Citation: **Manar Hekal et al (2023), Design Ergonomics of self-service technology for people with special needs, International Design Journal, Vol. 13 No. 6, (November 2023) pp 397-406**

Design Ergonomics of self-service technology for people with special needs

Dr. Manar Mahmoud Mohamed Hekal.
Lecturer, Advertising Department, Faculty of Applied Arts, Damanhour University.
Dr. Nevin Ezzat Gamal El-den.
Associate Professor, Advertising Department, Faculty of Applied Arts, Helwan University.
Prof.Tamer Abd Al-latif.
Professor of Design, Advertising Department, Faculty of Applied Arts, Helwan University.

Abstract:

The Egyptian government seeks to refine the skills of people with special needs, whether physical or functional, in special ways to make them an effective element in the various employment sectors in addition to their social and cultural integration, as meeting their needs is the paramount components of the state, and this came in line with technological development in societies, where societies are interested globally in this category of different extent of disability (auditory - visual - motor) and the work of their own programs, and the percentage of people with special needs is estimated at 10.5% of the total population inside Egypt, The number of people with disabilities reached 8.636 million people, of whom 6.608 million people have simple difficulty, 1.636 million people have great difficulty, and 390.9 thousand people have absolute difficulty, and the Statistics Authority indicated that the difficulty of walking or climbing stairs came in first place with 1.097 million people, followed by the difficulty of self-care with 548.2 thousand people, difficulty understanding and communicating with others with 493.6 thousand people, difficulty hearing with 458.9 thousand people, difficulty seeing with 439.2 thousand people, and difficulty seeing with 439.2 thousand people, and difficulty remembering or focusing 434.7 thousand people, and the number of special education schools reached 1078 schools with 4841 classes during the year 2019-2020, and includes 42.255 thousand students, most of whom are boys, with a number of 27.002 thousand students compared to 15.253 thousand students, and the density of classes of special education schools is 11.5 students / class during the year 2019-2020 compared to 8.5 students / class during the year 2018-2019. Digital technologies considered as the generators of comprehensive processes in society (which includes service makers, companies and users), which ultimately seeks to integrate between all groups, but they exist forms of global digital exclusion for the category of people with special needs and thus hinder comprehensive social processes, and with the spread of self-service technology (SST) and the presence of difficulties to deal with this category specifically with it, the need to employ this technology to produce a global design that suits all users and people with special needs ergonomically and increases the number of users prospective services and thus enhances the mental image of the institution they have, hence **the problem of research** in answering the following questions: What is self-service technology(SST) and how important is it for people with special needs? To what extent does the design of the service differ according to the classification of difficulties for people with special needs? What are the criteria for the success of designing self-service technology for people with special needs? **Objectives**: The research aims to identify the importance of self-service technology and the criteria for the success of designing self-service technology to suit people with special needs. **Methodology**: the research follows the descriptive approach based on collecting information to build the theoretical framework of the research and support it with a number of models in order to shed light on the design of self-service technology to suit people with special needs. **The study results** have shown that: The importance of self-service technology for service providers and the government, as it provides large numbers of employees and raises the efficiency of services and applying the international design standards helps to achieve a better experience for users of all categories. Commitment to the degrees of contrast and diversity in the design for the visually impaired and color blindness helps to preserve the identity of the advertiser and also ensures the optimal use of technology. Preparing the roads which lead to the kiosks through Tactile Paving and adding audio description of the service, allows visually impaired and blind users to use self-service technology optimally.

Keywords:

Self Service Technology-SST, Motor disability, Special Needs, Visual disability

References:

1- Ekkarat Suwannakul - Role of Technology Readiness in Airline Passengers' Perceptions of Self-service Technology Quality- African Journal of Hospitality, Tourism and Leisure-April 2021, Vol 10, No 2, https://doi.org/10.46222/ajhtl.19770720-125.
2- Wästerfors, D., and K. Hansson.. "Taking Ownership of Gaming and Disability." Journal of Youth Studies 20 (9): 1143–1160 - 2017. doi:10.1080/13676261.2017.1313969
3- Macdonald, S. J., and J. Clayton.. "Back to the Future, Disability and the Digital Divide." Disability &

Society 28 (5): 702–718. 2013 - doi:10.1080/09687599.2012.732538.
4- Dana Boucher, Neeti Dave, Steven DeDomenic and others : Challenges Faced by Persons with Disabilities Using Self-Service Technologies - Purdue University- USA- 2021- page 4
5- J´ohannesson Omar I.a Balan Oanab Spagnol Simonec Valgeirsd´ottir ´ Vigd´ıs Valaa Unnthorsson R´unarc Kristj´ansson Arnia, Moldoveanu Al- ´ inb. Designing sensory-substitution devices: Principles, pitfalls and potential. https://content.iospress.com/articles/ restorative-neurology-and-neuroscience/rnn160647, September 2016
6- https://www.marketing91.com/self-service-technologies/2021-10-6
7- https://www.forbes.com/sites/edrensi/2018/07/11/mcdonalds-says-goodbye-cashiers-hello-kiosks/?sh=4d649c346f14 McDonald's Says Goodbye Cashiers, Hello Kiosks2021-10-7
8- https://nummax.com/en/nouvelle/3-benefits-of-using-a-drive-thru-or-a-self-service-kiosk-for-your-restaurant/
9- https://www.merriam-webster.com/dictionary/special%20needs(1-6-2023)
10- https://www.moh.gov.sa/en/awarenessplateform/VariousTopics/Pages/Disability.aspx (1-6-2023).
11- https://www.evoke-creative.com/project/mcdonalds/(12-7-2023)
12- https://www.vetogate.com/4899747# (4/6/2023)
13- https://grubbrr.com/dont-overlook-these-kiosk-accessibility-features/(22-7-2023)
14- Food Service: Accommodating Diners with Disabilities | ADA National Network (adata.org)(12-6-2023)
15- ADA kiosk for ADA Kiosk compliance and accessibility (kioskindustry.org)(25-6-2023)
16- What is Vision Impairment? | Department of Ophthalmology | University of Pittsburgh (1-8-2023)
17- https://kioskindustry.org/kiosks-for-visually-impaired-rnib/2023-8-1
18- https://uxbooth.com/articles/accessibility-visual-design/2023-8-2
19- http://www.diva-portal.org/smash/get/diva2:1312380/FULLTEXT01.pdf (1-8-2023) page 44
20- https://www.banquemisr.com/en/Home/ABOUT-US/News/EL-momken-program?sc_lang=ar-EG(1-8-2023)
21- https://www.almasryalyoum.com/news/details/2804382(2-8-2023)
22- https://www.airbus.com/en/newsroom/stories/2019-02-wi-fi-staying-connected-while-travelling
23- https://www.railwaygazette.com/uk/worldline-and-evoke-self-service-ticket-kiosk-tested/59529.article
24- https://evergrip.com/tactile-paving-guidance/

Paper History:

Paper received July 29, 2023, Accepted October 7, 2023, Published of November 2023

