FAR Survey Questions for Mobile Application Usability Improvement

UF	Experienced from	Questions
Attractiveness	SUPR-Q [51], WAMMI [49]	1. I think the interfaces of this application are not consistent. 2. Menus of the application are organized well. 3. The presentation of the software is very attractive. 4. Understanding the functions of the application 5. Interface of the application 6. Screen characters, messages and prompt of screen 7. Organization of the application information
Effectiveness	CSUQ [39], UMUX [44], SEQ [47]	8. Using the application I enjoy all time. 9. I can complete my task very effectively using this application. 10. The information of the application helps me to complete my tasks 11. Organization of application screen information
Efficiency	SUS [31], CSUQ [39], UMUX [44], WAMMI [49]	12. Responses of the application 13. This application is not skillful when I want to do something which is not standard. 14. This application recovers the mistakes easily and quickly.
Helpfulness	SUMI [35], WAMMI [49], ASQ [46]	15. The instructions and prompts are helpful of the application. 16. This application helps you to complete your task. 17. This application helps you to overcome your problems. 18. The help information satisfy according to your demand. 19. This application helps to (copy and paste) export / import data according to your demand. 20. This application is not really very helpful. 21. The help information assist you to use this application 22. The terminology that are used in this application related to task. 23. The help messages on the screen application are helpful.
Human Engineering	ASQ [46]	24. After releasing new version of application, I wonder to use new version of the software. 25. The application new version satisfy the all requirements that identified earlier version of application.
Learnability	SUS [31], SUMI [35], CSUQ [39], WAMMI [49]	26. Learning this application is not full of problems. 27. It takes little time to learn the application functions. 28. I spend much time to learn this application. 29. Interest to learn this application. 30. Easy to find information from help options of this application. 31. Learning new features of this application is not very complex. 32. It is not difficult to remember application terminology
Operability	ASQ [46], UMUX [44]	33. I agree to use all functions of this application frequently. 34. The application is not complex unnecessarily. 35. This application is easy to use. 36. This application sometimes does not stop unexpectedly.

		37. I know every time what to do next with this application.
Reliability	WAMMI [49]	38. I felt very confident using the application. 39. I will recommend this application to others. 40. Sequence of the screens of this application.
Satisfaction	SUS [31], SUMI [35], CSUQ [39], QUIS [42], UMUX [44], ASQ [46], SEQ [47], SMEQ [48], SUPR-Q [51]	41. Working with this application is satisfying. 42. There is enough information on the screen of the application. 43. I believe I became productive quickly using this application.
Training	CSQU [39], SUMI [35], ASQ [46], WAMMI [49]	44. I wouldn't need the support of a technical person to be able to use this application. 45. There is no need to read before you can use the application.
Understandability	WAMMI [49]	46. It is easy to make the application do exactly what you want. 47. The way of information presentation is clear and understandable
Usability Compliance	WAMMI [49]	48. Online help, on-screen messages, and other documentation. 49. I am satisfied to use all the support information of this application.

References

[1] Frank Possel-Doelken and Li Zheng, "Supply Chain Management - Actual Problems in the Supply Chain", Strategic Production Networks, Springer-Verlag, Berlin, Heidelberg 2002.

[2] Ahi, P., Searcy, C., A comparative literature analysis of definitions for green and sustainable supply chain management, Journal of Cleaner Production (2013), http://dx.doi.org/10.1016/j.jclepro.2013.02.018

[3] Keah Choon Tan, "A framework of supply chain management literature", European Journal of Purchasing & Supply Management 7 (2001) 39-48.

[4] D.M. Lambert, S.J. Garcia-Dastugue, K.L. Croxton, An evaluation of process- oriented supply chain management frameworks, Journal of Business Logistics 26 (1) (2005) 25–50

[5] Chao-Hsien Lin, Sheue-LingSheue-Ling Hwang, and Eric Min-yangWang, "Design for Usability on Supply Chain Management Systems Implementation", Human Factors and Ergonomics in Manufacturing, Vol. 19 (5) 378–403 (2009).

[6] Elif fatma babayiğit, "A usability evaluation framework and a case study on a supplier portal system", December 2003.p 229.

[7] Mark Ko, Ashutosh Tiwari, Jorn Mehnen Manufacturing, "A review of soft computing applications in supply chain management", Applied Soft Computing 10 (2010) 661–674.

[8] Areti Manataki, Yun-Heh Chen-Burger, Michael Rovatsos,, "SCOlog: A logic-based approach to analysing supply chain operation dynamics", Expert Systems with Applications 41 (2014) 23–38.

[9] Uta Juttner, "Supply chain risk management Understanding the business requirements from a practitioner perspective", The International Journal of Logistics Management Vol. 16 No. 1, 2005 pp. 120-141.

[10] Kenneth W. Green Jr, Pamela J. Zelbst, Jeramy Meacham, Vikram S. Bhadauria, (2012),"Green supply chain management practices: impact on performance", Supply Chain Management: An International Journal, Vol. 17 Iss: 3 pp. 290 – 305.

[11] Craig Shepherd and Hannes, "Measuring Supply Chain Performance: Current Research and Future Directions", The International Journal of Productivity and Performance Management Vol. 55 No. 3/4, pp. 242–258.

[12] Zhu, Q, Sarkis, J ,Geng, Y, "Green supply chain management in China: pressures, practices and performance", International Journal of Operations & Production Management Vol. 25 No. 5, 2005 pp. 449-468.

[13] ROBERT MASON*† and CHANDRA LALWANI‡ †Lean, "Transport integration tools for supply chain management", International Journal of Logistics: Research and Applications Vol. 9, No. 1, March 2006, 57–74.

[14] Zailani, Suhaiza, Jeyaraman, K. ,Vengadasan, G. ,Premkumar, R., " Sustainable supply chain management (SSCM) in Malaysia: A survey", International Journal of Production Economics, 140 (2012) 330–340.

[15] Chunguang Bai, Joseph Sarkis, Xiaopeng Wei and Lenny Koh, "Evaluating ecological sustainable performance measures for supply chain management", Supply Chain Management: An International Journal, Volume 17, Number 1, 2012, 78–92.

[16] Bhakthavatchalam, S., Diallo, C., Venkatadri, U. and Khatab, A., "Quality, Reliability, Maintenance Issues in Closed-Loop Supply Chains: A Review", International Federation of Automatic Control, 48-3 (2015) 460–465.

[17] Andrea Genovese, S.C. Lenny Koh, Niraj Kumar and Pradhumn Kumar Tripathi, "Exploring the challenges in implementing supplier environmental performance measurement models: a case study", Production Planning & Control: The Management of Operations, Volume 7287, Issue July 2014, Pages 1 -14.

[18] Modrak, Vladimir, Marton, David, "Modelling and complexity assessment of assembly supply chain systems", International Journal of General Systems, Volume 48, April 2015, Pages: 428-435.

[19] Peiris, K. Dharini Amitha, Jung, Jin, Gallupe, R. Brent, "Building and evaluating ESET: A tool for assessing the support given by an enterprise system to supply chain management", Decision Support Systems, Volume 77, 2015, Pages 41- 54.

[20] Jim A. McCall, Paul K. Richards, Cene F. Walters, Factors in Software Quality Concept and Definitions of Software Quality, Final Technical Report, November 1977.

[21] Boehm et al, Characteristics of Software Quality, North Holland Publishing, Amsterdam, Netherlands, 1978.

[22] A. Madan and S. K. Dubey, "Usability Evaluation Methods: A Literature Review," Volume. 4, no. 02, pp. 590–599, 2012.

[23] Rafa E. Al-Qutaish, "Quality Model in Software Engineering Literature: An Analytical and Comparative Study", Journal of American Science, Volume. 6(3), 2010.

[24] Sanjay Kumar Dubey, Ajay Rana and Mridu, "Analytical Comparison of Usability Measurement Method", International Journal of Computer Applications (0975-8887), Volume 39-No. 15, February 2012.

[25] Jakob Nielsen "Usability 101: Introduction to Usability", [Online]. Available: https://www.nngroup.com/articles/usability-101-introduction-to-usability/, January 4, 2012.

[26] Drs. Erik P. W. M. van Veenendaal CISA, "Questionnaire based usability testing", Published in Conference Proceedings European Software Quality Week, Brussels, November 1998.

[27] NurSukinah Aziz, AdzharKamaluddin and NorrozilaSulaiman, "Assessing Web Site Usability Measurement", IJRET: International Journal of Research in Engineering and Technology, Volume 2, Issue 9, Sep-2013.

[28] P. Botella, X. Burgues, J.P. Carvallo, X. Franch, G. Grau, J. Marco, C. Quer, "ISO/IEC 9126 in practice: what do we need to know?".

[29] Ahmed Seffah, Mohammad Donyaee, Rex B. Kline and Harkirat K. Padda, "Usability measurement and metrics: A consolidated model", Software Quality Journal (2006) 14: 159–178, Springer Science + Business Media, Inc. 2006.

[30] ZafarMasood, Shang Xuequn, and Jamal Yousaf, "Usability Evaluation Framework for Software Engineering Methodologies", Lecture Notes on Software Engineering, Vol. 2, No. 3, August 2014.

[31] Brooke, J. (1996) SUS: a "quick and dirty" usability scale. In P W Jordan, B Thomas, B AWeerdmeester & A L McClelland (eds.) Usability Evaluation in Industry.

[32] Aaron Bangor, Philip T. Kortum & James T. Miller, "An Empirical Evaluation of the System Usability Scale", Intl. Journal of Human–Computer Interaction, 24(6), 574–594, 2008.

[33] James R. Lewis and Jeff Sauro, "The Factor Structure of the System Usability Scale", In Proc. SIGCHI 2005, ACM Press (2005), 401-409.

[34] Kraig Finstad, "The System Usability Scale and Non-Native English Speakers", Journal of Usability Studies, Vol.1, Issue 4, August 2006, pp.185-188.

[35] Jurek Kirakowski and Mary Corbett, "SUMI: the Software Usability Measurement Inventory" British Journal of Educational Technology Volume 24, Issue 3, pages 210–212, September 1993. Article first published online: 27 OCT 2006.

[36] Dr Jurek Kirakowski, (2016, September 26). What is SUMI? [Online]. Available: http://sumi.ucc.ie/whatis.html

[37] Dr Jurek Kirakowski, (2016, September 26). Software Usability Measurement Inventory (SUMI). [Online]. Available: http://sumi.ucc.ie/en/

[38] Mansor, Z., Kasirun, Z. M., Yahya, S., and Arshad, N. H. The Evaluation of WebCost Using Software Usability Measurement Inventory (SUMI). International Journal of Digital Information and Wireless Communications (IJDIWC) 2, 2 (2012), 197-201.

[39] Lewis, J. R. "Tradeoffs in the Design of the IBM Computer Usability Satisfaction Questionnaires", International Journal of Human-Computer Interaction 1, (1999), 1023-1027.

[40] Fruhling, Ann and Lee, Sang, "Assessing the Reliability, Validity and Adaptability of PSSUQ" (2005). AMCIS 2005 Proceedings. Paper 378.

[41] Chin, J.P., Diehl, V.A., Norman, K.L. (1988), "Development of an Instrument Measuring User Satisfaction of the Human-Computer Interface", ACM CHI'88 Proceedings, 213-218.

[42] QUIS: The Questionnaire for User Interaction Satisfaction, [Online]. Available: http://www.cs.umd.edu/hcil/quis/

[43] Goknur Kaplan Akıllı, "User Satisfaction Evaluation of an Educational Website", The Turkish Online Journal of Educational Technology – TOJET January 2005 ISSN: 1303-6521 volume 4 Issue 1 Article 11.

[44] Finstad, K. The usability metric for user experience. Interacting with Computers, 22 (2010), 323-327.

[45] James R. Lewis, Brian S. Utesch and Deborah E. Maher, "UMUX-LITE – When There's No Time for the SUS", Session: Evaluation Methods 2, CHI 2013: Changing Perspectives, April 27–May 2, 2013, Paris, France.

[46] Lewis, J. R. (1995) IBM Computer Usability Satisfaction Questionnaires: Psychometric Evaluation and Instructions for Use. International Journal of Human-Computer Interaction, 7:1, 57-78.

[47] Sauro, J., Dumas, J.S. Comparison of Three One-Question, Post-Task Usability Questionnaires. ACM, Boston, pp. 1599-1608. 2009.

[48] Jeff Sauro, and Joseph S. Dumas. Comparison of three one-question, post-task usability questionnaires. CHI 2009, April 4–9, 2009, Boston, Massachusetts, USA.

[49] Demo Survey, [Online] Available: http://www.wammi.com/samples/

[50] Using WAMMI, [Online] Available: http://www.wammi.com/using.html

[51] Jeff Sauro "SUPR-Q: A Comprehensive Measure of the Quality of the Website User Experience" Journal of Usability Studies, Vol. 10, Issue 2, February 2015, pp. 68-86.

[52] Cortina, J. M., "What is coefficient alpha? An examination of theory and application", Journal of Applied Psychology 78, 1 (1993), 98-104.

[53] Cerny, C.A., & Kaiser, H.F. (1977). A study of a measure of sampling adequacy for factor-analytic correlation matrices. Multivariate Behavioral Research, 12(1), 43-47.

[54] Kaiser, H. 1974. An index of factor simplicity. Psychometrika 39: 31–36.

[55] W.E. Wong, J.R. Horgan, S. London, H. Agrawal, "A study of effective regression testing in practice", The Eighth International Symposium on Software Reliability Engineering, 2-5 Nov. 1997.

[56] Md Alamgir Kabir, Bo Han, "An Improved Usability Evaluation Model for Point-of-Sale Systems", International Journal of Smart Home, Vol. 10, No. 7 (2016), pp. 269-282.

[57] Md Alamgir Kabir, Muaan Ur Rehman, Shariful Islam Majumdar, "An Analytical and Comparative Study of Software Usability Quality Factors", 2016 7th IEEE International Conference on Software Engineering and Service Science, August 26 – 28, (2016) pp. 800-804.

[58] Template of Survey Protocol, https://community.dur.ac.uk/ebse/resources/templates/SurveyTemplate.pdf

[59] Wohlin, Claes, Martin Höst, and Kennet Henningsson. "Empirical research methods in software engineering." Empirical methods and studies in software engineering. Springer Berlin Heidelberg, 2003. 7-23.

[60] Gray, David E. Doing research in the real world. Sage, 2013.