

Information Technology Acceptance Models into Practice: An Applied Statistical Analysis

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Abstract. The diversity and multiplicity of IT acceptance models and theories may pose a challenge in terms of model selection. Another challenge is related to proceeding with a study without even considering adopting or adapting a specific model or theory. To address these challenges, this study which applied the design science paradigm has been conducted. The researcher has particularly followed the taxonomy development method which provides guidance for researchers interested in developing taxonomies. The developed taxonomy includes different characteristics, dimensions, and categories. The study extends previous IT acceptance literature by developing a taxonomy which can help in assessing the degree of potential applicability of different IT acceptance models. It consists of 3 categories, 19 dimensions involving a total of 91 characteristics. The proposed taxonomy is of potential value to IT researchers in that it can be used in different ways. One of which is that it can be used as a guide to consider theories and models other than TAM. Despite diversity and multiplicity of IT acceptance models, an evaluation of the developed taxonomy of the current study indicates limitations of existing models in terms of addressing: a) IT acceptance at a group rather than an individual level, b) the impact of privacy, and c) the impact of gender on IT acceptance. The current study calls for a scholarly shift of IT current acceptance research to consider analysing IT acceptance at group and organizational levels.

Keywords: Information Technology, Acceptance, Models, Assessment, Tools.

1. Introduction

Developing explanatory models and theories, analysing the impact of IT adoption influencing factors, and addressing IT implementation challenges have been the primary focus of numerous IT acceptance studies. However, research studies which particularly focus on developing taxonomies that address evaluating the applicability of different theories, models, and frameworks within information science, systems and management are still limited. To address this gap, this research is undertaken. It extends previous literature by developing a methodological taxonomy which can help in

assessing the degree of potential applicability of different IT acceptance models. The proposed taxonomy is of potential value to IT researchers given the significant number of IT acceptance models which approximately reached 22 models and theories^{[1][2]}. The diversity and multiplicity of IT acceptance models and theories may pose two research challenges. The first challenge is how to better select a specific model, while the second is related to proceeding with a study without even considering adopting or adapting a specific model or theory. The taxonomy developed in this current study can be utilised to address these challenges.

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The present study aims at addressing the following objectives:

- Developing a taxonomy that serves as a framework for reviewing and selecting IT acceptance models which includes different characteristics, dimensions, and categories.
- Evaluating the developed taxonomy based on specific parameters and with reference to selected IT acceptance models.
- Conducting a statistical analysis (weight analysis) on the different characteristics, dimensions, and categories of the developed taxonomy based on IT experts' views.

2. Information Technology (IT) Acceptance Models

Previous studies that investigated IT acceptance in different countries around the world have often made use of various models and theories. Examples of often cited models and theories include The Technology Acceptance Model (TAM), Diffusion of Innovations (DOI) Theory, Unified Theory of Acceptance and Use of Technology (UTAUT), Theory of Planned Behaviour (TPB), the Technology–organization–environment Framework (TOE framework), Theory of Reasoned Action (TRA), Delone and McLean IS Success Model (ISS), Task Technology fit model (TTF), Expectation Confirmation Theory (ECT), Uses and Gratifications (U&G) Theory, Big Five theory (BIG5), Extended Technology Acceptance Models (TAM2) and (TAM3), Social Cognitive Theory (SCT), Trust Model, Perceived Value Model, Unified Theory of Acceptance and Use of Technology (UTAUT2), Social Capital Theory, Inter-organizational Relationship (IOR) Theory, Flow Theory, Social Identity Theory^[1], and The Stimulus Theoretical Framework^[2].

The relative value of these models and theories is that they can be used to investigate the impact of different factors that may influence users' acceptance of information systems and technologies^{[3][4]}. This section analyses two of the most popular IT acceptance models: TAM and UTAUT. However, readers can refer to these references^{[1][2]} for an analysis of other models and theories.

2.1 Technology Acceptance Model (TAM)

The 1985 model of technology acceptance by Fred Davis is the most widely used theoretical model of information systems and technologies adoption over the past years^{[3][5][6]}. The model could be of importance to future researchers who are interested in investigating users' adoption and use of IT in different

contexts. This model suggests that acceptance of technology by individuals is determined by two factors: perceived usefulness and perceived ease of use, and that these two major factors are likely to be influenced by a number of external factors^{[3][5][7][6][8]}.

It is worth noting that the TAM model has run through several modifications over the past years^{[5][9]}. The original model has suggested that the explanation of users' motivation to accept IT is mainly influenced by basic factors that represent perceived usefulness, perceived ease of use and attitude towards use, and these factors may be affected by other external factors^[10]. In addition, the model has indicated that attitude towards use determines actual use, but it is also influenced by people's perception about usefulness and ease of use^[11]. A suggested amendment to the original model indicates that system characteristics/functionality may affect users' attitude towards using these systems^[12]. Another development of the model has been the inclusion of another factor which is the intention to use IT and its relationship with perceived usefulness^[13]. The model points to the potential impact of perceived usefulness on intentional use and perceived ease of use on perceived usefulness on people's acceptance of IT^{[14][15]}.

However, according to^[11], the TAM "has limitations in being applied beyond the workplace" and, therefore, "the ability of TAM to apply in a customer context where the acceptance and use of information technologies is not only to achieve tasks but also to fulfil the emotional needs may be limited". For additional critique of the TAM model see^{[16][9][11]}.

2.2 The Unified Theory of Acceptance and Use of Technology (UTAUT)

This theory was developed in 2003 by Venkatesh^[14]. It was based on the conclusions drawn from several theories or models which explored users' acceptance of technology^[6],

most notably, the following theories: the Theory of Reasoned Actions (TRA), the Technology Acceptance Model (TAM), the Theory of Planned Behaviour (TPB), the Using Personal Computers Model (UPCM), the Diffusion of Innovation Theory (DOI), and the Social Knowledge Theory (SKT)^{[14][11][17]}. The UTAUT includes several variables that may affect the intention to use and the actual use of technology.

As in the previous model (TAM), both intentional use and actual use are the most important dependent variables in the UTAUT. However, in this theory, these two factors are influenced by a different set of independent variables when compared to TAM. These factors, according to^{[14][6][11][17]}, are as follows.

- Performance Expectancy (PE): the degree to which people believe that the use of technology will improve the functionality of their work.
- Effort Expectancy (EE): the degree to which people believe that the use of technology to perform their work will be easy.
- Social influence (SI): the degree to which one believes that others believe that he or she needs to use technology.
- Facilitating conditions (FC): the degree to which people believe that the infrastructure necessary to support their use of technology is available and accessible.

It should be noted that this theory also points to the potential impact of a set of intermediate or overlapping variables which relate to demographic characteristics of users (gender, age, and prior experiences) on IT adoption and use^[18]. The theory assumes that the relationship between performance expectancy and effort expectancy and the relationship between social influence and users' intention to use technology will vary according

to age and gender^[14]. On the other hand, the theory also indicates that the relationship between intention to use, effort expectancy, and social influence will differ according to users' experience, and that the relationship between social influence and intention to use technology will be different among users' depending on the degree of their voluntary use^{[14][17]}. And finally, the theory assumes that the relationship between actual use of technology and facilitating conditions will vary according to users' different age groups and experiences^{[19][11]}.

However, some authors such as^[18] have summarized the often cited limitations of the theory which are associated with not addressing some factors which may influence users' adoption and use of IT, such as perceived awareness, perceived quality of systems/services, perceived security, perceived privacy, and perceived trust. For additional critique of the UTAUT see^{[20][19]}.

3. Method

The researcher has made use of the design science paradigm which represents an outcome-based methodology. Outcomes of this paradigm include a wide range of not only artificial objects such as human/computer interfaces, explanatory theories, process models, taxonomies, implementation methods, and development strategies and instruments, but also presumptions about the setting in which these objects are intended to be used^{[21][22][23][24][25]}. These artificial objects are, therefore, considered knowledge containing^[22].

According to [26], there are two main processes that characterize the design research methodology: Artifact building and artefact evaluation. In relation to this paper, the artificial object which has been developed represents a methodological taxonomy that can be used for assessing the degree of potential applicability of different IT acceptance models. The researcher refers to previous relevant

literature^{[1][27][28][29][30][31]} and particularly followed the taxonomy development method put forward by^[32] which provides guidance for researchers interested in developing taxonomies. The developed taxonomy includes different characteristics, dimensions, and categories which are described as follows.

3.1 Characteristics

Characteristics are often defined as a typical or noticeable feature, quality, or attribute that belongs to people, places, or things and therefore serves to identify them^[33]. In this current study, characteristics represent a micro level of analysis and are used to describe specific features that relate to the object under consideration which is IT acceptance model. These features or attributes include, for example, country, language, technology studied, quantitative and qualitative data.

3.2 Dimensions

According to^[32], a taxonomy has a set of a limited number of dimensions. Dimensions in this study represent a meso level of analysis in that they are used to group characteristics together into one dimension. These characteristics which represent a micro level in the taxonomy are grouped together according to their similar features. Each dimension, therefore, consists of a specific number of characteristics which describe objects under consideration^[32]. The dimension 'Culture', for example, is used to group three characteristics in the taxonomy which are western, non-western, and western vs. non-western.

3.3 Categories

Categories in this study represent a macro level of analysis in that they are used to put similar dimension together. Thus, each category consists of several dimensions that share similar features and, in particular, that which relate to a specific area such as context, methodology, and application. For example, the category

‘Methodology’ is used to put 11 dimensions together. These dimensions can be seen in Fig. 1, which is shown and discussed in the next following section.

4. Results and Discussion

4.1 The Development of the Taxonomy

As stated in the previous section, the steps that have been undertaken to develop the taxonomy include developing characteristics, dimensions, and categories. These steps respectively represent three different levels in the taxonomy: micro, meso, and macro levels. This process has resulted in a methodological taxonomy of IT acceptance models which is shown in Fig. 1 below (C represents Category, D represents Dimension, and CH represent Characterises).

As can be seen from Fig. 1, there are 3 categories of the taxonomy: context, methodology, and evaluation of degree of applicability. In the first category ‘context’, there are 5 dimensions and each dimension consists of several characteristics. For example, the dimension ‘culture’ consists of 3 characteristics: western, non-western, and western vs. non-western, while the dimension ‘factors’ consists of 3 characteristics: independent, dependant, and intervening.

On the other hand, the category ‘methodology’ has the largest number of dimensions (11) in the developed taxonomy. An example of these dimension is research philosophy which consists of 4 characteristics which are positivist and post-positivist, interpretivist and constructivist, critical theory, and pragmatic. Another example is the dimension ‘data source’ which consists of 3 characteristics: primary, secondary, and both. A further example is the dimension labelled ‘level of analysis’ which consists of 3 characteristics: individual, group, and organisational levels. This dimension can be used to identify the predominant level of analysis that has been applied in IT acceptance research

and consequently highlight the level which needs more attention in the future.

The final and third category which is labelled ‘evaluation of degree of applicability’ can be used to assess the potential suitability of previous IT acceptance models and theories according to three dimensions and a total of 19 characteristics. For example, the dimension labelled ‘type of application’ indicates whether a previous IT acceptance study exactly or partially replicated a previous model or a theory. It also indicates whether a re-analysis of existing data has been undertaken or if two or more than two models or theories have be incorporated in a study. The two remaining dimensions can be of value for future researchers in that a future study can consider when undertaking. These are related to commonly reported limitations and suggestions for improvement by previous IT acceptance studies.

4.2 An Evaluation of the Developed Taxonomy Model Based on Specific Parameters/Aspects

The resulting taxonomy shown in Fig. 1 can be used differently depending on the purpose of its usage. For example, it can be used to assess the potential applicability of one chosen IT adoption model or theory to address specific questions of a given research project. However, it can also be used to conduct a systematic comparison between two or more IT adoption models or theories to help a researcher deciding whether to adopt/adapt a specific model or even proceeding with a study without even considering a model or a theory.

In order to conduct an evaluation of the developed taxonomy of this study, the researcher has used 330 previous IT adoption research mentioned in [2], [11], and [1] that relate to the following, often cited, five IT adoption models and theories:

- TAM
- UTAUT
- DOI
- TIF
- ECT

C1: Content (0.80)	D1: Subject Area (0.79)	CH1: Education, Health, Business & management, Computer, and information systems, Multi-disciplinary
	D2: Culture (0.71)	CH2: Western, Non-western, Western vs. non-western
	D3: Factor (0.89)	CH3: Independent, Dependent, Intervening, a combination of two/more
	D4: Technology (0.81)	CH4: Internet banking, e-learning, health care systems, knowledge management systems, e-payment systems, digital games and entertainment, e-government, mobile technology, social media, cloud computing, digital library, global positioning system, e-commerce, enterprise systems, transportation, other
	D5: Stage of Adoption (0.86)	CH5: pre-adoption stage, adoption stage, post-adoption stage
C2: Methodology (0.79)	D1: Research philosophy (0.76)	CH1: Positivist & post-positivist, interpretivist and constructivist, critical theory, pragmatic
	D2: Population (0.87)	CH2: Students, Firms' employees, Citizens, Faculty members, children and young people, people with special needs
	D3: Sampling method (0.81)	CH3: Probability sampling, Non-probability
	D4: Research approach (0.85)	CH4: Quantitative, Qualitative, Mixed
	D5: Research method (0.79)	CH5: Survey, Experiment, Case study, Ethnography, Action research, Meta-analysis, Systematic review, Grounded theory
	D6: Data source (0.82)	CH6: Primary, Secondary, Both
	D7: Data collection tools (0.76)	CH7: questionnaire, interview, observation, focus group, experimental tools
	D8: Type of Study (0.81)	CH8: Descriptive, Relational, Comparative
	D9: Data analysis method (0.78)	CH9: Quantitative (statistical), Qualitative, Mixed
	D10: Level of analysis (0.77)	CH10: Individual, Group, Organisational
	D11: Research Design (0.76)	CH11: Cross-sectional, longitudinal
C3: Evaluation of degree of applicability (0.77)	D1: Type of application (0.84)	CH1: Exact replication, partial replication, reanalysis of data, corroboration
	D2: Commonly reported limitations (0.82)	CH2: Terminology, Respondents' self-reported usage, single culture, single country, single organisation, single community, sample selection, sample size, measurement problems, other
	D3: Commonly suggestions For improvement (0.78)	CH3: Adding new factors, Reducing no. of factors, Re-labelling of terms/factors, new measurement approach/test, other

Fig. 1. Taxonomy of reviewing and selecting IT acceptance models/theories (developed by the researcher of this paper, 2020) (Values in brackets are based on weight analysis).

The researcher evaluates the applicability of the taxonomy that she has developed in this present study by attempting to answer this main question: which model is better to select if a

given study is considering the following parameters (P), which are based on the dimensions of the developed taxonomy.

- P1: Health as a subject area

- P2: Privacy as an influencing, independent factor
- P3: Gender as an intervening factor
- P4: Continuance use as a dependent factor
- P5: Internet banking as a technology for adoption
- P6: Students as a research population
- P7: Quantitative method as a research approach
- P8: Meta-analysis as a research method
- P9: Secondary data as a data source
- P10: Surveys as a data collection tool
- P11: Statistical approach as a data analysis method
- P12: Analysing data at a group rather than an individual level

The results of this evaluation process are shown in Tables 1-12 below.

4.2.1 *An evaluation of the developed taxonomy model: Health as a subject area*

An evaluation of the developed taxonomy model to address P1: health as a subject area is shown in Table 1 below.

Table 1. An evaluation of the developed taxonomy model to address P1: health as a subject area.

Models/theories	Parameter/Aspect
	P1: Health as a subject area
TAM	x
UTAUT	x
DOI	x
TIF	x
ECT	

Table 1 indicates that TAM, the UTAUT, DOI theory, and the TIF have more potential than the ECT in relation to aspect 1 (i.e., investigating IT acceptance in relation to health contexts). This result is in line with that which has been reported in [1], and which points to the significance of the above-mentioned models. The implication of this result is that if future researchers are interested in exploring IT

acceptance in relation to health contexts, then they should consider these four models/theories.

4.2.2 *An evaluation of the developed taxonomy model: privacy*

An evaluation of the developed taxonomy model to address P2: Privacy as an influencing, independent factor is shown in Table 2 below.

Table 2. An evaluation of the developed taxonomy model to address P2: Privacy as an influencing factor.

Models/theories	Parameter/Aspect
	P2: Privacy as an influencing, independent factor
TAM	x
UTAUT	x
DOI	x
TIF	
ECT	

Table 2 indicates that TAM, the UTAUT, and the DOI theory have more potential than the TIF and the ECT especially in relation to aspect 2 (i.e., investigating the impact of privacy as an independent factor on IT acceptance). This result is in line with that which has been reported in [1], and which points to the significance of the above-mentioned models. The implication of this result is that if future researchers are interested in exploring the impact of privacy on IT acceptance, then they should consider these three models/theories.

4.2.3 *An evaluation of the developed taxonomy model: gender*

An evaluation of the developed taxonomy model to address P3: gender as an intervening factor is shown in Table 3 below.

Table 3. An evaluation of the developed taxonomy model to address P3: Gender as an intervening factor.

Models/theories	Parameter/Aspect
	P3: Gender as an intervening factor
TAM	
UTAUT	x
DOI	
TIF	
ECT	

On contrary to the above results shown in Table 1 and Table 2, Table 3 indicates limitations of the above-mentioned theories except UTAUT in relation to addressing aspect 3 (i.e., gender as intervening variable). There are two implications to this significant result. The first is the need to conduct future research to further develop these models/theories to address the above aspect. The second implication is that if a study is interested in exploring the impact of gender as an intervening factor, then such a study should consider UTAUT to address the this factor, or theories other than TAM, DOI, TIF, and ECT since these four models/theories do not adequately address this factor (i.e., gender).

4.2.4 An evaluation of the developed taxonomy model: Continuanace use

An evaluation of the developed taxonomy model to address P4: Continuanace use as a dependent factor is shown in table 4 below.

Table 4. An evaluation of the developed taxonomy model to address P4: Continuanace of use as a dependent factor.

Models/theories	Parameter/Aspect
	P4: Continuanace use as a dependent factor
TAM	x
UTAUT	x
DOI	x
TIF	
ECT	x

Table 4 indicates that TAM, the UTAUT, DOI theory, and the ECT have more potential than the TIF in relation to aspect 4 (i.e., investigating IT acceptance with a special reference to continuanace use as a dependent factor). This result is in line with that which has been reported in [1], and which points to the significance of the above-mentioned models. The implication of this result is that if future researchers are interested in exploring continuanace using of IT as a dependent factor, then they should consider these four models/theories.

4.2.5 An evaluation of the developed taxonomy model: Internet banking

An evaluation of the developed taxonomy model to address P5: Internet banking as a technology for adoption is shown in Table 5 below.

Table 5. An evaluation of the developed taxonomy model to address P5: Internet banking as a technology for adoption.

Models/theories	Parameter/Aspect
	P5: Internet banking as a technology for adoption
TAM	x
UTAUT	x
DOI	x
TIF	
ECT	x

In a similar vein to the result shown above in table 4, table 5 indicates that TAM, the UTAUT, DOI theory, and the ECT have more potential than the TIF in relation to aspect 5 (i.e., investigating IT acceptance with a special reference to Internet banking as a technology for adoption). This result points to the significance of the above-mentioned models. The implication of this result is that if future researchers are interested in exploring internet banking as a technology for adoption as a topic for such an investigation, then they should consider these four models/theories.

4.2.6 An evaluation of the developed taxonomy model: Students as a sample

An evaluation of the developed taxonomy model to address P6: Students as a research population is shown in Table 6 below.

Table 6. An evaluation of the developed taxonomy model to address P6: Choosing students as a research population.

Models/theories	Parameter/Aspect
	P6: Students as a research population
TAM	x
UTAUT	x
DOI	x
TIF	x
ECT	x

Table 6 indicates that TAM, UTAUT, DOI, TIF and ECT share having great potential in relation to addressing aspect 6. This aspect relates to investigating IT acceptance by students as a research population/sample. However, this result also points to the importance of more consideration that should be given to other populations such as children and young people, retired employees, and people with special needs (e.g., blind). Such diversity of studied groups will add to previous research that greatly focuses on students.

4.2.7 An evaluation of the developed taxonomy model: Quantitative approach

An evaluation of the developed taxonomy model to address P7: using a quantitative method as a research approach is shown in table 7 below.

Table 7. An evaluation of the developed taxonomy model to address P7: using a quantitative method as a research approach.

Models/theories	Parameter/Aspect
	P7: Quantitative method as a research approach
TAM	x
UTAUT	x
DOI	x
TIF	x
ECT	x

Table 7 indicates that TAM, UTAUT, DOI, TIF and ECT share having great potential in relation to addressing aspect 7. This aspect relates to using quantitative method as a research approach. However, this result also points to the importance of more consideration of using qualitative methods to investigate IT acceptance to reach a balance with the currently overwhelming quantitative IT acceptance studies. These qualitative studies can contribute to better understanding of aspects that are not adequately addressed by quantitative studies that adopted the above five model/theories such as aspect 3 (i.e., the impact of gender on IT acceptance) and aspect 8 (i.e., the impact of

privacy on IT acceptance) which are respectively shown in Table 3 and Table 8.

4.2.8 An evaluation of the developed taxonomy model: meta-analysis as a research method

An evaluation of the developed taxonomy model to address P8: using meta-analysis as a research method is shown in Table 8 below.

Table 8. An evaluation of the developed taxonomy model to address P8: using meta-analysis as a research method.

Models/theories	Parameter/Aspect
	P8: Meta-analysis as a research method
TAM	x
UTAUT	x
DOI	x
TIF	
ECT	

Table 8 highlights the significance of the TAM, the UTAUT, and the DOI theory in relation to aspect 8 (i.e., using meta-analysis as a research method for a study). This result is expected given the fact that these three models/theories are widely used and hence the number of previous studies that used these models are more than that which used other models (i.e., TIF and ECT). The implication of this result is that if future researchers are interested in conducting a meta-analysis of previous IT acceptance research, then they should consider these three models/theories (i.e., TAM, UTAUT, and DOI), but also expect to encounter challenges relating to finding enough data if they choose to conduct meta-analysis of previous studies that applied TIF and ECT. For example, a study by [1] reported that while TAM has been used in 140 papers, TIF and ECT have been used in 12, and in 8 papers, respectively.

4.2.9 An evaluation of the developed taxonomy model: Using secondary data as a data source

An evaluation of the developed taxonomy model to address P9: using secondary data as a data source is shown in Table 9 below.

Table 9. An evaluation of the developed taxonomy model to address P9: using secondary data as a data source.

Models/theories	Parameter/Aspect
	P9: using secondary data as a data source
TAM	x
UTAUT	x
DOI	x
TIF	
ECT	

Table 9 indicates that TAM, the UTAUT, and the DOI theory have more potential than the TIF and the ECT in relation to aspect 9 (i.e., using secondary data as a data source for an investigation of IT acceptance). This result points to the significance of the above-mentioned models. This result is expected given the fact that these three models/theories are widely used and hence the number of previous studies that used these models are more than that which used other models (i.e., TIF and ECT). The implication of this result is that if future researchers are interested in exploring IT acceptance by using secondary data as a data source for an investigation, then they should consider these three models/theories (i.e., TAM, the UTAUT, and the DOI theory), but also should expecting to encounter challenges relating to finding enough data if they choose to adopt TIF and ECT.

4.2.10 An evaluation of the developed taxonomy model: Using surveys as a data collection tool

An evaluation of the developed taxonomy model to address P10 using surveys as a data collection tool is shown in Table 10 below.

Table 10 indicates that TIF and ECT share having great potential with TAM, UTAUT, and DOI in relation to aspect 10. This aspect relates to using surveys to investigate IT acceptance. This result indicates that these five models/theories have a relative flexibility feature in terms of methodology.

Table 10. An evaluation of the developed taxonomy model to address P10: using surveys as a data collection tool.

Models/theories	Parameter/Aspect
	P10: using surveys as a data collection tool
TAM	x
UTAUT	x
DOI	x
TIF	x
ECT	x

4.2.11 An evaluation of the developed taxonomy model: Using statistical approach as a data analysis method

An evaluation of the developed taxonomy model to address P11: using statistical approach as a data analysis method is shown in Table 11 below.

Table 11. An evaluation of the developed taxonomy model to address P11: using statistical approach as a data analysis method.

Models/theories	Parameter/Aspect
	P11: Statistical approach as a data analysis method
TAM	x
UTAUT	x
DOI	x
TIF	x
ECT	x

Table 11 indicates that TIF and ECT share having great potential with TAM, UTAUT, and DOI in relation to aspect 11, which relates to using statistical approaches for data analysis. This result indicates that these five models/theories have a relative flexibility feature in terms of methodology.

4.2.12 An evaluation of the developed taxonomy model: Group as a level of analysis

An evaluation of the developed taxonomy model to address P12: analysing data at a group rather than an individual level is shown in Table 12 below.

Table 12. An evaluation of the developed taxonomy model to address P12: Analysing data at a group rather than an individual level.

Models/theories	Parameter/Aspect
	P12: analysing data at a group rather than an individual level
TAM	x
UTAUT	
DOI	
TIF	
ECT	

Table 12 indicates the shortcoming of the above-mentioned theories except TAM in relation to addressing aspect 12. There are two implications to this significant result. The first is the need to conduct future research to further develop these models/theories to address the above aspect. The second implication is that if a study is interested in analysing IT acceptance patterns at a group rather than an individual level, then such a study should consider TAM or theories other than UTAUT, DOI, TIF, and ECT since these four models/theories do not adequately address IT acceptance at a group rather than an individual level.

4.3. An evaluation of the developed taxonomy model based on experts' views

The researcher has also asked a number of IT experts to rank the dimensions shown in Fig. 1 of the developed taxonomy. They were asked to rank these dimensions and pinpoint the top ten significant parameters which, according to their expertise, should be considered by future studies and why. Forty-five experts in IT related fields have been contacted online. They were asked to participate in an online survey to collect their views. Thirty-three of them have responded and a summary of their responses is shown in Table 13 below.

As can be seen from Table 13, the impact of privacy has been ranked first. This result is expected since this factor, as shown in Table 2, is not adequately addressed by previous IT acceptance models. Remarkably, health contexts for investigating IT acceptance has

been ranked second and this may be explained given the pandemic corona virus situation which required people to work online. On the other hand, gender as an intervening factor that may influence IT adoption has been ranked third. This result is expected since that this factor, as shown in Table 3, is not fully covered by previous IT acceptance models. Finally, it is worth noting that IT experts who participated in this study pinpoint the importance of investigating IT adoption by people with special needs as this area is also not been adequately considered by IT adoption research which largely focused on students.

Table 13. An evaluation of the developed taxonomy model based on experts' views.

Rank	Dimension	Percent
1	Privacy	92%
2	Health contexts	84%
3	Gender	76%
4	Group level	69%
5	Secondary data	53%
6	Meta-analysis	46%
7	Continuance use	38%
8	Comparative	30%
9	People with special needs	23%
10	Terminology	15%

5. Significance of the Study

The resulting taxonomy depicted in Fig. 1 is of potential value to IT researchers. It can be used in four different ways as follows:

Firstly, it can be used as a classification tool according to which a literature or a systematic review is carried out. The results of such reviews can identify patterns and trends within IT acceptance research. The taxonomy developed in this study which consists of 3 categories, 19 dimensions involving a total of 91 characteristics is more comprehensive than the literature review framework developed by [1] which only consists of six perspectives: year of publication, IT adoption theories, research level, dependent variable, IT adoption context, and independent variable.

Secondly, the resulting taxonomy of this paper can be used to assess the degree of potential applicability of different IT acceptance models. This can help deciding whether to adopt/adapt a specific model or even proceeding with a study without even considering a model or a theory.

Thirdly, the resulting taxonomy of this current study can be used as a tool for conducting a systematic comparison between two or more of different IT acceptance models.

And finally, the developed taxonomy can be used in other domains within information science, systems, and management. Although the proposed taxonomy has been developed with reference to IT acceptance, it can also be used by researchers who are interested in exploring other topics or who are interested in developing taxonomies.

A significant contribution of the developed taxonomy is that it indicates that although the existing IT acceptance literature is large in volume, it is limited in a number of ways as follows:

Firstly, existing literature has primarily adopted TAM along with its extensions while the potential of other models and theories has not been thoroughly considered. Thus, a significant contribution of the current study is that its proposed taxonomy can be used as a guide to consider theories and models other than TAM.

Secondly, an evaluation of the developed taxonomy of the current study indicates that existing theories and models do not adequately address the impact of privacy factors as well as the impact of gender on IT acceptance. Therefore, another contribution of the current study is that it pinpoints areas that need further investigations.

Thirdly, an evaluation of the developed taxonomy of the current study indicates that the existing IT acceptance literature can be largely

regarded as following an individualistic approach (i.e., primarily focusing on IT acceptance among individuals rather than among groups or at an organizational level). This can be explained given the fact that many theories and models focus on IT acceptance at an individual level and therefore do not adequately address IT acceptance at organizational or group levels. A significant contribution of the current study is that it calls for a scholarly shift in the current focus of IT acceptance to consider developing new understanding about IT acceptance at organizational and group levels.

6. Conclusion

This study extends previous IT acceptance literature by developing a methodological taxonomy model which can help in assessing the degree of potential applicability of different IT acceptance models. It consists of 3 categories, 19 dimensions involving a total of 91 characteristics. It can be used in different ways: a) as a classification tool according to which a literature or a systematic review aiming at identifying patterns and trends within IT acceptance research is carried out, b) as a tool for assessing the degree of potential applicability of different IT acceptance models to aid deciding whether to adopt/adapt a specific model or even proceeding with a study without even considering a model or a theory; c) as a tool for conducting a systematic comparison between two or more of different IT acceptance models, and d) and as a guide for researchers who are interested in developing taxonomies related to other topics. Although this paper has developed a methodological taxonomy for model selection in relation to IT acceptance, it can also be used by researchers who are interested in developing taxonomies that relate to other topics such as information seeking models, information retrieval models, and systems management models. These topics can be venues for future research to further develop

the dimensions of the taxonomy developed in this current study.

Despite diversity and multiplicity of IT acceptance models, an evaluation of the developed taxonomy of the current study indicates limitations of existing models in terms of addressing: a) IT acceptance at a group rather than an individual level, b) the impact of privacy, and c) the impact of gender on IT acceptance. The current study calls for a scholarly shift of IT current acceptance research to consider analysing IT acceptance at group and organizational levels.

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استخدام نماذج تبني تقنية المعلومات: تطوير طوبولوجية لاختيار النماذج

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المستخلص. قد يمثل تنوع وتعدد نماذج ونظريات قبول تكنولوجيا المعلومات تحدياً من حيث اختيار النموذج. ويتعلق تحد آخر بالمضي في الدراسة دون الأخذ بعين الاعتبار باعتماد نموذج أو نظرية معينة. للتصدي لهذه التحديات أجريت هذه الدراسة باستخدام منهجية نموذج علوم التصميم. وقد اتبعت الباحثة بشكل خاص طريقة تطوير التصنيف التي توفر التوجيه للباحثين المهتمين بتطوير التصنيفات. يشمل التصنيف المطور في هذه الدراسة خصائص وأبعاد وفئات مختلفة. ساهمت هذه الدراسة في الإضافة للمؤلفات السابقة من خلال تطوير تصنيف منهجي يمكن أن يساعد في تقييم درجة التطبيق المحتمل لنماذج قبول تكنولوجيا المعلومات المختلفة. يتكون التصنيف المطور في هذه الدراسة من 3 فئات، 19 بعداً تتضمن ما مجموعه 91 خاصية. التصنيف المطور في هذه الدراسة له قيمة محتملة لباحثي تكنولوجيا المعلومات من حيث أنه يمكن استخدامه بطرق مختلفة منها أنه يمكن استخدامه كدليل لتقييم النظريات والنماذج الأخرى غير نموذج قبول التكنولوجيا (TAM). خلصت الدراسة إلى أنه على الرغم من تنوع وتعدد نماذج قبول تكنولوجيا المعلومات، فإن تقييم التصنيف المطور للدراسة الحالية يشير إلى محدوديات النماذج الحالية من حيث أن: نماذج قبول تكنولوجيا المعلومات تركز على المستوى الفردي بدلاً من مستوى المجموعة، ولا تأخذ بعين الاعتبار دراسة تأثير عوامل الخصوصية والجنس. تدعو الدراسة الحالية إلى إجراء تحول علمي في بحوث قبول وتبني تقنية المعلومات بحيث تأخذ بعين الاعتبار تحليل قبول تكنولوجيا المعلومات على مستوى المجموعة والمستوى التنظيمي.

الكلمات المفتاحية: تكنولوجيا المعلومات، القبول، النماذج، التقييم، الأدوات.

