

Analysis of the determinants of digital technology adoption in Moroccan audit firms: development of an explanatory conceptual model

Analyse des déterminants de l'adoption des technologies numériques dans les cabinets d'audit marocains : élaboration d'un modèle conceptuel explicatif

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Disclosure Statement :	Authors are not aware of any findings that might be perceived as affecting the objectivity of this study
Conflict of Interest :	The authors report no conflicts of interest.
Cite this article :	EL ADIB, M., & NAFZAOU, M. A. (2023). Analysis of the determinants of digital technology adoption in Moroccan audit firms: development of an explanatory conceptual model. International Journal of Accounting, Finance, Auditing, Management and Economics, 4(4-1), 246-269. https://doi.org/10.5281/zenodo.8264705
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Received: July 15, 2023

Accepted: August 17, 2023

International Journal of Accounting, Finance, Auditing, Management and Economics - IJAFAME

ISSN: 2658-8455

Volume 4, Issue 4-1 (2023)

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Abstract

The exponential evolution of technology has brought about many changes in the way businesses operate, including audit firms. Digitalization, once considered an optional choice, has become a major strategic issue. Thus, thanks to the traditional literature review approach, this study examines the theoretical foundations and conceptual frameworks around technology adoption. Indeed, this article presents a preliminary conceptual model to the context of audit firms in Morocco, based on the theoretical model of UTAUT (Venkatesh et al., 2003) and a thorough theoretical model. The objective is to identify the determinants of the adoption and use of digitalization in these firms. Aspects such as the removal of paper, the use of computer equipment and the accelerated exchange of data are among the new technologies that influence these firms. Understanding the factors that motivate these firms to adopt digitalization is still unknown. This conceptual model aims to provide information on the different determinants of digitalization in audit firms in Morocco, by providing an overview of the key elements necessary for its effective implementation and use.

Keywords: Digitalization; Adoption of new technology; Digital transformation; UTAUT; Audit firm.

JEL Classification: M10, M42,

Paper type: Theoretical Research

Résumé

L'évolution exponentielle de la technologie a apporté de nombreux changements dans le fonctionnement des entreprises, y compris les cabinets d'audit. La digitalisation, autrefois considérée comme un choix optionnel, est devenue un enjeu stratégique majeur. Ainsi, grâce à une approche traditionnelle de revue de la littérature, cette étude se penche sur les fondements théoriques et les cadres conceptuels entourant l'adoption de la technologie. En effet, cet article présente un modèle conceptuel préliminaire adapté au contexte des cabinets d'audit au Maroc, en se basant sur le modèle théorique d'UTAUT (Venkatesh et al., 2003) et une base théorique approfondie. L'objectif est d'identifier les déterminants de l'adoption et de l'utilisation de la digitalisation dans ces cabinets. Les aspects tels que la suppression du papier, l'utilisation de matériel informatique et l'échange accéléré des données font partie des nouvelles technologies qui impactent ces cabinets. Comprendre les facteurs qui motivent ces cabinets à adopter la digitalisation reste encore inconnu. Ce modèle conceptuel vise à fournir des informations sur les différents déterminants de la digitalisation dans les cabinets d'audit au Maroc, en offrant un aperçu des éléments clés nécessaires à sa mise en place et à son utilisation efficace.

Mots clés : Digitalisation ; Adoption de la nouvelle technologie ; Transformation digitale ; UTAUT ; Cabinet d'audit.

JEL Classification : M10, M42,

Paper type: Recherche théorique

1. Introduction

In a few years, the digital world has managed to establish itself at all levels, influencing various aspects of daily life, embracing multiple domains, and rapidly penetrating both the economic and social spheres. Traditional business methods and work processes have been practically replaced and overshadowed by a new culture and ideology. Today, the emergence of the digital web, also known as business 4.0, represents a real strategic and organizational challenge for all companies. However, beyond any considerations about the digital culture, it is essential to emphasize that the new information and communication technologies (ICT) present both opportunities and threats to these companies. The companies that have recognized the importance of computing and digitization have been able to achieve the desired level of efficiency, time savings and optimization of returns, thereby strengthening their ability to manage their environment. Conversely, a considerable proportion of market players have vanished due to their failure to adapt to the shifting environment. It is indeed a double-edged sword.

Audit firms, like any other entity, are not spare from this digital disruption, which leads them to question the implementation and use of digital technologies within the specific context of Morocco. Moroccan audit firms face distinct challenges and opportunities stemming from cultural, regulatory, and economic factors that impact their technology adoption journey. This study aims to address the specific challenges and opportunities faced by Moroccan audit firms in integrating digital technologies into their practices, shedding light on the intricacies of this transition. By doing so, we not only bridge the gap in the literature regarding digital technology adoption within Moroccan audit firms but also contribute to the broader discourse on digital transformation within emerging economies.

The central question leading this research is: What are the determining factors for the adoption of digital technologies within Moroccan firms? This pivotal inquiry forms the foundation of our investigation, where we delve into the complex interplay of technological, organizational, and contextual elements that shape the adoption process. To answer this question, we draw upon established theoretical models while tailoring them to the specific Moroccan context, thus providing a comprehensive understanding of the factors influencing digital adoption in the realm of audit firms.

Research in the field of new technology has given rise to several theoretical models over the years, rooted in various disciplines such as psychology, information systems, marketing, and more. Indeed, these models are diverse and tailored to different contexts. Therefore, we have chosen the UTAUT model (Venkatesh et al., 2003) because it has been tested multiple times by various researchers, ensuring its relevance and effectiveness. Furthermore, the model has been extended and modified based on an extensive literature review to adapt it to our research topic and context.

The objectives of this study encompass: Presenting the various theoretical models that explain the determining factors for the adoption of new technology; Proposing an adapted conceptual model that delves into the factors of digital adoption within Moroccan audit firms and addresses the specific challenges and opportunities presented by the Moroccan context.

2. Literature Review

2.1. Conceptual Framework

2.1.1 Definition of Digitalization

Digitalization is characterized as the utilization of digital technology to modify and substitute a conventional business model, ultimately providing new opportunities and avenues for growth

and value creation. It is a process through which a company transitions from a traditional business to a digital one (Gartner, 2019).

It is important to differentiate between automation and digitalization, as they are not synonymous. Digitalization involves creating value and bringing about a certain reconfiguration by introducing something novel and innovative, whereas automation focuses on enhancing what already exists (Moore, 2015). On the other hand, robotization is a sub-domain and part of automation, as a robot can be described as a mechanical apparatus or device that functions autonomously in the physical realm (Linturi & Kuittinen, 2016). It is important to mention that Robotic Process Automation encompasses software robots as well (Willcocks et al., 2015).

Another source of perplexity emerges in the realm of technology terminology, specifically regarding the term's "digitization" and "digitalization" (Legner et al., 2017). Digitization pertains to the technical procedure of converting analog signals into digital format, eventually represented by binary digits (Legner et al., 2017). Conversely, digitalization encompasses a broader process involving the integration of digital technologies and the subsequent transformative effects induced by these information technologies (Riedl et al., 2017). Digitalization encompasses the multiple technical and social phenomena associated with its adoption in various individual and organizational contexts (Legner et al., 2017).

Reis et al. (2018) were able to identify three forms of digitalization and digital transformation:

- The first form, of a technological nature, defines digitalization as the utilization of new technologies such as applications, mobile technology, analytical tools, and social networks (Fitzgerald et al., 2013).
- The second form considers the social aspect, where digitalization is seen as a phenomenon that influences various aspects of people's lives (Matt et al., 2015).
- The third form, of an organizational nature, focuses on the changes in operational processes and organizational reconfigurations that digitalization requires. It can even contribute to the formation of entirely original new business models that differ from those existing before digitalization (Ross et al., 2016).

2.1.2 Presentation of the UTAUT Model

The Unified Theory of Acceptance and Use of Technology (UTAUT), developed by Venkatesh et al. (2003), is a model that integrates eight explanatory theories of technology adoption into a single framework (see Figure 11). The model has been empirically examined and validated in various studies examining the adoption and use of technology in different contexts (Lin, Chan, & Jin, 2004; Anderson & Schwager, 2004; Rosen, 2005; Lassoued, 2010; Ouedraogo, 2011; Ibanescu, 2011). These studies have demonstrated the utility and effectiveness of the UTAUT model. It considers five direct determinants that explain the behavior of adopting technology, specifically digital adoption in our case. Three of these determinants are related to the intention behind the adoption behavior, while the remaining two are directly linked to the behavior itself. The model comprises five explanatory variables, which are as follows:

- Expected Performance: According to Venkatesh et al. (2003), this refers to the level to which an individual believes that using the system will lead to gains and favorable outcomes. It also relates to the individual's belief in increasing their efficiency through the adoption of the behavior (Venkatesh & Brown, 2001).
- Expected Effort: This corresponds to the degree of belief an individual has concerning the ease of use of the system (Davis et al., 1989, p.320; Venkatesh et al., 2003).
- Social Influence: This reflects the extent to which a person perceives that others think they should use the new system. Social influence is based on three essential points. Firstly, Social factors pertain to the individual's perceptions or beliefs regarding other people or the social group they belong to (Thompson, Higgins, & Howel, 1991). Secondly, the subjective norm refers to the individual's belief about what important

people will think in their life if they adopt the behavior (Fishbein & Ajzen, 1975). Lastly, the image refers to the individual's belief that adopting the technology in question will boost their image in the eyes of others (Moore & Benbasat, 1991).

- **Facilitating Conditions:** This represents the level to which the actor perceives that the necessary technical and organizational infrastructure exists to improve and facilitate the use of the system.
- **Behavioral Intention:** In this case, intention refers to the perceived probability that the individual under study will adopt the behavior being investigated.

To refine the model and make it suitable for the specific study context, Venkatesh et al. (2003) added moderating variables, which include age, gender, willingness to use, and experience. These variables were chosen because they influence the explanatory variables, as they can change the relationship and influence the link between the explanatory variables and the dependent variable.

It is worth noting that the utility and advantage of UTAUT lie in the fact that it is based on multiple models and theories, taking into account the most significant determinants from various other models. Additionally, the authors included moderating variables to act on the connection between the dependent and independent variables. These variables modify the direction, form, intensity, and strength of the impact the independent variable has on the dependent variable (Sharma et al., 1981).

UTAUT is considered the most informative and successful model for explaining the adoption of new technology today. This is mainly due to its explanation of 50% of the variance in adoption and 70% of the variance in intention of this adoption (Venkatesh et al., 2003). Furthermore, the model has the utmost coefficient of determination (R^2) when it comes to the intention behind behavior and the behavior itself related to the adoption of new technology.

In conclusion, considering the various advantages that the UTAUT model presents, despite the criticisms it has received, which we have attempted to address, we have chosen UTAUT as the base model for constructing our research model. We will make certain modifications to adapt it to our specific context and research topic.

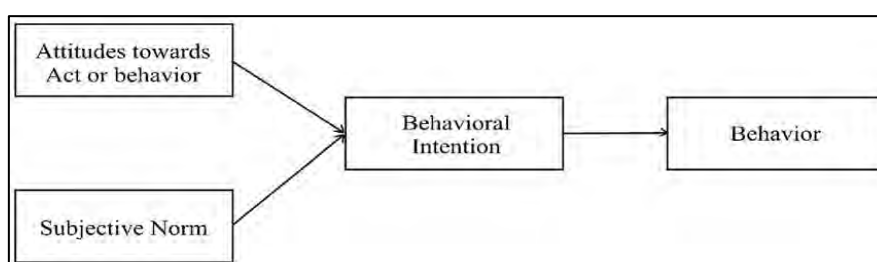
2.2. Presentation of Various Theoretical Models Related to Technology Adoption

Research on technology acceptance and usage has given rise to several theoretical models, including the following main ones:

2.2.1 Theory of Reasoned Action (TRA)

Fishbein and Ajzen (1975) are the originators of this theory. They attempted to explain the intention to adopt a behavior founded on two determinants. The first determinant is the individual's perspective about the performance of the behavior, which indicates their theory has a limitation in that the intention to engage in a particular behavior may be influenced by other external variables that the individual does not control. To address this limitation, Ajzen added a new factor (another explanatory variable) in 1991.

Figure 1. TRA



Source: Fishbein & Ajzen (1975)

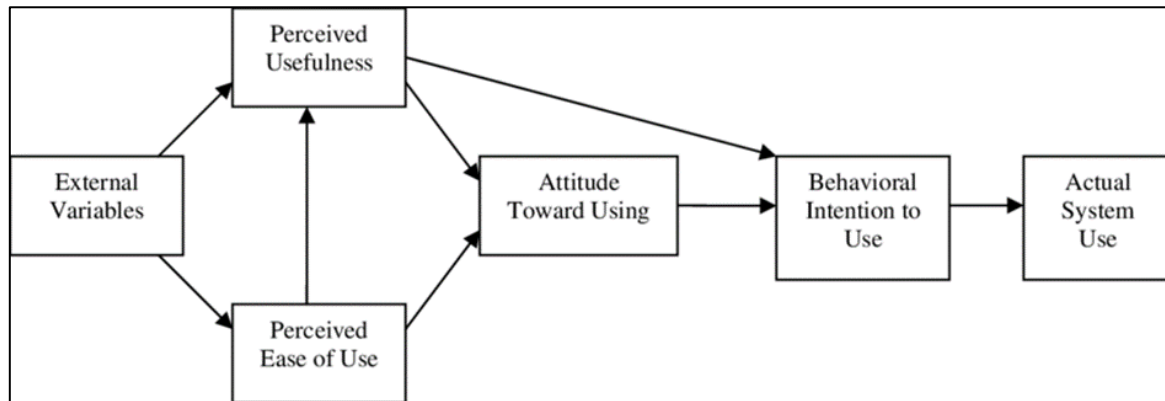
The theory of Reasoned Action provides a robust framework for understanding individuals' intentional behaviors, focusing on attitudes and social norms. However, its limitation lies in its reliance on the precise measurement of attitudes and norms, which can be intricate within a constantly evolving corporate environment. Moreover, this theory has a limitation in that the intention to engage in a particular behavior may be influenced by other external variables that the individual does not control. To address this limitation, Ajzen added a new factor (another explanatory variable) in 1991.

2.2.2 Technology Acceptance Model (TAM)

The development of this model is attributed to Davis in 1989. Initially, the researcher aimed to explain the connection between the adoption of information systems (IS) and the individual's intention behind this adoption. The intention to accept an innovative technology is directly linked to two variables:

- **Perceived usefulness:** The level of conviction held by the decision-maker regarding the technology's potential to elevate performance.
- **Ease of use:** The level to which the decision-maker perceives that adopting the technology requires minimal effort.

Figure 2. TAM



Source: Davis (1989)

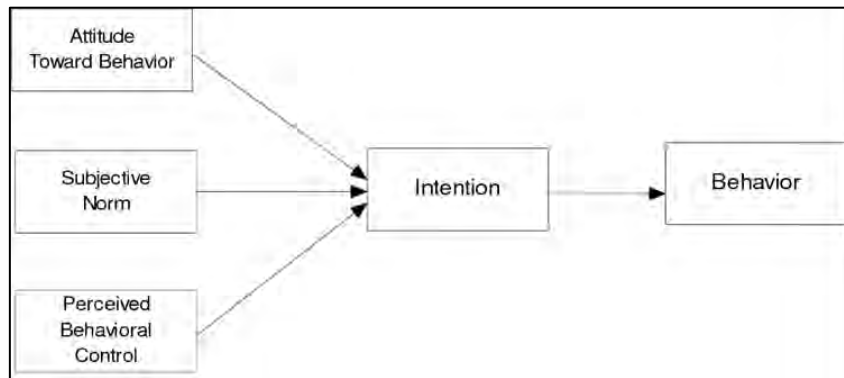
To characterize this technology, a set of variables needs to be identified. These variables can then be tested against a set of parameters, including the perceived utility and perceived simplicity of use. This analysis raises questions about the attitudes of customers, consumers, and users toward the technology, as well as their intentions. For example, does the customer or employee have the intention to use this innovative technology?

Davis introduced additional extensions (new explanatory variables) in a subsequent model called TAM 2, aiming to improve upon the original TAM 1 model.

2.2.3 Theory of Planned Behavior (TPB)

Built upon the Theory of Reasoned Action developed by Fishbein and Ajzen in 1975, Ajzen introduced improvements by proposing an original and novel theory named the Theory of Planned Behavior. This theory added a third explanatory variable to explain a specific behavior, known as behavioral control. The Theory of Planned Behavior aimed to surmount the limitations of the Theory of Reasoned Action by considering external variables that affect the intention behind a behavior. This variable encompasses factors related to the possession of resources and the mastery of certain skills, which may or may not be under the individual's control.

Figure 3. TPB



Source: Ajzen (1991)

The theory of Planned Behavior (TPB) integrates attitudes, social norms, and behavioral control, allowing for better predictability of adoption intentions. Yet, like with TRA, its implementation can be intricate within a dynamically changing organizational setting.

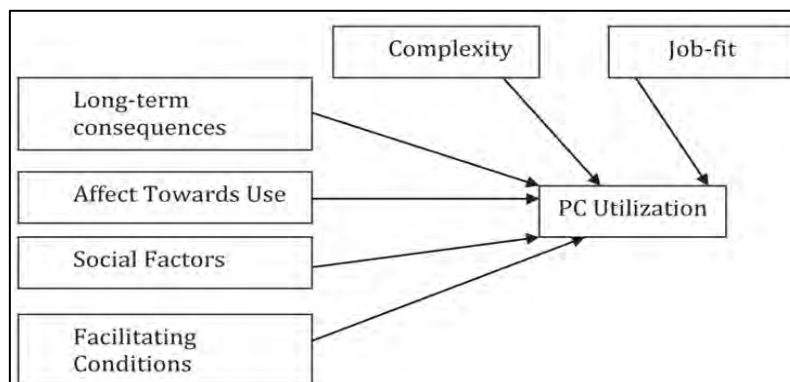
2.2.4 Model of PC Utilization (MPCU)

The Personal Computing Utilization Model (MPCU) was developed by Thompson et al. in 1991 as an enhancement to the Triandis model (1977) specifically for predicting PC adoption. The explanatory variables in their model include:

- **Long-term consequences:** indicates the perceived future results that can be achieved through PC adoption.
- **Job-fit:** Reflects the belief that adopting the technology can enhance an individual's productivity in their work.
- **Complexity:** Represents the perceived level of complexity of the innovation, i.e., how complex it is to use and understand.
- **Hedonic motivation:** Refers to the positive or negative emotional experiences associated with PC use, such as joy, pleasure, disgust, depression, or dissatisfaction.
- **Social factors:** Accounts for the integration of an individual into their cultural and group-specific characteristics, as well as the sociological contracts they have established with others.
- **Facilitating conditions:** Encompasses the objective factors that make PC use possible and easy, including various forms of assistance provided to PC users.

These variables aim to offer a comprehensive understanding of the factors influencing PC adoption and utilization within an individual's context.

Figure 4. MPCU



Source: Thompson et al. (1991)

Model of PC Utilization (MPCU) emphasizes actual technology use, providing valuable insights into real impact. However, it might overlook the initial factors that lead to adoption.

2.2.5 The Motivation Model

Davis et al. (1992) adopted the motivation model to understand the integration and use of innovative technology, as it suggests that both intrinsic and extrinsic motivations determine an individual's behavior.

Extrinsic motivation refers to users' perception of obtaining specific outcomes or rewards once a particular task is performed. Within the realm of technology adoption, individuals may use new technology because they perceive it as essential for attaining desirable outcomes that go beyond the activity itself, such as enhanced job performance, higher salary, or career advancements. Intrinsic motivation. In addition, it refers to the perception that individuals want to use a new technology for its own sake, without any apparent external rewards. They find the activity itself rewarding and fulfilling.

The motivation model underscores the significance of both extrinsic and intrinsic motivations in shaping individuals' behavior and adoption of new technologies.

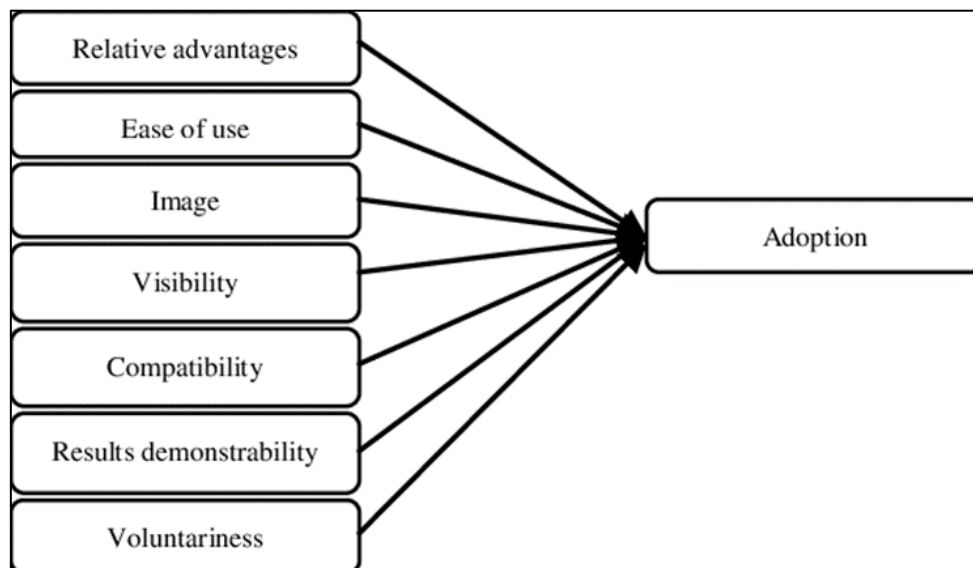
2.2.6 Innovation Diffusion Theory (IDT)

The innovation diffusion theory proposed by Everett Rogers in 1962 has been utilized over time to elucidate the adoption of various innovations. Moore and Benbasat (1991) adopted Rogers' innovation variables and added others related to individual acceptance of new technology. In their theory, the authors highlighted a set of explanatory variables behind the adoption of a technology, which include:

- **Voluntariness of use:** The level to which individuals perceive the obligation or freedom of choice in adopting new technology.
- **Demonstrability of results:** The degree to which the outcomes of implementing new technology are observable and communicable.
- **Compatibility:** The degree of alignment between the new technology being diffused and internal variables of the organization, such as values, past experiences, and needs.
- **Visibility:** The level of observability of the results by others.
- **Image:** The perception of individuals regarding the improvement of their status or image in society through the adoption of innovative technology.
- **Ease of use:** The perceived difficulty level linked to the diffusion of an innovation.
- **Relative advantage:** The perceived difference in advantage compared to the previous innovation, where a greater perceived value compared to its predecessor leads to higher diffusion.

These variables help explain the adoption and acceptance of innovative technologies within organizations or by individuals.

Figure 5. IDT



Source: Moore & Benbasat (1991)

Innovation Diffusion Theory (IDT) offers a holistic perspective by considering the influence of various actors and the diffusion process. However, it might not provide an exhaustive explanation of individual reasons for adoption.

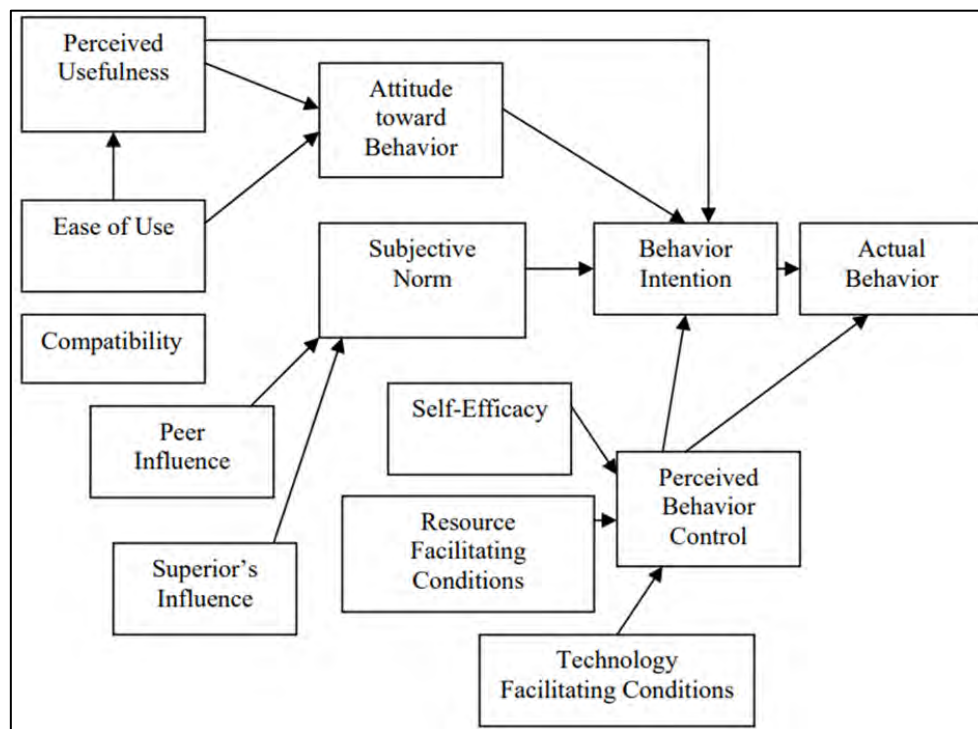
2.2.7 Decomposed Theory of Planned Behaviour (DTPB)

Taylor and Todd (1995) suggested a model that combines the Theory of Planned Behavior (TPB) and the Technology Acceptance Model (TAM). The model takes into account factors from both theories to predict a behavior related to technology usage. The key factors included in the model are:

- **Attitudes toward behavior:** This relates to an individual's negative or positive evaluations of engaging in the behavior. It reflects their beliefs about the outcomes and consequences of using the technology.
- **Behavioral control:** This factor considers the degree to which individuals perceive control over their ability to perform the behavior. It takes into account factors such as resources, skills, and external constraints that may influence their ability to utilize the technology.
- **Subjective norm:** This factor captures the influence of social norms and the opinions of significant others on an individual's intention to employ the technology. It reflects the individual's perception of whether significant others believe they should use the technology.
- **Perceived ease of use:** This factor assesses the individual's perception of how difficult or easy it is to employ the technology. It encompasses factors such as complexity, user-friendliness, and the presence of support and training.
- **Perceived usefulness:** This factor pertains to the individual's belief that using the technology will boost their performance or make their tasks easier or more efficient.

By considering these factors, the model aims to estimate the behavioral intention and actual behavior related to technology usage, taking into account both individual attitudes and subjective norms, as well as the individual's perception of the ease of use and utility of the technology.

Figure 6. DTPB



Source: Taylor and Todd (1995)

Decomposed Theory of Planned Behaviour (DTPB) breaks down factors into specifics, enabling a finer analysis. Yet, this complexity can render its application laborious.

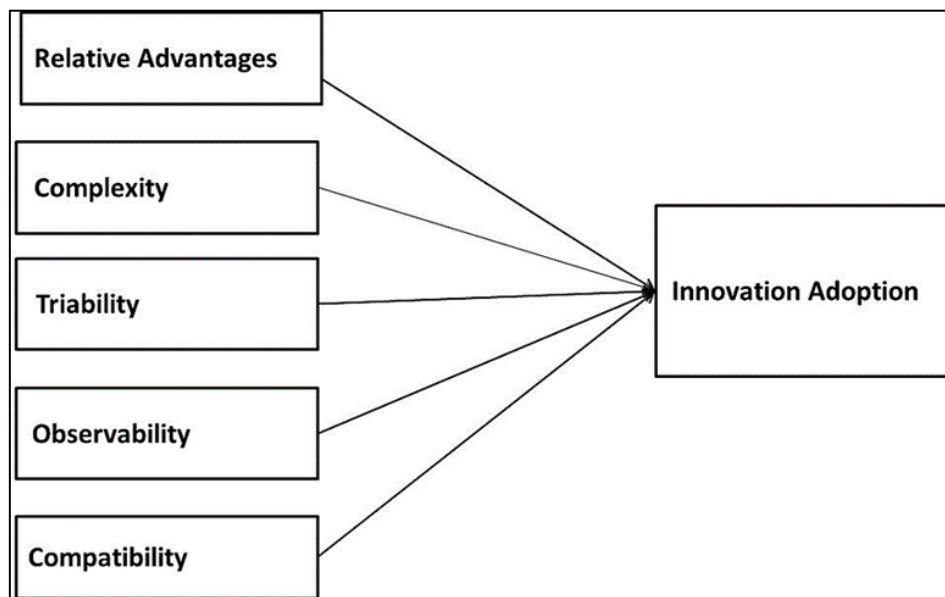
2.2.8 Innovation Diffusion Theory (IDT)

Rogers (1995) developed the Theory of Diffusion of Innovations to explain the factors influencing the adoption and use of innovations. He identified five elements that explain the adoption of an innovation, which are based on the individual perceptions of the actor who will implement and use the innovation. These perceptions include:

- **Relative advantage:** The perceived degree of improvement or advantage offered by the innovation compared to existing alternatives. The greater the perceived relative advantage, the higher the likelihood of adoption.
- **Complexity:** The perceived degree of difficulty or complexity associated with understanding and using the innovation. Innovations that are perceived as simple and easy to employ are more likely to be adopted.
- **Trialability:** The opportunity for individuals to experiment with the innovation on a trial basis before making a complete commitment. The ability to test the innovation reduces uncertainty and encourages adoption.
- **Observability:** The level to which the outcomes and benefits of adopting the innovation are visible and observable to others. Innovations that provide observable benefits or positive outcomes are more likely to be adopted.
- **Compatibility:** The level of perception regarding the compatibility of the innovation with the user's needs, experiences, and values. Innovations that are perceived by the user's social system and existing practices are more likely to be adopted.

These factors help explain the diffusion process of innovations by considering how individuals perceive the innovation's Complexity; Compatibility; Trialability; Observability and Relative advantage. By understanding these perceptions, researchers and practitioners can better understand and facilitate the adoption and incorporation of innovations.

Figure 7. IDT



Source: Rogers (1995)

Innovation Diffusion Theory (IDT) offers a holistic view of the diffusion process by considering various elements such as innovation characteristics, communication channels, and social systems. However, it may not fully encompass the individual cognitive processes that influence adoption decisions within the complex setting of audit firms in Morocco. Its emphasis on collective behavior could potentially overshadow the specific motivations that guide individual professionals.

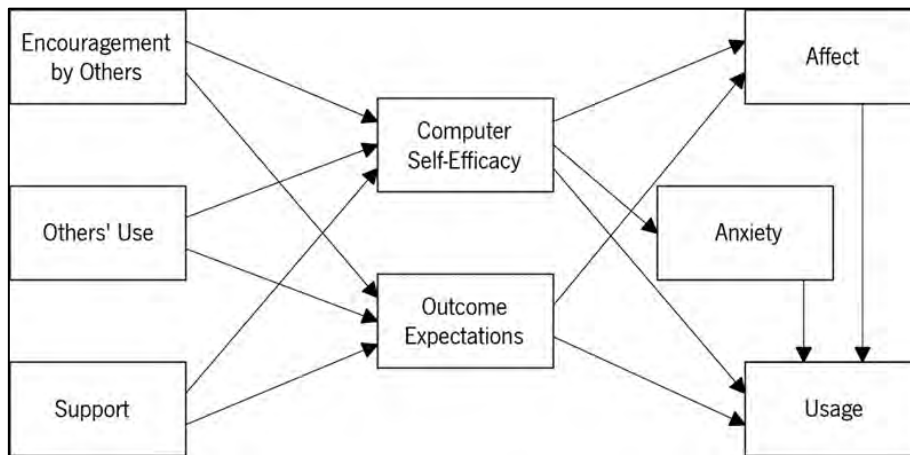
2.2.9 Social Cognitive Theory (SCT)

Social Cognitive Theory, introduced by Albert Bandura in 1986, emphasizes the role of social interactions and reciprocal influences between environmental, personal, and behavioral determinants in the learning process. This theory has been applied in various domains. Compeau and Higgins (1995) applied it to explain computer usage. Their basic model takes into account several factors, including:

- **Outcome expectations (performance):** Refers to the effectiveness and efficiency that an individual could achieve by using computers.
- **Outcome expectations (personal):** Relates to expectations of improved status, image, or rewards such as salary increases or promotions.
- **Self-efficacy:** Denotes an individual's confidence in their abilities to manipulate computers. Higher self-efficacy leads to increased computer usage.
- **Affect:** Represents the positive emotions and feelings that individuals experience from using computers. Positive affect encourages computer usage.
- **Anxiety:** This variable represents the negative side, referring to the feelings of anxiety or discomfort that individuals may experience when using computers.

These factors contribute to the understanding of individuals' decisions to use computers by considering their expectations of outcomes, self-efficacy beliefs, emotional responses, and anxieties. The social cognitive theory supplies a framework to analyze the interplay between these factors and their influence on computer usage.

Figure 8. SCT



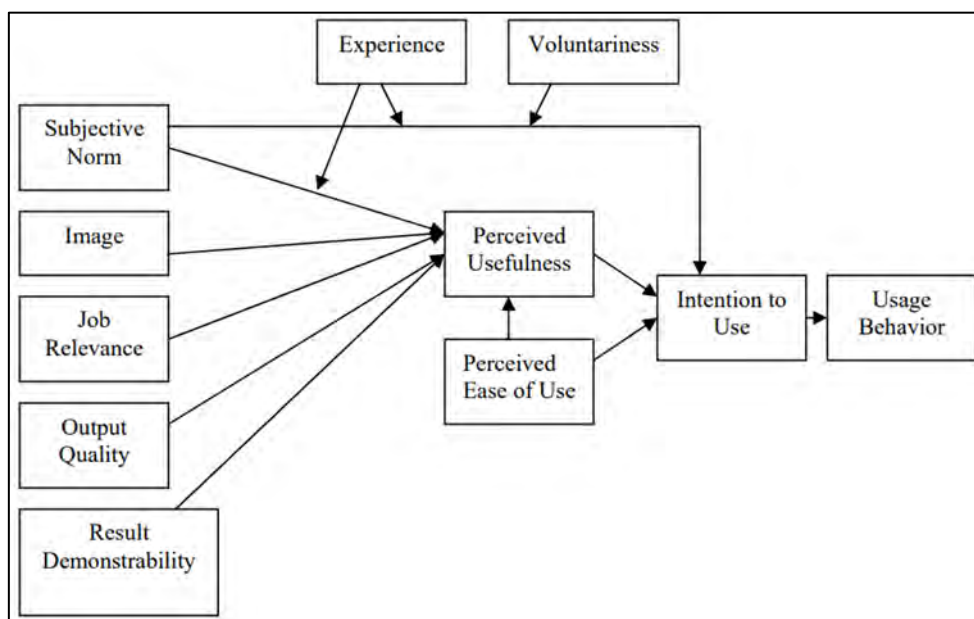
Source: Compeau & Higgins (1995)

Social Cognitive Theory (SCT) highlights the role of cognitive, behavioral, and environmental factors in shaping individual actions. Its emphasis on observational learning and self-efficacy offers valuable insights into technology adoption behavior. Yet, it might not fully encompass the broader organizational and societal influences that play a significant role in the audit sector of Morocco. This limitation might require additional contextualization within the complex dynamics of the industry.

2.2.10 Technology Acceptance Model 2 (TAM 2)

In their study conducted in 2000, Venkatesh and Davis expanded the original Technology Acceptance Model (TAM) by developing TAM 2, which included additional variables to explain the adoption of innovative technology, particularly in the context of mandatory adoption. The different variables that provide an explication of the adoption of an innovation in the second model are presented in Figure 9.

Figure 9. TAM 2



Source: Venkatesh and Davis (2000)

Technology Acceptance Model 2 (TAM 2) expands on the original TAM by incorporating external variables such as subjective norms and cognitive instrumental processes. This enhancement allows for a more comprehensive understanding of user perceptions and intentions. Nonetheless, TAM 2 may not extensively address the unique challenges faced by Moroccan audit firms in terms of regulatory constraints, cultural differences, and specific industry demands. Customization of the model's constructs might be necessary to fully capture the nuances of technology acceptance in this context.

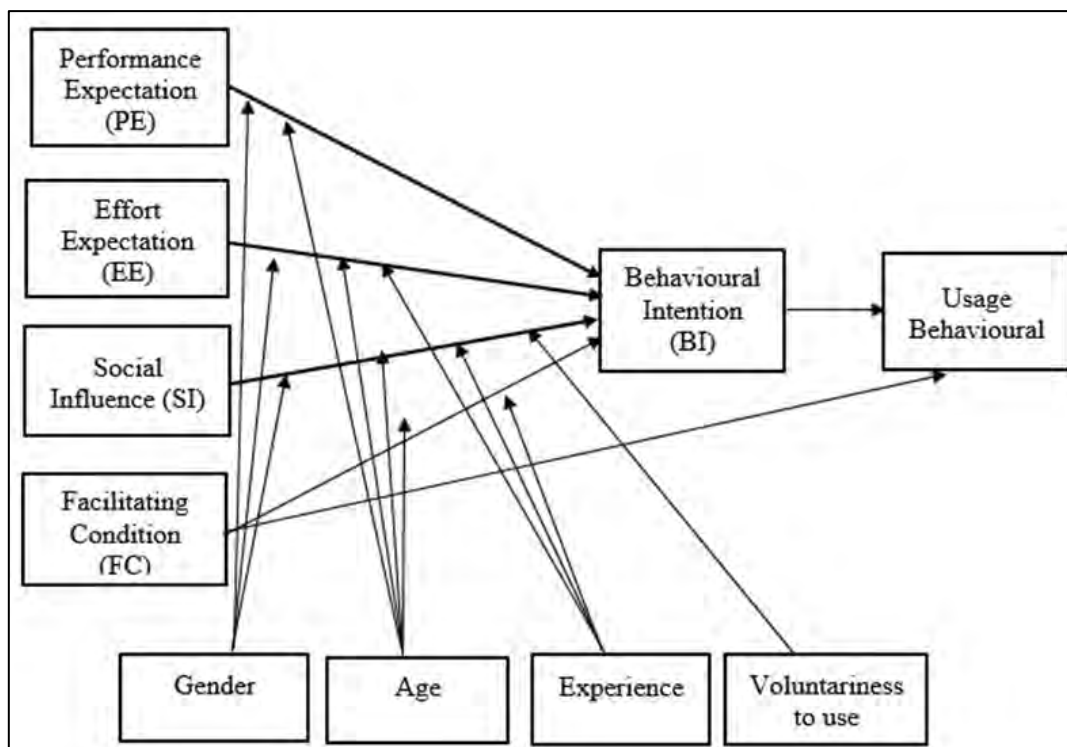
2.2.11 Unified Theory of Acceptance and Use of Technology (UTAUT model)

Venkatesh, Morris, and Davis (2003) were able to integrate eight theories into a single model. This model consists of four explanatory variables, which are:

- **Perceived performance expectancy:** The level to which a person believes that adopting the system will yield benefits in terms of work performance.
- **Perceived effort expectancy:** It corresponds to the perceived ease associated with using the system.
- **Social influence:** The level to which the actor believes that others think he should employ the new system.
- **Facilitating conditions:** The actor's perception of the adequacy of the technical and organizational infrastructure to enable the successful adoption of the system.

These variables were integrated to establish a comprehensive model that takes into consideration various factors influencing the adoption of a new system.

Figure 10. UTAUT model



Source: Venkatesh et al. (2003)

The Unified Theory of Acceptance and Use of Technology (UTAUT model) integrates key determinants of technology adoption, including performance expectancy, effort expectancy, social influence, and facilitating conditions. Its comprehensive nature provides a strong foundation for understanding the complexity of adoption decisions. However, UTAUT might need to be adapted to account for the distinctive challenges and opportunities encountered by

audit firms operating within the Moroccan business landscape. The interplay between cultural factors, industry norms, and technological capabilities could necessitate tailored adjustments to the model's constructs.

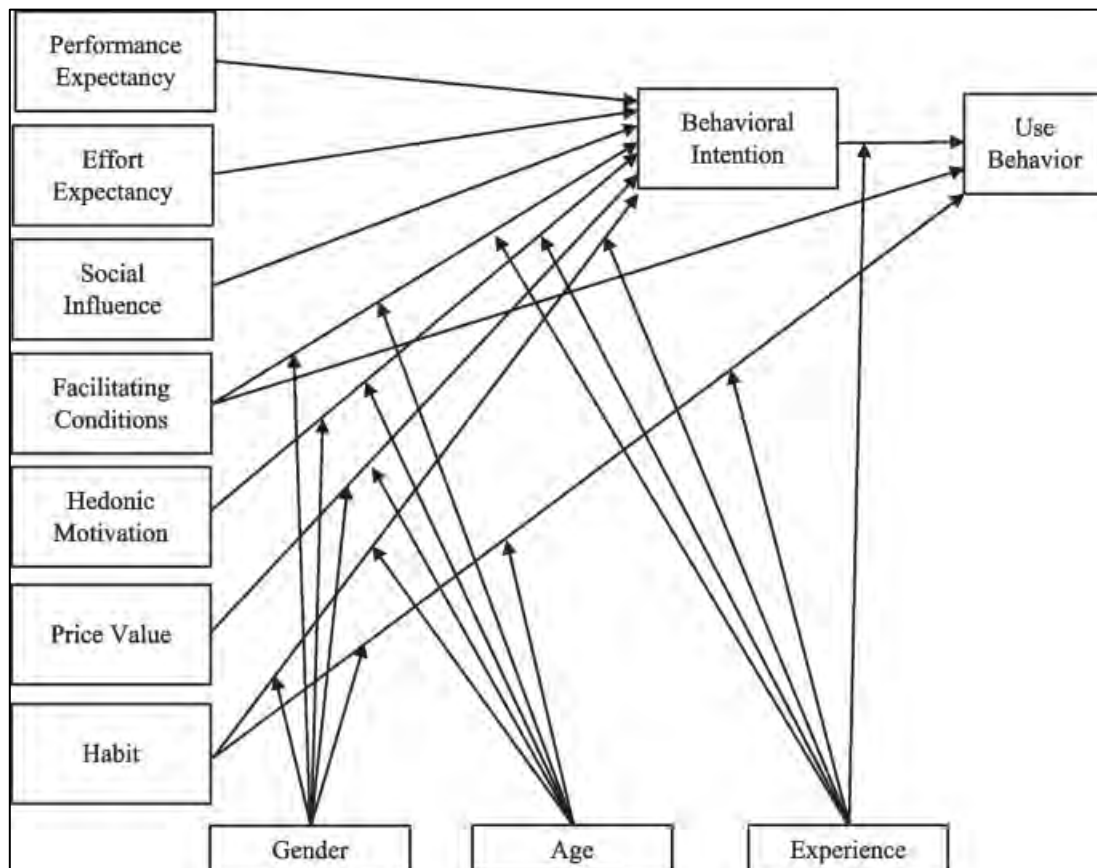
2.2.12 Unified Theory of Acceptance and Use of Technology 2 (UTAUT model 2)

Venkatesh, in 2012, made further improvements to the initial model to enhance its accuracy. He introduced new explanatory variables such as habit, price value, and hedonic motivation. These additional variables were incorporated to offer a more comprehensive understanding of the factors influencing technology acceptance and usage.

- **Hedonic motivation:** This variable refers to the individual's desire for enjoyable and pleasurable experiences associated with using the technology. It captures the intrinsic motivation driven by the enjoyment and satisfaction derived from using the technology.
- **Price value:** This variable considers the perceived value or cost associated with adopting and using the technology. It takes into account factors such as the financial investment required, the perceived benefits of the cost, and the individual's assessment of the value proposition.
- **Habit:** Habit refers to the automatic and routine behavior developed through repeated use of technology. It captures the extent to which the individual has formed a habit of using the technology, which can influence their intention to continue using it.

By incorporating these additional variables, Venkatesh aimed to enhance the model's ability to elucidate and forecast the adoption of technology and usage by considering a wider range of individual motivations and factors that impact decision-making.

Figure 11. UTAUT model 2



Source: Venkatesh et al. (2012)

2.2.13 Theoretical discussion

The presented models, ranging from the Theory of Reasoned Action (TRA) to the Unified Theory of Acceptance and Use of Technology (UTAUT), offer distinct lenses through which to perceive the determinants of technology adoption. The themes that traverse these models reveal a delicate equilibrium between universality and specificity. While models such as the Innovation Diffusion Theory (IDT) and UTAUT provide holistic viewpoints by encapsulating societal and contextual dynamics, models like the Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB) zoom in on individual cognitions and perceptions. Such a contrast emphasizes the perpetual challenge of encapsulating the multifaceted nature of technology adoption within a single model. This comparison not only enriches our understanding of adoption mechanisms but also underscores the necessity of a nuanced approach that balances the broader ecosystem with specific insights. By appreciating the individual strengths of each model and recognizing their limitations, researchers can craft a more integrated understanding that bridges the psychological, sociocultural, and organizational dimensions of technology adoption.

Research on new technologies has long been studying and analyzing why and how individuals adopt and use innovative technologies. Within this extensive research field, several streams of research have emerged. Some research streams focus on individual acceptance of technology, utilizing either intention or usage as the key variables to explain adoption (e.g., Davis et al., 1989; Compeau & Higgins, 1995). Other streams examine the organizational context, studying technology adoption within specific organizational structures (e.g., Leonard-Barton & Deschamps, 1988), while some focus on task-fit technology (Goodhue & Thompson, 1995; Goodhue, 1995), and so on.

Each of these research streams contributes valuable and distinctive insights to the literature on technology adoption. The theoretical models considered in this article primarily employ adoption, i.e., intention and/or usage, as the essential dependent variable. The objective here is to explain the adoption of digital technologies within audit firms in Morocco as the dependent variable. We identify three limitations in these previous models and aim to address them in the construction of our preliminary conceptual model.

- **The studied technological domain:** The technologies that have been analyzed and addressed in different studies were information-related and considered relatively less complex and user-oriented, in contrast to the emphasis on more intricate organizational technologies of executives, managers, and the present study.
- **Timing of the study:** The previous models presented are generally developed after the implementation of the new technology, that is, after the decision of adoption or rejection, whereas it is crucial to study the phenomenon before and during the active implementation of the technology. In this research, we will examine the new technology in the form of digitization from the initial decision made for its adoption.
- **Voluntary or mandatory contexts:** Most models have been conducted in situations where the actor has the right to choose or refuse the adoption of technology. This can bias the applicability of the findings to the entire population. Notable exceptions to this are found in TAM 2 (Venkatesh & Davis, 2000) as well as in studies that have added willingness as a direct effect on intention to account for perceived non-voluntary adoption (e.g., Moore & Benbasat, 1991; Agarwal & Prasad, 1997). Our study will take into account both the voluntary and mandatory effects of digital adoption.

3. Development of Hypotheses and Proposal of the Preliminary Conceptual Model

3.1. Development of Hypotheses

The UTAUT model is a comprehensive and general model that needs to be reformulated with new modifications and revisions to make it adaptable to the study of the adoption of specific technologies in specific contexts. This adaptation is founded on the earlier literature review and a preliminary qualitative study conducted with employees and experts, as well as the overall direct observation.

3.1.1 The impact of attitude, moderated by age, gender, and experience, on the intention to adopt digital technology

In terms of the structure of the model, it has been helpful to combine the three explanatory variables: perceived usefulness, expected effort, and perceived risk into a single variable category called attitude. This is justified by Ajzen's (1991) model in the Theory of Planned Behavior, which proposes three categories of variables that explain intention. The first category is an attitude, which indicates the beliefs an individual holds about the consequences of adopting a particular behavior. In our case, these consequences include perceived usefulness (performance, employee motivation, long-term effects), expected effort (ease of use of digital adoption), and perceived risk (data loss risk, data security, and protection risks).

Perceived usefulness and expected effort are consistent with the original UTAUT model (Venkatesh et al., 2003), while we have deemed it important to add perceived risk as a variable because it has a significant influence on the intention to adopt digitalization (Fu et al., 2006; Schaupp & Carter, 2010, Akinwale & Kyari, 2022).

The significance of intention as a forecaster of behavior is essential, which is why the foundational model for all the previously mentioned models is the one suggested by Fishbein and Ajzen (1975), which asserts that intention underlies all behavior. Therefore, we expect that the effect of attitude on the intention to adopt digitalization will be differently moderated based on experience, with a stronger effect among younger and more experienced executives in audit firms.

Research suggests that older executives within organizations often face challenges in comprehending new or intricate information, which consequently impacts their ability to learn new technologies (Plude & Hoyer, 1985; Morris et al., 2005). The underlying reason for this difficulty can be traced back to the natural deterioration of cognitive and memory capabilities that typically accompany the aging process (Posner, 1996).

***H1:** Perceived usefulness, expected effort, and perceived risk, grouped under attitude and moderated by age, gender, and experience, would influence the intention to adopt digital technology within an audit firm.*

3.1.2 The impact of external factors and their influence on the intention to adopt digital technology, moderated by the adoption willingness

The second category is related to external influence, which encompasses all external factors that can impact the decision-making of the individual. In the case of digitalization, the decision to adopt and use it is often driven by external variables. Two types of influences are considered: social influence, where other individuals exert pressure on the decision-maker, as confirmed by Ajzen's Theory of Planned Behavior (1991) and the UTAUT model (Venkatesh et al., 2003); and the current context characterized by the Covid-19 pandemic.

The Covid-19 crisis has acted as a catalyst for digital transformation in organizations (Saad et al, 2022), as highlighted by Xavier Moulies, Director of Devenir, Nouméa, New Caledonia, in a contribution to the collective book "Les répercussions durables de la crise sur le management"

(Frimousse & Peretti, 2020). The crisis has accelerated the adoption of digitalization as an effective and relevant "therapeutic response" to cope with disruptions and slowdowns in activities and even to discover new sources of value creation through increasingly agile management (Goldman et al., 1995).

H2: Social influence and crisis, grouped under external influence and moderated by adoption willingness, would influence the intention to adopt digital technology.

3.1.3 Impact of facilitating conditions on the intention to adopt digital technology

The third category of explanatory variables consists of enabling conditions (Venkatesh et al., 2003). In this regard, three explanatory variables are considered relevant: financial resources, self-efficacy, and support.

Financial resources and self-efficacy are grounded in the theory of resources and capabilities (Penrose, 1959; Prahalad & Hamel, 1990). A leader of an audit firm cannot contemplate implementing a digitalization process without having the necessary resources and appropriate skills. Self-efficacy, as explained in social cognitive theory (Compeau & Higgins, 1999), refers to the ability to use and manipulate new technological innovations. It raises the question of whether the users within an audit firm can effectively handle and utilize the digital tools adopted by the firm. If this variable is not met, it is recommended that firm leaders provide training for their employees.

In the UTAUT model, enabling conditions are considered direct explanatory variables of behavior. However, these variables also influence the intention behind the behavior. According to Ajzen's Theory of Planned Behavior (1991), the facilitating conditions, analogous to enabling conditions, are related to both intention and behavior, highlighting their dual influence.

H3: Facilitating conditions would influence the intention to adopt digital technology within an audit firm.

3.1.4 Direct impact of facilitating conditions, moderated by organizational culture, on digital adoption

To adapt UTAUT to the context of digital adoption by audit firm leaders, it is also relevant to confirm the direct relationship between enabling conditions and behavior (digital adoption) in addition to the existing connection between enabling conditions and the intention to adopt digital technology. In Ajzen's Theory of Planned Behavior (1991) and other models such as the DTPB (Taylor & Todd, 1995), enabling conditions are considered explanatory variables for both intention and behavior.

H4: Facilitating conditions, moderated by organizational culture, would directly influence digital adoption within an audit firm.

3.1.5 The impact of the intention to adopt digital technology on real adoption

Behavioral intention is an intermediate component between the factors and the adoption behavior (Fishbein & Ajzen, 1975). It is related to the individual's self-instructions to behave in a certain way. In other words, it is the wish, will, or desire to adopt the behavior. Limayem and Rowe (2003) linked the term "intention" to ideas such as "I will do," "I should do," and/or "I intend to do."

In their UTAUT model, Venkatesh et al. (2003) confirmed that behaviors follow the intentions associated with those behaviors. Fishbein and Ajzen (1975) were the pioneers in behavioral intention and defined it as "the subjective probability that an individual will perform a specific behavior." Thus, behavioral intention refers to future behavior, which also applies to the behavior of adopting digital technology, as demonstrated by Luthi (2012), who showed that the intention to use a new technology decides the degree of real adoption. Building upon this

premise, we rephrase the following hypothesis as follows:

H5: *The intention to adopt digital technology would positively affect the real adoption of digital technology*

3.1.6 Moderating Variables

- **Age:**

Individual characteristics are influenced by age when it comes to explaining digital adoption (Lashitew, 2023). That's why we have considered age as a moderating variable for the connection between individual characteristics and the intention to adopt digital technology.

A study conducted in 2013 by CEFRIO (Centre Francophone en Informatisation des Organisations), which has since been renamed the Center for Research and Innovation Facilitation in Organizations, focused on the communication patterns of adults in Quebec. The study revealed that internet usage and the use of various mobile communication methods decrease with age, indicating that older individuals tend to use less technology. The exact center conducted a study in 2012 that demonstrated that the Y generation, aged between 18 and 34, remains more connected to the internet compared to previous generations.

Thus, age is considered a discriminating variable in the acceptance or rejection of ICT (Igbaria & Parasuraman, 1989; Igbaria, 1993). Also, in the field of e-learning (Tarhini et al, 2014). In his study on innovation adoption, Rogers (1995) emphasizes that adopters are generally younger, have higher incomes, and have higher social status compared to non-adopters. Igbaria and Parasuraman (1989) observe that aging individuals tend to have less exposure to ICT, which makes them more resistant to change and less flexible. This reluctance is further exacerbated by their computer anxiety, reducing their propensity to utilize systems (Zoltan & Chapanis, 1981). Additionally, aging individuals tend to exhibit more negative attitudes toward computers compared to younger individuals.

- **Experience:**

Experience constitutes a moderating variable in our research, specifically the familiarity of individuals (audit firm managers in our case) with technological tools (Sun & Zhang, 2006; Lashitew, 2023). Indeed, several researchers have endeavored to confirm the positive relationship between experience and individuals' beliefs about technology use (Cheong & Park, 2005; Fulk et al., 1987; Schmitz & Fulk, 1991; Burton-Jones & Hubona, 2006; Hackbarth et al., 2003; Lee et al., 2006). The conclusion was quite clear: the more individuals are familiar with technology, the more convinced they are of its effectiveness and ease of implementation and mastery of complex tasks (Ndubisi & Jantan, 2003; Burton-Jones & Hubona, 2006; Cheong & Park, 2005). Thus, an important point to add is that as individuals become more accustomed to technology, they develop expertise that enables them to be more satisfied when adopting new technologies (Gatian, 1994; Simmers & Anandarajan, 2001; Guimaraes & Igbaria, 1997; Sun & Zhang, 2006).

- **Gender:**

In several studies related to our research topic, gender is considered an essential element to take into consideration. The influence of gender on beliefs regarding the adoption of new technologies has been studied and analyzed in various contexts (Sumak et al., 2010; Wang & Shih, 2009; Dečman, 2015). Various studies have shown that perceptions of usefulness regarding the intention to adopt innovative technology are perceived to be stronger among men than women (Nysveen et al., 2005; Ong & Lai, 2006; Amin, 2007; Wang & Shih, 2009). Other studies have confirmed that women attach more importance to expected effort (Amin, 2007; Venkatesh et al., 2003) and are more optimistic about it than men (Saeed & Abdinnour-Helm, 2008; Page et al., 2007).

Regarding our study, specifically the variables in our basic UTAUT model, several studies like

Gefen and Straub (1997) have clearly shown the relationship between gender differences and their impact on the perception of both perceived usefulness, expected effort, and social influence in the adoption of information systems.

However, other studies have shown that personal perception and intention regarding the adoption of innovative technology have no relationship with gender, as the adoption of the technology remains gender-neutral for the individuals being studied (Knight & Pearson, 2005; Orr et al., 2001; Page et al., 2007; Yi et al., 2006; Dečman, 2015). This may be relative to the inherent qualities of the technology in question, the study context, and the culture of the society in which the individual is situated (Hofstede, 2009).

- **Willingness:**

Thus, we propose a moderating variable that can impact the connection between external influence and intention, namely the willingness of the actor to adopt. The higher the willingness to adapt, the less important external influence is considered to be. Willingness to use refers to the extent to which the adoption of digital innovation is perceived to be voluntary or unconstrained (Moore & Benbasat, 1991, 1995). Furthermore, Hartwick and Barki (1994) observed significant differences between those who voluntarily adopt digital technology and those who do so out of obligation, suggesting that further research is needed to delve deeper into this subject.

- **Organizational culture:**

A successful digital transformation cannot occur without a digitally-oriented organizational culture (Long et al, 2022; Moslehpour et al, 2022; Bley et al, 2022). According to a study by BCG titled 'It's Not a Digital Transformation Without a Digital Culture' (BCG, April 2018), nearly 80% of companies that embrace a digital culture achieve superior and sustainable performance. This is why we believe it is necessary to include organizational culture as a moderating variable that can influence the connection between enabling conditions and digital adoption. Even with favorable conditions, the absence of a digital-friendly organizational culture may hinder successful adoption.

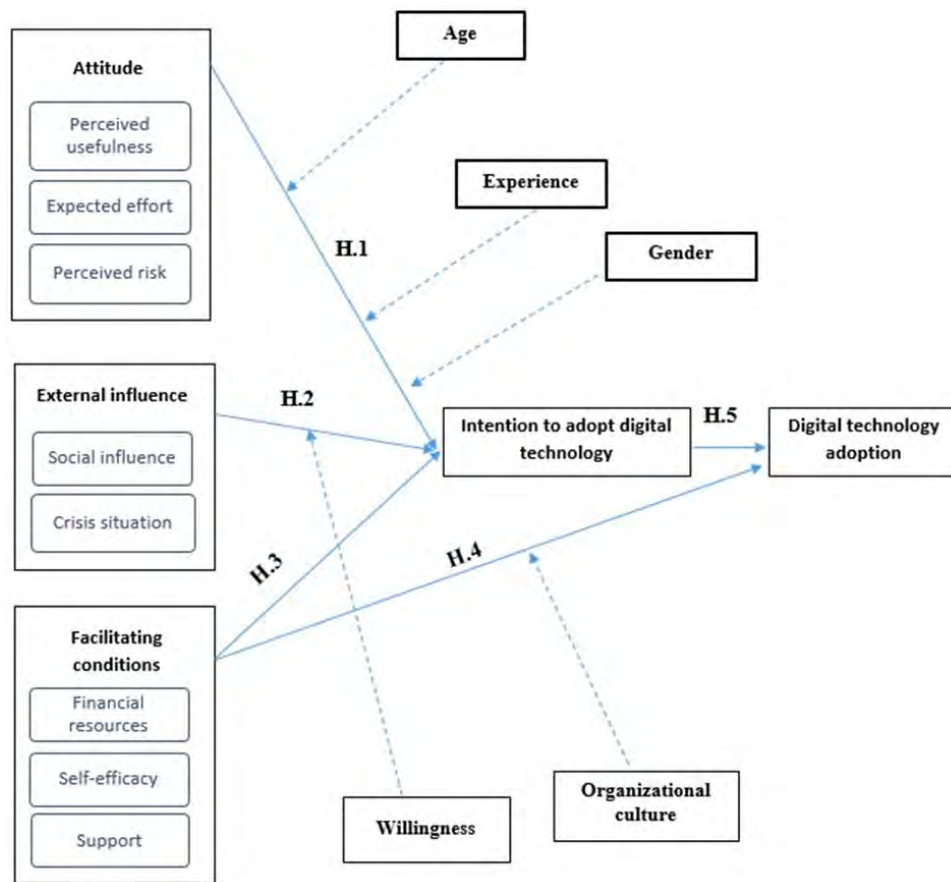
3.2. Proposition of the model adapted to our research context and subject

Before presenting our model, it is essential to contextualize our approach by revisiting earlier research and its findings. A retrospective examination of prior studies reveals a spectrum of affirmative and adverse associations among distinct variables. Reflecting on these insights, we construct a comprehensive framework that amalgamates and extends these relationships. Our model takes into careful consideration a range of pivotal variables:

- **Attitude:** Incorporating dimensions such as perceived usefulness, expected effort, and perceived risk, which collectively shape individuals' disposition towards digital adoption.
- **External Influence:** Encompassing factors like social influence and crises that underscore the role of external forces in technology adoption.
- **Facilitating Conditions:** Recognizing the significance of an enabling environment in fostering technology integration.
- **Moderating Variables:** Embracing the moderating impact of age, experience, gender, willingness, and organizational culture, which infuse nuance into the overarching adoption dynamics.

This intricate interplay of factors converges into a holistic model that encapsulates the intricate landscape of digital technology assimilation within Moroccan audit firms. By unifying these components, we endeavor to unveil a comprehensive framework that not only encapsulates the diversity of interconnections but also serves as a stepping stone towards deciphering the complexities underlying technology adoption.

Figure 12. Factors influencing the adoption of digital technologies within Moroccan audit firms



Source: Auteurs

4. Conclusion

In conclusion, the digitalization of audit firms presents a significant challenge that affects organizations of all sizes and industries. Recognizing this environmental change, this article focuses on proposing a preliminary conceptual model specifically tailored to the adoption of digitalization within audit firms in Morocco. The chosen framework for this model is the UTAUT model (Venkatesh et al., 2003), which has been modified to align with the research subject and context.

This study aims to identify the determinants that influence the adoption of digitalization within audit firms. By understanding these factors, the chances of successfully implementing digitalization can be assessed, and the various acceptance and adoption factors can be comprehended. This understanding enables proactive and anticipatory measures to be taken, such as implementing training programs or seeking government support, to address potential resistance from audit firm leaders who may be hesitant to embrace digitalization.

The findings of this research will not only contribute to the existing body of knowledge on digitalization in audit firms but also offer practical implications for audit firm leaders. By identifying the factors influencing digitalization adoption, leaders can proactively address potential barriers and leverage opportunities for successful implementation. This research underscores the importance of adapting to the digital landscape and highlights the need for audit firms to embrace digitalization as an integral part of their operations.

However, it is important to recognize that this study has its limitations. Our preliminary conceptual model, while informed by established theories, remains untested in the field. Future

research endeavors should focus on empirically validating and refining this model through comprehensive data collection and analysis. Furthermore, exploring the intricate interplay between specific factors within the context of Moroccan audit firms could enhance the accuracy of the model's predictions.

In consolidating the outcomes of our theoretical exploration, it is evident that each model contributes a unique facet to understanding technology adoption. From individual motivations to broader societal influences, a spectrum of determinants comes into play. While the models differ in scope and emphasis, they collectively underscore the multifaceted nature of the digitalization journey. This synthesis lays the groundwork for future research endeavors aiming to empirically validate and refine our conceptual model, bridging the theoretical and practical realms of technology adoption within audit firms.

In conclusion, the successful digital transformation of audit firms requires a comprehensive understanding of the determinants that influence adoption. By recognizing these factors, audit firm leaders can make informed decisions, implement necessary interventions, and pave the way for a successful digital transition in the industry.

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