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Adoption of online public grievance redressal system in India: Toward developing a unified view

Nripendra P. Rana [a], Yogesh K. Dwivedi [a, *], Michael D. Williams [a], Vishanth Weerakkody [b]

[a] School of Management, Swansea University, Swansea, SA2 8PP, Wales, UK
[b] Brunel University London, College of Business, Arts & Social Sciences, Brunel Business School, Eastern Gateway Building, Brunel University London, Uxbridge, UB8 3PH, UK

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ABSTRACT

The aim of this research is to develop a unified model of electronic government (e-government) system adoption and validate it using the data gathered from 419 citizens from few selected cities in India. In course of doing so, the research also evaluates the performance of nine well-known alternative theoretical models of information technology (IT) adoption including the unified theory of acceptance and use of technology (UTAUT). The results indicate that the proposed unified model for e-government adoption by this research has outperformed all other theoretical models by explaining highest 66% variance on behavioral intentions, adequately acceptable levels of fit indices, and significant relationships between each hypothesis. The research also provides its limitations and presents implications for theory and practice toward the end.

1. Introduction

With the expansion of information technology (IT), governments across the world have realised the significance of using it to enhance public service delivery to their citizens and businesses, interact flexibly with their components, and communicate efficiently within public administration organisations (Irani, Elliman, & Jackson, 2007). E-government, which administers the public administration organisations' use of IT to deliver services electronically, has currently emerged to support public governance. E-government provides a number of benefits to its stakeholders including reducing corruption, delivering more accountable, transparent and easily accessible public services, promoting e-democracy, reducing cost, citizen oriented focus, prevailing over the social divide, and faster adaptation to meet citizens' requirements (Akman, Yazici, Mishra, & Arifoglu, 2005; Hackney, Jones, & Losch, 2007; Huang & Bwoma, 2003; Watson & Mundy, 2001). In other words, it allows the citizens and businesses to access government information and services as effectively and efficiently as possible using the Internet and other means of communication (Aggelidis & Chatzoglou, 2009; Bhatnagar, 2000; Cook, 2000; Dwivedi, Weerakkody, & Janssen, 2012; Gilbert, Balestrini, & Littleboy, 2004; Lin, Fofanah, & Liang, 2011; Singh & Sahu, 2008; Tung & Rieck, 2005) and allows government to plan for an effective and smooth running of the overall system.

Realising such remarkable benefits provided by the e-government particularly to citizens, a number of empirical studies (e.g., Belanger & Carter, 2008; Horst, Kuttschreuter, & Gutteling, 2007; Hung, Tang, Chang, & Ke, 2009; Lean, Zailani, Ramayah, & Fernando, 2009; Rana & Dwivedi, 2015; Rana, Dwivedi, Lal, Williams, & Clement, 2015; Rana, Dwivedi, Piercy, & Williams, 2014, 2015; Rufin et al., 2014; Wang & Liao, 2008; Wang & Shih, 2009) have been published to explore the adoption of such systems in the extant literature. However, these studies have largely employed the alternative models of IT adoption such as the technology acceptance model (TAM), the theory of planned behavior (TPB), diffusion of innovation (DOI), social cognitive theory (SCT), decomposed theory of planned behavior (DTPB), and the unified theory of acceptance and use of technology (UTAUT) independently or their combinations to understand the citizens' reluctance or slow adoption of an e-government service. For example, Rana and

* Corresponding author.
E-mail addresses: nrananp@gmail.com (N.P. Rana), y.k.dwivedi@swansea.ac.uk (Y.K. Dwivedi), m.d.williams@swansea.ac.uk (M.D. Williams), vishanth.weerakkody@brunel.ac.uk (V. Weerakkody).

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Dwivedi (2015) examined the adoption of an e-government system using the extended SCT theory whereas Rana, Dwivedi, and Lal (2015) investigated the adoption of a transactional e-government system using the extended DTPB model. Similarly, Rufin et al. (2014) used extended TAM model to examine the fundamentals of e-government adoption in the United States and Spain. As most theories used in the prior research of e-government adoption have considered the conventional information systems (IS) concepts, they tend to be criticised for not considering e-government specific perspectives. This gap in the literature is noticeable in the demand side empirical research on e-government adoption. Recognising the limited proficiency of IS concepts that are largely used in exploring technology adoption and its inability of considering the complexities surrounding e-government, there is a need of theory building exercise as an independent form of research in the area of e-government adoption considering fundamental theories of IS/IT adoption and concepts (Dwivedi et al., 2012).

As a number of studies (e.g., Chan, Hackney, Pan, & Chou, 2011; Coursey & Norris, 2008; Dwivedi et al., 2012; Hardy & Williams, 2011; Heeks & Bailur, 2007; Norris & Lloyd, 2006) on e-government have acknowledged a lack of theoretical development and rigour in the e-government adoption research, this study will take a step forward toward devising a unified model on e-government adoption and show how the proposed e-government specific unified model performs better than other alternative models of IT adoption including the UTAUT itself.

2. Indian context

India is the largest democracy in the world and its citizens are highly enthusiastic to be a part of good governance. The Prime Minister of India believes that the success of democracy cannot be imagined without participation of citizens (MyGov, 2014). There have been persistent efforts to embrace information and communication technology (ICT) enabled e-government systems in India. It has been the priority for the government of India to classify projects with a potential to scale up and put them on the mission-mode (Kumar & Misra, 2007). The National e-Governance Plan (NeGP) of Government of India seeks to lay the foundation and provide the motivation for the long-term growth of e-governance within the country. E-governance in India has gradually advanced from computerisation of government departments to the initiatives that summarise the finer points of governance such as citizen centricity, service orientation, and transparency. The NeGP takes a complete view of e-governance initiatives across the country, integrating them into a cooperative vision and a shared cause (IGP, 2014).

The main thrust for e-government was provided by the launching of NICNET in 1987 – a national satellite-based computer network. This was followed by the launch of the District Information System of the National Informatics Centre (DISNIC) programme to computerise all district offices in the country for which free hardware and software was provided to the state governments. NICNET was extended through the state capitals to all district headquarters by 1990. A large number of e-governance initiatives were established using ongoing computerisation, tele-connectivity, and internet in the subsequent years (IGP, 2014). Recently, in August 2014, the Cabinet at the meeting chaired by the Prime Minister, Shri Narendra Modi approved Digital India programme, which aims to transform the country into digital empowered society and knowledge economy. The programme will be implemented in phases from 2014 till 2018. The Digital India is transformational in nature and would make sure that government services are accessible to citizens through electronic mediums (PIB, 2014). However, the government services are currently being accessed by the citizens largely using common service centres (CSCs) set up across the country. As on 31st August 2013, about one hundred and twenty seven thousand CSCs (as per CSC Newsletter) were operational and started delivering services to people (INDG, 2014). The CSCs are much more than merely a service delivery points in the rural India. It is positioned as a change agent, as it promotes rural entrepreneurship, builds rural capacities and livelihoods, enables community participation and influences the overall action for social change (CSCS, 2015).

3. Online public grievance redressal system (OPGRS) system

The grievance redress mechanism is part and parcel of the machinery of any government. The grievance of the citizens is received at several points in the Government of India. These are Department of Administrative Reforms and Public Grievances under the Ministry of Personnel, Public Grievances and Pensions and Directorate of Public Grievances under the Cabinet Secretariat. An officer of the level of Joint Secretary is elected as Director of Grievances of the ministry/department/organisation. Using this e-government system, the citizens can register their complaints against any central government or state government ministries and departments. The users of the system need to select the appropriate ministry and department to lodge their complaint (Rana & Dwivedi, 2015). A standing committee of secretaries regularly reviews the functioning of Public Grievance Redress Machineries in various ministries, departments, and organisations (CPGRAMS, 2015).

The user of the OPGRS needs to provide his/her full address as a mandatory requirement along with other optional details such as contact number and e-mail address. The website provides a text box with a maximum of 4000 words to write the details of the complaint or grievance one would like to convey to the designated department. Once submitted online, the user receives an acknowledgment stating the name and full details of the secretary level officers assigned to look into the issue. The grievance lodged by the complainant has to be resolved within 20 days of time from the day of its submission. This e-government system also allows the users to lodge a reminder or clarification of the complaint, and the mechanism to view the status of the processing of the complaint. This system makes the government more transparent, accountable and responsive toward the citizens.

4. Reviews of extant user acceptance theories/models and their constructs

Information systems research has long studied how and why individuals adopt new information technologies. Within this wide area of investigation, there have been a number of streams of research (Venkatesh, Morris, Davis, & Davis, 2003). One stream of research focuses on individual acceptance of technology by using intention or usage as a dependent variable (Compeau & Higgins, 1995a; Davis, Bagozzi, & Warshaw, 1989) whereas other streams have looked at satisfaction or net benefits to measure success of an IS using IS success models (DeLone & McLean, 1992; 2003) and IS implementation success at the enterprise level (Leonard-Barton & Deschamps, 1988) or task-technology fit (Goodhue, 1995; Goodhue & Thompson, 1995). While each of these streams makes significant contribution to the literature on user acceptance of IT, the theoretical models to be included in the current review, comparison, and synthesis employ intention and/or usage as the key dependent variable (Venkatesh et al., 2003). Table 1 describes the constructs relating to nine various models of IS/IT adoption and outlines the corresponding models to which these constructs are associated with.

The TRA, devised by Fishbein and Ajzen (1975), developed from

Table 1
Theory, models, and constructs of individual acceptance.

Core construct	Model/Theory	Source(s)
Attitude	TRA	Fishbein and Ajzen (1975)
	TPB	Ajzen (1991)
	DTPB	Taylor and Todd (1995b)
Subjective Norm	TRA, TAM, DTPB	As Above
	TAM2	Venkatesh and Davis (2000)
Perceived Behavioral Control	TPB	Ajzen (1991)
	DTPB	Taylor and Todd (1995b)
Perceived Ease of Use	TAM, DTPB, TAM2	Davis (1989), Davis et al. (1989)
Perceived Usefulness		
Compatibility	DOI, DTPB, IDT	Moore and Benbasat (1991), Rogers (1995), Taylor and Todd (1995b)
Self-Efficacy	DTPB, SCT	Compeau and Higgins (1995a, 1995b), Compeau, Higgins, and Huff (1999), Taylor and Todd (1995b)
Resource Facilitating Condition	DTPB	Taylor and Todd (1995b)
Technology Facilitating Condition		
Result Demonstrability	DOI, IDT, TAM2	Moore and Benbasat (1991), Rogers (1995), Venkatesh and Davis (2000)
Image		
Relative Advantage	DOI, IDT	Moore and Benbasat (1991), Rogers (1995)
Trialability		
Visibility		
Ease of Use		
Complexity	DOI	Rogers (1995)
Voluntariness to Use	IDT	Moore and Benbasat (1991)
Job Relevance	TAM2	Venkatesh and Davis (2000)
Output Expectation-Personal	SCT	Compeau and Higgins (1995a, 1995b), Compeau et al. (1999)
Output Expectation-Professional		
Affect		
Anxiety		
Performance Expectancy	UTAUT	Venkatesh et al. (2003)
Effort Expectancy		
Social Influence		
Facilitating Conditions		

[Legend: DOI: Diffusion of Innovation, DTPB: Decomposed Theory of Planned Behavior, IDT: Innovation Diffusion Theory, ISSM: Information Systems Success Model, SCT: Social Cognitive Theory, TAM: Technology Acceptance Model, TAM2: Extended Technology Acceptance Model, TPB: Theory of Planned Behavior, TRA: Theory of Reasoned Action, UTAUT: Unified Theory of Acceptance and Use of Technology].

the prior research that started out as the theory of attitude and behavior, which guided the study of attitude and behavior (Fishbein & Ajzen, 1975). It has been one of the most elementary and dominant theories employed to predict a broad variety of human behaviors (Venkatesh et al., 2003). The constituents of the TRA are three common constructs: behavioral intention, attitude, and subjective norm. This theory suggests that a person's behavioral intention depends on his or her attitude about the behavior and subjective norm (Fishbein & Ajzen, 1975).

The TPB is an extended version of the TRA (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) because of its limitation over dealing with behaviors where people have full volitional control (Ajzen, 1991). Apart from the constructs of the TRA, it was added with an additional construct called perceived behavioral control (Mathieson, 1991; Taylor & Todd, 1995a). A related model is the DTPB (Taylor & Todd, 1995b), which is identical to the TPB in terms of predicting intention. It combined elements and characteristics from both TPB and TAM in order to provide a more comprehensive understanding of technology adoption. In contrast to TPB but similar to the TAM, DTPB decomposes its constructs such as attitude, subjective norm, and perceived behavioral control into the underlying belief structure within the technology adoption contexts (Venkatesh et al., 2003).

In 1985, Fred Davis suggested TAM, which was proposed later in the year of 1989 to describe the potential user's behavioral intention to use the IT innovations (Davis, 1989). The TAM is a variation of the TRA to predict the system usage by essentially implementing two independent variables; namely, perceived ease of use and perceived usefulness and a dependent variable behavioral intention (Davis, 1989; King & He, 2006). It is considered as one of the most powerful and widely employed models in the area of IS/IT adoption (King & He, 2006; Lee, Kozar, & Larse, 2003, in part because of its ease of understanding and simplicity (King & He, 2006). Later, Davis proposed a newer version of the TAM: TAM2. The TAM2 extended the TAM by including a subjective norm as an additional predictor of intention in the case of a compulsory setting (Venkatesh & Davis, 2000).

The DOI (Rogers, 1995) has its origin in Sociology and has been in use since the 1960s to study a variety of innovations. Rogers found five general attributes of innovation: relative advantage, compatibility, complexity, observability, and trialability. These are a number of diffusion studies that have demonstrated to constantly influence adoption. Within IS, Moore and Benbasat (1991) adapted the characteristics of innovations described by Rogers and upgraded it with some more constructs including ease of use, result demonstrability, image, visibility, and voluntariness that could be useful for studying individual technology acceptance.

The SCT is one of the most influencing theories of human behavior (Bandura, 1986; Venkatesh et al., 2003). It presents a framework for understanding, predicting, and altering individual behavior. This theory recognised human behavior as an interface of individual factors, behavior, and the environment (Bandura, 1986). Compeau and Higgins (1995b) employed and widened the SCT to the perspective of the computer applications. Although Compeau and Higgins' (1995b) model examined the use of computer system, the nature of the model and the theory in question allowed it to be used for acceptance and use of the IS/IT in general.

Rooted in sociology, the innovation diffusion theory (IDT) (Rogers, 1995) has been used to study a number of innovations ranging from agricultural tools to organizational innovation (Tornatzky & Klein, 1982). Further, Moore and Benbasat (1991) tailored the characteristics of innovations presented by Rogers and refined a set of constructs to use it for individual technology acceptance.

The UTAUT is a unified theory composed of four core determinants of intention and usage, and up to four moderators of key relationships. It is based on the mapping of the eight key competing theoretical models of technology adoption including the TRA, the TAM, the Motivational Model (MM), the TPB, a model combining the TAM and the TPB (C-TAM-TPB), the Model of PC Utilization (MPCU), the IDT, and the SCT. An empirical test of this model provided a support for its performance. The model was then found to outperform all eight individual models (Venkatesh et al., 2003).

The existing studies on e-government adoption have largely used theories and models of IS/IT adoption as illustrated in Table 1. This study aims to examine the performance of each theory or model using the data gathered for the OPGRS system and will devise a unified model of e-government adoption and test its performance. The unified model will be developed based on the most appropriate measures available to be picked up from the set of UTAUT measures provided by Venkatesh et al. (2003), which were originally developed and used in the organisational setup.

5. Data and methods

The sample of the study consists of wide spectrum of respondents from different cities of India including Delhi, Pune, Mumbai, Bangalore, Patna, Siliguri, and Gangtok covering all different demographies. The final questionnaire consisted of a total of 92 questions including 10 questions from respondents' demographic characteristics, 82 questions from the constructs used across all nine models of technology adoption. The proposed research model contains 56 questions belonging to seven constructs that are part of the 82 questions designed for nine models of technology adoption. All these questions were multiple-type, closed-ended and seven-point Likert scale type questions. Likert scales (1–7) with anchors ranging from strongly disagree to strongly agree were used for all non-demographic items. Appendix [A] lists all the items of constructs used in this study.

We moved around all these cities to contact people particularly in organisations and handed them questionnaire personally. At the time of interacting to respondents, we came to know that although majority of respondents were computer and Internet literate, they were new to the system. Therefore, we decided to gather data only from the potential adopters of the system. In course of this drive, we largely came in contact with students of various disciplines at undergraduate and post-graduate levels at different academic institutions. In some cases, we also invited respondents' members of family and demonstrated to them the functioning of the OPGRS system before distributing questionnaire.

A total of 1500 questionnaires were distributed to respondents through one-to-one and group interactions and in some cases they were given maximum two days of time to complete the questionnaire. This was done considering little large list of questions and also with a view of providing them with a little time to understand questions before completing it. However, some respondents filled in the questionnaire and handed over on the spot. A total of 485 completed survey questionnaires were received back after about sixty days of effort to visit and meet respondents from various cities in India. The further scrutiny of questionnaires revealed that 66 of them were partially completed and so rejected from the subsequent analysis. Hence, we were left with 419 usable responses, which made the basis for the empirical analysis of the data. The overall response rate was found to be 32.3% with 27.9% valid questionnaires.

6. Empirical comparison of models of technology adoption

Table 2 presents nine different theories/models of IT adoption and validated using the data collected for the OPGRS system. The analysis of the model indicates that the TRA is the best performing model in comparison to other models in terms of the significance of its relationships from ATT and SN to BI (i.e., each at $p < 0.001$), the highest variance (i.e., 62%) obtained on BI, and reasonably acceptable fit indices (i.e., CFI = 0.901, GFI = 0.911, AGFI = 0.839) obtained for the model. However, the Chi-square by degree of freedom and RMSEA values were not found at the recommended levels and therefore the model is not supposed to perform absolutely reasonable as far as the performance of the model is concerned. The TAM model has not been able to perform as per its previous status and the variance (i.e., 37%) explained by the model on BI and its fit indices (i.e., CFI = 0.782, GFI = 0.808, AGFI = 0.735) are poorer than the TRA, which does not fulfil the recommended criteria. Moreover, the Chi-square by degree of freedom and RMSEA values are close to the one shown by the TRA and is unacceptable. However, the validation of the TRA does indicate that attitude plays an extremely vital role in determining BI. A strong and significant relationship of attitude on behavioral intention (i.e., $\gamma = 0.77$, $p < 0.001$) is possibly the reason why the variance explained by the TRA on BI is reasonably high.

The relevance of attitude in the model and its enhanced performance is also supported by the TPB and DTPB models. These models explain the second and third highest variance on BI respectively after the TRA with all their relationships as significant. However, both these models do not seem to be reasonably fit for the data provided as its majority of the critical fit-indices such as such as χ^2/DF (for TPB 5.577, for DTPB 0.679), CFI (for TPB 0.856, for DTPB 0.694), GFI (for TPB 0.873, for DTPB 0.650), and RMSEA (for TPB 0.105, for DTPB 0.097) were found to underperform than its recommended levels. Moreover, the other models such as the SCT, the IDT, the TAM2, and the DOI underperformed in terms of significance of one or more variables, majority of fit-indices, and comparably reasonably low variance on behavioral intention (see Table 2). Hence, these models are not found to perform at the expected levels. The model such as the UTAUT, which has been found to be a recommended model in most of its implementations, has although found to have all its relationships significant, its fit indices (i.e., χ^2/DF = 6.585, CFI = 0.652, GFI = 0.789, AGFI = 0.729, and RMSEA = 0.116) were found extremely underperforming.

Also, the model was found to explain one of the lowest variances (i.e., 0.25) on BI. The above analyses of the alternative models of adoption in the context of e-government systems indicate that none of the models of IT adoption are deemed appropriate to be considered to represent the e-government systems adoption. Hence, it gives rise to a need of a unified model in this area of research (similar to the UTAUT, which represents the IT adoption perspective), which could preferably represent the e-government specific context.

7. Proposed research model and hypotheses development

Table 2 has illustrated all different relationships between constructs of the extant models of technology adoption based on the analysis of data gathered from non-adopters of the OPGRS system. The analyses indicated that none of the models mentioned above stood firm on every criterion for their acceptability in terms of significance of relationships and their overall performance. However, the trend clearly indicates that the performance of the models (i.e., TRA, TPB, and DTPB) with attitude as an independent or a mediating variable is found stronger in terms of the significance of relationships between their constructs, fit-indices, and the variance explained by them on BI in comparison to those models (e.g., TAM, TAM2, SCT, DOI, IDT, and UTAUT) that do not have attitude as a variable. Also, attitude itself showed a strong and highly significant

Table 2
Prior technology adoption models' comparison.

Model/theory	I.V.	D.V.	PC	R^2	χ^2/DF (p)	CFI	GFI	AGFI	RMSEA
TRA	ATT	BI	0.77***	BI = 0.62	7.720 (0.000)	0.901	0.911	0.839	0.127
	SN	BI	0.17***						
TAM	EOU	BI	0.24*	BI = 0.37	7.294 (0.000)	0.782	0.808	0.735	0.123
	PU	BI	0.39***						
	EOU	PU	0.78***	PU = 0.61					
SCT	OEPR	BI	0.34***	BI = 0.40	5.537 (0.000)	0.724	0.782	0.726	0.104
	OEPL	BI	−0.14*						
	SE	BI	0.27***						
	AFT	BI	0.43***						
	ANX	BI	−0.07ns						
TPB	ATT	BI	0.74***	BI = 0.59	5.577 (0.000)	0.856	0.873	0.820	0.105
	SN	BI	0.13**						
	PBC	BI	0.18***						
DTPB	EOU	ATT	0.25***	ATT = 0.36	4.903 (0.000)	0.679	0.694	0.650	0.097
	COMP	ATT	0.19**						
	PU	ATT	0.50***						
	ATT	BI	0.72***	BI = 0.55					
	SN	BI	0.11*						
	PBC	BI	0.12*						
	TFC	PBC	0.50***	PBC = 0.50					
	SE	PBC	0.50***						
IDT	RA	BI	0.22**	BI = 0.33	4.614 (0.000)	0.653	0.669	0.624	0.093
	COMP	BI	0.15*						
	TRB	BI	−0.03ns						
	IMG	BI	−0.24***						
	EOU	BI	0.35***						
	RD	BI	0.18*						
	VSB	BI	−0.04ns						
	VU	BI	0.21*						
TAM2	IMG	PU	0.02ns	PU = 0.62	4.873 (0.000)	0.751	0.765	0.716	0.096
	JR	PU	0.39***						
	RD	PU	0.27***						
	SN	PU	0.24***						
	EOU	PU	0.58***						
	SN	BI	0.18**	BI = 0.29					
	PU	BI	0.35***						
	EOU	BI	0.18*						
DOI	RA	BI	0.34***	BI = 0.24	5.428 (0.000)	0.755	0.815	0.766	0.103
	COMP	BI	0.26***						
	CLX	BI	−0.21***						
	TRB	BI	0.10ns						
UTAUT	PE	BI	0.28**	BI = 0.25	6.585 (0.000)	0.652	0.789	0.729	0.116
	EE	BI	0.23***						
	SI	BI	0.28***						
	FC	BI	0.20**						

[Legend: χ^2: Chi-Square, AGFI: Adjusted Goodness of Fit Index, AFT: Affect, ANX: Anxiety, ATT: Attitude, BI: Behavioral Intention, CFI: Comparative Fit Index, COMP: Compatibility, CLX: Complexity; DF: Degree of Freedom, D.V.: Dependent Variable, DOI: Diffusion of Innovation; DTPB: Decomposed Theory of Planned Behavior; EOU: Perceived Ease of Use, EE: Effort Expectancy, EU: Ease of Use, FC: Facilitating Conditions, GFI: Goodness of Fit Index, IDT: Innovation Diffusion Theory, IMG: Image, I.V.: Independent Variable, JR: Job Relevance, ns: Non-Significant, OEPL: Outcome Expectations – Professional, OEPR: Outcome Expectations – Personal, p: Significance of Chi-Square by Degree of Freedom value, PBC: Perceived Behavioral Control, PC: Path Coefficient, PE: Performance Expectancy, PU: Perceived Usefulness, RA: Relative Advantage, RD: Result Demonstrability, RMSEA: Root Mean Square Error of Approximation, SCT: Social Cognitive Theory, SE: Self-Efficacy, SI: Social Influence, SN: Subjective Norm, TAM: Technology Acceptance Model, TAM2: Extended TAM; TFC: Technology Facilitating Conditions, TPB: Theory of Planned Behavior, TRA: Theory of Reasoned Action, TRB: Trialability; UTAUT: Unified Theory of Acceptance and Use of Technology, VSB: Visibility, VU: Voluntariness to Use].

relationship with behavioral intention in all these models (i.e., TRA, TPB, and DTPB). The research also acknowledged that even though the unified constructs (i.e., performance expectancy, effort expectancy, social influence, and facilitating conditions) of the originating UTAUT (Venkatesh et al., 2003) model contained majority of the constructs used in the earlier dominant technology adoption models (e.g., TRA, TAM, TPB), that pertain to the similar meaning of its constructs, the model (i.e., UTAUT) itself does not seem to perform at the expected level.

Deriving from the enhanced performance of the models through the inclusion of attitude, we recommend including attitude as a mediating construct in our proposed research model. The role of attitude in explaining technology acceptance is widely acknowledged in prior literature (e.g., Bobbitt & Dabholkar, 2001; Kim, Chun, & Song, 2009; Taylor & Todd, 1995b; Yang & Yoo, 2004). Further, the inclusion of attitude in models of IS/IT acceptance is consistent with the TRA (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), the TPB (Ajzen, 1991), and the DTPB (Taylor & Todd, 1995b). The attitude and behavioral intention relationship represented in the TRA, TPB, or DTPB implies that, all else being equal, the individuals form intentions to perform behaviors toward which they have positive attitude. This relationship is cardinal to the TRA and related models presented by Triandis (1977) and Bagozzi (1981) (Davis et al., 1989). While devising the TAM extension (TAME) model, Jackson, Chow, and Leitch (1997) called the researchers to investigate whether perceived usefulness and perceived ease of use influence attitude in order to refine their model.

Specifically, we position attitude as a mediating variable between performance expectancy and behavioral intention, effort expectancy and behavioral intention, and social influence and

behavioral intention and between anxiety and behavioral intention. This is because the extent to which the OPGRS system is useful and consistent with performance expectations and easy to use can influence the individual's attitude leading to intention. Moreover, the suggestions and recommendations by the important others can also influence individuals' attitudes toward using the system. A number of empirical studies (e.g., Aboelmaged, 2010; Aggelidis & Chatzoglou, 2009; Egea & González, 2011; Kim, Suh, Lee, & Choi, 2010) have advocated the use of attitude as a mediating variable along with perceived usefulness and perceived ease of use in the TAM model. Davis et al. (1989) argued that the perceived usefulness and behavioral intention relationship is basically based on the idea that, within organisational settings, people form intentions toward behaviors they believe will enhance their job performance, over and above whatever positive or negative feelings may be aroused toward the behavior. As the current context is primarily linked with individuals setting, the importance of including attitude as a mediating variable in the proposed research model should be seen in the backdrop of Davis et al.'s (1989) argument, which further strengthens and justifies the presence of this variable in the proposed research model.

Attitude has also been used as a mediating variable of performance expectancy and effort expectancy in several studies that had used the UTAUT (e.g., Alshare & Lane, 2011; Koh, Prybutok, Ryan, & Wu, 2010; Sumak, Polancic, & Hericko, 2010) model. Moreover, studies (e.g., Chiu, Lee, Liu, & Liu, 2012; Park, Yang, & Lehto, 2007; Sumak et al., 2010) have also shown the empirical support for the relationship between social influence and attitude in context of the technology adoption literature in general. Based on strong theoretical foundation (i.e., Ajzen, 1991; Davis, 1989; Fishbein & Ajzen, 1975; Taylor & Todd, 1995b) and prior empirical research (e.g., Chen & Lu, 2011; Cox, 2012; Zhang & Gutierrez, 2007), we also propose that attitude would instigate behavioral intention. We also propose to include the relationship between facilitating conditions and behavioral intention to the proposed research model. This is based on theoretical foundations (Ajzen, 1991; Taylor & Todd, 1995b) of its root constructs (such as perceived behavioral control and facilitating condition) followed by the empirical findings (e.g., Eckhardt, Laumer, & Weitzel, 2009; Foon & Fah, 2011; Yeow & Loo, 2009) that support the effect of facilitating conditions and behavioral intention. This research also argues that anxiety could be used as an external variable of the proposed research model. Anxiety might be considered as a determinant of attitude where the potential adopters of any e-government system would probably be more concerned about. Venkatesh et al. (2003) also argued that anxiety should not be considered as a direct determinant of behavioral intention, which does provide support for anxiety-attitude relationship.

Under the proposed research model, we theorise that constructs such as performance expectancy, effort expectancy, social influence, and facilitating conditions will play a significant role as direct determinants of attitude and behavioral intention. Moreover, this research will also consider anxiety as an external variable to determine users' attitude, which would in turn influence behavioral intention. Also, we argue that the moderators specified in the original UTAUT model may not be applicable in context as in the current research and this is why no moderators have been included in the proposed model. One potential reason is that we are primarily interested in clarifying the direct relationships of exogenous constructs with attitude and behavioral intention as performed by other dominant models of technology adoption did it with behavioral intention and use behavior except the UTAUT (which used moderators) model. However, even the UTAUT as a basic model can be compared with the other models where its theoretical consideration may preclude the use of moderators in the beginning. Such evaluation of the UTAUT model will allow us to understand its performance when the data related to all different moderating variables are combined together. Fig. 1 presents the proposed research model with appropriate hypotheses.

7.1. Performance expectancy

Performance expectancy is defined as the degree to which a person believes that using the system will assist him or her to accomplish improvements in job performance. The variables of the extant technology adoption models discussed in this research including perceived usefulness (from TAM and TAM2), relative advantage (from DOI and IDT), and outcome expectations (from SCT) are similar in nature to performance expectancy (Venkatesh et al., 2003). These constructs have been observed as similar to each other in some previous literature. For example, usefulness and relative advantage (Davis et al., 1989; Moore & Benbasat, 1991; Plouffe, Hulland, & Vandenbosch, 2001) and usefulness and outcome expectations (Compeau & Higgins, 1995a; Davis et al., 1989) were regarded as similar constructs across the various studies. The theoretical underpinning of the TAM by Davis et al. (1989) and the DTPB by Taylor and Todd (1995b) indicated that perceived usefulness significantly determined individual's attitude in the context of IS/IT adoption. As perceived usefulness is measured as one of the root constructs of performance expectancy in the UTAUT framework, it seems reasonable to argue that performance expectancy will have a significant impact on individual's attitude toward adopting the OPGRS system.

Similarly, relative advantage is also considered as one of the root constructs of performance expectancy has been found as a significant determinant that impacts individual's attitude toward adopting an e-government system. The positive and significant impact of perceived usefulness on attitude has been examined in a number of studies (e.g., Hung, Chang, & Yu, 2006, 2009, 2013; Lin et al., 2011; Lu, Huang, & Lo, 2010) on e-government adoption. After the evolution and development of the UTAUT model in 2003, a reasonable number of studies (e.g., Koh et al., 2010; Park et al., 2007; Pynoo et al., 2011) have examined the influence of performance expectancy on attitude. Their findings indicated that performance expectancy is a positive and significant determinant of individual's attitude toward adopting or using the corresponding IS/IT systems. Considering the above discussions, the following hypothesis can be formulated:

H1. Performance expectancy will have a positive and significant influence on attitude.

7.2. Effort expectancy

Effort expectancy is defined as the level of simplicity associated with the use of the system. Three variables including perceived ease of use (from TAM and TAM2), complexity (from DOI and IDT), and ease of use (from IDT) summarise the concept of effort expectancy (Venkatesh et al., 2003). The similarities among these variables have been found in prior research studies (Davis et al., 1989; Moore & Benbasat, 1991; Plouffe et al., 2001; Thompson, Higgins, & Howell, 1991). Similar to perceived usefulness and entrenched in the theoretical underpinning of the TAM by Davis et al. (1989) and the DTPB by Taylor and Todd (1995b), perceived ease of use is a significant predictor of attitude in the technology adoption research. A number of studies (e.g., Park et al., 2007; Pynoo et al., 2011) have provided the significant empirical justification for this relationship.

A reasonable number of studies (e.g., Hung et al., 2006; 2009; 2013; Lin et al., 2011; Lu et al., 2010) on e-government systems

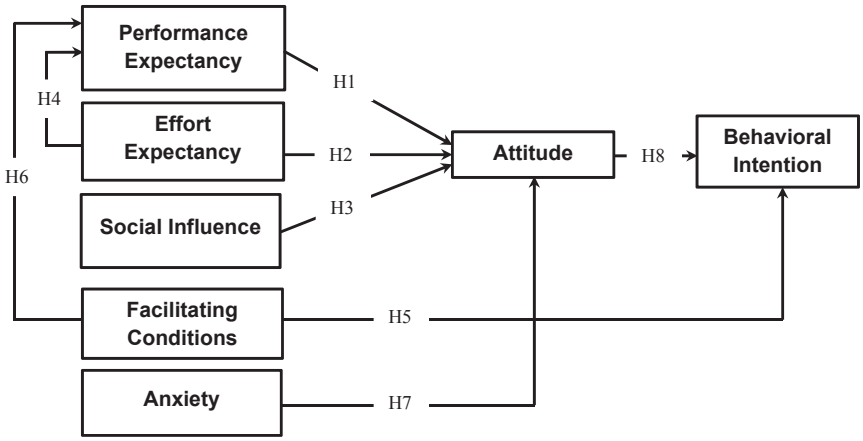

Fig. 1. Proposed research model (adapted from Venkatesh et al., 2003).

adoption have found a positive and significant relationship of perceived ease of use with attitude. For example, Hung et al. (2006) found this positive and significant relationship for online tax filing and payment system, Hung et al. (2009) established it for electronic document management system, whereas Hung et al. (2013) justified this relationship for the different e-government systems including government-to-business (G2B) e-government services and mobile e-government services. Exploring the citizen's adoption of e-government services in Gambia, Lin et al. (2011) found that perceived ease of use had a significant impact on user's attitude. Examining the determinants influencing taxpayer's online tax-filing in Taiwan, Lu et al. (2010) found that perceived ease of use of the tax filing system significantly influenced taxpayer's attitude. The impact of effort expectancy on attitude has been explored mainly in the IT adoption research and a reasonable number of studies (e.g., Alshare & Lane, 2011; Chen, Kuan, Lee, & Huang, 2011; Park et al., 2007; Pynoo et al., 2007; 2011) have explored this relationship. For example, predicting the student-perceived learning outcomes and satisfaction in enterprise resource planning (ERP) courses, Alshare and Lane (2011) found that effort expectancy had a significant direct impact on attitude. In context of playing online game using mobile, Chen et al. (2011) revealed that the impact of effort expectancy was significantly high on consumers' attitude. Monitoring the implementation of an information system in a hospital setting, Pynoo et al. (2007) found attitude as a better measure for effort expectancy in a mandatory setting. Predicting secondary school teachers' acceptance and use of a digital learning environment, Pynoo et al. (2011) found that effort expectancy was a predictor of attitude, especially in the beginning. Exploring the adoption of mobile technology in Chinese context, Park et al. (2007) also found effort expectancy as a significant predictor of their attitude. Hence, based on the above discussion and evidence for the positive impact of effort expectancy on attitude in different technological and e-government settings, the following hypothesis is formulated:

H2. Effort expectancy will have a positive and significant impact on attitude.

The research also hypothesises the positive and significant impact of effort expectancy on performance expectancy. The significance of this relationship has emerged from their root constructs namely perceived ease of use (i.e., a root construct for effort expectancy) and perceived usefulness (i.e., a root construct for performance expectancy) of the TAM model. Davis et al. (1989) formulated a significant relationship between perceived ease of use and perceived usefulness. The authors argued that improvements in ease of use may be instrumental, contributing to enhanced performance. That is, effort saved due to improved ease of use may be redeployed enabling an individual to accomplish more work for the same effort.

Studies (e.g., Fu, Chao, & Farn, 2006; Karavasilis, Zafiropoulos, & Vrana, 2010; Lu et al., 2010) on e-government systems adoption have also acknowledged that easy to use system could be considered more useful and leads to higher user's efficiency and performance. For example, exploring the taxpayer's intention to adopt a specific tax-filing method (i.e., manual, two-dimensional barcode, and Internet) in Taiwan, Fu et al. (2006) found that perceived ease of use was significant predictor of perceived usefulness irrespective of the tax-filing method used. A similar finding in context of online tax-filing system of Taiwan was also obtained by Lu et al. (2010). Extending TAM to understand the e-government adoption by teachers in Greece, Karavasilis et al. (2010) found a strong and significant influence of perceived ease of use on perceived usefulness. Hence, the following hypothesis is formulated:

H4. Effort expectancy will have a positive and significant impact on performance expectancy.

7.3. *Social influence*

Social influence is defined as the degree to which a person perceives that important others believe he or she should use a new system. This variable is composed of other similar variables including subjective norm (from the TRA, the TAM2, the TPB, and the DTPB), social factors (from model of PC utilisation), and image (from the IDT) (Venkatesh et al., 2003). Studies (e.g., Chen et al., 2011; Chiu et al., 2012; Park et al., 2007; Pynoo et al., 2007; Sumak et al., 2010) on technology adoption have also supported the positive and significant influence of social influence on attitude. For example, applying the UTAUT model in playing online game through mobile phones in Taiwan, Chen et al. (2011a) found that social influence had a positive and significant impact on experienced users' attitude. Analyzing the adoption of Internet sport lottery in Taiwan, Chiu et al. (2012) found that social influence as a significant determinant of user's attitude across different age groups and varied levels of Internet experience. The findings of the research indicated that lottery gaming and online betting is socially inclined to social influence that allows players to easily link to each other (Chiu et al., 2012).

Similarly, exploring the adoption for mobile technologies for

Chinese consumers, Park et al. (2007) also found that social influence positively influenced consumer's attitude toward using mobile technology. Hamari and Koivisto (2015) examined how social influence individual's willingness to maintain the difficult habits such as exercise, sustainable and healthy eating using a variety of social and gamification services. Their results indicated that social influence had a positive impact on how much people were willing to exercise as well as their attitudes and willingness to use such services. The role of social influence is substantiated in the findings of socio-psychology research too, which indicate that social influence has key evaluative implications on the processing of attitude relevant information, which in turn influences the likelihood of individuals to act on their attitudes (de Araujo Burcharth, Knudsen, & Sondergaard, 2014; Crano & Prislin, 2006). We also believe that societal influence from the people of close proximity such as members of family, friends, and colleagues will have positive and certain levels of impact on individual's attitude toward making decision to use the online social e-government system like the OPGRS. Deriving from the above discussions and empirical support for this relationship, we will formulate the following hypothesis:

H3. Social influence will have a positive and significant impact on attitude.

7.4. Facilitating conditions

Facilitating conditions are defined as the level to which a person believes that an organisational and technical infrastructure are available to support the use of the system. It captures concepts from the other root variables including perceived behavioral control (from TPB and DTPB), facilitating condition (from model of PC Utilisation), and compatibility (from IDT). Including perceived behavioral control (a root construct of facilitating conditions) as a predictor of behavioral intention in the TRA model, Ajzen (1991) formulated a new model called the TPB and established that such inclusion led to substantial improvements of the model in terms of predicting individual's intentions.

Taylor and Todd (1995b) found a theoretical overlap by modeling facilitating condition as a key constituent of perceived behavioral control in TPB/DTPB. The authors argued that for inexperienced users, perceived behavioral control had relatively less impact on intention. Venkatesh et al. (2003) argued that when the constructs such as performance expectancy and effort expectancy are present to predict the intention, facilitating conditions becomes insignificant in predicting behavioral intention. In comparison to the original UTAUT conceptualisation, Venkatesh, Thong, and Xu (2012) added a direct relationship from facilitating conditions to behavioral intentions in the extended UTAUT (i.e., UTAUT2), which was primarily developed to address the consumer's adoption of technology. Giving reference to the UTAUT model, it was argued that facilitating conditions was hypothesised to influence technology use in the organisational environment where facilitating conditions can serve as the proxy for actual behavioral control and influence behavior directly (Ajzen, 1991). However, the assistance by the information system or technology in the case of each individual can vary considerably across application vendors, technology generations, and devices used to run the application. In such cases, facilitating conditions work more like perceived behavioral control and influence behavioral intention as well (Venkatesh et al., 2012). Empirical evidence of a number of studies (e.g., Chiu et al., 2012; Lee & Lin, 2008) on technology adoption by individual has also supported the significant impact of facilitating conditions on behavioral intentions.

Moreover, the analysis of the relationship between facilitating conditions on behavioral intention along e-government adoption research has been explored across a reasonable number of studies (e.g., Carter, Schaupp, Hobbs, & Campbell, 2012; Schaupp, Carter, & McBride, 2010) and found that they were significant on individual's intention to use the system. For example, analyzing the e-file utilisation among the US taxpayers, Carter et al. (2012) revealed that facilitating conditions were found significant in explaining the intention to e-file use. Similarly, analyzing the US taxpayers' intention to adopt e-file, Schaupp et al. (2010) found that facilitating conditions had a significant impact on behavioral intention. Based on the above discussion, the following hypothesis is formulated:

H5. Facilitating conditions will have a positive and significant impact on behavioral intention.

A handful of studies (e.g., Lee & Lin, 2008; Schaper & Pervan, 2007) on technology adoption have also supported the positive and significant impact of facilitating conditions on performance expectancy. For example, Lee and Lin (2008) developed and empirically tested a theoretical model on the acceptance of podcasting in the perspective of learning in higher education. The findings of the research indicated that facilitating conditions in the forms of technical support and copyright clearance significantly influenced students' behavioral intentions to use the system. Schaper and Pervan (2007) examined information and communication technology (ICT) acceptance and utilisation by Australian occupational therapists and found that organisational facilitating conditions had a positive and significant impact on performance expectancy. We also believe that facilitating conditions such as providing initial training and necessary resources might facilitate users to understand the usefulness, efficiency, and potential of the system and enhance their performance to get the job done. Therefore, we hypothesise:

H6. Facilitating conditions will have a positive and significant impact on performance expectancy.

7.5. Anxiety

The emotional aspect of technology usage is expected to be captured through a construct called anxiety. It is defined as an individual's apprehension or even fear when he or she is faced with the possibility of using computers (Simonson, Maurer, Montag-Torardi, & Whitaker, 1987). Attitude is an individual's affective evaluation of a specific object (Davis et al., 1989). Computer anxiety relates to users' general insights about computer usage and is determined as an indirect determinant of intention (Venkatesh, 2000). In IS, anxiety has been viewed as a personality variable that influences systems use (Agarwal, 2000; Zmud, 1979). A substantial body of research in IS and psychology has revealed the relevance of computer anxiety by demonstrating its impact on attitudes (e.g., Howard & Smith, 1986; Igbaria, 1990; Igbaria & Chakrabarti, 1990; Igbaria & Parasuraman, 1989; Morrow, Preix, & McElroy, 1986; Parasuraman & Igbaria, 1990). For example, Igbaria (1990) suggested that individuals high in computer anxiety will have negative attitudes toward using a computer.

Investigating the insight between computer anxiety levels and attitude among undergraduate students in Greece, Korobili, Togia, and Malliari (2010) found that there was a strong negative relationship between two concepts. Similarly, analyzing computer anxiety and attitudes towards the Internet in an East European sample, Durndell and Haag (2002) argued that the results tend to support the contention that the literature on attitudes and anxiety towards computers is liable to extrapolate to the Internet. Analyzing cross-cultural comparison of gender differences in

computer attitudes and anxieties for the sample of the UK and Hong Kong, Brosnan and Lee (1998) found opposite relationship (i.e., less anxiety and more positive attitudes) between these two variables for both the samples. Exploring the use of virtual world among the students of a large public university, Brown, Fuller, and Vician (2004) found a very significant and negative relationship between students' anxiety and their attitude to use the specific applications. Exploring student's attitudes and intentions to use technology during class for the non-class related purposes, Taneja, Fiore, and Fischer (2015) demonstrated that students' attitudes are influenced by cyber-slacking anxiety and distraction by other cyber-slacking behavior. Examining both Internet use and non-use among elderly, van Deursen and Helsper (2015) also accepted that holding negative attitudes about computers and the Internet is associated with computer anxiety. Although anxiety has been researched extensively in the IS and psychology literature, its role as a determinant to influence individual's attitude in the context of e-government adoption has yet to be examined. Based on the above discussions, it can be ascertained that higher degree of individual's anxiety will lead to lower levels of citizens' attitude toward using the system. Therefore, we hypothesise:

H7. Anxiety will have a negative and significant impact on citizens' attitude toward using the system.

7.6. Attitude

The construct attitude has been used across various theories of IS/IT adoption research including the TRA (Fishbein & Ajzen, 1975), the TAM (Davis et al., 1989), the TPB (Ajzen, 1991), and the DTPB (Taylor & Todd, 1995b) to measure influence on behavioral intention to use the system. As per the TRA, a person's behavioral intention is jointly determined by an individual's attitude and subjective norm concerning the behavior in question (Fishbein & Ajzen, 1975). Similar to the TRA, the TAM postulated that the individual's behavioral intention is determined by the individual's attitude toward using the system (Davis et al., 1989). Attitude toward behavior is defined as the level to which an individual has a positive or negative evaluation or appraisal of the behavior in question (Ajzen, 1991). Formulating the TPB model, Ajzen (1991) postulated that attitude toward behavior is generally found to precisely predict the individual's behavioral intentions.

The studies based on the TPB model also supports this assertion presenting that attitude can significantly influence the intention to use new IS/IT (Mathieson, 1991; Pavlou & Fygenson, 2006; Taylor & Todd, 1995b). In fact, similar to the TAM model, Taylor and Todd (1995b) established attitude as a mediating variable, which leads to higher overall intention to use a system. In the field of public administration and e-government, a number of studies (e.g., Hung et al., 2009, 2013; Lu et al., 2010) have supported the relationship between attitude and behavioral intention. For example, analyzing the user's acceptance of mobile e-government services in Taiwan, Hung et al. (2013) found attitude as a critical factor for understanding and predicting mobile users' behavioral intentions. Examining factors that impact citizens' adoption of e-government services, Al-Hujran, Al-Debei, Chatfield, and Migdadi (2015) found strong evidence that citizen attitude toward using e-government services is the most significant determinant of citizen intention to adopt and use e-government services. Realising its importance in IS/IT adoption research in general and e-government adoption in particular, the following hypothesis is formulated:

H8. Attitude will have a positive significant relationship with behavioral intention.

8. Selection of most appropriate items from the UTAUT

Table 3 presents items of the proposed research model and their corresponding factor loadings. While formulating the UTAUT model, Venkatesh et al. (2003) adopted an approach where they selected four highest loading items from the measurement model for each determinant. We adapted the similar approach where the selected higher loading items from similar constructs constituting the unified variables were selected and used for the unified model for e-government adoption.

While choosing the items, we made sure that we pick minimum of three items for a construct in the proposed model beyond the recommended level of factor loadings (i.e., $\geq$0.50). Except for SF1, the factor loading values of all other items belonging to different constructs were found to be at $\geq$0.60 levels. Further, realising that some of the relatively lower loading items might adversely affect the performance of the proposed research model, it was decided to drop them from the selected set of items forming a construct.

The selected items (marked using '*' in Table 3) resulted in the most highly and appropriate loading factors. This includes three from PE (i.e., RA1PU1, RA3PU5, and PU6), four from EE (i.e., EU1EOU3, EOU4, and EU3EOU6, and EOU5), three from social influence (i.e., SF1, SN1, and SN2), and five from facilitating conditions (i.e., PBC2, PBC3, PBC4, FC1, and FC2). Moreover, three items each from the constructs attitude (i.e., ATT1, ATT2, and ATT3), anxiety (ANX2, ANX3, and ANX4), and behavioral intentions (i.e., BI1, BI2, and BI3) were also found useful toward contributing the proposed model development.

9. Results

9.1. Respondents' demographic profile

The characteristics of the data gathered from the respondents of various geographical locations indicated that the majority of the population was from a relatively younger generation. For example, 83.5% respondents belonged to an age group of 20–34 years. As far as the occupation of the respondents is concerned, the largest 56.1% of the total sample were students followed by the next largest 22.4% represented by the private-sector employees. The education qualification for close to 82% of the overall population was found to be undergraduate and above. The computer and Internet literacy and awareness of the respondents can be adjudicated from their very high computer and Internet experience percentage of approximately 96%.

9.2. Descriptive statistics

Table 4 presents the mean and standard deviation for the selected items of each construct used for the proposed research model. The mean values of all constructs (except for anxiety) were either found close to five or above it. This indicates that users responded favorably to the system at large. However, a relatively lower mean value of around four for the items for the construct anxiety indicates that respondents did not respond positively for the items related to this construct. Relatively higher standard deviations (i.e., particularly close to 1.5 or higher) for some items of anxiety (i.e., ANX2 and ANX3), social influence (i.e., SN1 and SF1), and behavioral intention (i.e., BI1) indicated that respondents' response were rather little diverging across their mean values and respondents seemed to make varying opinions about the questions asked to them.

Reliability analysis was implemented using Cronbach's alpha. It is used for evaluating the reliability of the scale that provides an indication about the internal consistency of the items measuring

Table 3
Item loadings using AMOS (N = 419).

Measure	Items	FL	Measure	Items	FL
Performance Expectancy (PE)	OE1	0.64	Social Influence (SI)	SN1*	0.82
	OE2	0.42		SN2*	0.75
	OE3	0.42		SF1*	0.50
	OE4	0.59		SF2	0.24
	OE5	0.45		SF3	0.24
	OE6	0.51		SF4	0.22
	OE7	0.50		IMG1	0.28
	PU2	0.43		IMG2	0.22
	PU6*	0.80		IMG3	0.24
	RA2	0.63	Facilitating Conditions (FC)	PBC1	0.58
	RA1, PU1*	0.66		PBC2*	0.65
	RA3, PU5*	0.87		PBC3*	0.75
	RA4, PU4	0.41		PBC4*	0.70
	RA5, PU3	0.38		PBC5	0.52
Effort Expectancy (EE)	EOU4*	0.67		FC1*	0.60
	EOU5*	0.68		FC2*	0.67
	EU1, EOU3*	0.73		FC3	0.55
	EU3, EOU6*	0.61	Attitude (ATT)	ATT1*	0.77
	EU4, EOU1	0.56		ATT2*	0.73
	EU2, EOU2	0.57		ATT3*	0.77
	CLX1	0.12		ATT4	0.66
	CLX2	0.03		AFT1	0.53
	CLX3	0.10		AFT2	0.56
	CLX4	0.03		AFT3	0.57
Anxiety (ANX)	ANX1	0.39		AFT4	0.25
	ANX2*	0.67	Behavioral Intention (BI)	BI1*	0.75
	ANX3*	0.81		BI2*	0.75
	ANX4*	0.63		BI3*	0.73

[Legend: FL = Factor Loading, N = Sample Size].

Table 4
Mean and Standard Deviation (SD) of items (N = 419).

Construct	CA	ID	Item(s)	Mean	SD
Performance Expectancy (PE)	0.806	11	RA1, PU1	5.51	1.351
			RA3, PU5	5.58	1.228
			PU6	5.55	1.227
Effort Expectancy (EE)	0.766	6	EU1, EOU3	5.16	1.357
			EOU4	5.05	1.382
			EU3, EOU6	5.17	1.308
			EOU5	5.13	1.429
Social Influence (SI)	0.715	6	SN1	4.78	1.545
			SN2	4.94	1.488
			SF1	4.36	1.742
Facilitating Conditions (FC)	0.777	3	PBC2	5.01	1.340
			PBC3	5.35	1.241
			PBC4	5.52	1.248
			FC1	5.06	1.305
			FC2	4.91	1.398
Anxiety (ANX)	0.735	1	ANX2	4.15	1.683
			ANX3	3.83	1.721
			ANX4	4.13	1.481
Attitude (ATT)	0.835	1	ATT1	5.81	1.294
			ATT2	5.63	1.359
			ATT3	5.64	1.316
Behavioral Intention (BI)	0.796	0	BI1	5.31	1.499
			BI2	5.20	1.463
			BI3	5.27	1.402

[Legend: CA: Cronbach's Alpha, ID: Items Dropped].

the same construct (Hair, Anderson, Tatham, & Black, 1992; Zikmund, 1994). Cronbach's alpha (see Table 4) for all the constructs was found to exceed the recommended minimum acceptable level of 0.70 (Hair et al., 1992; Nunnaly, 1978). In addition, Table 4 also presents the number of dropped items from the set of unified constructs to be considered for the proposed unified model for e-government adoption. The highest 11 items were dropped from performance expectancy whereas no item was dropped from behavioral intention.

9.3. Measurement model

The study tested the convergent and discriminant validity of the scales using confirmatory factor analysis. Anderson and Gerbing (1988) recommended three ad hoc tests for convergent validity. Table 5 illustrates the standardised factor loadings, composite reliabilities, and average variance extracted for this purpose. Standardised factor loadings are representative of the level of association between scale items and a single latent variable. The loadings are found highly significant in all cases. Composite reliabilities (CRs), similar to Cronbach's alpha were found well beyond the minimum limit of 0.70 (as recommended by Hair et al., 1992; Nunnaly, 1978) in each case. Average variance extracted (AVE) estimates are measures of the variation explained by the latent variable to random measurement error (Netemeyer, Johnston, & Burton, 1990) and ranged from 0.601 to 0.769 for all constructs. These estimates are found to be at greater than or equal to the recommended lower limit of 0.50 (Fornell & Larcker, 1981). Hence, all three tests related to convergent validity of the scales were supported.

Discriminant validity was also measured using the test recommended by Anderson and Gerbing (1988). To pass this test, the factor correlation between a pair of latent variables should be less than the square root of AVE of each variable as shown in Table 6 through factor correlation matrix. The evaluation of this validity indicates that AVE shown in bold fonts across the diagonal of Table 6 for each variable is always greater than the correlation value for any pair of variables. For example, correlation between attitude and behavioral intention is 0.657, which is less than the square root of AVE shown along the diagonal of both these variables (i.e., 0.877 and 0.831 respectively). In other words, a variable is considered to be different from other variables if the square root of the AVE for it is greater than its correlations with other latent variables (Barclay & Smith, 1997), which is satisfied for every variable of the proposed research model of the current study.

Table 5
Results of confirmatory factor analysis (CFA).

Measure	FL	CR	AVE
Performance Expectancy (PE)		0.820	0.737
RA1PU1	0.65		
RA3PU5	0.87		
PU6	0.80		
Effort Expectancy (EE)		0.768	0.602
EU1EOU3	0.67		
EOU4	0.67		
EU3EOU6	0.61		
EOU5	0.68		
Social Influence (SI)		0.743	0.601
SN1	0.83		
SN2	0.75		
SF1	0.50		
Facilitating Conditions (FC)		0.803	0.649
PBC2	0.65		
PBC3	0.74		
PBC4	0.69		
FC1	0.60		
FC2	0.67		
Anxiety (ANX)		0.839	0.617
ANX2	0.65		
ANX3	0.86		
ANX4	0.58		
Attitude (ATT)		0.840	0.769
ATT1	0.84		
ATT2	0.80		
ATT3	0.75		
Behavioral Intention (BI)		0.797	0.691
BI1	0.76		
BI2	0.75		
BI3	0.75		

[Legend: AVE = Average Variance Extracted, CR = Composite Reliability, FL = Factor Loading].

Table 6
Factor correlation matrix.

Variable	PE	EE	SI	FC	ANX	ATT	BI
PE	**0.859**						
EE	0.539** p < 0.01	**0.776**					
SI	0.273** p < 0.01	0.362** p < 0.01	**0.775**				
FC	0.557** p < 0.01	0.543** p < 0.01	0.346** p < 0.01	**0.806**			
ANX	−0.014 p > 0.05	0.059 p > 0.05	0.234** p < 0.01	0.128** p < 0.01	**0.786**		
ATT	0.562** p < 0.01	0.464** p < 0.01	0.357** p < 0.01	0.450** p < 0.01	−0.061 p > 0.05	**0.877**	
BI	0.425** p < 0.01	0.426** p < 0.01	0.358** p < 0.01	0.427** p < 0.01	0.009 p > 0.05	0.657** p < 0.01	**0.831**

[Note: Square root of AVE on Diagonals in Bold] [p > 0.05: non-significant; *p < 0.05, **p < 0.01].

9.4. Structural model testing

The overall model fit looks adequate as can be seen from Table 7. The test of overall model fit resulted in a $\chi 2$ value of 460.304 with degrees of freedom as 239 and a probability value of less than 0.001. The significant p-value indicates that the absolute fit of the model is less than desirable. However, although the $\chi 2$-test of absolute model fit is sensitive to sample size and non-normality, a better measure of fit is $\chi 2$ over degrees of freedom. This ratio for the proposed model in this study is 1.926, which is within the suggested [3-1] bracket (Chin & Todd, 1995; Gefen, 2000).

In addition to the above-mentioned ratio, we also report some of the fit indices. Descriptive fit statistics compare a specified model to a baseline model, typically the independence model, with a view to show the superiority of the proposed model. We report the Goodness-of-Fit index (GFI), the adjusted GFI (AGFI), and the Comparative Fit Index (CFI). Gerbing and Anderson (1992) found CFI as one of the most stable and strong fit indices. We also report RMSEA (Root Mean Square Error of Approximation), which measures the discrepancy per degree of freedom (Steiger & Lind, 1980).

The CFI should be at or above 0.90 (Hoyle, 1995), while the AGFI should be at or above 0.80 (Chin & Todd, 1995; Segars & Grover, 1993). The CFI statistics should be at or above 0.90 (Bentler & Bonett, 1980; Hoyle, 1995). Finally, RMSEA should be below 0.10 (Browne & Cudeck, 1993), but has also been suggested to represent a very good fit if below the more restrictive threshold of 0.06 (Hu & Bentler, 1999). Table 7 illustrates these statistics and found all of them in accordance within the recommended levels.

Having established the relative adequacy of the model's fit, it is suitable to examine individual path coefficients corresponding to our hypotheses. This analysis is presented in Table 8. All eight hypotheses are supported. The independent constructs performance expectancy, effort expectancy, and social influence positively and significantly influenced attitude (i.e., H1, H2, and H3), whereas anxiety negatively and significantly influenced attitude (i.e., H7).

Moreover, effort expectancy (i.e., H4) and facilitating conditions (i.e., H6) significantly influenced performance expectancy. Also, facilitating conditions (i.e., H6) and attitude (i.e., H8) positively impacted individual's behavioral intention (see Table 8).

Fig. 2 shows the validated research model with path coefficients and significance of each relationship. It also demonstrates the variance of the model shown on each of the three dependent variables (i.e., performance expectancy, attitude, and behavioral intention). The variance of the model shown on BI (i.e., 66%) outperforms the variances presented by any alternative model of IS/IT adoption on BI indicating that this is a better research model for e-government adoption than possibly any other alternative models including the UTAUT.

10. Discussion

The current research examined the alternative models of IS/IT adoption in the perspective of the OPGRS system. Similar to the UTAUT model formulation, this research integrated the fragmented theory and research on individual acceptance of IS/IT used across the studies of e-government adoption into a unified theoretical model for e-government adoption that captures the essential elements of previously established models (Venkatesh et al., 2003). Firstly, we identified and theoretically reviewed the nine specific models of the determinants of intention and usage (see Table 2). Secondly, these models were empirically compared using the primary data gathered from one of the citizen's specific e-government systems called OPGRS. Thirdly, the conceptual and empirical similarities across these models and the process of formulation of the UTAUT model were used to develop the research model. The items for the integrated constructs from among the set of overall items collected from the similar constructs were carefully selected based on their performance in terms of higher factor loadings.

The research model was empirically tested using the same dataset of the OPGRS. This test provided a strong empirical support for the research model, which posits four direct determinants (i.e., performance expectancy, effort expectancy, social influence, and anxiety) of attitude, two direct determinants (i.e., facilitating conditions and attitude) of behavioral intention, and two direct determinants of performance expectancy (i.e., effort expectancy and facilitating conditions). Through this research model we found that attitude played a strong mediating role as far as examining the adoption of an e-government system is concerned. The findings for this research are crucial for the fact that they underscore the

Table 7
Model fit summary for the research model.

Fit statistics	Recommended Value	Model Value
Chi-Square (χ^2)/Degree of Freedom (DF)	≤3.000	460.304/239 = 1.926
Probability Value (p)	>0.05	<0.001
Goodness of Fit Index (GFI)	≥0.900	0.916
Adjusted Goodness of Fit Index (AGFI)	≥0.800	0.894
Comparative Fit Index (CFI)	≥0.900	0.945
Root Mean Square Error Approximation (RMSEA)	≤0.060	0.047

Table 8
Path coefficients and hypotheses testing.

Constructs' relationship	Standardised regression weight	Critical ratio (CR)	Significance (p)	Hypothesis-supported (YES/NO)
PE→ATT	0.439***	6.624	p < 0.001	H1-YES
EE→ATT	0.173*	2.329	p = 0.021	H2-YES
SI→ATT	0.271***	4.485	p < 0.001	H3-YES
EE→PE	0.266**	2.898	p = 0.001	H4-YES
FC→BI	0.126*	2.216	p = 0.035	H5-YES
FC→PE	0.516***	5.570	p < 0.001	H6-YES
ANX→ATT	−0.145**	−3.074	p = 0.003	H7-YES
ATT→BI	0.733***	10.525	P < 0.001	H8-YES
R^2(BI)	0.66			
R^2(ATT)	0.53			
R^2(PE)	0.53			

[Legend: CR: Critical Ratio, p: Significance: *p < 0.05, **p < 0.01, ***p < 0.001]

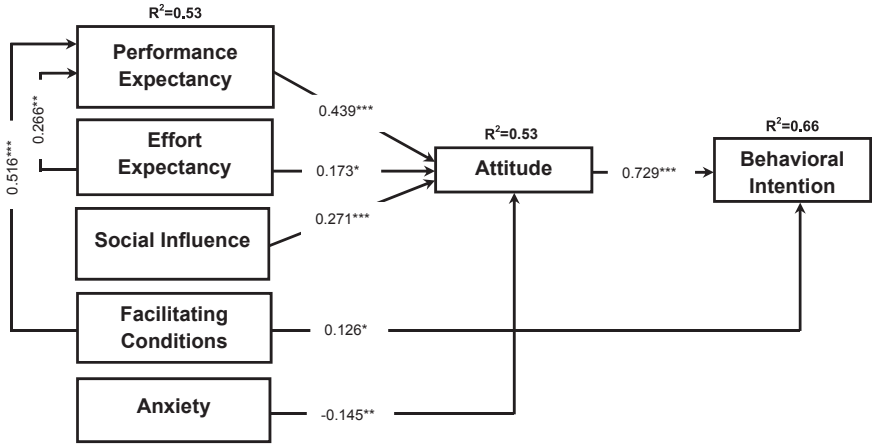

Fig. 2. Validated research model.

significance of overtly modeling individual characteristics through the proposed research model. Moreover, this model was able to account for 66% of the variance (adjusted R^2) in behavioral intention – a substantial improvement over any of the nine original models and/or their extensions.

The significant impact of performance expectancy and effort expectancy on attitude in our validated research model indicates that individual's attitude can be shaped by the level to which the e-government system may be easy to use (i.e., less complex) and the degree to which it may prove to be useful (i.e., greater performance) – in other words, the capabilities of OPGRS system might influence the individual's attitude. Davis et al. (1989) also argued that within organisational settings, people form intentions toward behavior they believe will enhance their job performance over and above whatever positive or negative feelings they might have. This argument would be applicable and supportive to the current research context where the adoption of an e-government system is measured at the individual level where people don't have the compulsion to intend to adopt certain system because it might enhance their performance. Therefore, we argue that usefulness and benefits provided by such system will directly influence individual's positive or negative feelings rather than their intention to use it. Also, significant and established link between perceived ease of use and attitude (see Davis et al., 1989) gives strength to effort expectancy and attitude relationship.

These relationships have been supported in a number of studies (e.g., Alshare & Lane, 2011; Park et al., 2007; Pynoo et al., 2011) on technology adoption. For example, Alshare and Lane (2011) obtained the similar results of performance expectancy and effort expectancy on individual's attitude while understanding student-perceived learning outcomes in enterprise resource planning courses. Predicting secondary school teachers' acceptance and use of a digital learning environment, Pynoo et al. (2011) also found the similar results of performance expectancy and effort expectancy on their attitude. The authors argued that teachers held a positive attitude toward digital learning as it was useful and easy to use. As far as e-government adoption is concerned, a fair number of studies (e.g., Karavasilis et al., 2010; Lau, 2004; Lu et al., 2010; Zhang, Guo,

& Chen, 2011) supported the impact of perceived usefulness (i.e., root variable for performance expectancy) and perceived ease of use (i.e., root variable for effort expectancy) on attitude. Further, effort expectancy was also found to be a determinant of performance expectancy. This relationship was originally formulated rooted in perceived ease of use and perceived usefulness where Davis et al. (1989) argued that easy to use system saves user's time which can be effectively employed to accomplish more work for the similar efforts. This relationship in context of the OPGRS indicates that even if the users were in touch with the system very briefly, it's easy to explore interface allowed them to perform more and better.

Moreover, social influence was also found to be significant determinant of individual's attitude. This is perhaps not surprising as well because individuals may also refine their attitudes based on information or stories shared by others who have already adopted similar other technologies or information systems (e.g., Chiu et al., 2012; Pynoo et al., 2007; Sumak et al., 2010).

The research also empirically established the impact of anxiety on behavioral intention indirectly through attitude. The significant though negative influence of anxiety on attitude indicates that non-adopter's apprehensions about using an e-government system would negatively influence his or her feelings. Anxiety is considered as a type of deterrent emotions that occur when IT event is considered as a threat and the individual feels that he or she has only a partial control over the outcome from the system (Beaudry & Pinsonneault, 2010). This relationship also indicates that users utilise their emotions along with cognitions while developing a firm belief toward using an e-government system.

Moreover, we also found facilitating conditions being the direct determinant of behavioral intention as well as performance expectancy. This is perhaps not completely surprising – facilitating conditions such as training programs and the e-government services provided through common service centres (CSCs) (i.e., ICT enabled front-end service delivery points at the rural level for delivery of government services) established across the country may be instrumental in enabling individuals to form positive attitude toward the corresponding system (e.g., Chiu et al., 2012; Pynoo et al., 2007). Moreover, the explicit modeling of attitude as a mediating variable significantly improves the explanatory power of the theoretical model—i.e., 25%–66%, without and with attitude respectively for behavioral intention. The significant impact of facilitating conditions on performance expectancy indicated that the government support to its citizens in terms of providing them training through selected champions in the given location and provision for computer support through CSCs probably enhance their effectiveness and performance. Prior studies (e.g., Lee & Lin, 2008; Schaper & Pervan, 2007) on technology adoption have also supported this relationship.

Finally, the strong and significant impact of mediating construct attitude on behavioral intention implies that a user might intend to use the OPGRS system based on the strength of their attitudes. A number of studies on technology adoption (e.g., Chiu et al., 2012; Park et al., 2007; Venkatesh, Thong, Chan, Hu, & Brown, 2011) in general and e-government adoption (e.g., Hung et al., 2006; Lau, 2004; Lu et al., 2010) in particular have acknowledged this relationship strong and significant.

10.1. Limitations and future research

Although we have systematically attempted to develop and validate the research model based on the data gathered and compared it with the other alternative models of IS/IT adoption and found it outperforming all other models, we are not untouched with certain limitations of this research. Firstly, the exploration of the research model has been validated with regard to the potential adopters of the OPGRS system. Hence, the caution needs to be taken while generalising its findings to adopters of the system. Secondly, in course of choosing the higher loading items for the core determinants (i.e., performance expectancy, effort expectancy, social influence, and facilitating conditions) of attitude and intentions, we found that items of some constructs representing the specific model were not represented in the proposed research model (e.g., none of the items from output expectation (from SCT) was considered as a part of performance expectancy construct of the proposed research model).

Therefore, the measures used in the research model can be considered as preliminary and the future research should explore more fully developing and validating appropriate scales for each of the construct (Venkatesh et al., 2003). Thirdly, the study has not validated this system for specific cultural and geographical contexts. Future research can dig out more on these aspects. Fourthly, this study has performed empirical investigation of the proposed research model considering the one time cross-sectional data collected from different categories of potential users (such as students, employees, unemployed, and elderly citizens) from seven different cities of the country. The future research can validate the performance of the proposed model separately for students and professionals may be using longitudinal data. Finally, while the variance (i.e., 66%) explained by the research model on behavioral intentions is higher than any alternative models of IS/IT adoption, further work should identify and test additional boundary conditions of the model in an attempt to provide an even richer understanding of e-government adoption.

10.2. Implications for theory

The original UTAUT model can explain individual's acceptance and use of IS/IT using two constructs (i.e., performance expectancy and effort expectancy) that may be viewed to represent technological context and other two (i.e., social influence and facilitating conditions) may be considered to represent implementation context (Schaper & Pervan, 2007). However, the individual characteristics are not included in the original UTAUT model. In the synthesis of prior research, we found that they had linked significant importance to the individual's attitude toward IS/IT (e.g., Alshare & Lane, 2011; Sumak et al., 2010). This study proposed and tested a theoretical model with attitude as a variable representing the individual context. The analyses revealed that our proposed theoretical model performed better than each alternative model including the UTAUT. As none of the research in e-government systems adoption has developed a unified model as has been devised in here, it contributes to the existing theoretical knowledge on e-government adoption.

Moreover, the current study also uncovered the significance of the construct such as anxiety along with the research model. The presence of this variable is deemed appropriate for measuring the adoption of any societal system such as e-government and also strengthens the performance of the model. Anxiety can be well suited in case of both communicational and transactional e-government systems and hence contribute toward strengthening the model. This additional construct along the core constructs of the research model is a theoretical contribution toward any framework development related work in the e-government systems adoption based research. However, the researchers can test more e-government specific constructs along this model to test its performance under different circumstances. Adding certain relationships such as FC → BI, EE → PE, and FC → PE were not found in the original UTAUT model, and offer new insights regarding the individual attitudes and intentions relating to the adoption of the OPGRS system. Also, the performance of the proposed research model indicates that

moderators may not be universally applicable to all contexts and hence run the danger of being non-relevant in certain settings. Our analysis also shows that it may be beneficial and significant to theorise and validate on the direct effects rather than considering moderators.

10.3. Implications for practice

The findings of this research indicated that attitude played a crucial role in individual's intention to adopt and use the OPGRS system. Specifically, attitude had direct effects on behavioral intention—which implies that the concerned government organisation implementing the OPGRS may find it beneficial to shape individual's attitude for influencing their further intentions to use the system.

We found that performance expectancy and effort expectancy had direct effects on attitude. This implies that the individuals attribute considerable prominence to the technological extent to which an e-government system is useful and easy to use. Therefore, designers, developers, and policy makers for the e-government system should focus more on minimising the complexities associated with exploration and use of the system, if there is any, and usefulness of the system such that acceptance and use of such systems may be managed more successfully.

Possible ways of achieving these objectives may include wider and more accurate representation of user requirements to systems analysts, designers, and developers or selection and use of those e-government systems (i.e., as a benchmark) that are more consistent with user requirements and having wide acceptance, and effective communication of the system's capabilities through product brochures, live demonstrations, and success stories (e.g., Alshare & Lane, 2011; Koh et al., 2010; Pynoo et al., 2011; San Martín and Herrero, 2012). An alternative way to develop widely acceptable and easy to use system can also be developed in consultation with the experienced designers, systems analysts, and software developers who possess a good experience of developing such systems and understand user's anguish and expectations from such system.

We also found that social influence had direct impacts on attitude and facilitating conditions on behavioral intention. This suggests that individuals may associate importance to the facilitating conditions such as help desks, CSCs, and training programs as well as to the experiences of other individuals in using the e-government system in question. Hence, the concerned government organisation or department should consider providing adequate infrastructural facilities and proper training to users through the established CSCs across the country so that they can be positively inclined to use relatively new e-government system like OPGRS. Concerned government departments and/or officials may proactively manage social influence that could be exerted on individuals by organising forums for sharing best use practices, instituting champions who are enthused about diffusing awareness and benefits of the OPGRS and can generate positive word-of-mouth, and planning counter-measures for any negative feedback (e.g., Chiu et al., 2012; Pynoo et al., 2007; Sumak et al., 2010).

11. Conclusion

This research critically reviewed the alternative models of IS/IT adoption using the data gathered for the OPGRS system and proposed an alternative theoretical model that is based on the more relevant items of the core constructs used by the UTAUT and emphasised the need to explicitly theorise individual characteristics through inclusion of attitude as a mediating variable. Specifically, we modeled attitude to mediate the effects of core constructs such as performance expectancy, effort expectancy, and social influence on behavioral intention. The findings indicated that using different and suitable set of items (measured on the basis of their factor loading values) for the core constructs of the UTAUT model and including attitude as a mediating variable, we developed a research model, whose performance was found to be reasonably better and the variance explained by the model on behavioral intention outperformed all the alternative models of IS/IT adoption validated using the same primary data. Hence, our empirical investigation shows that the proposed theoretical model that reframed the propositions of the original UTAUT model may serve as a meaningful alternative for understanding an e-government adoption.

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Appendix. [A]: Measurement of constructs

The following questions were asked to respondents on Likert scale [1–7] where [1] = Extremely Disagree and [7] = Extremely Agree [Citations indicate those studies from items for various constructs have been fetched] [Legend: AFT: Affect (Compeau & Higgins, 1995a; Compeau et al., 1999); ANX: Anxiety (Venkatesh et al., 2003); ATT: Attitude (Davis et al., 1989; Fishbein & Ajzen, 1975); BI: Behavioral Intention (Venkatesh et al., 2003); CLX: Complexity [Thompson et al., 1991]; EU: Ease of Use (Davis, 1989; Davis et al., 1989; Moore & Benbasat, 1991); EOU: Perceived Ease of Use (Davis, 1989; Davis et al., 1989; Moore & Benbasat, 1991); FC: Facilitating Conditions (Thompson et al., 1991; Venkatesh et al., 2003); IMG: Image (Moore & Benbasat, 1991; Venkatesh & Davis, 2000); JR: Job Relevance (Venkatesh & Davis, 2000); OE: Outcome Expectation (Compeau & Higgins, 1995b; Compeau et al., 1999); PBC: Perceived Behavioral Control (Ajzen, 1991; Taylor & Todd, 1995a, 1995b); PU: Perceived Usefulness (Davis, 1989; Davis et al., 1989; Moore & Benbasat, 1991); RA: Relative Advantage (Davis, 1989; Davis et al., 1989; Moore & Benbasat, 1991); RD: Result Demonstrability (Moore & Benbasat, 1991; Rogers, 1995); SE: Self-Efficacy (Compeau & Higgins, 1995a, 1995b; Compeau et al., 1999); SF: Social Factor (Venkatesh et al., 2003); SN: Subjective Norm (Ajzen, 1991; Davis et al., 1989; Fishbein & Ajzen, 1975); TRB: Trialability (Moore & Benbasat, 1991; Rogers, 1995); VSB: Visibility (Moore & Benbasat, 1991; Rogers, 1995), VU: Voluntariness to Use (Moore & Benbasat, 1991)]

AFT1. I would like lodging complaint using the public grievance redressal system.

AFT2. I look forward to those aspects of lodging complaint that require me to use the public grievance redressal system.

AFT3. Using the public grievance redressal system would be interesting to me.

AFT4. Once I start lodging complaint using the public grievance redressal system, I would find it hard to stop.

ANX1. I would feel apprehensive about using the public grievance redressal system.

ANX2. It scares me to think that I could lose a lot of information using the public grievance redressal system by hitting the wrong key.

ANX3. I hesitate to use the public grievance redressal system for fear of making mistakes I cannot correct.

ANX4. The public grievance redressal system would be somewhat intimidating to me.

ATT1. Using the public grievance redressal system would be a good idea.

ATT2. Using the public grievance redressal system would be a wise idea.

ATT3. I like the idea of using the public grievance redressal system.

ATT4. Using the public grievance redressal system would be pleasant.

BI1. I intend to use the public grievance redressal system.

BI2. I predict that I would use the public grievance redressal system.

BI3. I plan to use the public grievance redressal system in the near future.

COMP1. Using the public grievance redressal system would be compatible with all aspects of day-to-day life (or my work).

COMP2. I think that using the public grievance redressal system would fit well with the way I like to lodge and monitor complaint.

COMP3. Using the public grievance redressal system would fit into my work style.

CLX1. Using the public grievance redressal system would take too much time from my normal duties.

CLX2. Working with the public grievance redressal system would be so complicated; it is difficult to understand what is going on.

CLX3. Using the public grievance redressal system would involve too much time doing mechanical operations (e.g., data input).

CLX4. It would take too long to learn how to use the public grievance redressal system to make it worth the effort.

EU4/EOU1. Learning to operate the public grievance redressal system would be easy for me.

EU2/EOU2. I would find it easy to get the public grievance redressal system to do what I would like it to do.

EU1/EOU3. My interaction with the public grievance redressal system would be clear and understandable.

EOU4. I would find the public grievance redressal system to be flexible to interact with.

EOU5. It would be easy for me to become skillful at using the public grievance redressal system.

EU3/EOU6. I would find the public grievance redressal system easy to use.

FC1. Guidance would be available to me in the selection of the public grievance redressal system.

FC2. Specialized instruction concerning the public grievance redressal system would be available to me.

FC3. A specific person (or group) would be available for assistance with public grievance redressal system difficulties.

IMG1. People who would use the public grievance redressal system will have more prestige than those who don't.

IMG2. People who would use the public grievance redressal system will have a high profile.

IMG3. Using the public grievance redressal system is a status symbol.

JR1. In my day-to-day life (or job), use of public grievance redressal system would be important.

JR2. In my day-to-day life (or job), use of the public grievance redressal system would be relevant.

OE1. If I use the public grievance redressal system, I will increase my effectiveness.

OE2. If I use the public grievance redressal system, I will spend less time on routine tasks.

OE3. If I use the public grievance redressal system, I will increase the quality of output.

OE4. If I use the public grievance redressal system, I will increase the quantity of output for the same amount of effort.

OE5. If I use the public grievance redressal system, my friends/colleagues will perceive me as competent.

OE6. If I use the public grievance redressal system, I will increase my chances of getting an honor/prestige in my society (or promotion in job).

OE7. If I use the public grievance redressal system, I will increase my chances of getting recognized (or a raise in job).

PBC1. I would be having control over using the public grievance redressal system.

PBC2. I would be having the resources necessary to use the public grievance redressal system.

PBC3. I would be having the knowledge necessary to use the public grievance redressal system.

PBC4. Given the resources, opportunities and knowledge it takes to use the public grievance redressal system, it would be easy for me to use this system.

PBC5. The public grievance redressal system is compatible with the other system I use.

RA1/PU1. Using the public grievance redressal system would enable me to accomplish lodging complaint more quickly.

RA2. Using the public grievance redressal system would improve the quality of work I do.

PU2. Using the public grievance redressal system would improve my overall performance.

RA5/PU3. Using the public grievance redressal system would increase my productivity.

RA4/PU4. Using the public grievance redressal system would enhance my effectiveness.

RA3/PU5. Using the public grievance redressal system would make it easier to lodge my complaint.

PU6. I would find the public grievance redressal system useful in lodging and monitoring complaint.

RD1. I have no difficulty telling others about the results I would obtain from using public grievance redressal system.

RD2. I believe I could communicate to the others the consequences of using public grievance redressal system.

RD3. The results of using public grievance redressal system would be apparent to me.

RD4. I would have difficulty explaining why using public grievance redressal system may or may not be beneficial.

SE1. I would feel comfortable while using the public grievance redressal system on my own.

SE2. If I wish, I could easily operate the public grievance redressal system on my own.

SE3. I would be able to use the public grievance redressal system even if there is no one around to show me how to use it.

SF1. I would use the public grievance redressal system because of the certain section of people who use the system.

SF2. The government departments (e.g. Directorate of Public Grievances/District Administration) are helpful in the use of the public grievance redressal system.

SF3. The government officials would very much support the use of the public grievance redressal system for getting my complaint lodged.

SF4. In general, the government organization/department supports the use of the public grievance redressal system.

SN1. People who influence my behavior think that I should use the public grievance redressal system.

SN2. People who are important to me think that I should use the public grievance redressal system.

TFC1. It would be easy for me to get support if I need help when I have problems using the public grievance redressal system university/college/common service centre/Internet Cafe etc. (or at work).

TFC2. It would be easy for me to get support if I need help when I

have problems using the public grievance redressal system at home.

TRB1. I would like to have a great deal of opportunity to go for a trial of various public grievance redressal system applications (e.g. lodging/monitoring/tracking complaints).

TRB2. I know where I can go to satisfactorily try out various uses (e.g. lodging/monitoring/tracking complaints) of a public grievance redressal system.

TRB3. A public grievance redressal system would be available to me to adequately test run various applications (e.g. lodging/monitoring/tracking complaints modules).

TRB4. Before deciding whether to use any public grievance redressal system applications, I would properly try them out.

TRB5. I would be permitted to use public grievance redressal system on a trial basis long enough to see what I could do.

VSB1. I would be able to see what others do using public grievance redressal system.

VSB2. In my society/locality (or work place), I see public grievance redressal system on many places.

VSB3. I have seen public grievance redressal system in use outside my society/locality (or work place).

VSB4. The public grievance redressal system is quite visible in my society/locality (or work place).

VSB5. It is easy for me to observe others using public grievance redressal system in my society/locality (or work place).

VU1. The designated/concerned government officials would expect me to use public grievance redressal system.

VU2. My use of a public grievance redressal system would be voluntary.

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