeing & agreeing, mean values for both dimensions exceed 3.4 and standard deviation values are extremely low referring to low dispersion between

respondent's responses. General trend for the first and second dimensions was agreement with mean values of 4.167 and 4.050 respectively. The overall mean of the whole independent variable (digital transformation practices) represent agreement with a mean value of 4.108.

11.3.2 Quality of Digital Services & Internal Operations.

Table (5): Mean & S.D for Quality of Digital Services & Internal Operations

N	Statements	Mean	Standard Deviation	Importance Order	General Trend
	First: Quality of Digital Services				
1	Internal working systems contributes in saving time & effort of clients (taxpayers) to complete their transactions.	4.350	0.710	1	Completely Agree
2	Level of customer satisfaction (taxpayers) has improved and increased significantly.	4.230	0.693	2	Completely Agree
3	Services provided to clients (taxpayers) have become simple, flexible, and focused on high-value interactions.	4.128	0.697	3	Agree
4	The brand image of the Egyptian Tax Authority among taxpayers is improving significantly & continuously.	4.084	0.776	4	Agree
5	Internal work systems have greatly contributed to enhancing speed of resolving & responding to client's complaints.	4.066	0.766	5	Agree

N	Statements	Mean	Standard Deviation	Importance Order	General Trend
6	Internal work systems ensure that needs of taxpayers are met directly and continuously.	4.031	0.840	6	Agree
7	Clients feedback, responses & suggestions regarding different electronic services provided are taken into consideration.	3.991	0.894	7	Agree
8	I have more time to focus on high-value client relationships.	3.982	0.889	8	Agree
Dimension Mean		4.108			Agree
Second: Quality of Internal Processes & Operations					
1	Internal working systems contributes in innovating new unconventional business models.	4.288	0.761	1	Completely Agree
2	Internal working systems contributes in enhancing completion time of different operational processes.	4.159	0.687	2	Agree
3	Internal working systems contributes in saving cost of completing operational processes.	4.150	0.769	3	Agree
4	Internal working systems contributes in reducing misuse of personal or financial data.	4.142	0.716	4	Agree

N	Statements	Mean	Standard Deviation	Importance Order	General Trend
5	Internal working systems contributes in enhancing quality of operational processes.	4.111	0.749	5	Agree
6	Internal working systems contributes in improving & developing traditional business models.	4.106	0.716	6	Agree
7	Internal working systems have facilitate follow-up process of recording, saving & archiving documents in such accurate and quick manner.	4.031	0.881	7	Agree
8	Internal working systems contributes in raising level of efficiency of employees within my tax center.	3.991	0.816	8	Agree
	Dimension Mean	4.122			Agree
	The Overall Mean of the Variable	4.115			Agree

Regarding the first dimension (quality of digital services) and the second dimension (Quality of Internal Processes & Operations), it is clear that samples' opinions fall between completely agreeing & agreeing, mean values for both dimensions exceed 3.4 and standard deviation values are extremely low referring to low dispersion between respondent's responses. General trend for the first and second dimensions was agreement with mean values of 4.108 and 4.122 respectively. The overall mean of the whole dependent variable (Quality of Digital Services & Internal Operations) represent agreement with a mean value of 4.115.

11.4 Testing Research Hypotheses.

In the light of research problem & objectives stated earlier, the main hypothesis of this research was formulated in order to analyze research variables, this main hypothesis states that "statistical significant relationship might exist between digital transformation practices and quality of digital services & internal operations within the Egyptian tax authority". In order to test the main hypothesis of this research with its two derived sub-hypotheses, ordinary least squares method (OLS) will be used in order to estimate parameters of simple linear regression model so as to measure the impact of digital transformation practices (digital technologies & clients experience) on quality of digital services & internal operations within the Egyptian tax authority. Considering the first sub-hypothesis, relationship between digital technologies and quality of digital services & internal operations within the Egyptian tax authority can be tested through the following model:

$$y_1 = \beta_0 + \beta_1 x_1 + e_{it}$$

y_1: quality of digital services & internal operations represents (dependent variable).

x_1: level of digital technologies (independent variable).

β_0: represents regression constant, and β_1 represents regression coefficient.

e_{it}: represents random error.

Table (6): Impact of Digital Technologies on the Dependent Variable.

Independent Variable	Coefficients β_i	F- test		T- test		Coeff Of determination R^2	Multiple correlation coefficient R
		F- statistic	P- value (Sig.)	t- statistic	P- value (Sig.)		
(Constant)	1.946	112.443	.000	9.415	.000	.334	.578
Digital Technologies	.520			10.604	.000		

Results of F-test indicates significance of the whole regression model, where P-Value (Sig.) =0.00 is less than 0.05, thus we accept the alternative hypothesis that the model is significant. With respect to coefficient of determination, value of $R^2 = .334$, which means that digital technologies explain about 33.4% of changes that occur in quality of digital services & internal operations within the Egyptian tax authority, remaining percentage is due to random error. Regarding correlation coefficient, value of R= .578, which indicates existence of moderate correlation between digital technologies & quality of digital services & internal operations. Value of $\beta_1 = .520$, which indicates existence of a positive relationship between digital technologies & quality of digital services & internal operations within the Egyptian tax authority.

The following chart represents regression line that demonstrate the impact of digital technologies on quality of digital services & internal operations within the Egyptian tax authority.
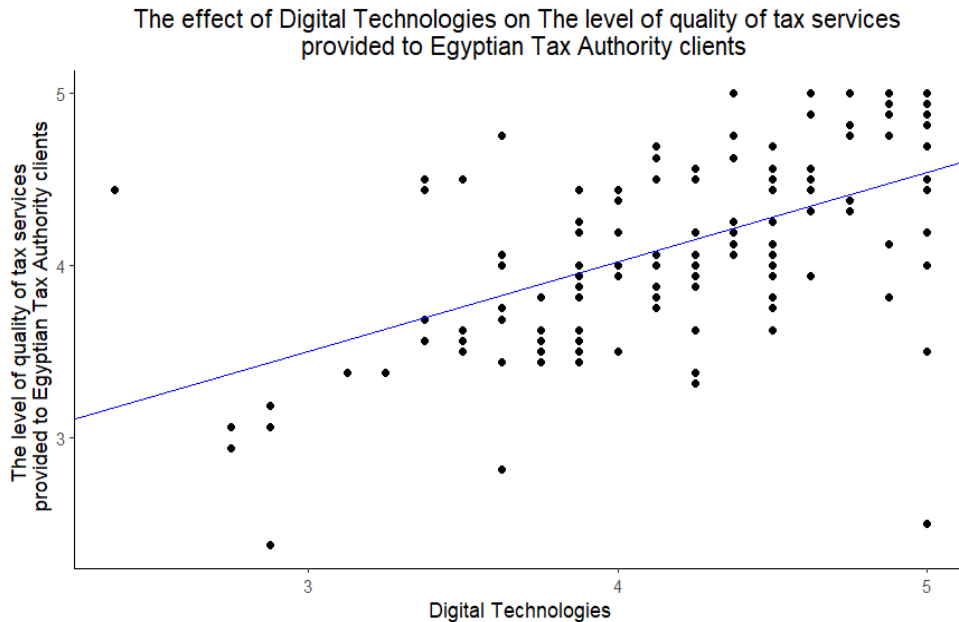
The effect of Digital Technologies on The level of quality of tax services provided to Egyptian Tax Authority clients

Therefore, the researcher can insist that there is a positive significant relationship between digital technologies & overall level of service quality & internal operations within the Egyptian tax authority, with a degree of confidence (95%).

Considering the second sub-hypothesis, relationship between client's experience and quality of digital services & internal operations within the Egyptian tax authority can be tested through the following model:

$$y_1 = \beta_0 + \beta_1 x_1 + e_{it}$$

y_1: quality of digital services & internal operations represents (dependent variable).

x_1: level of client's experience (independent variable).

β_0: represents regression constant, and β_1 represents regression coefficient.

e_{it}: represents random error.

Table (7): Impact of Client's Experience on the Dependent Variable.

Independent Variable	Coefficients β_i	F- test		T- test		Coefficient of Determination R^2	Multiple Correlation Coefficient R
		F-statistic	P-value (Sig.)	t-statistic	P-value (Sig.)		
(Constant)	1.949	137.547	.000	10.425	.000	.380	.617
Client's Experience	.535			11.728	.000		

Results of F-test indicates significance of the whole regression model, where P-Value (Sig.) =0.00 is less than 0.05, thus we accept the alternative hypothesis that the model is significant. With respect to coefficient of determination, value of $R^2 = .380$, which means that client's experience explain about 38% of changes that occur in overall level of service quality & internal operations within the Egyptian tax authority, remaining percentage is due to random error. Regarding correlation coefficient, value of R= .617, which indicates existence of moderate correlation between client's experience & quality of digital services & internal operations. Value of $\beta_1 = .535$, which indicates existence of a positive relationship between client's experience & quality of digital services & internal operations within the Egyptian tax authority.

The following chart represents regression line that demonstrate the impact of client's experience on overall level of service quality & internal operations within the Egyptian tax authority.

The effect of Clients Experience Taxpayer on The level of quality of tax services provided to Egyptian Tax Authority clients
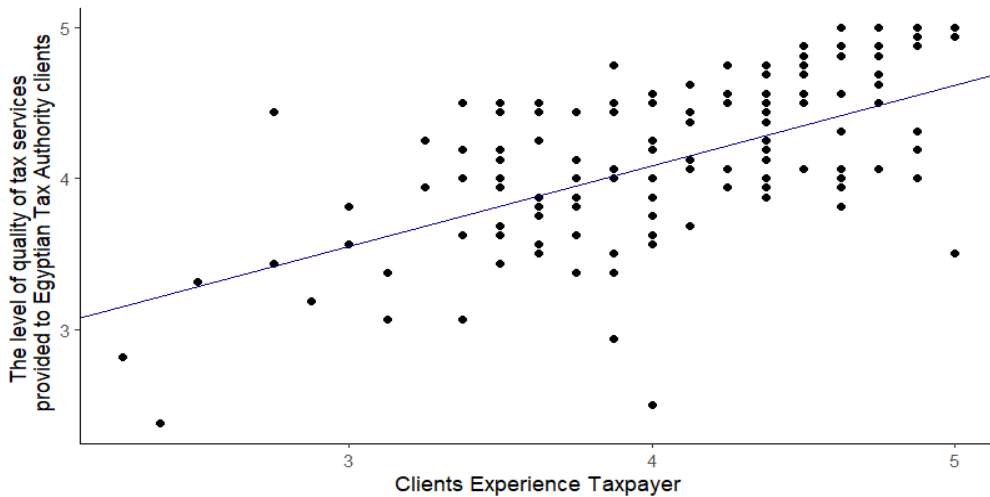
Therefore, the researcher can insist that there is a positive significant relationship between client's experience & quality of digital services & internal operations within the Egyptian tax authority, with a degree of confidence (95%).

12. Findings & Recommendations.

Results indicates that, there is a positive significant relationship between applying digital transformation practices within Egyptian tax authority and quality of digital services & internal operations and processes. When considering both dimensions of digital transformation practices; digital technologies & client's experience; digital technologies was found to explain about 33.4% of changes that occur in quality of digital services & internal operations within the Egyptian tax authority. On the other hand, client's experience was found to explain about 38% of changes that occur in quality of digital services & internal operations within the Egyptian tax authority. correlation coefficient also revealed strong correlation between digital technologies, client's experience, and quality of digital services & internal operations (Tzavlopoulos et al., 2019; M. Li & Madina, 2021; Santoro et al., 2022; Abd el Rahman, 2022)

In the light of research results shown previously, and in accordance to this evolving digital landscape, the researcher recommends decision makers inside Egyptian tax authority to continue their efforts in implementing digital transformation practices and providing digital services & digital financial solutions to all taxpayers (ordinary & large taxpayers) in order to maximize public revenues, enhance transparency in business transactions, improve tax compliance, reduce tax evasion, and simplify tax administration & digital tracking. These digital transformation practices should include all types of taxes such as income taxes, freelance taxes, value added taxes, and stamp taxes, with all transactions set to be paid electronically using non-cash payment methods.

Through applying digital transformation practices and mechanisms, quality of services and internal operations within the Egyptian tax authority will enhanced & improved as full digital processing of tax transactions will simplify taxpayer assessment processes. Digital platforms will also simplify submission of declarations, offer detailed reports & information, enhance taxpayer's digital experience, and marks a significant stride towards a digitally transformed tax landscape.

Finally, Egyptian financial inclusion strategy almost aims at improving citizen's quality of life through improving their economic & social conditions, this can be done through different channels & windows, one of which is digitalization of payment services through digital payment platforms. Through these digital transformation practices, Egyptian government different transactions will be digitally connected & linked within state's administrative apparatus to perform different transactions efficiently and effectively. In this regard, the researcher recommends the Egyptian tax authority and Ministry of finance to deepen digital financial inclusion practices within the Egyptian tax authority in order to enhance transparency & accountability, achieve principle of tax justice, mitigate risks & operational costs, reduce administrative burdens, and minimize level of financial exclusion.

References

A. Augustine, A., F. Folajimi, A. & L. Ayodele, A. (2020). Quality of Tax Services, Moderated by Trust in State Internal Revenue Service and Voluntary Tax Compliance Behaviour among Individual Taxpayers in South-West, Nigeria. *Journal of Accounting, Business and Finance Research*, *8*(2), 47–57. https://doi.org/10.20448/2002.82.47.57

Abd el Rahman, A. (2022). The impact of application of digital transformation on quality of banking services —an applied study on the Egyptian banking system. *Scientific Journal of Business & Environmental Studies*, *13*(2), 566–621.

Ahmed, S. & Faisal, M. M. (2021). SATISFACTION OF INDIVIDUAL TAXPAYERS' IN BANGLADESH. *Australian Finance & Banking Review*, 50–59. https://doi.org/10.46281/afbr.v5i1.1373

Al-dweeri, R. M., Ruiz Moreno, A., Montes, F. J. L., Obeidat, Z. M. & Al-dwairi, K. M. (2019). The effect of e-service quality on Jordanian student's e-loyalty: an empirical study in online retailing. *Industrial Management & Data Systems*, *119*(4), 902–923. https://doi.org/10.1108/imds-12-2017-0598

Al-Hawary, S. I. S. & Al-Smeran, W. F. (2017). Impact of Electronic Service Quality on Customers Satisfaction of Islamic Banks in Jordan. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *7*(1). https://doi.org/10.6007/ijarafms/v7-i1/2613

Al-Khayyal, A., Alshurideh, M., Al Kurdi, B. & Aburayya, A. (2020). *The Impact of Electronic Service Quality Dimensions on Customers' E- Shopping and E-Loyalty via the Impact of E-satisfaction and E-Trust: A Qualitative Approach*. *14*, 257–281.

Al-Shorman, H., Al-Zyadat, A., Khalayleh, M., Al-Quran, A., Alhalalmeh, D. M., Mohammad, A. & Alhawary, S. (2022). Digital Service Quality and Customer Loyalty of Commercial Banks in Jordan: the Mediating Role of Corporate Image. *Information Sciences Letters*, *11*, 1887–1896. https://doi.org/10.18576/isl/110604

Artawan, I. G. P., Widnyana, I. W. . & Kusuma, I. G. A. T. (2020). The Effect of Service Quality to Build Taxpayer Trust and Satisfaction on Increasing Taxpayer Compliance in Gianyar Regency. *International Journal of Contemporary Research and Review*, *11*(9), 21868–21883. https://doi.org/https://doi.org/10.15520/ijcrr.v11i09.842

Asuncion, A. & Lacap, J. P. (2021). *Impact of Service Quality on Taxpayers' Satisfaction at Revenue District Office 21A, Bureau of Internal Revenue, Pampanga, Philippines*. *2*, 54–70.

Au, L. T. N., Hoang, H. T. & Ho, L. T. H. (2023). Tax service quality for enterprises: development of a valid measurement scale. *Asia-Pacific Journal of Business Administration*, *15*(3), 345–360. https://doi.org/10.1108/apjba-01-2021-0033

Awadh Bin-Nashwan, S., Mubarak Al-Hamedi, A., Marimuthu, M. & Ramadhan Al-Harethi, A. (2020). Study on system fairness dimensions and tax compliance in the Middle East context. *Problems and Perspectives in Management*, *18*(1), 181–191. https://doi.org/10.21511/ppm.18(1).2020.16

Burashnikova, O. (2023). International experience of digitalization in the tax field. *Humanities Studies*, *91*(14), 148–157. https://doi.org/10.32782/hst-2023-14-91-17

Cetin Gerger, G. (2019). *Tax Services and Tax Service Providers' Changing Role in the IoT and AmI Environment BT - Guide to Ambient Intelligence in the IoT Environment: Principles, Technologies and Applications* (Z. Mahmood (ed.); pp. 203–216). Springer International Publishing. https://doi.org/10.1007/978-3-030-04173-1_9

Chauhan, S., Akhtar, A. & Gupta, A. (2022). Customer experience in digital banking: a review and future research directions. *International Journal of Quality and Service Sciences*, *14*(2), 311–348. https://doi.org/10.1108/ijqss-02-2021-0027

Chin, H., Marasini, D. P. & Lee, D. (2022). Digital transformation trends in service industries. *Service Business*, *17*(1), 11–36. https://doi.org/10.1007/s11628-022-00516-6

Dabla-Norris, E., Misch, F., Cleary, D. & Khwaja, M. (2020). The quality of tax administration and firm performance: evidence from developing countries. *International Tax and Public Finance*, *27*(3), 514–551. https://doi.org/10.1007/s10797-019-09551-y

Datta, P., Walker, L. & Amarilli, F. (2020). Digital transformation: Learning from Italy's public administration. *Journal of Information Technology Teaching Cases*, *10*(2), 54–71. https://doi.org/10.1177/2043886920910437

Demirel, D. (2022). The effect of service quality on customer satisfaction in digital age: customer satisfaction based examination of digital crm. *Journal of Business Economics and Management*, *23*(3), 507–531. https://doi.org/10.3846/jbem.2022.15328

Dinh, V., Le, U. & Le, P. (2015). Measuring the Impacts of Internet Banking to Bank Performance: Evidence from Vietnam. *The Journal of Internet Banking and Commerce*, *20*(2). https://doi.org/10.4172/1204-5357.1000103

Emara, N. & Zhang, Y. (2021). The non-linear impact of digitization on remittances inflow: Evidence from the BRICS. *Telecommunications Policy*, *45*(4), 102112. https://doi.org/10.1016/j.telpol.2021.102112

Gurcan, F., Boztas, G. D., Dalveren, G. G. M. & Derawi, M. (2023). Digital Transformation Strategies, Practices, and Trends: A Large-Scale Retrospective Study Based on Machine Learning. *Sustainability*, *15*(9), 7496. https://doi.org/10.3390/su15097496

Hesami, S., Jenkins, H. & Jenkins, G. P. (2024). Digital Transformation of Tax Administration and Compliance: A Systematic Literature Review on E-Invoicing and Prefilled Returns. *Digital Government: Research and Practice*. https://doi.org/10.1145/3643687

Hidayat, N., Suhadak, Darminto, Handayani, s. R. & Otok, B. (2014). Measurement model of service quality, regional tax regulations, taxpayer satisfaction level, behavior and compliance using confirmatory factor analysis. *World Applied Sciences Journal*, *29*, 56–61. https://doi.org/10.5829/idosi.wasj.2014.29.01.13833

Ismail, M. H. A., Khater, M. & Zaki, M. (2018). *Digital Business Transformation and Strategy: What Do We Know So Far?* https://doi.org/10.13140/RG.2.2.36492.62086

Jalil, A., Kaur, H. & Jogia, A. V. (2021). The impact of e-service quality on customer loyalty in United Kingdom. *International Journal of Applied Business and Management Studies*, *6*(1), 69–90.

Kamel, S. (2021). The Role of Digital Transformation in Development in Egypt. *Journal of Internet and E-Business Studies*, 1–10. https://doi.org/10.5171/2021.911090

Kim, R. Y. (2020). The Impact of COVID-19 on Consumers: Preparing for Digital Sales. *IEEE Engineering Management Review*, *48*(3), 212–218. https://doi.org/10.1109/emr.2020.2990115

Kitsios, F., Kamariotou, M. & Mavromatis, A. (2023). Drivers and Outcomes of Digital Transformation: The Case of Public Sector Services. *Information*, *14*(1), 43. https://doi.org/10.3390/info14010043

Li, C., Feng, W.-X., Han, S., Gupta, S. & Kamble, S. (2022). Digital Adaptive Governance, Digital Transformation, and Service Quality in Logistics Enterprises. *Journal of Global Information Management*, *30*(1), 1–26. https://doi.org/10.4018/jgim.309377

Li, M. & Madina, Z. (2021). Artificial Intelligence Assists the Construction of Quantitative Model for the High-Quality Development of Modern Enterprises. *Computational and Mathematical Methods in Medicine*, *2021*, 7211790. https://doi.org/10.1155/2021/7211790

Lukman, M. I., Tenriwaru, T. & Ikhtiari, K. (2022). The effect of tax service quality, application of e-registration and e-filing on the level of taxpayer satisfaction of personal persons at the tax service office Pratama Makassar Selatan. *Contemporary Journal on Business and Accounting*, *2*(1), 92–101. https://doi.org/10.58792/cjba.v2i1.24

Ma'ruf, S., Budiati, A. & Wibowo, S. (2023). Analysis of Tax Service Quality and Taxpayer Satisfaction During the Covid-19 Pandemic at the Pratama Tax Office Cileungsi, Bogor, West Java, Indonesia. *Sinergi International Journal of Accounting and Taxation*, *1*(3), 156–167. https://doi.org/10.61194/ijat.v1i3.134

Maulinarhadi, M., Hanum, L. & Mahardika, A. H. (2021). Determinant Factors of Taxpayer Satisfaction in Using the Electronic Tax Invoice Number (E–NOFA) in the Emerging Technology Era. In *Proceedings of the 3rd Annual International Conference on Public and Business Administration (AICoBPA 2020)*. Atlantis Press. https://doi.org/10.2991/aebmr.k.210928.037

Medynska, T. & Noginova, N. (2022). Digitalization of tax administration bodies in the context of current challenges and threats. *Scientific Notes of Ostroh Academy National University, "Economics" Series*, *1*(24(52)), 90–96. https://doi.org/10.25264/2311-5149-2022-24(52)-90-96

Metawa, N., Elhoseny, M. & Mutawea, M. (2022). The role of information systems for digital transformation in the private sector: a review of Egyptian SMEs. *African Journal of Economic and Management Studies*, *13*(3), 468–479. https://doi.org/10.1108/ajems-01-2021-0037

Miranda Veloso, C., Magueta, D., Barbosa Sousa, B. & Carvalho, J. L. (2020). Meassevuring E-Service Quality, Satisfaction and Loyalty of Customer in the Online Channel of the Modern Retail. *IBIMA Business Review*, 1–15. https://doi.org/10.5171/2020.531781

Moussa, A. & Tarek, S. (2023). Digital Transformation and its Impact in Egypt: A Comprehensive Literature Review. *International Journal of Professional Business Review*, *8*(8), e02755. https://doi.org/10.26668/businessreview/2023.v8i8.2755

Mpofu, F. Y. & Mhlanga, D. (2022). Digital Financial Inclusion, Digital Financial Services Tax and Financial Inclusion in the Fourth Industrial Revolution Era in Africa. *Economies*, *10*(8), 184. https://doi.org/10.3390/economies10080184

Munarko, A. (2022). Determinants of service quality: efficiency and workspace. *AKADEMIK: Jurnal Mahasiswa Humanis*, *2*(3), 136–144. https://doi.org/10.37481/jmh.v2i3.478

Mustapha, B. & Obid, S. N. B. S. (2015). Tax Service Quality: The Mediating Effect of Perceived Ease of Use of the Online Tax System. *Procedia - Social and Behavioral Sciences*, *172*, 2–9. https://doi.org/10.1016/j.sbspro.2015.01.328

Nazarov, M. A., Mikhaleva, O. L. & Fomin, E. P. (2019). Digital Economy: Russian Taxation Issues, International Scientific Conference: Global Challenges and Prospects of the Modern Economic Development. In *The European Proceedings of Social and Behavioural Sciences*. Cognitive-Crcs. https://doi.org/10.15405/epsbs.2019.03.129

Ngwengeh, B. B., Messomo, E. S. & Mbu, S. A. (2021). The Influence of Digital Financial Services on the Financial Performance of Commercial Banks in Cameroon. *European Scientific Journal ESJ*, *17*(15). https://doi.org/10.19044/esj.2021.v17n15p448

Obid, S. N. bt S. & Mustapha, B. (2014). Reengineering Tax Service Quality Using a Second Order Confirmatory Factor Analysis for Self-Employed Taxpayers. *International Journal of Trade, Economics and Finance*, *5*(5), 429–434. https://doi.org/10.7763/ijtef.2014.v5.410

Ozretic-Dosen, D. & Zizak, I. (2015). Measuring the quality of banking services targeting student population. *EuroMed Journal of Business*, *10*(1), 98–117. https://doi.org/10.1108/emjb-01-2014-0002

Rahayu, S. K. & Kusdianto, A. (2023). Challenges of Digital Tax Administration Transformation in Indonesia. In *Business, Management and Economics*. IntechOpen. https://doi.org/10.5772/intechopen.111458

Rha, J. S. & Lee, H.-H. (2022). Research trends in digital transformation in the service sector: a review based on network text analysis. *Service Business*, *16*(1), 77–98. https://doi.org/10.1007/s11628-022-00481-0

Rita, P., Oliveira, T. & Farisa, A. (2019). The impact of e-service quality and customer satisfaction on customer behavior in online shopping. *Heliyon*, *5*(10), e02690–e02690. https://doi.org/10.1016/j.heliyon.2019.e02690

Salih, A. A., Alsalhi, L. & Abou-Moghli, A. (2024). Entrepreneurial orientation and digital transformation as drivers of high organizational performance: Evidence from Iraqi private banks. *Uncertain Supply Chain Management*, *12*(1), 9–18. https://doi.org/10.5267/j.uscm.2023.10.022

Santoro, F., Munoz, L., Prichard, W. & Mascagni, G. (2022). *Digital Financial Services and Digital IDs: What Potential do They Have for Better Taxation in Africa?* (Working Papers, Issue 17793). Institute of Development Studies, International Centre for Tax and Development. https://econpapers.repec.org/RePEc:idq:ictduk:17793

Siagian, M., Rini, E. S. & Situmorang, S. H. (2021). The Effect of Digital Service Quality (BRIMO) on Customer Loyalty through Customer Trust and Satisfaction on COVID-19 Situation (Pt Bank Rakyat Indonesia Medan Regional Office). *International Journal of Research and Review*, *8*(8), 263–271. https://doi.org/10.52403/ijrr.20210836

Singh, S. (2019). Measuring E-Service Quality and Customer Satisfaction with Internet Banking in India. *Theoretical Economics Letters*, *09*(02), 308–326. https://doi.org/10.4236/tel.2019.92023

Tzavlopoulos, I., Gotzamani, K., Andronikidis, A. & Vassiliadis, C. (2019). Determining the impact of e-commerce quality on customers' perceived risk, satisfaction, value and loyalty. *International Journal of Quality and Service Sciences*, *11*(4), 576–587. https://doi.org/10.1108/ijqss-03-2019-0047

Vatolkina, N., Gorbashko, E., Kamynina, N. & Fedotkina, O. (2020). E-Service Quality from Attributes to Outcomes: The Similarity and Difference between Digital and Hybrid Services. *Journal of Open Innovation: Technology, Market, and Complexity*, *6*(4), 143. https://doi.org/10.3390/joitmc6040143

Vishnevsky, V. P. & Chekina, V. D. (2018). Robot vs. tax inspector or how the fourth industrial revolution will change the tax system: a review of problems and solutions. *Journal of Tax Reform*, *4*(1), 6–26. https://doi.org/10.15826/jtr.2018.4.1.042

Wadesango, N. & Magaya, B. (2020). The impact of digital banking services on performance of commercial banks. *Journal of Management Information and Decision Sciences*, *23*(S1), 343–353. https://api.semanticscholar.org/CorpusID:235432506

Wu, Y., Li, H., Luo, R. & Yu, Y. (2023). How digital transformation helps enterprises achieve high-quality development? Empirical evidence from Chinese listed companies. *European Journal of Innovation Management*. https://doi.org/10.1108/ejim-11-2022-0610

Yee, R. W. Y., Guo, Y. & Yeung, A. C. L. (2015). Being close or being happy? The relative impact of work relationship and job satisfaction on service quality. *International Journal of Production Economics*, *169*, 391–400. https://doi.org/10.1016/j.ijpe.2015.08.021

Zaoui, F. & Souissi, N. (2020). Roadmap for digital transformation: A literature review. *Procedia Computer Science*, *175*, 621–628. https://doi.org/10.1016/j.procs.2020.07.090

Zhou, L., Xia, Q., Sun, H., Zhang, L. & Jin, X. (2023). The Role of Digital Transformation in High-Quality Development of the Services Trade. *Sustainability*, *15*(5), 4014. https://doi.org/10.3390/su15054014

Zhou, S., Zhou, P. & Ji, H. (2022). Can digital transformation alleviate corporate tax stickiness: The mediation effect of tax avoidance. *Technological Forecasting and Social Change*, *184*, 122028. https://doi.org/10.1016/j.techfore.2022.122028