

Appendix A
Detailed Literature Review of Computer Self-Efficacy Studies

Online Appendix

The Computer Self-Efficacy Construct

CITATION	KEYWORDS	CSE DOMAIN - APPLICATION	THEORETICALLY GROUNDED SOURCES	CSE CONCEPTUALIZATION	MEASUREMENT OF CSE AND RELATED CONSTRUCTS	MANIPULATION OF CSE AND RELATED CONSTRUCTS	DISCUSSION - COMMENTS
Marakas, G. M., Yi, M. Y., & Johnson, R. D. (1998). The multilevel and multifaceted character of computer self-efficacy: Toward clarification of the construct and an integrative framework for research. <i>Information systems research</i> , 9(2), 126-163.	Computer Self-Efficacy Social Learning Theory Training Performance	Theoretical, Computer Training, Computer Performance	Social Learning Theory (SLT) (Bandura 1977a, 1977b, 1978a, 1982, 1986)	CSE two levels: A/E vs. A/S; GCSE; distinction between CSE and GCSE	SE magnitude, SE strength, Confidence ratings, SE generality,	5 factors affecting change in CSE: level effect; variability; locus; controllability; IV/DV	Appendix A contains a complete list of all CSE literature according to the model classifications used herein.
Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. <i>MIS quarterly</i> , 189-211.	User Behavior Causal Model Social Cognitive Theory Computer Use Measurement	Computer use, Technology adoption, Training	Social Cognitive Theory (Bandura, 1977; 1978; 1982; 1986)	CSE: an individual's perception of their ability to use computers to complete tasks.	CSE: a 10-item CSE measure and SE scoring. Related constructs: encouragement by others, others' use of computers, support, outcome expectancy, affect, anxiety, use.	Assessment of the measurement model including reliability and discriminant validity; assessment of the structural model including testing construct relationships and nomological validity.	The study stands as one of the first attempts to apply SCT and CSE concepts to the study of end-user computer training.
Agarwal, R., Sambamurthy, V., & Stair, R. M. (2000). The evolving relationship between general and specific computer self-efficacy—An empirical assessment. <i>Information systems research</i> , 11(4), 418-430.	Computer Self-Efficacy Technology Acceptance Software Training Longitudinal Study Causal Model	Technology Adoption, Computer Training	Personality Theory, Self-Efficacy (Bandura, 1997)	CSE: the judgment of one's ability to use an information technology, Distinction between CSE and SSE	CSE: 10-item scale (Compeau and Higgins 1995a), PIIT, SSE, PEOU, Prior experience, Prior use	Measure PIIT and pre-training GCSE, Measure SSE relative to Win95 and perceived ease of use of Win95, Measure SSE and perceived ease of use relative to Lotus123, (Control variable: Prior experience)	Theory development, practical recommendation
Hasan, B. (2003). The influence of specific computer experiences on computer self-efficacy beliefs. <i>Computers in human behavior</i> , 19(4), 443-450.	Computer Self-Efficacy General Computer Experience Specific Computer Experience	Education, Computer Training, Computer Performance	Social Cognitive Theory (Bandura 1986)	CSE: an individual perception about the ability to use a computer to perform a computing task successfully	CSE: 9-item scale (Compeau and Higgins 1995), Confidence in performing a computing task, Experience, Responses	Experience with several software packages affecting change in CSE	The finding supports Bandura's (1986) proposition that prior experience concerning complex and unfamiliar tasks significantly affects SE beliefs, Computer training course emphasizes programming language and graphic application to enhance CSE formation, Gender differences in CSE may be attributed partially to gender difference in experience with programming languages
Thatcher, J. B., & Perrewe, P. L. (2002). An empirical examination of individual traits as antecedents to computer anxiety and computer self-efficacy. <i>MIS quarterly</i> , 381-396.	Self-Efficacy Anxiety Personality Negative Affectivity Personal Innovativeness	Computer Training, Technology Adoption	Individual differences influencing IT use (Agarwal and Prasad 1999; Marakas et al. 2000; Weil and Wugalter 1990)	CSE: individuals' judgment of their capabilities to use computers in diverse situations	CSE: 10 items (Compeau and Higgins 1995b), CA, Trait anxiety, Negative affectivity, PIIT	4 factors affecting change in CSE: negative affect; trait anxiety, personal innovativeness in IT, computer anxiety; PLS used to test the model. Each construct was modeled as reflective.	Provide insight into the nomological net, Highlight the importance of distinguishing between types of neuroticism, Offer insights on source of SE and anxiety that influence IT training.
Torkzadeh, G., Chang, J. C. J., & Demirhan, D. (2006). A contingency model of computer and Internet self-efficacy. <i>Information & Management</i> , 43(4), 541-550.	Computer Self-Efficacy Internet Self-Efficacy Computer Anxiety Computer User Attitude Computer User Training Gender Contingency Model	Computer Use, Computer Training, Self-Efficacy Development, System Development	Schunk (1984; 1989)	CSE: an individual's belief regarding their ability to use a computer	CSE: 25 of 32 items (Murphy et al. 1989), ISE, CA, User attitude	'High' or 'low' computer anxiety on the pre-test computer anxiety scale; 'Favorable' or 'unfavorable' attitude toward computers on the pre-test computer user attitude scale; Pre- and post-training mean score of CSE/ISE; Examine effects of computer anxiety and user attitude on CSE/ISE	The results support earlier findings that training programs influence SE. Individual differences also have influences on SE development, Highlight the importance of individual differences in computer training and SE development.
Faseyitan, S., Libii, J. N., & Hirschbuhl, J. (1996). An in-service model for enhancing faculty computer self-efficacy. <i>British Journal of Educational Technology</i> , 27(3), 214-226.	Computer Self-Efficacy University Faculty Computer Training Inservice Model Inservice Program	Education, Computer Training, Computer Use, Technology Adoption	Social Cognitive Theory (Bandura 1982; 1986)	CSE: self-judged capabilities on using computers for instruction	CSE: a five point Likert scale	An in-service program including 4 types of activities to enhance CSE of faculty; Methodological framework based on Bandura's SE sources; Pre- and post-program surveys to measure CSE change	Positive impact of the in-service programs in terms of improved CSE and adoption, supportive environment, Theoretically, confirmed Bandura's beliefs, Practically, offer steps to plan such program

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Hasan, B. (2006). Effectiveness of computer training: The role of multilevel computer self-efficacy. <i>Journal of Organizational and End User Computing (JOEUC)</i> , 18(1), 50-68.	Computer Anxiety Computer Training Far-Transfer Learning General Computer Self-Efficacy Near-Transfer Learning Perceived Ease of Use Software-Specific Computer Self-Efficacy	Computer Training	SE and learning theories, Training literature, Empirical IS studies	CSE: people's perceptions about their abilities to use a computer successfully; Distinction between GCSE and application-specific CSE	GCSE: 6 items (Compeau and Higgins 1995), Specific CSE: 6 items (Johnson and Marakas 2000), PEOU, CA, Near-transfer learning, Far-transfer learning	A field experiment	Insights for antecedents of each level of CSE. Examine all four training outcomes identified in Kirkpatrick's (1959) training effectiveness model
Chen, I. S. (2017). Computer self-efficacy, learning performance, and the mediating role of learning engagement. <i>Computers in Human Behavior</i> , 72, 362-370.	Computer Self-Efficacy Learning Engagement Performance Conservation of Resources (COR) Theory Job Demands-Resources model (JD-R model)	Computer Training	COR theory, JD-R model (Crawford, LePine, and Rich 2010)	CSE: individuals' belief about their ability to successfully use computers to solve tasks and manage situations	GSE: 10 items (Schwarzer, Baßler, Kwiatek, Schroder, and Zhang 1997), Daily CSE: the short version of the Occupational Self-Efficacy Scale (Schyns & von Collani 2002) containing 8 items, Learning engagement, Learning performance	Baseline evaluation: encompassed demographics and GSE, controlling for GSE Daily diary evaluation: encompassed daily CSE and daily learning engagement Learning performance: at the end of each class by a computer skill examination	Insights for computer training for older adults
Hsia, J. W., Chang, C. C., & Tseng, A. H. (2014). Effects of individuals' locus of control and computer self-efficacy on their e-learning acceptance in high-tech companies. <i>Behaviour & Information Technology</i> , 33(1), 51-64	Electronic Learning (e-learning) Individual Difference Personality Locus of control Computer Self-Efficacy Technology Acceptance Model	Education	TAM (Davis 1989, Ong et al. 2004), Social Cognitive Theory (Bandura et al. 1977; Bandura 1986)	CSE: individuals' judgment of their capability to use a computer in diverse situations	CSE: 5 items (Compeau and Higgins 1995), Locus of control, Perceived usefulness, PEOU, Behavioral intention	Didn't manipulate CSE per se; CSE was modeled as antecedents to TAM-related constructs	Offered practical insights to managers who would like to implement e-learning at their companies, Extended TAM
Scherer, R., & Siddiq, F. (2015). Revisiting teachers' computer self-efficacy: A differentiated view on gender differences. <i>Computers in Human Behavior</i> , 53, 48-57.	Computer Self-Efficacy Gender Differences Measurement Invariance Multi-Group Professional Development Courses	Education, Computer Training	Social Cognition Theory (Bandura 1997), The gender effects on CSE	CSE: a judgement of one's capability to use a computer; Teachers' CSE	Teachers' CSE, Dichotomous measure of participation	The 3 factors: basic, advanced and collab, and instructional	Validated multidimensional scale for measuring teachers' CSE
Shao, Z., Wang, T., & Feng, Y. (2015). Impact of organizational culture and computer self-efficacy on knowledge sharing. <i>Industrial Management & Data Systems</i> .	Organizational Culture Computer Self-Efficacy Explicit Knowledge Sharing Tacit Knowledge Sharing	Computer Use	Organizational Culture, Knowledge-sharing behavior, Social Cognitive Theory (Bandura 1997)	CSE: one's belief in their ability to apply computer skills to a broader range of tasks	Org. culture: Quinn and Spreitzer (1991), Explicit/tacit knowledge sharing: Bock et al. (2005), CSE: Compeau and Higgins (1995)	CSE mediates the effect of organizational culture on knowledge-sharing behavior	Enrich the theoretical understanding (ERP use, social cognitive perspective i.e. CSE), Enable managers to understand more profoundly knowledge - sharing behaviors of employees
Ball, D. M., & Levy, Y. (2008). Emerging educational technology: Assessing the factors that influence instructors' acceptance in information systems and other classrooms. <i>Journal of Information Systems Education</i> , 19(4), 431	Emerging Educational Technology Educational Technology Acceptance Technology Use in the Classroom Technology in Education Information Systems in Education	Education	The Technology Acceptance Model	CSE: SE as it relates to computing behavior	CSE: the 10 item CSE instrument (Compeau and Higgins, 1995), CA: the 7-item instrument (Fuller et al. 2006) Experience with the use of technology (EUT) measure: (Cassidy and Eachus, 2002; Igbaria and Iivari 1998) Intention to use (IU): (Chen et al. 2007).	Increase instructors' intention to use emerging educational technology by increasing CSE	limitation concerns generalizability and bias, Future research can address the limitation, expand the nomological net, and include demographic characteristics

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Chang, L. M., Chang, S. I., Ho, C. T., Yen, D. C., & Chiang, M. C. (2011). Effects of IS characteristics on e-business success factors of small-and medium-sized enterprises. <i>Computers in Human Behavior</i> , 27(6), 2129-2140	Social Cognitive Theory Information Systems Success Model Structural Equation Modeling Small- and Medium-Sized Enterprises	E-Business	IS Success Model (DeLone and McLean 1992), Social Cognitive Theory (Bandura 1986)	CSE: Belief of people in their computer ability to accomplish work	CSE: the 10 items (Compeau and Higgins 1995a), Information quality, System quality, Service quality, Outcome expectations, User satisfaction	External factors on CSE change on other behavioral constructs	The present study was based on the IS success model, and it combined the outcome expectations and computer self-efficacy of SCT to understand how system constructs indirectly affect user satisfaction through cognitive factors. Appendix A: Measures of effects of IS characteristics on e-business success
Chou, H. W. (2001). Effects of training method and computer anxiety on learning performance and self-efficacy. <i>Computers in Human Behavior</i> , 17(1), 51-69	End-User Training Behavior Modelling Computer Anxiety Gender Difference Self-Efficacy	Computer Training	Gender: Posner and McLeod (1982), Training: Bostrom et al., Anxiety: Posner and McLeod (1982), Self-efficacy: Bandura (1986), Learning performance: Kirkpatrick (1994)	n/a	Learning performance: TASK1 and TASK2 are objective questions to test general knowledge and hands-on tasks to test procedural knowledge CSE: This five-point Likert-type measure of CSE (Murphy, Coover & Owen, 1989)	Field experiment, effect of two training conditions, anxiety, gender on CSE change and performance	Limitations and implications: small student sample, the scope of the study needs to be extended. Additional training techniques need to be studied with different computer training content. Another avenue of research is to explore and compare the effects of different types of learning styles, as well as other potentially important individual differences
Johnson, R. D., & Marakas, G. M. (2000). The role of behavioral modeling in computer skills acquisition: Toward refinement of the model. <i>Information Systems Research</i> , 11(4), 402-417.	Model Refinement Training Behavioral Modeling Performance	Computer Training, Computer Performance	CSE model (Marakas et al. 1998), Social Cognitive Research (Bandura 1986)	CSE: Marakas et al. (1998)	CSE: Framework for developing CSE measures proposed by Marakas et al. 1998, measures focus on a specific skill, Prior experience: self-reported 10 questions (Compeau 1992), Outcome expectancy: 9 questions (Compeau and Higgins 1995), Computer anxiety: 8 items from computer anxiety rating scale	Adjust prior experiment design (Compeau and Higgins 1995) to enable testing of the effect of enactive mastery	Two measures of CSE were compared, Provide better understanding of the role that training methods play in influencing CSE estimations
Moos, D. C., & Azevedo, R. (2009). Learning with computer-based learning environments: A literature review of computer self-efficacy. <i>Review of educational research</i> , 79(2), 576-600.	Self-Efficacy Motivation Computer-Based Learning Environments Literature review	Theoretical, Computer Use	Azevedo, Cromley, Winters, Moos, & Greene (2005)	CSE: an individual's perception of their capability related to specific computer skills and knowledge (C.A. Murphy et al., 1989)	n/a	n/a	Theoretical Notes: 1. the vast majority of studies in this literature review used Bandura's (1986) operational definition of self-efficacy; 2. very little empirical research has explored the relationship between computer self-efficacy and other forms of self-regulating processes; 3. future research should also account for the relationship between computer self-efficacy and other self-regulatory processes Methodological Notes: 1. a more systematic approach is needed in examining computer self-efficacy with different types of CBLEs; 2. It is critical to measure computer self-efficacy with a variety of different CBLEs because the cognitive and metacognitive demands vary between distinct CBLEs;
Paraskeva, F., Bouta, H., & Papagianni, A. (2008). Individual characteristics and computer self-efficacy in secondary education teachers to integrate technology in educational practice. <i>Computers & Education</i> , 50(3), 1084-1091.	Adult Learning Secondary School Teachers Self-Efficacy Self-Concept Modern Technologies in Education	Education, Computer Training, Computer Use, Technology Adoption	Benson (2004), Hsioung (2002), Roussos (2002)	GSE and CSE, Self-esteem and CSE, Demographic characteristics of the teachers, and CSE	GSE: The scale is a ten item, Likert-type scale that purports to measure a belief in personal competence (Matthias Jerusalem and Ralf Schwarzer 1981), Self-esteem: Rosenberg CSE (Murphy, Coover, and Owen 1989)	The participants attended a training program about learning and instruction	Teacher training in technology as an educational tool can change teachers' attitudes toward and confidence with technology and provide them with skills they did not previously have. More importantly, teachers need to have specific needs during their technology learning, overcoming their reticence towards using technology in the classrooms.
Scott, J. E., & Walczak, S. (2009). Cognitive engagement with a multimedia ERP training tool: Assessing computer self-efficacy and technology acceptance. <i>Information & Management</i> , 46(4), 221-232.	Computer Self-Efficacy, Cognitive Engagement, Technology Acceptance, ERP, Training Tools, Neural Network	Computer Training, Computer Use	Incorporating user engagement in TAM	CSE: a malleable state that was an outcome of using the training tool	CSE: five survey questions for CSE about judgements of proficiency and confidence,	ERP classes where subjects had access to the multimedia ERP training tool	Statistical significance was found for organizational support and engagement as antecedents of CSE, The lack of effects from age and gender on CSE Partial validation for the effectiveness of utilizing the engagement and organizational support constructs

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Sun, J. C. Y., & Rueda, R. (2012). Situational interest, computer self-efficacy and self-regulation: Their impact on student engagement in distance education. <i>British Journal of Educational Technology</i> , 43(2), 191-204.	Computer Self-Efficacy Self-Regulation Engagement Interest Distance Learning	Education	Bandura (1997), Zimmerman and Schunk (2001)	CSE: one's perceived ability to accomplish a task with the use of computer	Self-efficacy: CSE (Bates & Khasawneh, 2007), Self-regulation: (Dembo et al, 2006; Zimmerman & Risemberg, 1997)	n/a	Educators could identify students who are taking online courses for the first time and provide necessary technical help to ease their anxieties and increase their emotional encouragement levels, Educators must pay attention to young students' needs for strategies to increase their ability to self-regulate their learning in distance education environments.
Zhang, Y., & Espinoza, S. (1998). Relationships among computer self-efficacy, attitudes toward computers, and desirability of learning computing skills. <i>Journal of research on Computing in Education</i> , 30(4), 420-436.	Attitudes Toward Computers Educational Computing Self-Efficacy	Education, Computer Training	CSE, Attitude and perceptions of desirability of learning computing skills	Kinzie, Delcourt, and Powers (1994), Bandura (1977)	The Computer Technologies Survey (CTS) consisted of three parts: 1. the modified demographic items; 2. attitude items; 3. CSE and desirability of learning computing skills	Three computer courses	Students' self-perceived confidence levels are related to their computer self-efficacy, Computer education instructors should help students be aware of the functions of computer technology in the information, Computer education instructors should be aware of difference between current students who bring computer experience with them and previous students who had to learn computer literacy from the very beginning.
Wilfong, J. D. (2006). Computer anxiety and anger: The impact of computer use, computer experience, and self-efficacy beliefs. <i>Computers in human behavior</i> , 22(6), 1001-1011.	Anxiety Anger Computer Use Computer Experience Self-Efficacy Psychotherapy	Computer Use	Computer Anxiety, Computer Anger, Computer Use, SE, Computer Experience	CSE: an individual's perceptions of their ability to use computers in the accomplishment of a task rather than reflecting simple component skills (Compeau and Higgins 1995)	CSE: Compeau and Higgins (1995),	Computer anxiety & Computer anger: the participants were instructed to imagine having to perform a computer task using new and unfamiliar software under time constraints	Alleviating anxiety and anger symptoms by using SD; Computer-therapy
Thatcher, J. B., Zimmer, J. C., Gundlach, M. J., & McKnight, D. H. (2008). Internal and external dimensions of computer self-efficacy: An empirical examination. <i>IEEE Transactions on Engineering Management</i> , 55(4), 628-644.	Attribution Theory Computer Anxiety Computer Self-Efficacy Perceived Ease-of-Use Social Cognitive Theory	Theoretical	Social Cognitive Theory, Attribution Theory	Internal CSE and External CSE	CSE: Compeau and Higgins' measure (1995) EOU: Davis Computer anxiety: Computer Anxiety Rating Scale (CARS)	n/a	The internal and external CSE dimensions behave differently, while internal CSE exerts a significant positive effect on EOU, external CSE's influence varied with the target technology, Organizational support negatively influenced CSE, The importance of building internal CSE beliefs about using IT, yet for specific technologies, external CSE may have negative implications
Chou, H. W., & Wang, T. B. (2000). The influence of learning style and training method on self-efficacy and learning performance in WWW homepage design training. <i>International journal of information management</i> , 20(6), 455-472.	World Wide Web End-User Training Training Method Learning Style	Computer Training; Computer Performance	Training method, Individual differences, Learning style, SE, Gender, Past achievement	SE: one's judgement of his (her) capability to successfully perform target behaviors (Bandura 1986)	CSE: A 5-point Likert-type measure (Murphy et al. 1989)	Training	Behavior modeling can be used successfully to alter self-efficacy and performance in some instance, Insights on the impacts of learning style on learning performance and computer self-efficacy perception,
Murphy, C. A., Coover, D., & Owen, S. V. (1989). Development and validation of the computer self-efficacy scale. <i>Educational and Psychological measurement</i> , 49(4), 893-899.	Scale Development Scale Validation Computer Self-Efficacy Instrument Development Instrument Validation	Theoretical	SE model (Schunk 1987; Owen 1986)	SE: self-percepts that vary across activities and situational environments (Bandura 1986)	Develop a CSE scale: 32 items	Three types of students represent three different settings of learning to use computers, Principal factor analysis with oblique rotation to assess factorial validity and reliability,	Increases attention regarding quantitative assessment of gender difference in SE judgments.
Barbeite, F. G., & Weiss, E. M. (2004). Computer self-efficacy and anxiety scales for an Internet sample: testing measurement equivalence of existing measures and development of new scales. <i>Computers in human behavior</i> , 20(1), 1-15.	Self-Efficacy Computer Anxiety Computer Performance Attitudes Internet Computers Sampling	Theoretical, Computer Training, Computer Use, Computer Performance, Scale Development, Instrument Development	SE model: Bandura (1986; 1997), Anxiety: (Kanfer & Heggstad 1997)	CSE: a belief in one's ability to use computers (Compeau & Higgins, 1995) CA: (Chua, Chen, & Wong, 1999)	CSE and CA: consisting of 87 items were reduced to 4 scales measuring 4 constructs comprised of 16 items	Online standing research panel, Survey, Activity checklist	Notes on measurement equivalence when developing an instrument, A simpler scale for measuring CA and CSE with improved validity and reliability
Deng, X., Doll, W., & Truong, D. (2004). Computer self-efficacy in an ongoing use context. <i>Behaviour & Information Technology</i> , 23(6), 395-412.	Computer Self-Efficacy Technology Intrinsic Motivation Computer Task User Autonomy Learning Capabilities Effective IT Use IT Impact on Work Organizational IT Use	Computer Use, Computer Training, Technology Adoption, Job performance	How learning capabilities, user autonomy, and collegial support could influence CSE	n/a	CSE: 3 items (Spreitzer 1995)	A sample of professionals doing engineering design work from 5 mid-west firms, The unit of analysis is an individual who uses a specific software (e.g. AutoCAD, CATIA, prior mgmt. tools), Data analysis: Measurement model; Structural model	CSE's antecedents and consequences in ongoing use context of computers, CSE manipulation in actual computer use at work instead of in training

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Fagan, M. H., Neill, S., & Wooldridge, B. R. (2004). An empirical investigation into the relationship between computer self-efficacy, anxiety, experience, support and usage. <i>Journal of Computer Information Systems</i> , 44(2), 95-104.	Computer Self-Efficacy Computer Anxiety Computer Experience Computer Support	Technology Adoption, Computer Use, Computer Training	Theory of interpersonal behavior (Triandis), Social cognitive theory (Bandura)	n/a	CSE: Murphy, Coover, and Owen (1989)	Surveys used to measure constructs of interest, Distributed to 978 business school students, Measurement model and structural model	Empirical support for Bandura's SCT and Triandis's TIB Organizational support influences computer usage indirectly through CSE, Organizations and educators focus their efforts on building CSE, and on modifying the determinants of CSE to achieve higher levels of user acceptance of computer technology
Karsten, R., & Roth, R. M. (1998). Computer self-efficacy: A practical indicator of student computer competency in introductory IS courses. <i>Informing Science</i> , 1(3), 61-68.	Computer Self-Efficacy Self-Efficacy IS Education	Education, Computer Training	The relationship of CSE to computer training and other individual and situational variables	CSE: a judgment of one's capability to use a computer (Compeau and Higgins 1995), 4 sources of SE belief adapted in the context of computer learning	CSE: Murphy, Coover, and Owen (1989)	Introductory IS course learning environment, Pretest and posttest CSE, as well as posttest confidence	Examine other variables with a more diverse sample, Analyze other CSE measures in education context, Appendix 1: CSE scale (from Murphy, Coover, & Owen, 1989)
Rex, K., & Roth, R. M. (1998). The relationship of computer experience and computer self-efficacy to performance in introductory computer literacy courses. <i>Journal of research on computing in education</i> , 31(1), 14-24.	Computer Experience Computer Literacy Computer Self-Efficacy	Education, Computer Training	CSE and Computer literacy	CSE: a judgment of one's ability to use a computer (Compeau and Higgins 1995)	CSE: 35-item and new items were added to reflect skills in computer network (Murphy et al. 1989), Experience and performance	A classroom (introductory MIS course), Pretest and posttest CSE	Relevance of computer experience matters more than its quantity, Pre-course CSE positively influence performance but not strong, highlighting the importance of IS courses to develop and enhance students' computer literacy
Marakas, G., Johnson, R., & Clay, P. F. (2007). The evolving nature of the computer self-efficacy construct: An empirical investigation of measurement construction, validity, reliability and stability over time. <i>Journal of the Association for Information Systems</i> , 8(1), 2.	Computer Self-Efficacy Measurement Validation Computer Performance Training Formative versus Reflective Constructs	Theoretical, Instrument Development, Scale Development, Instrument Validation, Scale Validation	Bandura (1977a, b), Marakas et al. (1998)	CSE: 3 dimensions - magnitude, strength, and generality - (Gist 1987)	CSE: measures as a formative construct	n/a	Restate three goals for doing this study, Raises attention on different task domains, and continually investigate conceptualization of CSE, as well as refinement, development, and validation of CSE measures, Appendix provided new measures of GCSE developed for this study
Hasan, B. (2006). Delineating the effects of general and system-specific computer self-efficacy beliefs on IS acceptance. <i>Information & Management</i> , 43(5), 565-571.	General computer self-efficacy; System-specific computer self-efficacy; Ease of use; Usefulness; Behavioral intention; IS acceptance	Technology adoption	TAM and social cognitive theory - multidimensional nature of CSE	n/a	General CSE beliefs were measured by 9 items from the widely used CSE instrument, System-specific CSE was measured by 9 items from the work of Marakas et al. (1998)	Before training, the survey included items to assess participants' general CSE, system-specific (pico) CSE, and demographic information.	theoretical: link between CSE and system acceptance. Practical: managerial practice, computer training, tech acceptance. Limitation: examine other factors, generalizability, and need for investigating actual behavior.
Lee, H., Choi, S. Y., & Kang, Y. S. (2009). Formation of e-satisfaction and repurchase intention: Moderating roles of computer self-efficacy and computer anxiety. <i>Expert Systems with Applications</i> , 36(4), 7848-7859.	Online consumer behavior; E-satisfaction; E-service quality; Computer anxiety; Computer self-efficacy	e-commerce	n/a	n/a	CSE was measured using 10 items developed by Compeau and Higgins (1995)	n/a	Theoretical contribution: examined and confirmed the moderating effect of CSE and computer anxiety in online consumer behavior. Practical contribution: managerial practice and marketing. Limitation to be addressed in future research: other antecedents, other moderators, other use context, other cross-cultural context, longitudinal study
McIlroy, D., Sadler, C., & Boojawon, N. (2007). Computer phobia and computer self-efficacy: Their association with undergraduates' use of university computer facilities. <i>Computers in Human Behavior</i> , 23(3), 1285-1299.	Computer phobia; Computer anxiety; Computer self-efficacy	Education, computer use	n/a	n/a	technophobia represented by computer anxiety - measured by CARS and cognition - measured by CTS. Computer Self-Efficacy Scale (CSES)	no specific manipulation per se. Data were collected from university students based on variables under investigation: experience, home use computer, introductory tutor, use of facilities, etc.	Contribution: three self-reported measures used in this study provided a comprehensive assessment of students' strengths and weaknesses in overall computing attitudes and behaviors than many previous studies
Koh, J. H., & Frick, T. W. (2009). Instructor and student classroom interactions during technology skills instruction for facilitating preservice teachers' computer self-efficacy. <i>Journal of Educational Computing Research</i> , 40(2), 211-228.	Technology skill; educational technology; computer self-efficacy; technology integration; teacher education	Teacher education; computer training; technology integration	See "lit review"	n/a	Experimental design	pre- and post-observation survey. App-specific CSE was measured using 20-item scale adapted from Ropp (1999).	Patterns of classroom practice that appear to support CSE. This study needs to be replicated in other educational technology courses for preservice teachers for future research. To further validate the taxonomy, uncover optimal combinations of interaction categories, and develop pedagogical models for preservice teacher education.
Sheng, Y. P., Pearson, M., & Crosby, L. (2003). Organizational culture and employees' computer self-efficacy: an empirical study. <i>Information Resources Management Journal (IRMJ)</i> , 16(3), 42-58.	Organizational culture, computer self-efficacy, information technology	IT-based business; computer use	Theoretical and empirical connection between org culture and CSE	n/a	CSE was assessed by using the 10-item scale from Compeau and Higgins (1995)	Using 6 org. culture constructs as determinant constructs of CSE	Future research points out: Operationalize climate and morale as single constructs, Need to examine the roles of micro-level sub-cultures in CSE manipulation, Further assess relationship between involvement and CSE, How changes in org. culture influence both CSE and types of tech utilized over time?

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Oni, A. A., & Ayo, C. K. (2010). An empirical investigation of the level of users' acceptance of e-banking in Nigeria. <i>Journal of internet banking and commerce</i> , 15(1), 1-13.	Technology Acceptance Model (TAM), perceived credibility, computer self-efficacy, customer attitude, and e-banking	E-banking	Davis 1989; Bandura 1982	n/a	The questionnaire items were adopted from the prior studies (Reid et al., 2008; Jahangir et al., 2008; Muniruddeen 2007; Pikkariainen et al., 2004; Karjaluo et al., 2002)	In acceptance of E-banking, CSE could indirectly determine acceptance.	Points out that credibility of the system is a significant concern for both users and intending users and should be given more attention. Privacy of data and security measures of the e-Banking technology are the issues that bother users' minds. Users of E-banking system are worried about the security of the system
Chau, P. Y. (2001). Influence of computer attitude and self-efficacy on IT usage behavior. <i>Journal of Organizational and End User Computing (JOEUC)</i> , 13(1), 26-33.	TAM model IT use behavior	Computer Use Theoretical	Social cognitive theory developed by Bandura (1986) CSE Compeau and Higgins, 1995; and Igbaria and Iivari, 1995	Compeau and Higgins 1995	n/a	n/a	This study sought empirical support for a research model that augmented the well-known TAM by adding computer attitude and self-efficacy as external variables to the original model. Empirical evidence supporting the proposed model was found. Computer self-efficacy, shown to have a relatively small, though negative, effect on perceived usefulness and no significant effect on perceived ease of use
Saadé, R. G., & Kira, D. (2009). Computer anxiety in e-learning: The effect of computer self-efficacy. <i>Journal of Information Technology Education: Research</i> , 8(1), 177-191.	Online learning; Anxiety; Perceived ease of use	Education Computer use	Based on Bandura (1977, 1978, 1982, 1986a, 1986b, 1988)	Based on Bandura (1977, 1978, 1982, 1986a, 1986b, 1988)	10 items – no source	n/a	The study shows that computer self-efficacy has a strong significant mediating influence on reducing the anxieties towards the LMS utilization. Implications to our findings suggest that before introducing prospective students to the LMS they should be tested for any computer anxieties they may have.
Torkzadeh, G., Koufteros, X., & Pflughoeft, K. (2003). Confirmatory analysis of computer self-efficacy. <i>Structural Equation Modeling</i> , 10(2), 263-275.	Confirmatory Analysis of Computer Self-Efficacy Structural Equation Modeling Measurement of CSE	Theoretical Computer Use	Based on Bandura's (1986) self-efficacy theory, developed the computer self-efficacy scale (CSES).	A four-factor model be used, they labeled the four factors: (a) beginning skills, (b) file and software skills, (c) advanced skills, and (d) mainframe skills	A revised version of the original 30-item CSES (Torkzadeh & Koufteros, 1994) was administered	n/a	This study presented corroborating results from a confirmatory analysis of a computer self-efficacy instrument developed initially by Murphy et al. (1989) and previously validated by Torkzadeh and Koufteros (1994).
Durndell, A., Haag, Z., & Laithwaite, H. (2000). Computer self-efficacy and gender: a cross cultural study of Scotland and Romania. <i>Personality and individual differences</i> , 28(6), 1037-1044.	Computing; Self-efficacy; Gender	Computer Use	(Bandura, 1995; 1997)	3 factor solution identified items relevant to beginning level computer skills, advanced level computer skills and mainframe computer skills	This study utilized Torkzadeh and Koufteros's version of the CSE scale, with slight modification, 2 additional statements that were originally used by Murphy et al. were included, giving a total of 29 statements.	n/a	Role of gender in CSE, Research has indicated that in West Europe males on average are often found to be more experienced about computing than females, and to have more positive attitudes and self-efficacy (self-confidence) towards computing than females.
Khorrani-Arani, O. (2001). Researching computer self-efficacy. <i>International Education Journal</i> , 2(4), 17-25.	Computer Attitude	Education; CSE Measurement;	Bandura (1986) Compeau and Higgins (1995)	Bandura (1986), Compeau and Higgins (1995)	Refer to Table 1 – the Murphy (1989) CSE scale	n/a	The paper aims to develop a measure of CSE and three computer attitude scales to obtain baseline data at the start of the course on IT and describe the IT course for Year 8 in one secondary school.
Johnson, R. D. (2005). An empirical investigation of sources of application-specific computer-self-efficacy and mediators of the efficacy—performance relationship. <i>International Journal of Human-Computer Studies</i> , 62(6), 737-758.	Computer self-efficacy; Computer training; Motivation; Goal setting; Goal orientations; Personality; Computer anxiety	Computer Performance Computer Use Theoretical	Computer self-efficacy finds its roots in Social Cognitive Theory (Bandura, 1986) and derived from the broader construct of self-efficacy.	Bandura (1986), Compeau and Higgins (1995), Marakas et al. (1998)	AS-CSE: This construct was measured with a 10-item scale developed by Marakas et al. (2004). The scale was developed consistent with the Marakas et al. (1998) measurement development framework and recommendations by Bandura (2001)	n/a	Integrating theory from research on training, computer self-efficacy (CSE), and motivation, this research validated a model of four factors that contribute to application-specific computer self-efficacy (AS-CSE) formation (previous experience, personality, learning goal orientation and computer anxiety) and three factors that mediate the relationship between AS-CSE and performance.
Stone, R. W., & Henry, J. W. (2003). The roles of computer self-efficacy and outcome expectancy in influencing the computer end-user's organizational commitment. <i>Journal of Organizational and End User Computing (JOEUC)</i> , 15(1), 38-53.	Organizational Commitment CSE, Outcome Expectancy	Computer Performance Computer Use	Self-efficacy theory (Bandura, 1982, 1986)	Bandura (1986), Compeau and Higgins (1995)	The CSE and outcome expectancy items were also developed from previously published scales (Henry and Stone, 1995). The CSE measure was also modified so the scale was reversed in direction	n/a	This study uses data collected by a computer-based medical information system end-users survey in a large hospital in the southeastern United States. The theoretical model links several antecedents to the end-users' organizational commitment, mediated by computer self-efficacy and outcome expectancy using this data.
Saadé, R. G., & Kira, D. (2009). Computer anxiety in e-learning: The effect of computer self-efficacy. <i>Journal of Information Technology Education: Research</i> , 8(1), 177-191.	Online learning; Anxiety; Perceived ease of use	Education Computer use	Based on Bandura (1977, 1978, 1982, 1986a, 1986b, 1988)	Concept of Computer anxiety and CSE - Brosnan, 1999; Rosen & Weil, 1995	10 items CSE scale	n/a	The study shows that computer self-efficacy has a strong significant mediating influence on reducing the anxieties towards the LMS utilization. Implications of the findings suggest that before introducing prospective students to the LMS they should be tested for any computer anxieties they may have.

CITATION	KEYWORDS	CSE DOMAIN - APPLICATION	THEORETICALLY GROUNDED SOURCES	CSE CONCEPTUALIZATION	MEASUREMENT OF CSE AND RELATED CONSTRUCTS	MANIPULATION OF CSE AND RELATED CONSTRUCTS	DISCUSSION - COMMENTS
He, J., & Freeman, L. A. (2010). Understanding the formation of general computer self-efficacy. <i>Communications of the Association for Information Systems</i> , 26(1), 12.	General computer self-efficacy, self-efficacy, computer anxiety, MIS education	Computer use Technology adoption Theoretical	Antecedents of CSE being studied in the literature	Marakas et al. (1998); Bandura and Adams,(1977); Bandura, (2001); Compeau and Higgins, (1995b)	Insight on the formation and effects of general CSE among MIS students. The measurements of involved factors, Formative Constructs	n/a	This study was designed to investigate the information sources of CSE suggested by its theoretical origin in Social Cognitive Theory, and test the validity of a formative measure of CSE that was recently developed in the literature. The effects of CSE on two dependent variables—computer attitudes and MIS intentions—were also included in the research model
Celik, V., & Yesilyurt, E. (2013). Attitudes to technology, perceived computer self-efficacy and computer anxiety as predictors of computer supported education. <i>Computers & Education</i> , 60(1), 148-158.	Computer-mediated communication; Learning communities; Pedagogical issues; Teaching/learning strategies	Education; Computer training	Computer supported education	Perceived computer self-efficacy Computer anxiety: Maurer (1994)	Teacher candidates' attitudes to technology attitudes: "Technology Attitude Scale" Computer self-efficacy of the teacher candidates: "Perceived Computer Self-Efficacy Scale"	n/a	It was detected that attitude to technology, perceived CSE and computer anxiety are important predictors of teacher candidates' attitude toward using computer supported education. In this respect, teacher candidates' completion of pre-service education in such a way that heighten their perceived CSE which will be a crucial gain for them in terms of acquiring a positive attitude toward the application of computer supported education
Durndell, A., & Haag, Z. (2002). Computer self-efficacy, computer anxiety, attitudes towards the Internet and reported experience with the Internet, by gender, in an East European sample. <i>Computers in human behavior</i> , 18(5), 521-535.	Self-efficacy; Gender differences; East Europe; Computer anxiety; Internet attitudes; Internet experience	Computer use	Bandura, 1997; Torzkadeh & Koufteros, 1994	Concerned aspects of Internet experience: length of time in month as an Internet user and uses to which the Internet was put Computer anxiety with relation to Computer self-efficacy	Computer self-efficacy: "Computer self-efficacy (CSE) Scale" by Torzkadeh and Koufteros	The materials were distributed in teaching situations in a Romanian university towards the end of the academic year	This study would seem to support the contention that the research literature on the use of computers probably will extrapolate to the Internet. This will include the frequent finding of variations due to gender, in contradiction to the hopes of some Internet enthusiasts. This study also tends to support the point of view that the emerging countries of Easter Europe will not be immune to the gender related effects of technology
Gist, M. E., Schworer, C., & Rosen, B. (1989). Effects of alternative training methods on self-efficacy and performance in computer software training. <i>Journal of applied psychology</i> , 74(6), 884.	Computer self-efficacy; Behavioral modeling; Training approach; Performance	Education; Computer training; Computer performance	Campbell, 1971; Campbell, Dunnette, Lawler & Weich, 1970; Goldstein, 1980; Wexley, 1984; Wexley & Baldwin, 1986	Pre-experimental computer self-efficacy was based on the confidence subjects brought to the training. It is considered an independent variable. Software self-efficacy was considered a dependent variable	Computer self-efficacy: A measure was designed to assess the level of computer self-efficacy before training. The measure consisted of five items; each item assessed efficacy on some aspect of computer operation over six levels of difficulty	Both treatment groups were given virtually identical training in terms of content. Two different commercial products were used for training; both packages were designed to train the novice in the use of the specific financial software program	Modeling training yielded better performance and was also associated with more positive reported work styles, less negative affect during training, and greater satisfaction with training. Moreover, modeling proved to be more effective than tutorial training for participants at all levels of computer self-efficacy
Torkzadeh, G., & Kouferos, X. (1994). Factorial validity of a computer self-efficacy scale and the impact of computer training. <i>Educational and psychological measurement</i> , 54(3), 813-821.	Computer self-efficacy; Gender difference; Computer training	Education; Computer training; Computer use	Bandura (1986)	Self-percept held by students of their ability in different situations related to computers	To assess the computer self-efficacy of participating students before and after their computer training, this study used Murphy, Coover, and Owen (1989) measures. The instrument employs a 5-point Likert-type response formatted scale.	The impact of computer training on CSE was examined using attitudinal responses collected from undergraduate participants. The attitudinal measures were collected during the first week of the course and before trainees' exposure to the program. Attitudinal reactions to the same set of measures were again collected immediately before completion of the training course	Educational practices can constitute a critical contextual influence on students' perceptions of efficacy. Clear performance feedback may moderate gender differences in achievement cognitions and influence future success or self-efficacy expectations. Training programs and educational practices need to be styled with a high degree of feedback, including feedback on students' successes, because the reassurance seems to influence personal self-efficacy positively.
Torkzadeh, R., Pflughoeft, K., & Hall, L. (1999). Computer self-efficacy, training effectiveness and user attitudes: An empirical study. <i>Behaviour & Information Technology</i> , 18(4), 299-309.	Training; Computer self-efficacy; User attitude	Education; Computer training	training and user's attitude (Zoltan and Chapanis 1982, Bitter and Davis 1985)	Bandura (1986)	CSE: Refer to Murphy et al. (1989), Harrison and Rainer (1992) and Torkzadeh and Kouferos (1994)	Subjects in nine sections of an introductory course participated in the study. Students were taught the applications by following the instructor's actions who closely monitored their progress. The attitudinal and self-efficacy measures were administered at the beginning and the end of the course	Some pre-training assessment of individuals' attitudes may be appropriate given the influence of their attitudes on training effectiveness
Pellas, N. (2014). The influence of computer self-efficacy, metacognitive self-regulation and self-esteem on student engagement in online learning programs: Evidence from the virtual world of Second Life. <i>Computers in Human Behavior</i> , 35, 157-170.	Second Life; Student's engagement; Self-Efficacy; Metacognitive self-regulation; Self-Esteem	Education	Marchand & Gutierrez, 2012	Compeau and Higgins (1995)	Self-efficacy byTorkzadeh and Van Dyke (2001), Self-regulation by Artino & McCoach (2008), Self-esteem by Tarafodi and Swann (2001)	Data were gathered from students who enrolled in the winter and spring semester courses	without considering other factors, such as the instructor's support or students' e-skills and perspectives; self-esteem had a direct effect on students' cognitive and emotional engagement. This suggests antecedent variables to be decisive factors for increasing students' engagement in distance education through virtual worlds.
Simmering, M. J., Posey, C., & Piccoli, G. (2009). Computer self-efficacy and motivation to learn in a self-directed online course. <i>Decision Sciences Journal of Innovative Education</i> , 7(1), 99-121.	Computer Self-Efficacy; e-Learning; Initial Motivation to Learn; Self-Directed Learning; Training	Education; Computer training; Computer use	Self-Directed Learning (Piccoli et al., 2001)	Self-efficacy: Bandura, 1986; Bandura, 1991 Computer self-efficacy: Compeau & Higgins, 1995; Marakas, Yi, & Johnson, 1998	Computer self-efficacy: Compeau and Higgins' (1995) 10-item scale; Initial motivation to learn: Noe and Schmitt (1986)	Participants were enrolled in an online college course the purpose of which it was to teach students how to use software applications as well as basic IT concepts. This course involved only six traditional classroom meetings over 5 months.	Educational implications, more research is needed to understand the role of CSE and motivation in self-directed online courses versus those with more instructor-student interaction. Practical implications: Students' perceptions of their ability to use computers relate to their increased knowledge in an online course. Thus, if universities can offer introductory classes, computer support, or improved resources to make students feel comfortable using computer equipment, this may increase students' learning opportunities.

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Strong, D. M., Dishaw, M. T., & Bandy, D. B. (2006). Extending task technology fit with computer self-efficacy. <i>ACM SIGMIS Database: the DATABASE for Advances in Information Systems</i> , 37(2-3), 96-107.	Task-Technology Fit (TTF) models; Computer Self-efficacy (CSE); Individual Differences; Individual Characteristics; Fit	Computer use; Technology Adoption	Task-Technology Fit (Goodhue and Thompson, 1995; Dishaw & Strong, 1999)	Compeau & Higgins, 1995; Bandura, 1986; 1997 General CSE (Hong et al., 2002)	CSE: Compeau and Higgins' (1995) CSE items Task and Technology: (Dishaw & Strong, 1998b; 1999; 2003; Dishaw et al., 2001)	The tools include Microsoft Access, SPSS, Microsoft Projects, ProModel, or a CASE tool that students can use for routine modeling assignments in these courses. The students completed the questionnaire after completing their modeling assignment	The study tests Task-Technology Fit models in another context, using modeling tools. While a student population is appropriate for this study, the CSE extension should also be tested with professionals.
Kagima, L. K., & Hausafus, C. O. (2000). Integration of electronic communication in higher education: Contributions of faculty computer self-efficacy. <i>The Internet and Higher Education</i> , 2(4), 221-235.	Electronic communication; Faculty computer self-efficacy	Education; Computer use; Technology adoption	Bandura's theory of self-efficacy (1986); Compeau & Higgins, 1995; Olivier, 1985;	Compeau & Higgins, 1995; Olivier, 1985; Bandura, 1986	Scales developed by Delcourt and Kinzie (1993) Self-efficacy for computer Technologies; Faseyitan, Libii, and Hirschbuhl (1996) Faculty Instructional Computing Questionnaire; Murphy et al. (1988) Computer Self-Efficacy Scale	n/a	The construct of self-efficacy was a significant factor in predicting integration of electronic communication in teaching. As hypothesized, faculty computer self-efficacy scores were significantly different based on age, gender, college, extent of integration, and computer experience. Differences in confidence in general computer use and the WWW can be attributed to ubiquitous changes in hardware, operating systems, software, and networking systems.
Murphy, C. A. (1988). Assessment of computer self-efficacy: Instrument development and validation.	Adult vocational education; Computer Literacy; Construct validity; Higher Education; Nurse Practitioners; Predictive Validity; Rating Scales; Self-Efficacy; Self-evaluation;	Computer use	Bandura's theory of self-efficacy (1986) and Schunk's model of classroom learning (1985)	Bandura, 1986	Forty-two items were generated after a careful analysis of the skills. Results of the expert review were used to revise the original items and shorten the form to 32 items.	learning to use computers in three different settings.	The regression analyses highlighted the relative unimportance of precursor variables as a group, but underscored the importance of efficacy information in rendering computer efficacy judgments. The variables representing efficacy information seemed to combine in different ways to render the three types of efficacy judgments, thus suggesting that scale scores rather than total scores be used to generate meaningful information.
Shih, Y. Y. (2006). The effect of computer self-efficacy on enterprise resource planning usage. <i>Behaviour & Information Technology</i> , 25(5), 407-411.	Enterprise resource planning systems; Technology acceptance model; Computer efficacy; Structural equation model	Technology adoption	TAM and CSE	Compeau and Higgins (1995)	PEOU, and PU (Davis 1989, Dishaw and Strong 1999); A 10-item measure of CSE was adopted from Compeau and Higgins (1995) for measuring individual perceptions of their ability to use a computer to accomplish an ERP task	n/a	Respondents with high self-efficacy used the ERP system more, and derived more from their use of the ERP system. The present analysis, suggested that IS managers should stress the system functionality and permitted users to understand the various ways the ERP system can improve productivity. CSE is an important factor in explaining the ERP usage behavior in this study, and training has been suggested as an essential method of improving CSE.
Karsten, R., & Schmidt, D. (2008). Business student computer self-efficacy: Ten years later. <i>Journal of Information Systems Education</i> , 19(4), 445.	Computer Self-efficacy; Computer Experience; Computer use; Gender	Education; Computer use	Compeau and Higgins, (1995)	Compeau and Higgins, (1995); GCSE	Murphy, Coover, and Owen (1989); Compeau and Higgins (1995)	n/a	The study raises attention regarding IS educators periodically evaluate students' computer self-efficacy entering introduction to information systems classes; 2. IS educators and researchers to develop and refine measures of computer self-efficacy at both the general and task-specific level of analysis.
Downey, J. P., & McMurtrey, M. (2007). Introducing task-based general computer self-efficacy: An empirical comparison of three general self-efficacy instruments. <i>Interacting with Computers</i> , 19(3), 382-396.	Self-efficacy; Computer self-efficacy; General self-efficacy; Computer attitudes; Computer competency; Structural equation modeling	Theoretical; Computer performance	Bandura, 1986; Gist, 1987; Marakas et al., 1998	Summated General Computer Self-efficacy (SGSE); General Computer Self-efficacy (GSE)	SGCSE: averaging a respondent's scores on six application-specific CSE instruments, GCSE: Compeau and Higgins, 1995a Global self-efficacy: Hill et al., 1987, Attitude: Computer Attitude Scale (Loyd and Gressard, 1984), Computer competence: Munro et al., 1997	n/a	This study showed a significant relationship between SGCSE and overall competence, anxiety, and computer affect. Further, SGCSE was a significantly better predictor of general computing competence than either the global instrument or GCSE (CH). This confirms Bandura's (1997) belief that task-based instruments are better for specific outcomes, particularly "action" or performance within the domain.

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Bao, Y., Xiong, T., Hu, Z., & Kibelloh, M. (2013). Exploring gender differences on general and specific computer self-efficacy in mobile learning adoption. <i>Journal of Educational Computing Research</i> , 49(1), 111-132.	Technology adoption model; Computer self-efficacy; Gender differences; Mobile learning adoption	Education; Technology Adoption	Gender differences in perceptions and acceptance of e-learning	general CSE and specific CSE	General CSE: Compeau and Higgins, 1995, Specific CSE: it was measured by six self-developed items, PU, PEOU, BI: Davis, 1989; Ong & Lai, 2006; Venkatesh & Davis, 1996.	n/a	The present study confirmed that general CSE contributed to the shape of an individual's specific CSE. Interestingly, there is no gender difference in the effect of general CSE on specific CSE. This means that in both males and females, mind and memories are not stored in isolation, but in networks in which each item is linked to many others through connections referred to as associations. Both general CSE and specific CSE appeared to be a significant determinant of perceived usefulness and ease of use for both females and males, indicating users with higher general CSE or specific CSE are likely to have more positive usefulness and ease of use beliefs.
Galpin, V., Sanders, I., Turner, H., & Venter, B. (2003). Computer self-efficacy, gender, and educational background in South Africa. <i>IEEE Technology and Society Magazine</i> , 22(3), 43-48.	Computer self-efficacy; Gender differences; Educational background	Education		general computer self-efficacy	GCSE: Cassidy and Eachus' scale (1999)	n/a	This research has shown differences in self-efficacy between male and female students at university level and between advantaged and disadvantaged students at university level, and no significant difference between school boys and girls. Disadvantaged students had mixed self-efficacy beliefs. As with much research of this type, the results further research questions.
Chiu, C. M., & Wang, E. T. (2008). Understanding Web-based learning continuance intention: The role of subjective task value. <i>Information & Management</i> , 45(3), 194-201.	Benefits; Continuance; Costs; Subjective task value; Unified Theory of Acceptance and Use of Technology; Web-based learning	Education	Unified Theory of Acceptance and Use of Technology and expectancy-value model of achievement motivation	general computer self-efficacy; the self-assessment of a person's ability to use a system to complete important tasks.	Compeau and Higgins (1995)	n/a	The study points out that understanding what performance expectancy, effort expectancy, and positive subjective task value mean to learners is likely to establish longer-term relationships. Intrinsic value was the strongest predictor of an individual's intention to continue using Web-based learning.
Dalcher, I., & Shine, J. (2003). Extending the new technology acceptance model to measure the end user information systems satisfaction in a mandatory environment: A bank's treasury. <i>Technology Analysis & Strategic Management</i> , 15(4), 441-455.	Technology adoption model; End user acceptance; Computer self-efficacy; Mandatory environment' Bank Treasury	Technology adoption	TRA and TAM	CSE is individuals' beliefs concerning their ability to perform specific task successfully, given a degree of expended effort, and persistence in the face of challenging situations.	The scales captured the magnitude and strength of the respondents' self-efficacy.	n/a	This study was undertaken to initially examine an organization's concerns regarding staff acceptance of a new operating platform, and consequently, identify areas for practical management action to improve staff acceptance and thus improve hoped for productivity. The null hypothesis that no statistically significant relationship would be found between the attitudes, perceptions, and the overall end user satisfaction, was tested and subsequently refuted.
Chan, S. C. (2004). Understanding internet banking adoption and use behavior: A Hong Kong perspective. <i>Journal of Global Information Management (JGIM)</i> , 12(3), 21-43.	Internet banking; Technology adoption; Technology acceptance model; Structural equation modeling	Technology adoption	The attitude literature & TAM2	A potential adopter's perception of their ability to use the computer to accomplish a task	Compeau and Higgins (1995)	n/a	This study provides empirical support for a research model that modified the well-known TAM. The results reveal that CSE plays an indirect, but significant role influencing both intentions to adopt and continue-use of Internet Banking.
Cassidy, S., & Eachus, P. (2002). Developing the computer user self-efficacy (CUSE) scale: Investigating the relationship between computer self-efficacy, gender, and computer experience. <i>Journal of educational computing research</i> , 26(2), 133-153.	CSE measurement	Education; Computer use	Social Cognitive Theory	Based on Bandura (1977, 1978, 1982, 1986a, 1986b, 1988)	30-item Computer User Self-Efficacy (CUSE) scale designed to measure general computer self-efficacy in an adult student population. Refer to Table 1 for different scales of CSE	n/a	Method—Phase One; 47-Item Computer User Self-Efficacy Scale - see Appendix A and B
Salanova, M., Grau, R. M., Cifre, E., & Llorens, S. (2000). Computer training, frequency of usage and burnout: the moderating role of computer self-efficacy. <i>Computers in Human Behavior</i> , 16(6), 575-590.	Computer training; Frequency of usage; Computer self-efficacy; Burnout	Computer training; Computer Use	Bandura's (1982, 1986, 1997) theory of self-efficacy	Murphy, Coover and Owen (1989) define CSE as one's perception of one's capabilities regarding specific computer-related knowledge and skills.	CSE was assessed by a self-constructed scale and validated in a previous study (Beas, Agut, Salanova & Grau, 1999). An example of one item is "I feel very competent using computer aided technology".	n/a	This paper aims to test the moderating role of CSE in the relationship among computer training, frequency of usage, and burnout (i.e. exhaustion and cynicism).

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Hayashi, A., Chen, C., Ryan, T., & Wu, J. (2020). The role of social presence and moderating role of computer self-efficacy in predicting the continuance usage of e-learning systems. <i>Journal of Information Systems Education</i> , 15(2), 5.	Expectation-Confirmation Model (ECM), Confirmation, Satisfaction, IS Continuance Intention.	Education – E-learning IT Adoption Computer Use	Derived from the theory of self-efficacy theory	Computer self-efficacy incorporates judgments of the ability to apply those skills to broader tasks (Compeau and Higgins 1995).	Compeau and Higgins (1995).	n/a	They found that End-user intention to continue using e-learning system depends significantly on the gap between expectation and post-use experience. The narrower the gap, the higher the satisfaction level end users have with e-training systems, regardless of social presence. The authors mention that neither computer self-efficacy nor social presence may affect the intention of end-users to continue using e-learning systems to assimilate IT skills.
Shu, Q., Tu, Q., & Wang, K. (2011). The impact of computer self-efficacy and technology dependence on computer-related technostress: A social cognitive theory perspective. <i>International Journal of Human-Computer Interaction</i> , 27(10), 923-939.	Social cognitive theory Technostress	Computer Use Computer Performance	Bandura's Social cognitive theory Technostress - Weil and Rosen, in their 1997 book Technostress: Coping With Technology	(Compeau & Higgins, 1995)	Tarafdar et al. (2007) identified five components of computer-related technostress The computer self-efficacy instrument was originally developed by Compeau and Higgins (1995)	n/a	As expected from SCT, computer self-efficacy had a negative relationship with technostress. This is consistent with findings of prior studies (Johnson & Marakas, 2000; Thatcher & Perrewe, 2002), in which they found a negative link between computer self-efficacy and anxiety.
Wangpipatwong, S., Chutimaskul, W., & Papisatorn, B. (2008). Understanding Citizen's Continuance Intention to Use e-Government Website: a Composite View of Technology Acceptance Model and Computer Self-Efficacy. <i>Electronic Journal of e-Government</i> , 6(1).	e-Government, TAM Continuance Intention	TAM, IT Adoption	Compeau and Higgins, 1995 Davis, 1989	Bandura, 1986 Compeau and Higgins, 1995	Compeau and Higgins (1995).	n/a	This study aims to understand the fundamental factors influencing citizens' continuance intention to use e-Government websites. The results revealed that perceived usefulness and perceived ease of use of e-Government websites and citizen's CSE directly enhanced citizen's continuance intention to use e-Government websites. CSE is adopted as an additional factor that influences citizens' continuance intention to use e-Government websites.
Harrison, A. W., & Rainer Jr, R. K. (1992). An examination of the factor structures and concurrent validities for the computer attitude scale, the computer anxiety rating scale, and the computer self-efficacy scale. <i>Educational and Psychological Measurement</i> , 52(3), 735-745.	Measurement of CSE Computer Anxiety Computer Attitude	Education	Compeau and Higgins (1995)	Murphy et al. 1989	Computer Self-Efficacy Scale. A principal factor analysis with orthogonal rotation produced a 3-factor solution that explained 68.7% of the systematic covariance among the 32 CSE items by Murphy et al.	n/a	The study evaluates the factor structures and concurrent validity of the Computer Attitude Scale, the Computer Anxiety Rating Scale, and the Computer Self-Efficacy Scale. Principal factor analyses for each of the three scales resulted in interpretable factor solutions with high alpha reliabilities. Intercorrelations among the derived factors demonstrated the concurrent validity of the three instruments.
Yeşilyurt, E., Ulaş, A. H., & Akan, D. (2016). Teacher self-efficacy, academic self-efficacy, and computer self-efficacy as predictors of attitude toward applying computer-supported education. <i>Computers in Human Behavior</i> , 64, 591-601.	Teacher self-efficacy Academic self-efficacy Computer self-efficacy Computer-supported education	Education	Compeau and Higgins (1995).	Computer self-efficacy is defined as "the judgment of an individual's ability to use a computer" by Compeau and Higgins (1995).	CSE scale, which consists of a single factor and 18 items developed by Askar and Umay (2001).	n/a	The most significant finding of this study is that teacher self-efficacy, academic self-efficacy, and computer self-efficacy are important predictors of prospective teachers' attitude toward applying computer-supported education.
Chien, T. C. (2012). Computer self-efficacy and factors influencing e-learning effectiveness. <i>European Journal of Training and Development</i> .	Computer self-efficacy, E-learning system, E-learning instructor, Learning methods, Financial services	Computer training Computer use	Compeau and Higgins, 1995	Compeau and Higgins, 1995	Ten-question computer self-efficacy scale developed by Compeau and Higgins (1995) was adopted to evaluate employees' computer self-confidence.	n/a	Learners' CSE has a moderating effect on the relationship between system functionality and training effectiveness. The higher the CSE, the stronger is the relationship between functionality and effectiveness, and vice versa. However, CSE does not significantly affect the relationship between other independent variables and training effectiveness. High CSE can result in better training effectiveness; therefore, it is necessary to enhance employee computer skills and their confidence in using e-learning.
Conrad, A. M., & Munro, D. (2008). Relationships between computer self-efficacy, technology, attitudes and anxiety: Development of the computer technology use scale (CTUS). <i>Journal of Educational Computing Research</i> , 39(1), 51-73.	Instrument development, Computer technology use scale, Technology related anxiety, CSE, Attitudes to technology	Computer Performance Computer Use	Social Cognitive Theory - Bandura, 1977, 1986, 1995, 1999a	Cassidy and Eachus (2002) have argued that scales assessing aspects of CSE should be domain specific. In constructing the Computer Technology Use Scale (CTUS) issues computer self-efficacy will be considered in detailing this domain.	CSE scales obsolete (Cassidy & Eachus, 2002)	CSE items were derived from the four mediators of self-efficacy including persistence, goal setting, attribution, and coping strategies.	The article reports two studies which describe the development and evaluation of a new instrument, the Computer Technology Use Scale (CTUS), comprising three domains: computer self-efficacy, attitudes to technology, and technology related anxiety.

CITATION	KEYWORDS	CSE DOMAIN - APPLICATION	THEORETICALLY GROUNDED SOURCES	CSE CONCEPTUALIZATION	MEASUREMENT OF CSE AND RELATED CONSTRUCTS	MANIPULATION OF CSE AND RELATED CONSTRUCTS	DISCUSSION - COMMENTS
Tams, S. (2022). Helping older workers realize their full organizational potential: a moderated mediation model of age and IT-enabled task performance. <i>MIS Q.</i>	System use outcomes, Task performance, Systems design, Information processing, Age, Older users, Experience, Self-efficacy, Overload, Effort cost	Computer Performance Computer Use	Theories of cognitive aging, Theory of processing speed (Salthouse 1996), Wickens' Human Information Processing Model (Wickens et al. 2004)	IT self-efficacy: the belief that persons have in their ability to use IT effectively to accomplish work tasks (Compeau and Higgins 1995)	IT self-efficacy Study 1: I could complete a job using the computer ... (Compeau and Higgins 1995; Marakas et al. 1998) Study 2: (Bandura 2006; Compeau and Higgins 1995; Marakas et al. 1998)	An information processing task (search for matching pairs of symbols in a matrix of computer-generated card)	The present investigation seeks to provide a parsimonious account of age-related differences in IT-enabled task performance, The present investigation contributes to the literature on IS use by responding to calls for more research on the effects of age on the outcomes, The study also contributes to the literature on IT-enabled task performance by answering calls for more empirical work on the impacts of user characteristics on task performance outcomes, The research contributes back to the reference literature on cognitive aging by making valuable additions to processing speed theory
Gupta, S., & Bostrom, R. P. (2019). A revision of computer self-efficacy conceptualizations in information systems. <i>ACM SIGMIS Database: the DATABASE for Advances in Information Systems</i> , 50(2), 71-93.	Task specificity Complex task SE	CSE Theory	Social Learning Theory	General/Specific CSE Simple/Complex Task CSE	Self-developed	Quasi-experiment	
Scherer, R., & Siddiq, F. (2015). Revisiting teachers' computer self-efficacy: A differentiated view on gender differences. <i>Computers in Human Behavior</i> , 53, 48-57.	Computer self-efficacy; Gender differences; Measurement invariance; Multi-group confirmatory factor analysis; Professional development courses	Education	Social Cognitive Theory - Bandura, 1977, 1986, 1995, 1999a	Specific CSE	Teachers Computer Self-Efficacy Scale [Appended] Teachers' Participation in Professional Development Courses on ICT Scale	Secondary data	RQ1: CSE assessment can discriminate equally well between the three factors for both female and male teachers. RQ2: Sig. diff. in teachers' CSE in basic operational skills and advanced and collab skills in favor of male teachers. No gender diff. with respect to CSE in skills for instructional purpose. RQ3: Participating in courses on operational computer skills has positive effect on 2 CSE factors (females only). For females participating in ICT integration courses, the effect of this participation is positive on CSE in advanced and instructional use of computers.
Shao, Zhen & Wang, Tienan & Feng, Yuqiang. (2015). Impact of organizational culture and computer self-efficacy on knowledge sharing. <i>Industrial Management & Data Systems</i> . 115. 590-611.	Organizational culture, Computer self-efficacy, Explicit knowledge sharing, Tacit knowledge sharing	Organizational Culture	Compeau & Higgins, 1995 Social Cognitive Theory - Bandura, 1977, 1986, 1995, 1999a	Specific CSE	Self-developed	Survey	Empirical results suggest that hierarchical culture that focuses on efficacy and uniformity is positively related with employees' explicit knowledge sharing; group culture that focuses on trust and belonging is positively related with employees' tacit knowledge sharing, and their relationship is fully mediated by employees' computer self-efficacy. In addition, computer self-efficacy also partially mediates the relationship between rational culture and employees' knowledge sharing.
Yesilyurt, E., Ulas, A.H., & Akan, D. (2016). Teacher self-efficacy, academic self-efficacy, and computer self-efficacy as predictors of attitude toward applying computer-supported education. <i>Comput. Hum. Behav.</i> , 64, 591-601.	Teacher self-efficacy, Academic self-efficacy, Computer self-efficacy, Computer-supported education	Computer attitudes	Social Cognitive Theory - Bandura, 1977, 1986, 1995, 1999a	Teacher SE Academic SE CSE	Self-developed	Survey	The most significant finding of this study is that teacher self-efficacy, academic self-efficacy, and computer self-efficacy are important predictors of prospective teachers' attitude toward applying computer-supported education.
Hayashi, Albert; Chen, Charlie; Ryan, Terry; and Wu, Jinpo (2004) "The Role of Social Presence and Moderating Role of Computer Self Efficacy in Predicting the Continuance Usage of E-Learning Systems," <i>Journal of Information Systems Education</i> : Vol. 15 : Iss. 2 , 139-154.	Social presence Online learning Virtual learning Perceived usefulness	Computer use	Social Cognitive Theory Expectation Confirmation Technology acceptance model	Specific CSE	Compeau & Higgins, 1995	Field experiment/Survey	They found that End-user intention to continue using e-learning system depends greatly on the gap between expectation and post-use experience. The narrower the gap, the higher the satisfaction level end users have with e-training systems, regardless of its social presence elements.
Islam, A.K.M.N., Whelan, E. and Brooks, S. (2021), "Does multitasking computer self-efficacy mitigate the impact of social media affordances on overload and fatigue among professionals?", <i>Information Technology & People</i> , Vol. 34 No. 5, pp. 1439-1461.	Social media Social media affordances Information overload	Social media overload	Social media affordances	Multi-tasking CSE	Self-developed	Survey	Social media affordances have significant impacts on information overload, but not on communication overload. In turn, information overload and communication overload significantly affect social media fatigue. Multitasking CSE was found to attenuate the effect of social media affordances on both information overload and communication overload.
Hammer, M., Scheiter, K., & Stürmer, K. (2021). New technology, new role of parents: How parents' beliefs and behavior affect students' digital media self-efficacy. <i>Computers in Human Behavior</i> , 116, 106642.	digital media; self-efficacy; expectancy-value model; parent beliefs; parent behaviors; secondary education	Education	Social Cognitive Theory	Digital media self-efficacy	Self-developed	Survey	Results show while parents' beliefs are related to students' digital media self-efficacy, only parents' provision of smart phones mediates this relation. Findings indicate the importance of parents' beliefs regarding digital media and the need for further research into at home factors that influence students' digital media self-efficacy.

CITATION	KEYWORDS	CSE DOMAIN - APPLICATION	THEORETICALLY GROUNDED SOURCES	CSE CONCEPTUALIZATION	MEASUREMENT OF CSE AND RELATED CONSTRUCTS	MANIPULATION OF CSE AND RELATED CONSTRUCTS	DISCUSSION - COMMENTS
Malaquias, RF., Malaquias, FFD., Ha YM., & Hwang, Y. (2021). A Cross-Country Study on Intention to Use Mobile Banking: Does Computer Self-Efficacy Matter?. <i>Journal of Global Information Management</i> , 29 (2), 102-117.	Mobile banking Intention to use	Computer use	Social Cognitive Theory Marakas, et al., 1998 Technology acceptance model	General and specific CSE	Self-developed	Survey	The results indicated a positive and significant effect of CSE on two antecedents of behavioral intention to use mobile banking: ease of use and trust. However, this effect was not significant in all three of the sub-samples' analysis. Through these two variables (i.e., ease of use and trust), the indirect effect of CSE on intention to use mobile banking was positive and significant at 1%.
Wolverton, C. C., Hollier, B. N. G., & Lanier, P. A. (2020). The impact of computer self efficacy on student engagement and group satisfaction in online business courses. <i>Electronic Journal of e-Learning</i> , 18(2), pp175-188.	Learner engagement Electronic learning	Education	Social Cognitive Theory Marakas, et al., 1998 Compeau & Higgins, 1995.	Specific CSE	Compeau & Higgins, 1995	Survey	Findings indicate that computer self-efficacy leads to student engagement and, further, that student engagement influences group satisfaction. Importantly, the relationship between student engagement and group satisfaction is mediated by group expectations.
Longstreet, P., Xiao, X., & Sarker, S. (2016). Computer-Related Task Performance: A new perspective. <i>Information & Management</i> , 53(4), 517-527.	Computer-related task performance Self-prophecy	Task performance	Bandura, 1986	Task-specific CSE	Compeau & Higgins, 1995	Experiment	The results indicate that using self-prophecy in conjunction with CSE may be beneficial for improving task performance. Further, the results show that future research into CSE could benefit by incorporating the SP effect into the research agenda. Using self-predictions in conjunction with CSE is likely to provide more robust results.

Appendix B
Key Computer Self-Efficacy Measures

No	Citation	Construct	Measurement Scale	Item	Reference
1	Hill, T., Smith, N. D., & Mann, M. F. (1987). Role of efficacy expectations in predicting the decision to use advanced technologies: The case of computers. <i>Journal of applied psychology, 72</i> (2), 307.	CSE	5-point response scale: totally agree – totally disagree	<ul style="list-style-type: none"> - I will never understand how to use a computer - Only a few experts really understand how computers work - It is extremely difficult to learn a computer language - Computer errors are very difficult to fix 	Hill and Smith (1985)
2	Murphy, C. A., Coover, D., & Owen, S. V. (1989). Development and validation of the computer self-efficacy scale. <i>Educational and Psychological measurement, 49</i> (4), 893-899.	CSE: specific activities or circumstances	A 5-point Likert-type response format was employed and respondents were asked to indicate the degree to which they felt very little confidence (1) to quite a lot of confidence (5).	<p><i>I feel confident:</i></p> <p>1)Beginning Level Computer Skills:</p> <ul style="list-style-type: none"> - adding and deleting information from a data file - escaping/exiting from the program/software - copying an individual file - copying a disk - making selections from an onscreen menu - moving the cursor around the monitor screen - using a printer to make a “hardcopy” of my work - using the computer to write a letter or essay - handling a floppy disk correctly - entering and saving data (numbers or words) into a file - storing software correctly - getting rid of files when they are no longer needed - working on a personal (microcomputer) - getting the software up and running - calling-up a data file to view on the monitor screen - organizing and managing files <p>2)Advanced Level Computer Skills:</p> <ul style="list-style-type: none"> - explaining why a program (software) will or will not run on a given computer - troubleshooting computer problems - writing simple programs for the computer - describing the function of computer hardware (keyboard, monitor, disk drives, computer processing unit) - understanding terms/words relating to computer hardware - understanding terms/words relating to computer software - understanding the three stages of data processing: input, processing, output - learning to use a variety of programs (software) - getting help for problems in the computer system - learning advanced skills within a specific program (software) - using the computer to organize information - using the computer to analyze number data <p>3)Mainframe Computer Skills:</p> <ul style="list-style-type: none"> - logging onto a mainframe computer system - logging off the mainframe computer system - working on a mainframe computer 	
3	Gist, M. E., Schwoerer, C., & Rosen, B. (1989). Effects of alternative training methods on self-efficacy and performance in computer software training. <i>Journal of applied psychology, 74</i> (6), 884.	CSE; Software SE	CSE: Assess the level of CSE before training – five items assessed efficacy on some aspect of computer operation over six levels of difficulty; Software SE: Measured midway through training – items were related to the content of the specific financial software package in which the participants were trained	<p><i>(CSE) Operating a microcomputer involves turning the machine on, inserting diskettes, and telling the computer to begin running a program.</i></p> <p><i>I am capable of operating a microcomputer:</i></p> <ul style="list-style-type: none"> - when I am provided with written instructional material - when the computer gives me instructions at each step, and informs me when I have completed a step successfully - when I can listen to someone giving instructions who pauses as I complete each step - when I can watch someone going through the steps before I try the procedures myself - when there is an instructor to guide me by telling me each step as I proceed, and explaining any errors I make <p><i>I am capable of learning to use a computer software package</i></p> <p><i>I am capable of learning the steps and commands necessary to construct formulas on worksheets/spreadsheets</i></p> <p><i>I am capable of learning all of the commands and steps necessary to create a spreadsheet from a model</i></p> <p><i>I am capable of learning to print completed spreadsheets</i></p> <p><i>I am capable of learning to develop a lotus spreadsheet independently</i></p>	

				<p><i>(Software SE) I am capable of:</i></p> <ul style="list-style-type: none"> - typing and entering numbers in cells - writing a formula for addition - entering a formula for addition in a cell - writing a formula for division - entering a formula for division in a cell - calling up the command to copy - telling the computer what to copy - telling the computer where to copy - writing new numbers which demonstrate the use of the formulas entered - viewing the formulas to be sure they are correct 	
4	Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. <i>MIS quarterly</i> , 189-211.	CSE	<ul style="list-style-type: none"> - Indicate whether the respondents can use unfamiliar software package: "Yes" or "No" - Rate their confidence about their first judgment, by circling a number from 1 to 10 	<p><i>I could complete the job using the software package:</i></p> <ul style="list-style-type: none"> - if there was someone giving me step by step instructions - if there was no one around to tell me what to do as I go - if I had never used a package like it before - if I had only the software manuals for reference - if I had seen someone else using it before trying it myself - if I could call someone for help if I got stuck - if someone else had helped me get started - if I had a lot of time to complete the job for which the software was provided - if I had just the built-in help facility for assistance - if someone showed me how to do it first - if I had used similar packages before this one to do the same job 	
5	Webster, J., & Martocchio, J. J. (1992). Microcomputer playfulness: Development of a measure with workplace implications. <i>MIS quarterly</i> , 201-226.	Computer efficacy beliefs	Measured a seven-point Likert scale ranging from strongly disagree to strongly agree	<ul style="list-style-type: none"> - I believe that WordPerfect Merging is a task on which I can perform well - It is just not possible for me to use WordPerfect Merging as well as I would like 	Hollenbeck and Brief (1987)
6	Harrison, A. W., & Rainer Jr, R. K. (1992). The influence of individual differences on skill in end-user computing. <i>Journal of Management Information Systems</i> , 9(1), 93-111.	CSE: specific computer skills ranging from elemental abilities to more advanced, complex skills	Respondents' perceptions on thirty-two statements using five-point Likert scales, from (1) strongly disagree to (5) strongly agree	<p><i>I feel confident:</i></p> <ul style="list-style-type: none"> - entering and saving data (numbers or words) into a file - calling up a data file to view on the monitor screen - storing software correctly - handling a floppy disk correctly - escaping/exiting from a program or software - making selections from an on screen menu - copying an individual file - using the computer to write a letter or essay - moving the cursor around the monitor screen - working on a personal computer (microcomputer) - using a printer to make a "hardcopy" of my work - getting rid of files when they are no longer needed - copying a disk - adding and deleting information from a data file - getting software up and running - organizing and managing files - understanding terms/words relating to computer software - understanding terms/words relating to computer hardware - describing the function of computer hardware (keyboard, monitor, disk drivers, computer processing unit) - troubleshooting computer problems - explaining why a program (software) will or will not run on a given computer - understanding the three stages of data processing: input, processing, output - learning to use a variety of programs (software) - using the computer to analyze number data - learning advanced skills within a specific program (software) - using the computer to organize information - writing simple programs for the computer - using the user's guide when help is needed - getting help for problems in the computer system - logging onto a mainframe computer system - logging off the mainframe computer system - working on a mainframe computer 	
7	Kinzie, M. B., Delcourt, M. A., & Powers, S. M. (1994). Computer technologies: Attitudes	SE for computer technologies	Respondents' agreement on a 4-point Likert scale:	<i>I feel confident:</i>	Delcourt and Kinzie (1990)

	and self-efficacy across undergraduate disciplines. <i>Research in higher education</i> , 35(6), 745-768.		(Form A) perceived SE for word processing, communicating via electronic mail, and searching CD-ROM bibliographic databases (Form B) Form A was expanded to include scales for assessing SE for use of spreadsheets, creation and management of databases, and use of statistical packages	<p>1) Spreadsheets</p> <ul style="list-style-type: none"> - formatting the columns and rows in a spreadsheet - naming the columns and rows in a spreadsheet - entering appropriate formulas for calculation in a spreadsheet - entering data in a spreadsheet - editing previous spreadsheet files - printing out the spreadsheet - saving a spreadsheet file <p>2) Database Programs</p> <ul style="list-style-type: none"> - formatting data fields in a database - naming data fields in a database - entering records in a database - searching records in a database with specific terms - sorting records in a database - printing out records in a database - saving database files <p>3) Electronic Mail</p> <ul style="list-style-type: none"> - logging on to e-mail - reading mail messages on e-mail - responding to mail messages on e-mail - deleting messages received on e-mail - sending mail messages on e-mail - sending the same mail message to more than one person on e-mail - responding privately to messages sent to more than one person on e-mail - forwarding messages received on e-mail - logging off of e-mail <p>4) Word Processing</p> <ul style="list-style-type: none"> - using a word-processing program to write a letter or a report - accessing previous files with a word-processing program - making corrections while word processing - formatting text (e.g., bold, underling while word processing) - moving blocks of text while word processing - using the spelling checker while word processing - using the searching feature in a word-processing program - printing out files I've written while word processing - saving documents I've written with a word-processing program - renaming a word-processing file to make a back-up copy <p>5) Statistical Packages</p> <ul style="list-style-type: none"> - entering data into a file for analysis - getting into a particular file - writing the statistical procedure - running a statistical procedure - correcting procedural errors - printing out statistical results - saving related files <p>6) CD-ROM Data Bases</p> <ul style="list-style-type: none"> - using a database on compact disc, such as ERIC, MedLine, Dialog, Science Citation Index, etc. - selecting the correct database on compact disc for a specific topic - selecting search terms for a database literature search - getting into a database on compact disc and starting a literature search 	
8	Henry, J. W., & Stone, R. W. (1995). Computer self-efficacy and outcome expectancy: the effects on the end-user's job satisfaction. <i>ACM SIGCPR computer personnel</i> , 16(4), 15-34.	CSE	A five-point Likert-type scale: from strongly disagree to strongly agree	<ul style="list-style-type: none"> - I fully understand the functions of the system - I have had sufficient training on the system to use it effectively - I can use all the functions of the system which are available to me 	
9	Johnson, R. D., & Marakas, G. M. (2000). The role of behavioral modeling in computer skills acquisition: Toward refinement of the model. <i>Information Systems Research</i> , 11(4), 402-417	CSE	<ul style="list-style-type: none"> - Half of the subjects: Rate the respondents' ability (on a scale of 1-10) to accomplish a task using Excel, under differing levels of assistance - The remaining subjects: Measure individuals beliefs in their abilities to complete tasks using a spreadsheet - For each question, subjects responded dichotomously (yes/no) to each question and their confidence in their abilities on a 10-100 scale 	<p><i>I believe I have the ability to:</i></p> <ul style="list-style-type: none"> - save a file - manipulate the way a number appears in a spreadsheet - use and understand the cell references in a spreadsheet - enter numbers into a spreadsheet - use a spreadsheet to communicate numeric information to others - write a simple formula in a spreadsheet to perform mathematical calculations - summarize numeric information using a spreadsheet - use a spreadsheet to share numeric information with other - use a spreadsheet to display numbers as graphs - use a spreadsheet to assist me in making decisions 	Compeau and Higgins (1995); Marakas et al. (1999)
10	Torkzadeh, G., & Van Dyke, T. P. (2001). Development and validation of an Internet self-efficacy scale. <i>Behaviour & information technology</i> , 20(4), 275-280.	The Internet SE: measure the domain of the World Wide Web and the Internet	A five-point Likert-type scale where 1 is strongly disagree to 5 is strongly agree	<p><i>I feel confident:</i></p> <p>1) Browsing:</p> <ul style="list-style-type: none"> - surfing the World Wide Web (WWW) - browsing the World Wide Web (WWW) - finding information on the World Wide Web (WWW) 	Hurphreys and Revelle (1984); Murphy et al. (1989); Harrison and Rainer (1992);

				<p>2) Encryption/decryption</p> <ul style="list-style-type: none"> - decrypting e-mail messages - decrypting e-mail messages that I receive - encrypting my e-mail messages that I send - decrypting my e-mail messages - encrypting my e-mail messages before sending them over the Internet - encrypting my e-mail messages <p>3) System manipulation</p> <ul style="list-style-type: none"> - sending a fax via the computer - receiving a fax on my computer - scanning pictures to save on the computer - making changes on a home computer - downloading from another computer - creating a home page for the World Wide Web (WWW) - recovering a file I accidentally deleted - editing (size, color) a scanned picture 	Torkzadeh and Koufteros (1994); Compeau and Higgins (1995)
11	Cassidy, S., & Eachus, P. (2002). Developing the computer user self-efficacy (CUSE) scale: Investigating the relationship between computer self-efficacy, gender, and computer experience. <i>Journal of educational computing research</i> , 26(2), 133-153.	Computer User Self-Efficacy: measure general CSE in an adult student population	Respondents' level of agreement/disagreement to each statement along a 6-point Likert scale	<ul style="list-style-type: none"> - Most difficulties I encounter when using computers, I can usually deal with - I find working with computers very easy - I am very unsure of my abilities to use computers - I seem to have difficulties with most of the packages I have tried to use - Computers frighten me - I enjoy working with computers - I find that computers get in the way of learning - DOS-based computer packages don't cause many problems for me - Computers make me much more productive - I often have difficulties when trying to learn how to use a new computer package - Most of the computer packages I have had experience with, have been easy to use - I am very confident in my abilities to make use of computers - I find it difficult to get computers to do what I want them to - At times I find working with computers very confusing - I would rather that we did not have to learn how to use computers - I usually find it easy to learn how to use a new software package - I seem to waste a lot of time struggling with computers - Using computers makes learning more interesting - I always seem to have problems when trying to use computers - Some computer packages make learning easier - Computer jargon baffles me - Computers are far too complicated for me - Using computers is something I rarely enjoy - Computers are good aids to learning - Sometimes, when using a computer, things seem to happen and I don't know why - As far as computers go, I don't consider myself to be very competent - Computers help me to save a lot of time - I find working with computers very frustrating - I consider myself to be a skilled computer user - When using computers I worry that I might press the wrong button and damage it 	
12	Fraillon, J., Ainley, J., Schulz, W., Friedman, T., & Gebhardt, E. (2014). <i>Preparing for life in a digital age: The IEA International Computer and Information Literacy Study international report</i> (p. 308). Springer Nature.	ICT SE	Indicate how well the respondents thought they could do each of 13 computer-based tasks: on a 0 to 100 scale	<p><i>I know how to do this:</i></p> <ul style="list-style-type: none"> - search for and find information you need on the internet - search for and find a file on your computer - create or edit documents (e.g., assignments for school) - upload text, images, or video to an online profile - edit digital photographs or other graphic images - create a multimedia presentation (with sound, pictures, or video) - change the settings on your computer to improve the way it operates or to fix problems - use a spreadsheet to do calculations, store data, or plot a graph - use software to find and get rid of viruses - build or edit webpages - set up a computer network - create a database - create a computer program or macro 	