An Evolutionary Review of the Technology Adoption Models

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ABSTRACT

The use of information systems and modern technologies is crucial for any business nowadays. Thus, several models and hypotheses concerning the acceptability of technological innovations have emerged. Several models were discovered via research to introduce the aspects contributing to the information system's success. The researchers examined and evaluated 15 models and theories of technology adoption at the individual level through a theoretical lens grounded in the literature. Throughout the assessment, the models that rely heavily on assumptions are highlighted. The present study will summarize the weaknesses and virtues of these models and ideas.

Keywords: Technology adoption; Innovation Models; Decision Theories, Retail Technology, Individual Adoption;

1.   INTRODUCTION

There has been much academic interest in analyzing and predicting retail transformation because of the retail industry's history of continual change over the past few decades. Research into the causes and trends of retail model innovation has been prompted by seminal works on the history of retailing institutions, such as the "wheel of retailing" and the "retail accordion" [1]. Innovation theory and practice benefit from a deeper understanding of whether or not technologies are adopted. Ajzen and Fishbein's (1980) Theory of Reasoned Action [2], Davis's (1989) Technology Acceptance Model [3], Parasuraman and Davis's (2000) Technology Readiness Index [4], and Natarajan et al. (2017) 's Unified Theory of Acceptance [5] and Use of Technology all owe something to the Development of Ideology (DOI) framework by Rogers, (1995) [6]. As defined by Rogers (1995) and used by the Digital Object Identifier (DOI) [7], an invention is a thought, method, or item that is judged novel by a person or another unit of adoption, while diffusion is the mechanism by which individuals adopt a new idea, product, or service, groups, or institutions over time [8]. Macro, domain, and market/industry adoption are the three categories of emergent technology [9]. A second meso domain examines the interactions that affect the social system in which potential adopters are placed, and a third meso domain examines the human (micro) domain. Numerous studies have been conducted to ascertain what factors influence and how likely customers are to adopt cutting-edge technology innovations [10].

Retail adoption of new technologies was based on educated guesses about how customers would use them and how management would obtain accurate data for forecasting future demand [11]. One major research avenue, therefore, has been on consumers' openness to new technologies rather than on their efficient implementation or uptake by businesses and their employees [12]. Although innovation is crucial to a company's success, it can be hard for

businesses to pinpoint the factors contributing to the successful implementation of new ideas [13]. Small unstructured retailers can adopt innovation in one of two ways: to predict changes in the environment or to adapt to existing ones [14]. From a retail technology vantage point, a company's whole nature may be transformed, and novel operational procedures or concepts can be introduced [15]. It is suggested that technological advancements in retail might affect business output, as new technologies are always being introduced [16], [17], [18]. The paper evaluates various technology adoption, individual decision and acceptance models suitable for retail markets, and the technology adoption by retailers.

2.   BACKGROUND

Any technological advancement resulting in a novel concept, product, strategy, behavior, or impact on consumers or businesses is considered an innovative technology [19]. This section of the paper concentrated on the review of practical applications of the theory of diffusion of innovations, specifically on the elements and processes that might reveal the results of their acceptance. The ways that retailers and customers adjust to introducing innovative technology are discussed. As a rule, process innovation is the most numerous of these numerous types of innovation. Innovation may be categorized based on the degree of aggregate data. Innovation can take place on many different scales, from the level of the individual through process improvement and adaptation to the scale of the entire value chain of a company through product and service innovation and new business models to the scale of an entire industry through technological breakthroughs as innovation systems [20]; [21]; [22]. The adoption and use of innovations are studied in innovation diffusion [23]; [24], which draws from sociology and psychology [25]. There is a lot of evidence from studies on adopting IT/IS innovations that suggest that doing so is challenging [26]; [27].

Well-known and widely-used models and ideas on how and why people accept new technologies. Based on the ideas of the behavioral sciences in psychology and sociology, as well as its consequences for technology use, these theories were created to investigate how people adapt to new technologies and demonstrate their potential. Over time, these theories have morphed and built upon one another. The 14 most influential and well-known theories are summarized in this paper. Ajzen and Fishbein's (1980) Theory of Reasoned Action (TRA), which grew into Ajzen's (1985) [28] and later Decomposed Theory of Planned Behavior (DTPB) [29]. The Technology Readiness Assessment (TRA) was expanded into the Technology Acceptance Model (TAM) [30], including contributions from the field of information systems. TAM has spawned a second iteration, TAM-2 [31]. They also provide TAM and TPB individually, in addition to the combination version (C-TAM-TPB) [32]. When TAM is expanded upon, it becomes UTAUT [33], then UTAUT-2 [34]. The Innovation Diffusion Theory (IDT) [35], the Motivational Model (MM) [36], and the Social Cognitive Theory (SCT) [37] are all examined together with the Model of PC Utilization (MPCU) [38] developed in the field of computer science. Figure 1 provides an overview of the most well-known approaches to understanding people's willingness to adopt new technologies. Some ideas, as we have seen, are developed from previous models.

3.   TECHNOLOGY ADOPTION MODELS

Individual acceptance is the subject of eight different models and hypotheses [31]. The theories and acceptance models are TRA, SCT, TAM, TPB, MPCU, MM, C-TAM-TPB, and IDT. Various theories and models investigate humans' pre- and post-adoption actions about information and communication technologies (ICTs) [39]. TAM, TPB, UTAUT, DOI Theory, and TOE are widely used in technology adoption [40]. Each company has its DOI and TOE Framework. Every person has their TAM, TPB, and UTAUT. Technology Acceptance Model (TAM), Information Systems (IS) Success Model, Computer Usage Model, and Personal Computer Acceptance Model are only a few of the various models [41]. The most popular models for predicting the performance of information systems and their subsequent adoption, such as the technology acceptance model and the information system success model, place a strong emphasis on technological characteristics [42]. A computer usage model will also consider human elements and institutional backing. Organizational considerations are also central to the personal computer adoption model [43]. This study aimed to highlight the positives and negatives of the theories mentioned in the literature.
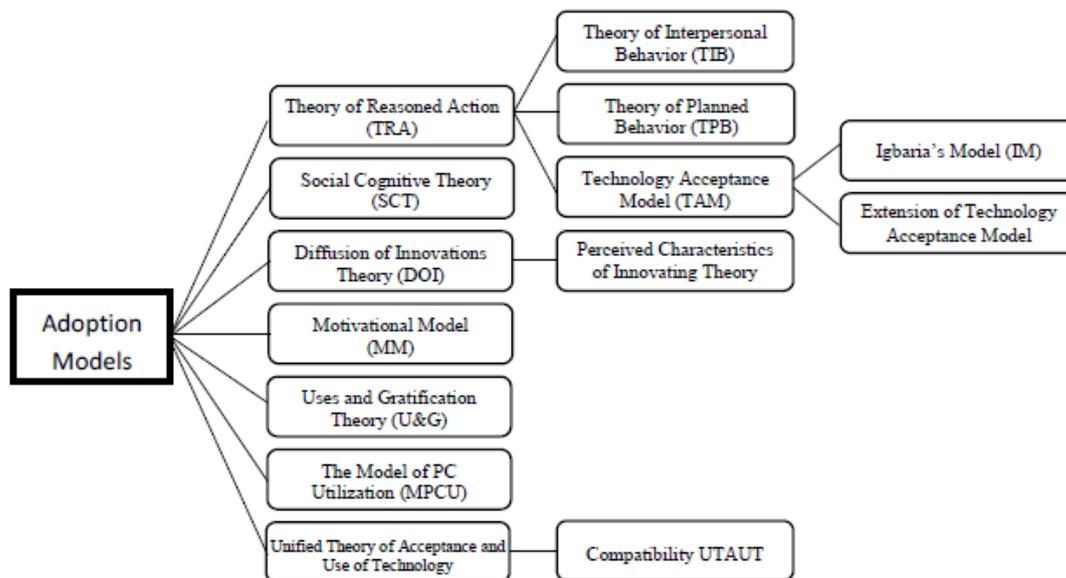

Figure 1: Overview of Technology Adoption Models *[38]*

3.1. Theory of Reasoned Action (TRA)

One of the most popular ideas is the Theory of Reasonable Action [44]. Intentional conduct is affected by a person's attitudes about the behavior [45]. An "attitude" is an individual's evaluation of an item, a "belief" is a link between an object and some attribute, and a "behavior" is a result of an aim. Emotionally charged and rooted in deeply held convictions about the target of one's actions, attitudes are the driving force behind all human action (e.g., POS payments are convenient). Second, there is the individual's perception of the social standards around certain conduct, e.g., my peer retailers use POS payment systems, which is a status upgrade in the retail business.

Ajzen & Fishbein (1975) define one's attitude toward behavior as favorable or negative feelings and evaluative effects on the execution of a certain activity. Individuals' subjective

norms reflect their conviction that others closest to them share their views on whether they should partake in the behavior at hand. Individuals' impressions of societal pressures to do or refrain from taking action on the topic are reflected in subjective norms [46]. Subjective norms are related to normative convictions. People will experience social pressure if they believe they are required to do something because they believe the majority of others around them believe they are expected to do it.

To summarize, the Theory of Reasoned Action is widely applied in several fields of study (TRA). This investigator concluded that there were several problems with this theory. TRA is limited since it presumes that actors' choices are voluntarily made. This presumption disregards the potential impact of institutionalized restraining measures on individual behavior [47]. The Theory of Reasoned Action (TRA) has broad applicability. TRA is too general to adequately characterize the active beliefs associated with any particular task. First, TRA researchers need to learn how people in their study population feel about the behavior in question. In 1991, Ajzen added the variable "perceived behavioral control" to his Theory of Planned Behavior to deal with these limitations (TPB) [48]; TPB suggests that an agent's intention to take action on a topic increase as their sense of agency grows.

3.2.   Theory of Planned Behaviour (TPB)

The theory of Planned Behaviour Conduct depicts this idea by centering on an aspect that characterizes an individual's behavioral intentions based on their attitudes about the behavior in question [49]. Two components are shared with the Theory of Reasonable Action [44]. Thirdly, consumers' perceptions of the constraints placed on their actions are considered. For instance, customers may wonder, "Can I apply for a QR code for UPI payment, and what are the requirements?"

TPB enhances perceived behavioral control of TRA (TRA). Perceived behavioral control predicts intention and behavior, according to TPB. The Theory of Planned Conduct asserts that attitudes, subjective standards, and perceived behavioral control all play a role in determining intention and predicting action. Through the interaction of the three determinants and the aim, demographic factors have the potential to affect behavior [50]. Before actions are taken, the reasons for such actions can be explained by attitudes, subjective norms, and perceived levels of behavioral control. Behavior can be predicted based on intent. According to the idea, perceived behavioral control estimates the individual's ability to express the action and overcome restrictions. Therefore, perceived behavioral control affects behavior, while actual conduct offers feedback on the appropriate level of expected behavior. According to the Model of the Theory of Planned Behavior, consumers should consider the costs and advantages of various courses of action and select the one that would allow them to realize the greatest increase in their projected net benefits [51].

In 1995, Taylor and Todd came up with the idea for the TAM-TPB model, using predictors from the TAM-TPB model to determine how IT was utilized. These predictors included attitude toward conduct from TRA/TPB, subjective norm from TRA/TPB, perceived

behavioral control from TPB, and perceived usefulness from TAM [29]. Intentional conduct drives actual behavior, which is impacted by factors such as attitude, subjective norm, perceived behavioral control, and perceived benefit. The C-TAM-TPB boldly asserts that perceived behavioral control would likewise directly affect behavior. Attitude is determined by perceived utility and ease of use, which directly impacts perceived usefulness [52].

The user experience would govern TAM-TPB Model connections. Taylor & Todd's (1995) empirical research showed that experienced users were more influenced by perceived usefulness, attitude, and behavioral control. Experience reduced subjective norms' effect. According to Taylor and Todd's study, less experienced users are more likely to depend on different factors (e.g., perceived benefit) than experienced users [29]. The graphic shows the hypothesis' structure.

In a nutshell, both the theory of reasoned action (TRA) and the theory of planned behavior (TPB) operate under the assumption that individuals are reasonable when considering the acts they do and the consequences of their choices (decision-making). The concept of planned action places emphasis on both conduct and intention. The Theory of Planned Behavior paradigm postulates that consumers make decisions by comparing the costs and advantages of various available alternatives and selecting the alternative that maximizes their projected net benefits. The concept of planned conduct is a model of rational choice. There are circumstances in which the system is required. The usage of the system is required of all users. This demonstrates that this idea ought to be a candidate for consideration by actions based on logical thinking [53].

3.3. Diffusion of Innovation (DOI)

The adoption and diffusion of innovations describe the uptake of new technologies. When potential users communicate about new technology via channels, market dispersion happens in a system of users. This helps users grasp new technology. Rogers' adoption process starts with knowledge. The remaining four steps are persuasion, choice, execution, and confirmation. Non-adoption may be viewed as a failed adoption procedure. Rogers believes characteristics, e.g., the user's boundaries, and external impediments, e.g., ineffective communication routes, might hinder adoption [54].

Innovation diffusion theory explains how, why, and how fast new ideas and technology spread across civilizations. Across diffusion, an invention spreads through a social system through time. It's a unique kind of communication as the messages are novel. Innovation, communication routes, timing, and social structure are key to innovation diffusion [55]. Several factors affect how soon an innovation is embraced; advantage, compatibility, trialability, and absorbability contribute 49% to 87% of adoption rates [56].

Overall, DOI theory simplifies things by focusing on a single product or idea without ignoring socioeconomics or social norms. Various research has shown how to predict

individual and organizational behavior using the diffusion model. DOI Theory is for corporations, not individual people [40], [57].

3.4.   Decomposed Theory of Planned Behaviour (DTPB)

Taylor and Todd delivered the Decomposed TPB (1995). Attitude, subjective standards, and perceived behavior control impact behavior intention and adoption. TPB and Decomposed TPB in internet banking [58]. Many studies have been done on the Theory of Reasoned Action [44], the Theory of Planned Behavior [49], and Decomposed Theory of Planned Behavior [29], but they were mostly used for products already on the market and included community views.

TPB achieves this aim using perceived behavioral control prediction to disassemble the TPB (DTPB). This model describes user behavior by linking beliefs, attitudes, intentions, and actions [59]. Attitudes, subjective norms, and the impression of behavioral control are significant components of this Model [60]. DTPB focuses on behavioral determinants such as attitudes, subjective norms, and perceived behavioral control. Attitude is based on perceived utility, convenience, and compatibility. Compatibility is how well an idea fits with established values, past experiences, and customer desires [61].

Compatibility affects one's viewpoint about online buying attitudes and is a forerunner to perceived utility. Two ideas underpin this model [62]. Compatibility is an antecedent of attitude among perceived usefulness, ease of use, trust, and service quality. More convenient internet stores are adopted, and compatibility affects internet acceptance as a tool [63].

3.5.   Technology Readiness Assessment (TRA)

A TRA is a rigorous, metric-based technique and associated report for assessing the maturity of Critical Technology Elements (CTEs), which are technologies crucial to the operation of a system. Technology Readiness Assessment Deskbook of the Department of Defense, 2003 (updated May 2005). The TRA measures technological advancement, which does not take this as a test of knowledge or an assessment of the developers' or company's competence; it is not intended [64]. Potential Applications of a Trade Restrictions Authorization

- Determine what information and processes are needed to make the technology project-ready and where testing, demonstration, and knowledge gaps exist.
- Recognize susceptible technologies that need additional monitoring or R&D investment;
- Identifying proven technology or stressing immature or untested technologies might increase managerial choices.

The Technology Readiness Level (TRL) scale was created by NASA in the 1980s and is now used by TRAs. Technology's TRL shows its development level. The relevance of TRLs in DOE-EM programs is that the TRL scale ranges from 1 (basic ideas) to 9 (advanced) (the total system used successfully in project operations). TRL has little association with design quality when implementing a technology. However, test results are vital in determining the

TRL. The environment must be proper for testing, and the technology must be large and detailed. Terms like "scale," "system integrity," and "environment." [65].

3.6.   Model of PC Utilization (MPCU)

Based on Triandis's theory of social behavior, Thompson et al. (1991) developed the Model of Personal Computer Use (MPCU) [66]. Triandis, via his research, came up with a hypothesis to account for the factors that impact and produce human behavior [67]. The Model of PC Utilization provides an IS-aligned framework for predicting PC uptake and utilization. The designers of the MPCU model opted to remove behavior intention from the equation since the model examines actual behavior (personal computer use). In addition, routines are disregarded because of the tautology inherent in the relationship between past and present PC use. Several factors can directly impact one's conduct, and the MPCU investigates these factors. Predicting factors for personal computer usage included job-related factors, societal consequences, long-term effects, and complexity. A user's facilitating condition, emotional state, and PC use are not strongly correlated. Despite routines' status as a tried-and-true behavior indicator, they are absent from MPCU [68].

According to Triandis, "Action is regulated by what individuals would want to do (attitudes)," as well as "what they think they should do" (social norms), "what they have typically done" (habits), and "the expected consequences of their action." Supportive context, pertinent arousal, and the individual's impression of subjective culture's traits are all included as behavioral intention and conduct factors and their linkages within this framework [38].

Thompson et al. updated Triandis' theoretical IS model to predict PC use [69]. This theoretical model effectively projects individual users' adoption and use of different information technologies. Individuals' sentiments (affect) toward PC use, social norms connected to PC use in the workplace, general computer habits, predicted effects of PC use, and the level of workplace enabling settings to help to utilize PCs all affect PC usage behavior in the MPCU [38], Because of measuring issues, the writers focused on actual user behavior rather than intention. MPCU model's efficacy in characterizing and understanding voluntary computer use has been challenged. The model's low explanatory power (24%) is another flaw [70].

3.7.   Innovation Diffusion Theory (IDT)

The sociologically based theory has been used to study progress in the subject. The Diffusion of Innovations (DOI) Model defines how consumers adopt new technologies and are one of the most widely used frameworks in the information systems and technology literature [40]. Since the theory's central concern is how innovations move across society at the individual and organizational levels. The diffusion and adoption processes. When innovation is adopted, it is "decided to make full use of as the best course of action available," whereas diffusion is "the process by which an invention is transmitted through certain channels through time among the members of a social system" [55].

The DOI/IDT hypothesis encompasses the innovation-decision process, innovation characteristics, and adopter characteristics to explain technological diffusion and adoption. The five phases in Rogers' (1995) innovation-decision paradigm are knowledge, persuasion, choice, execution, and confirmation. Rogers (2003) categorizes individuals depending on how rapidly they adopt new technology: innovators, early adopters, the early majority, the late majority, and laggards [71].

Innovations have advantages, compatibility, complexity, observability, and traceability. Roger's characteristics for IT/IS by adding factors on technology acceptability. People's desire to utilize technology, accessibility, perceived worth, and perceived simplicity are factors. The theory was utilized to disseminate IT in communities. The classical theory is better as a descriptive tool, less powerful in its explanatory ability, and less useful in anticipating results and delivering advice on expediting adoption. It's limited and hasn't proven how innovative features or people's opinions impact adoption [72]. DOI/IDT offers a partial theory on cultural relevance. The academic study may need to include social contexts to improve DOI theory [73].

3.8.   Motivational Model (MM)

Many psychological theories are based on intrinsic motivation, according to Davis et al. (1992). Self-Determination Theory (SDT) claims that self-determination involves the decision experience, having the option, and making a choice [74]. The regulatory procedure is discretionary. Variations in the motivation theory have been proposed to explain diverse human behavior. According to the Motivation Model, internal or external variables influence people's activities. SDT also examined how social variables affected motivation and argued that a third motivational component is needed to properly explain an individual's conduct, intrinsic and extrinsic [75] .

Expanding the MM to IT, drawing on the work of Deci et al., showed that extrinsic and intrinsic motivations substantially influence intentions regarding their IT usage behavior [76]. Examples of extrinsic motivation include a computer's perceived utility (PU), the acceptance of peers (subjective norms), and its perceived ease of use (PEOU). A favorable relationship between pleasure and perceived utility of the IS shows that enjoyment considerably influences intention when the IS is considered more beneficial. In other words, individuals are warming up to IS due to its enhanced pleasure [77].

3.9.   Social Cognitive Theory (SCT)

Various explanations have been proposed to explain developmental changes. These ideas differ in their views on human nature, motivation, and behavior. Social Cognitive Theory (SCT). Human behavior is a triadic, dynamic, and reciprocal interplay between personal factors, behavior, and the environment. This idea says that these three components determine an individual's behavior [78]. The SCT believes that response consequences limit action, but it claims that cognitive processes influence conduct before it occurs. Therefore, action-reaction consequences are used to predict its results. Having these expectations allows people to anticipate the outcomes of their actions. The SCT advocates imitating most behavior [79].

According to Venkatesh and colleagues' findings, the Social Cognitive Theory (SCT) is an important human behavior theory. The SCT comprises five components: expectations for the outcome, performance, personal expectations, feelings of self-efficacy, and anxiety. It is established that result expectations will be achieved through action performance results. The outcomes of one's work are primarily what is expected of a person's performance. A person's level of self-efficacy may be defined as the degree to which they are confident in their ability to carry out responsibilities using a system. To define effect as the conduct that a person prefers, one may say: (e.g., computer use). The tendency to have feelings of unease, worry, and even phobia about the usage of computers, in general, is referred to as computer anxiety. [33].

Social Cognitive Theory (SCT) studies employment choice, athletics, organizational behavior, and mental and physical health. Besides classroom conduct, it's employed for motivation, learning, and accomplishment. Social Cognitive Theory (SCT) includes ground-breaking conceptions of self-efficacy, experience, time to study, training, and social influence (later used as subjective criteria), but it can't be easily generalized. SCT may be used as an umbrella to expand its notions and structures; however, applying the theory is difficult. SCT was not created to research human behavior in specific domains. The context is ubiquitous and comprehensive, allowing it to apply to computer use, Internet use, and pleasure [80].

Social cognitive theory is based on person, behavior, and environment. It's uncertain how much each factor impacts real behavior and which is more important. Social cognitive theory can be expanded, but implementation is difficult. This perspective focuses on education and motivation.

3.10. Theory of TAM

TAM was established to anticipate Internet user behavior based on perceived ease of use, usefulness, mood, and behavioral intention [30]. The degree to which a subject believes that using a particular system won't require much effort is referred to as the subject's perceived ease of use, and the degree to which a subject believes that using a particular system will improve their performance is referred to as the subject's perceived usefulness. These constructions affect the subject's attitude toward the system, affecting the subject's behavior. The Theory of Reasoned Action forms the foundation of TAM (TRA) [44], which states that human behavioral intention is defined by attitude toward given conduct as well as subjective standards and expectations of others towards performing a specific behavior, demonstrating the degree to which a person is affected by how other people regard their behavior. Self-service technologies, radio frequency identification (RFID), and RFID are becoming increasingly common [81]. Earlier research utilized the traditional TAM approach, which involved the construction of bigger models with extra variables to demonstrate why a certain technology should be implemented. There are four distinct classifications for the model structures. Personal consumer attributes (such as user innovativeness and propensity to novelty, familiarity with sophisticated systems, etc.), technology safety and cost (i.e., privacy issues), and social pressure (i.e., word-of-mouth communication, number of friends utilizing a given technology, etc.) are all factors that can influence a person's decision to adopt new

technology (i.e., perceived enjoyment). Merchants recognize the importance of customers, but the market generally has a shallow understanding of their function [82]. Several recent studies focus on the best methods for increasing customers' active involvement in co-creation and extracting their information from these experiences to be translated into new products/services while using new internet-based technologies like social media [83].

Davis described the image below using TAM [30]. TAM explains the elements influencing user behavior across demographics and end-user computer platforms. First, TAM concentrated on its product's apparent usefulness and ease of use (PEU). The perceived utility of a system is the likelihood that using it (for example, a single platform electronic payment system) will improve the action of a potential user. In contrast, a system's perceived ease of use is the extent to which a potential user believes that using the target system is uncomplicated. The external conditions of a person affect their belief in a system. [84].

3.11.   Theory of TAM-2

TAM 2 was proposed by Venkatesh and Davis (2000). This study looked at how long it took for a system's value to be recognized by its users, focusing on the first month after launch and the subsequent three months. Users form impressions of a system's usefulness based on how effectively they perceive it to facilitate attaining their personal and professional objectives [31]. Data show that TAM 2 performed successfully in both optional and mandatory settings.

3.12.   Theory of TAM-3

Venkatesh and Bala (2008) merged the TAM2 model of technology adoption to create the more comprehensive TAM3 [31], [85]. Individual differences, system characteristics, societal effect, and enabling contexts are the categories of perceived utility and perceived ease of use used by the authors to build the TAM3. Within the TAM3 study paradigm framework, there was a correlation between computer anxiety and the perception of ease of use, and the perception of ease of use was linked to behavioral intention. The TAM3 model has been investigated by looking at actual IT deployments in the real world.

3.13.   Theory of UTAUT

In "User acceptance of information technology: Toward a unified vision," Venkatesh and colleagues created the unified theory of acceptance and use of technology (UTAUT) as a technology acceptance paradigm. The goal of the UTAUT is to detail a user's planned interactions and intentions for an information system [86]. The theory is built on four main ideas: 1) the expectation of performance, 2) the expectation of effort, 3) the influence of others, and 4) the existence of favorable circumstances. The first three factors directly influence users' intentions and actions, whereas the fourth directly influences their actions [87]. It is predicted that gender, age, experience, and the degree to which usage is voluntary all play a role in moderating the effect of the four key aspects on usage intention and behavior. The Theory of Reasoned Action, the Technology Acceptance Model, the Motivational Model, the Theory of Planned Behavior, a Combined Theory of Planned

Behavior and Technology Acceptance Model, the Model of Personal Computer Use, the Diffusion of Innovations Theory, and the Social Cognitive Theory were all reviewed and consolidated to form the basis for the theory [38].

3.14. Theory of UTAUT-2

In addition to the UTAUT constructs, hedonic motivation (the degree to which one finds the technology enjoyable), price value (the cognitive trade-off between perceived benefits and monetary costs of technology usage), and habit (the amount of time that has passed since the initial technology usage) all play a role in shaping one's intention to use the technology [34]. The UTAUT-2 factors of expected performance and effort, social influence, conducive settings, and hedonic incentives have all been linked to subsequent actions [88]. The statistics demonstrate a strong correlation between how simple something is and how helpful people think it will be to them. Several studies have found that [89], There is a lack of information regarding how different adaptations affect performance, effort expectancy, and hedonic motivation [90]. When public opinion, perceived usefulness, and accepted practices are all high, things are doing well. The effects of enabling conditions on effort expectations and hedonic motivation were positive, but there was no link between enabling conditions and performance expectations [91].

3.15. Summary of Theories

Table 1: Review of Adoption Theories

No.	Theories	Citation	Pro	Con
1	Theory of Reasoned Action (TRA)	[44]; [28]	Explains Attitude & Behavioral	Behavior performances are not considered
2	Theory of Planned Behaviour (TPB)	[49]	Recommended forecast model	Fails to identify gaps between behavior and intension
3	Diffusion of Innovation (DOI)	[55]; [71]	Focuses on Individual elements like product or innovation	Neglects social and socio-economic; Behavioral elements
4	Decomposed Theory of Planned Behaviour (DTPB)	[29]	Focuses on Beliefs and factors identification; Recommended for e-commerce solutions	Strictly need hardware and software infrastructure
5	Technology Acceptance Model (TAM)	[30]	Focuses on attitude towards adoption of technology	Lacks consideration of social and subjective elements
6	TAM -2	[31]	Extends inclusion of social and external factors	With so many variables, it is not easy to understand.
7	TAM – 3	[85]	Combination of TAM	With so many

			1 & 2 Covers internal and external factors	variables, it is not easy to understand.
8	C-TAM-TPB	[29])	Predicts behavioral control & social norms for both experienced and non-experienced users	External factors are not considered
9	Technology Readiness Assessment (TRA)	[64]	Evaluates individual character and decision-making abilities	Needs support of TAM to prove adaptability
10	Model of PC Utilization (MPCU)	[69]	Predicts Technology Utilization behavior	Uncertainties are excepted
11	Innovation Diffusion Theory (IDT)	[55]	Focuses on Ethical elements of technology diffusion and adoption	Social and Political influence is neglected
12	Motivational Model (MM)	[36]	intrinsic and extrinsic motivation to adopt technology	Change of Motivation is not considered
13	Social Cognitive Theory (SCT)	[73]	Focused on Self-learning for technology adoption	Self-regulation and self-efficacy cannot be regulated
14	UTAUT	[31]	Focuses on intention and behavior evolution	Lacks consideration of external factors
15	UTAUT -2	[87]	Combination of eight recommended models covering all acceptance levels	Lacks consideration of external factors

Table 1 summarizes the theories by narrowing down the respective pros and cons of each technology adoption models. It is imperative to keep in mind that these models make many assumptions about what human assumption and adoptions towards technology adoption. The ability to foretell the future relies heavily on the strengths and flaws of these models. This investigation proved that the most popular theoretical models are chosen because of their simple and plausible theoretical structure (like TAM) or because of the amount of information they provide (e.g., UTAUT). The alternative tactic strikes a middle ground between the two views. Even if UTAUT2, the most recent model in the technology adoption research, is not widely utilized, the evaluation claims that adopting and extending it will be a substantial contribution. This includes its robustness, foundation in a broad body of theory, and high predictive ability (it explains 74% of the variance in using behavioral intention)

(nine IT acceptance models). Setting variables relevant to the context of use may be used in many kinds of information technology (including those involving different technologies and nations). The argument here is that UTAUT2 will come in handy in the future for quantitatively measuring responses to emerging technology. A comprehensive and dynamic theoretical model that considers cultural, social, technological, and other relevant behavioral aspects would tremendously help explain the phenomena under research, which is why traditional acceptance theoretical models fall short.

4. CONCLUSION

A literature review of individual technology acceptance models was conducted in this research. A critical evaluation of fifteen models in individual adoption of technology was conducted. TAM, TAM2, UTAUT, TAM3, UTAUT-2, TPB, TRA, MPCU, SCT, and Diffusion of Innovation are some models and theories that may be used to understand how people respond to new technologies (DOI). Because each model's strengths and weaknesses were highlighted, the study might be valuable in the future. When conducting empirical studies in various technological contexts, the research's future scope is adopting and testing the UTAUT-2 theory with real-world problems.

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