Sinergie SIMA
Management Conference

Management of sustainability and well-being for individuals and society

Conference Proceedings

Short Papers

Parma (Italy)

13-14 June 2024

Sinergie-SIMA Management Conference Proceedings
Management of sustainability and well-being for individuals and society
13-14 June 2024
University of Parma - Italy

ISBN 978-88-94-7136-5-7

The Conference Proceedings are published online on *https://www.sijmsima.it*

Via Interrato dell'Acqua Morta, 26
37129 Verona - Italy

Enhancing Well-Being for People with Disabilities, Insights from Multiple Case Study of Smart Nature-Based Solutions' Actions in Italy

GIOVANNA BAGNATO[1] AUGUSTO BARGONI[2] CHIARA GIACHINNO[3]

Framing of the research. *Disabled people are defined by The United Nations (2006, p. 4) as "those who have long-term physical, mental, intellectual, or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others." This circumstance significantly complicates their capacity to enjoy public services and engage in routine tasks (Bhogal-Nair et al., 2023; Tuli et al., 2023). Indeed, there has been a longstanding emphasis on the crucial need to foster the safety of people with disabilities (PwDs) allowing them to actively engage in daily life activities to increase their overall quality of life (Blichfeldt and Nicolaisen, 2011; Darcy and Buhalis, 2010; Lyu, 2017; Rubio-Escuderos et al., 2021; Zhang and Cole, 2016).*

Consequently, in this scenario, it becomes essential to advocate for the empowerment and autonomy of PwDs (Ali et al., 2024; Rubio-Escuderos et al., 2021; Buhalis and Darcy, 2011; Buhalis and Michopoulou, 2010). Despite the differences between various forms of disabilities that necessitate exclusive treatments (Kalargyrou et al., 2018; Liu et al., 2024), innovative results resulting from nature-based solutions (NbSs) emerged to promote the well-being of PwDs (Marchigiani et al., 2021). In fact, Domaradzka and colleagues (2022), stated that NbSs "should, directly and indirectly, affect public health and wellbeing by creating a healthier environment for citizens by supporting the prevention of a variety of health conditions, including somatic and mental." As per this definition, NbSs entails strategies aimed at safeguarding, managing, and restoring natural or altered ecosystems. These strategies are designed to effectively tackle various societal challenges such as climate change, food and water security, and natural disasters, while simultaneously promoting human well-being and biodiversity benefits (IUCN French Committee, 2019; IUCN, 2012).

Furthermore, the European Commission provides a more expansive definition of NbSs, describing it as initiatives inspired and supported by, or mimicking nature with the goal of assisting societies in addressing a range of environmental, social, and economic challenges sustainably. Hence, NbSs have the potential to convert environmental and societal challenges into opportunities for innovation. The scientific interest on NbSs has primarily focused on mapping and collecting the multitude benefits arising from their application (Brink et al., 2016; Frantzeskaki, 2019) highlighting the synergies that NbSs have with technological advancements to optimize health-related services and cultivate a healthier urban environment for inhabitants (Domaradzka et al., 2022). This alignment underscores a pivotal paradigm shift, where the integration of technology enhances the efficacy and reach of NbSs interventions. Notably, the convergence of NbSs with progressive technology mirrors the evolving landscape of the 21st century, characterised by a pronounced attention on accessibility and inclusivity (Longo and Faraci, 2023). Substantially, by exploiting technological innovations, NbSs can effectively address global social challenges, particularly pertinent to the sizable demographic constituting approximately 15% of the world's population (World Health Organization, 2021; Tuli et al., 2023).

Purpose of the paper. *The integration of technology - which also focuses on generating accessibility and inclusion for PwDs (Longo and Faraci, 2023) - within NbSs can mitigate various barriers, facilitating their full and effective societal participation on an equal basis with others (Ali et al., 2023; Ginis et al., 2021). Specifically, technology can serve as a facilitator to alleviate several structural limitations and provide a better experience (Ali et al., 2023; Guner and Acarturk, 2020), ensuring equal opportunities among its beneficiaries (UN Department of Economic and Social Affairs, 2022). Despite numerous scientific studies addressing the application of technology for PwDs, there remains a scientific deficit regarding how NbSs, utilizing technology, can effectively generate accessibility and inclusion, thus transforming one of the major social challenges into opportunities for innovation (ICLEI, 2017; Kabisch et al., 2017; Mahmoud et al., 2021), with particular emphasis on local contexts. Indeed, as exposed in the study conducted by Frantzeskaki et al. (2019) to address the lacunae in the utilization of NbSs, it is essential to approach their implementation through an innovative lens. The authors delineate that integrating technology-driven solutions within NbSs can serve as a complement to their endeavors, a task which emerges as a predominant challenge within the NbSs (Farwig et al., 2017; Fernandes and Guiomar, 2018). For instance, leveraging technologies such as mobile phones or adopting citizen science*

[1] University of Torino – Italy
e-mail: giovanna.bagnato@unito.it
[2] University of Torino – Italy
e-mail: augusto.bargoni@unito.it
[3] University of Torino – Italy
e-mail: chiara.giachino@unito.it

Electronic Conference Proceedings
ISBN 978-88-94-7136-5-7
DOI 10.7433/SRECP.SP.2024.01

methodologies facilitates the collection of data pertaining to the impact of NbSs on diverse sociodemographic segments (Frantzeskaki et al., 2019). In the light of NbSs and the technological approach to enhance readability, we will refer to the technologies involved in NbSs with the acronym S-NbSs, that means 'smart nature-based solutions'. This leads directly to the research question of this work:

RQ1. How does technology acts as a facilitator within nature-based solutions to create accessibility and inclusion for people with disabilities?

Methodology. *To investigate the research question and based on preliminary research regarding the accessibility and inclusion through NbSs, the researchers intend to gather data from four initiatives actively engaged in promoting NbSs and innovative technological tools in Italian cities (refer to table 1 for further sample details in which the Italian project of NbSs are termed adopting Greek alphabet to grantee their demand of privacy). Specifically, in alignment with the recommendations for future research outlined by Kabisch et al. (2017), which emphasize the necessity of employing multiple-case study research, and following the approach utilized by Frantzeskaki (2019), the present study will also adopt multiple-case approach. This approach is anticipated to facilitate the discovery of intriguing insights and emergent social and business phenomena (Yin, 2017). Given the context of exploratory research approaches as elucidated by Creswell and Creswell (2018), the number of interviews deemed appropriate for qualitative research. In particular, the authors favor a qualitative approach, utilizing a two-stage interview process employing thematic analysis techniques through semi-structured interviews to construct a realistic observation of the cases and extract new content (Braun and Clarke, 2012; Snow and Thomas, 1994) as the first stage. Additionally, a questionnaire will be developed based on a thorough literature review pertaining to the Integrated Model of Technology Acceptance (TAM 3) (Venkatesh and Bala, 2008) as the second stage. Furthermore, in some cases, more than one person will be interviewed and thus, for completeness of primary data, the authors will employ data triangulation. Indeed, researchers will seek the participation of NbSs project managers and professionals engaged in evaluating technology effectiveness within local green spaces in cities (Jack and Raturi, 2006). By adopting this strategy, the research aims to gather diverse perspectives and alleviate the constraints associated with relying solely on a single data source. The data collection methodology will encompass a secondary source such as project initiatives documented on the NbSs website, potential reports, press articles, and online videos sourced from respective initiatives. The incorporation of secondary data will guarantee the validity and reliability of the study (Creswell, 2014). Additionally, the integration of NVivo 14 software will be employed to meticulously organize and analyze the data, ensuring a thorough and systematic approach to data treatment.*

After conducting the interviews, the qualitative methodology will be supplemented by the second stage via questionnaire. Specifically, participants will be asked about their willingness to take part in the questionnaire, which will be developed based on a literature review regarding TAM 3 (Venkatesh and Bala, 2008). As reported in the study by Lai (2017), Venkatesh and Bala (2008) fused Technology Acceptance Model version 2 (TAM 2) (Venkatesh and Davis, 2000) and the model of determinants of perceived ease of use (Venkatesh, 2000) to formulate TAM 3. It incorporates individual differences, system characteristics, social influence, and facilitating conditions as determinants of perceived usefulness and perceived ease of use. Within the TAM 3, experiences moderate the relationships between perceived ease of use and perceived usefulness, computer anxiety and perceived ease of use, and perceived ease of use and behavioral intention. All determinants of TAM 3 will be used for the construction of the questionnaire and the relevant items will be adapted (see table 2 in the appendix). By systematically collecting data on various efforts, the questionnaire will comprehensively map current practices and potential initiatives pursued through S-NbSs to promote actions aimed at enhancing accessibility and inclusion of PwDs.

Table 1. Analysis sample profile

ITALIAN PROJECT OF NBSS	***ORIGN***	***REGION***	***COUNTRY***
A	*2011*	*Emilia Romagna*	*Italy*
B	*2020*	*Piedmont*	*Italy*
Γ	*2020*	*Piedmont*	*Italy*
Δ	*2023*	*Calabria*	*Italy*
E	*2023*	*Lazio*	*Italy*

Results. *In terms of results, we anticipate that S-NbSs will make a significant difference in improving accessibility and inclusion for PwDs. We hope to see this through real-life data that shows more participation from PwDs in different community supports thanks to S-NbSs. This would suggest that the obstacles that PwDs face are being reduced, leading to an overall better experience for them. Additionally, our research aims to uncover specific technological progress within S-NbSs that will be duplicated in different local communities. These could include personalised assistive devices, adaptable infrastructure, and/or digital tools designed to make local environments more accessible based on factors like the surroundings and local economic conditions. In conclusion, we plan to offer practical suggestions, such as guidelines for incorporating inclusive design principles into city planning, strategies for allocating resources to implement S-NbSs, and programs to educate and empower stakeholders involved in making these changes happen.*

Research limitations. *The research objective will be investigated in Italy, primarily due to the accessibility of data retrieval, as the researchers originate from this country. So, it is essential to recognize that the circumstantial analysis is*

constrained by the geographical focus on Italy. This limitation underscores the need for cautious interpretation and generalization of the findings beyond the specific Italian context. Additionally, the study might face limitations in terms of the methodologies employed to investigate the role of technology within NbSs for promoting accessibility and inclusion for PwDs. For instance, the support of qualitative approaches such as multiple-case studies with interviews and questionnaire should offer pertinent insights but could scarcity quantitative data to establish statistical significance. Thus, quantitative approach should capture the nuanced experiences and perceptions of PwDs and stakeholders involved in S-NbSs initiatives. Finally, despite the consideration of all disabilities the effectiveness of S-NbSs initiatives in promoting overall accessibility and inclusion for all types of disabilities might be understated or oversimplified.

Originality of the paper. *The findings hold promise for uncovering several originalities, which are anticipated to emerge as the research advancements, contributing to a deeper understanding of the subject substance and its effective application. Specifically, this paper will contribute to the existing literature on the utilization of NbSs by extending its application to encompass PwDs, without confining focus to a specific disability, thereby promoting its practical implementation. Secondly, through comprehensive scientific research, the authors will synthesize the current body of knowledge concerning the benefits of integrating NbSs, technology - S-NbSs -, and its eventual impact on PwDs, thereby fostering a deeper understanding of the subject. Moreover, by employing S-NbSs and thereby embracing an innovative methodology, we endeavor to enhance scientific understanding pertaining to the technology, recognizing that substantial progress remains important (Oral et al., 2020). Thirdly, the development of a theoretical model, derived from TAM_V3 with integrated considerations for disabilities, will provide a framework for further exploration. This success is anticipated to have potential applicability in other contexts and industries. Finally, employing a multiple-case study approach will enable the practical testing of the previously constructed theoretical model.*

Managerial implications. *From a practical perspective, the integration of technology - identified as a facilitator of everyday activities - will expand accessibility and inclusion to all individuals, thus accommodating a wider audience of people - like PwDs - and gaining a competitive advantage over those who do not prioritize it. Also, S-NbSs foster a more equitable and sustainable urban environment, thereby embodying a proactive approach towards addressing societal pressing needs and challenges. Secondly, it is crucial that such initiatives garner community support and political facilitation to engage local authorities and foster knowledge acquisition, acknowledgment, and investments essential for progress (Oral et al., 2020). Thirdly, this commitment will enhance the city's reputation, directly contributing to the local economy. Finally, through such commitment, local spaces will contribute to long-term sustainability and adapt to changing demographics by creating a comfy environment for PwDs.*

Key words: *Disabilities; People with Disabilities (PwDs); Nature based Solutions (NbSs); Technologies; Smart-Nature based Solutions (S-NbSs); Qualitative methodology; Integrated Model of Technology Acceptance (TAM 3).*

References

ALI F., CAIN L., LEGENDRE T.S., WU L. (2023), "The intersection of technology, accessible tourism and tourists with intellectual disabilities: Proposing a novel conceptual framework", *Journal of Hospitality & Tourism Research*, vol. *47*, n. 4, pp. 76-90.

BHOGAL-NAIR A., LINDRIDGE A.M., TADAJEWSKI M., MOUFAHIM M., ALCOFORADO D., CHEDED M., LIU C. (2023), "Disability and well-being: Towards a capability approach for marketplace access", *Journal of Marketing Management*, pp. 1-30.

BLICHFELDT B.S., NICOLAISEN J. (2011), "Disabled travel: not easy, but doable", *Current issues in tourism*, vol. 14, n. 1, pp. 79-102.

BRAUN V., CLARKE V. (2006), "Using thematic analysis in psychology", *Qualitative Research in Psychology*, vol. 3, n. 2, pp. 77-101

BRAUN V., CLARKE V. (2012), *Thematic analysis*, American Psychological Association.

BRINK E., AALDERS T., ADAM D., FELLER R., HENSELEK Y., HOFFMANN A., IBE K., MATTHEY- DORET A., MEYER M., NEGRUT N.L., RAU A.L., RIEWERTS B., VON SCHUCKMANN L., TORNROS S., VON WEHRDEN H., ABSON D.J., WAMSLER C. (2016), "Cascades of green: a review of ecosystem-based adaptation in urban areas", *Glob. Environ. Chang*. Part A vol. 36, pp. 111-123.

CRESWELL J.W. (2014), *Research design: Qualitative, quantitative, and mixed methods approaches*, Sage.

CRESWELL J.W., CRESWELL J.D., (2018), *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, Sage, USA.

DARCY S., BUHALIS D. (2010), "Chapter 2. Conceptualising Disability", in Buhalis, Dimitrios and Darcy, Simon (eds.) *Accessible Tourism*. Bristol, Blue Ridge Summit: Multilingual Matters, pp. 21-45.

DOMARADZKA A., BIESAGA M., DOMARADZKA E., KOŁODZIEJCZYK M. (2022), "The civil city framework for the implementation of nature-based smart innovations: Right to a healthy city perspective", *Sustainability*, vol. 14, n. 16, p. 9887.

European Commission. Nature-Based Solutions. Available online: https://ec.europa.eu/research/environment/index.cfm?pg =nbs (accessed on 04 March 2024).

FARWIG N., AMMER C., ANNIGHÖFER P., BAUR B., BEHRINGER D., DIEKÖTTER T., ZIEGENHAGEN B. (2017), "Bridging science and practice in conservation: Deficits and challenges from a research perspective", *Basic and Applied Ecology*, vol. 24, pp. 1-8.

FERNANDES J.P., GUIOMAR N. (2018), "Nature-based solutions: The need to increase the knowledge on their potentialities and limits", *Land degradation & development*, vol. 29, n. 6, pp. 1925-1939.

FRANTZESKAKI N. (2019), "Seven lessons for planning nature-based solutions in cities", *Environmental science & policy*, vol. 93, pp. 101-111.
FRANTZESKAKI N., MCPHEARSON T., COLLIER M.J., KENDAL D., BULKELEY H., DUMITRU A., PINTÉR L. (2019), "Nature-based solutions for urban climate change adaptation: linking science, policy, and practice communities for evidence-based decision-making", *BioScience*, vol. 69, n. 6, pp. 455-466.
GINIS K.A.M., VAN DER PLOEG H.P., FOSTER C., LAI B., MCBRIDE C.B., NG K., HEATH G.W. (2021), "Participation of people living with disabilities in physical activity: a global perspective", *The Lancet*, vol. *398*, n. 10298, pp. 443-455.
GUNER H., ACARTURK C. (2020) "The use and acceptance of ICT by senior citizens: A comparison of technology acceptance model (TAM) for elderly and young adults", *Universal Access in the Information Society*, vol. 19, n. 2, pp. 311-330.
ICLEI. Nature-Based Solutions for Sustainable Urban Development. 2017. Available online: https://unfccc.int/files/parties_observers/submissions_from_observers/application/pdf/777.pdf (accessed on 05 March 2024).
IUCN French Committee. Nature-based Solutions for Climate Change Adaptation & Disaster Risk Reduction. 2019. Available online: https://uicn.fr/wp-content/uploads/2019/07/uicn-g20-light.pdf (accessed on 04 March 2024).
IUCN. The IUCN Programme 2013-2016. In Proceedings of the IUCN World Conservation Congress, Jeju, Korea, 6-15 September 2012; pp. 1-30.
JACK E.P., RATURI A.S. (2006), "Lessons learned from methodological triangulation in management research", *Management research news*, vol. 29 N. 6, pp. 345-357.
KABISCH N., KORN H., STADLER J., BONN A. (2017), *Nature Based Solutions to Climate Change Adaptation in Urban Areas: Linkages between Science Policy and Practice Springer*, OPEN: Berlin, Germany.
LAI P.C. (2017), "The literature review of technology adoption models and theories for the novelty technology", *JISTEM-Journal of Information Systems and Technology Management*, vol. 14, pp. 21-38.
LONGO M.C., FARACI R. (2023), "Next-Generation Museum: A Metaverse Journey into the Culture", *Sinergie Italian Journal of Management*, vol. 41 n. 1, pp. 147-176.
LYU S.O. (2017), "Which accessible travel products are people with disabilities willing to pay more? A choice experiment", *Tourism management*, vol. 59, pp. 404-412.
MAHMOUD I.H., MORELLO E., VONA C., BENCIOLINI M., SEJDULLAHU I., TRENTIN M., PASCUAL K.H. (2021), "Setting the social monitoring framework for nature-based solutions impact: Methodological approach and pre-greening measurements in the case study from clever cities milan", *Sustainability*, vol. 13, n. 17, p. 9672.
MARCHIGIANI E., CHIARELLI B., GAROFOLO I. (2021), "Spatial accessibility as a driver to build an inclusive and proactive city", *Urbani izziv*, vol. 32, pp. 7-21.
ORAL H.V., CARVALHO P., GAJEWSKA M., URSINO N., MASI F., HULLEBUSCH E.D.V., ZIMMERMANN M. (2020), "A review of nature-based solutions for urban water management in European circular cities: a critical assessment based on case studies and literature", *Blue-Green Systems*, vol. *2*, n. 1, pp. 112-136.
RUBIO-ESCUDEROS L., GARCÍA-ANDREU H., MICHOPOULOU E., BUHALIS D. (2021), "Perspectives on experiences of tourists with disabilities: implications for their daily lives and for the tourist industry", *Tourism Recreation Research*, pp. 1-15.
SNOW C., THOMAS J.B. (1994), "Field research methods in strategic management: Contributions to theory building and testing", *Journal of Management Studies*, vol. 31, n. 4, pp. 457-480.
TULI N., SRIVASTAVA R., KUMAR H. (2023), "Navigating services for consumers with disabilities: a comprehensive review and conceptual framework", *Journal of services marketing*, vol. 37 n. 9, pp. 1132-1150.
United Nations (2006), "Convention on the rights of persons with disabilities and optional protocol", available at: www.un.org/disabilities/documents/convention/convoptprot-e.pdf (accessed 2 March 2024).
United Nations Department of Economics and Social Affairs Disability (2022). Promoting accessible tourism for all. (accessed 2 March 2024), from https://www.un.org/development/desa/disabilities/issues/promoting-accessible-tourism-for-all.html
VENKATESH V., BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315.
WORLD HEALTH ORGANIZATION (2021), "Fact sheet on disability", available at: www.who.int/news-room/fact-sheets/detail/disability-and-health (accessed 2 March 2024).
YIN R.K. (2017), *Case study research: Design and methods (6th ed.)*, Sage.
YUNUS M., MOINGEON B., LEHMANN-ORTEGA L. (2010), "Building social business models: Lessons from the Grameen experience", *Long range planning*, vol. 43, n. 2-3, pp. 308-325.
ZHANG Y., COLE S.T. (2016), "Dimensions of lodging guest satisfaction among guests with mobility challenges: A mixed-method analysis of web-based texts", *Tourism management*, vol. 53, pp. 13-27.

Appendix

Table 2. Determinants and items of TAM 3

DETERMINANTS	ITEMS	REFERENCE
Perceived Usefulness	Using the system improves my performance in my job.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315. Davis F. D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS quarterly*, pp. 319-340. DAVIS F. D., BAGOZZI R. P. and WARSHAW P. R. (1989), "User acceptance of computer technology: A comparison of two theoretical models", *Management science*, vol. 35, n. 8, pp. 982-1003. VENKATESH V. and DAVIS, F. D. (2000), "A theoretical extension of the technology acceptance model: Four longitudinal field studies", *Management Science*, vol. 46, pp. 186-204.
	Using the system in my job increases my productivity.	
	Using the system enhances my effectiveness in my job.	
	I find the system to be useful in my job.	

Perceived Ease of Use	My interaction with the system is clear and understandable.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315. Davis F. D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS quarterly*, pp. 319-340. DAVIS F. D., BAGOZZI R. P. and WARSHAW P. R. (1989), "User acceptance of computer technology: A comparison of two theoretical models", *Management science*, vol. 35, n. 8, pp. 982-1003.
	Interacting with the system does not require a lot of my mental effort	
	I find the system to be easy to use.	
	I find it easy to get the system to do what I want it to do.	
Computer self-efficancy	I could complete the job using a software package ...	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315. COMPEAU D. R., and HIGGINS C. A. (1995), "Application of social cognitive theory to training for computer skills", *Information Systems Research*, vol. 6, pp. 118-143.
	... if there was no one around to tell me what to do as I go…	
	… if I had inly the software manual 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.	
Perception of External Control	I have control over using the system.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315. MATHIESON K. (1991). "Predicting user intentions: Comparing the technology ac- ceptance model with the theory of planned behavior", *Information Systems Research*, vol. 2, pp. 173-191. TAYLOR S. and TODD P. A. (1995), "Understanding information technology usage: A test of competing models", *Information Systems Research*, vol. 6, pp. 144-176.
	I have the resources necessary to use the system.	
	Given the resources, opportunities and knowledge it takes to use the system, it would be easy for me to use the system.	
	The system is not compatible with other systems I use.	
Computer Playfulness (CPLAY)	The following questions ask you how you would characterize yourself when you use computers:	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315. WEBSTER J. and MARTOCCHIO J. J. (1992), "Microcomputer playfulness: Development of a measure with workplace implications", *MIS Quarterly*, vol. 16, pp. 201-226. WEBSTER E. J. (1989). *Playfulness and computers at work,* New York University, Graduate School of Business Administration.
	... spontaneous	
	... creative	
	... playful	
	... Unoriginal	
Computer Anxiety (CANX)	The following questions ask you how you would characterize yourself when you use computers:	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315. VENKATESH V. (2000), "Determinants of perceived ease of use: Integrating perceived behavioral control, computer anxiety and enjoyment into the technology acceptance model", *Information Systems Research*, vol. 11, pp. 342-365.
	Computers do not scare me at all.	
	Working with a computer makes me nervous.	
	Computers make me feel uncomfortable.	
	Computers make me feel uneasy.	
	Computers do not scare me at all.	
	Working with a computer makes me nervous.	
	I do not feel threatened when others talk about computers.	
	It wouldn't bother me to take computer courses.	
	Computers make me feel uncomfortable.	
	I feel at ease in a computer class.	
	I get a sinking feeling when I think of trying to use a computer.	
	I feel comfortable working with a computer.	
	Computers make me feel uneasy.	
Perceived Enjoyment (ENJ)	The following questions ask you how you would characterize yourself when you use computers:	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315.

	I find using the system to be enjoyable.	DAVIS F. D., BAGOZZI R. P. and WARSHAW P. R. (1989), "User acceptance of computer technology: A comparison of two theoretical models", *Management science*, vol. 35, n. 8, pp. 982-1003.
	The actual process of using the system is pleasant.	
	I have fun using the system.	
Objective Usability (OU)	No specific items were used. It was measured as a ratio of time spent by the subject to the time spent by an expert on the same set of tasks. (Note: was operationalized by computing a novice-to-expert ratio of effort. During the training program, each participant was asked to perform a set of tasks using the new system. The system recorded the time each participant took to accomplish the tasks. The time was then compared to the time taken by an expert to accomplish the same tasks to determine a ratio, which served as the measure of objective usability for each participant.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315. VENKATESH V. (2000), "Determinants of perceived ease of use: Integrating perceived behavioral control, computer anxiety and enjoyment into the technology acceptance model", *Information Systems Research*, vol. 11, pp. 342-365.
Subjective Norm (SN)	People who influence my behavior think that I should use the system.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315. TAYLOR S. and TODD P. A. (1995), "Understanding information technology usage: A test of competing models", *Information Systems Research*, vol. 6, pp. 144-176.
	People who are important to me think that I should use the system.	
	The senior management of this business has been helpful in the use of the system.	
	In general, the organization has supported the use of the system.	
Voluntariness (VOL)	My use of the system is voluntary.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315. MOORE G. C. and BENBASAT I. (1991), "Development of an instrument to measure the perceptions of adopting an information technology innovation", I*nformation systems research*, vol. 2, n. 3, pp. 192-222.
	My supervisor does not require me to use the system.	
	Although it might be helpful, using the system is certainly not compulsory in my job.	
Image (IMG)	People in my organization who use the system have more prestige than those who do not.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315. MOORE G. C. and BENBASAT I. (1991), "Development of an instrument to measure the perceptions of adopting an information technology innovation", I*nformation systems research*, vol. 2, n. 3, pp. 192-222.
	People in my organization who use the system have a high profile.	
	Having the system is a status symbol in my organization.	
Job Relevance (REL)	In my job, usage of the system is important.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315. DAVIS F. D., BAGOZZI R. P. and WARSHAW P. R. (1992), "Extrinsic and intrinsic motivation to use computers in the workplace 1", *Journal of applied social psychology*, vol. 22, n. 14, pp. 1111-1132.
	In my job, usage of the system is relevant.	
	The use of the system is pertinent to my various job-related tasks.	
Output Quality (OUT)	The quality of the output I get from the system is high.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315. DAVIS F. D., BAGOZZI R. P. and WARSHAW P. R. (1992), "Extrinsic and intrinsic motivation to use computers in the workplace 1", *Journal of applied social psychology*, vol. 22, n. 14, pp. 1111-1132.
	I have no problem with the quality of the system's output.	
	I rate the results from the system to be excellent.	
Result Demonstrability (RES)	I have no difficulty telling others about the results of using the system.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315. MOORE G. C. and BENBASAT I. (1991), "Development of an instrument to measure the perceptions of adopting an information technology innovation", I*nformation systems research*, vol. 2, n. 3, pp. 192-222.
	I believe I could communicate to others the consequences of using the system.	
	The results of using the system are apparent to me.	
	I would have difficulty explaining why using the system may or may not be beneficial.	
Behavioral Intention (BI)	Assuming I had access to the system, I intend to use it.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315. Davis F. D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS quarterly*, pp. 319-340. DAVIS F. D., BAGOZZI R. P. and WARSHAW P. R. (1989), "User acceptance of computer technology: A comparison of two theoretical models", *Management science*, vol. 35, n. 8, pp. 982-1003.
	Given that I had access to the system, I predict that I would use it.	
	I plan to use the system in the next <n> months.	
Use (USE)	Assuming I had access to the system, I intend to use it.	

	Given that I had access to the system, I predict that I would use it.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", *Decision Sciences*, vol. 39, n. 2, pp. 273-315. Davis F. D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS quarterly*, pp. 319-340.
	I plan to use the system in the next <n> months.	
	On average, how much time do you spend on the system each day? -1 month (T1-T2), 3 months (T2-T3) and 2 months (T3-T4).	