

ICWEP2022

<https://icwep.uitm.edu.my/index.php>

International Conference on Wood and Eco-Products 2022

Best Western Hotel iCity, Shah Alam, Selangor, Malaysia 15-16 Nov 2022

Organiser: Faculty of Applied Sciences, Universiti Teknologi MARA (UiTM), Shah Alam
Malaysia & Research Nexus UiTM., Office of Deputy Vice-Chancellor (Research & Innovation)



Effects of Age and Mobile Technology Usage on Employee Engagement

**Nurul Salizawatee Mahpar^{1*}, Nor Lelawati Jamaludin¹,
Norina Ahmad Jamil², Nur Izzatul Iffah Shuib²**

** Corresponding Author*

¹Department of International Business and Management Studies, UiTM Puncak Alam, Malaysia

²Department of Technology and Supply Chain Management Studies, UiTM Puncak Alam, Malaysia

*salizawatee@uitm.edu.my, norlelawati0019@uitm.edu.my, norina2248@uitm.edu.my, nurzatul505@gmail.com

Tel *+60 3258 7117

Abstract

This study begins with realizing the essential contributions of mobile technology usage factors which are function, accessibility, cost, and security on employees' engagement in Malaysia's healthcare industry's workplace. The independent variables of mobile technology usage factors include function, accessibility, cost and security, while employee engagement is the independent variable. The sampling frame concentrates on the employees in KPJ Tawakkal Kuala Lumpur. Findings suggest that function, accessibility, and security influenced KPJ Tawakkal Kuala Lumpur's employee engagement. The moderating variable, age, was found to be insignificant in influencing the relationship between mobile technology usage factors (function, accessibility, cost, security) and employees' engagement.

Keywords: Mobile Technology; Security; Age; Employee Engagement

eISSN: 2398-4287 © 2023. The Authors. Published for AMER and cE-Bs by e-International Publishing House, Ltd., UK. This is an open-access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers) and cE-Bs (Centre for Environment-Behaviour Studies), College of Built Environment, Universiti Teknologi MARA, Malaysia.

DOI: <https://doi.org/10.21834/e-bpj.v8iS117.5454>

1.0 Introduction

Employees work and interact today differs remarkably from years ago (Slattery, 2013), the reason was mobile devices. Malaysia has employee engagement levels below the global average of 65 percent (Ayob & Nor, 2019). Therefore, there is a need to understand why this happened despite the government's extensive investment (Malaysian Budget, 2020). Global competition has forced Malaysian businesses to adapt to the newest technology to lower operational costs, increase employee engagement and enhance customer satisfaction (Carayannis & Clark, 2011). Since mobile technology is massively used, it is important how Malaysian employees manage its usage to suit Malaysian organizational culture. Currently, the technologies are used widely with minimal regard for their suitability in the healthcare industry usage (Harun, 2020).

Ulman (2013) suggested mobile technology enables employees to remain connected, enhances teamwork and overall organizational engagement and productivity. It is common nowadays that mobile technology users utilize their devices for personal and work-related activities (Yun, Kettinger, & Lee, 2012) and being supported by employers (Gorski, 2017). While mobile technology characteristics are essentials to contribute greater work engagement (Alley & Gardiner, 2012) and age tested as the moderating variable, organizations need to realize that it is crucial to engage employees to

eISSN: 2398-4287 © 2023. The Authors. Published for AMER and cE-Bs by e-International Publishing House, Ltd., UK. This is an open-access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers) and cE-Bs (Centre for Environment-Behaviour Studies), College of Built Environment, Universiti Teknologi MARA, Malaysia.
DOI: <https://doi.org/10.21834/e-bpj.v8iS117.5454>

create a stable workforce. Based on theory of task-technology fit (TTF) by Gebauer (2008), this study uses data from KPJ Tawakkal Specialist's employees to address two key questions: What is the effect of mobile technology usage factors (function, accessibility, cost, security) on employee engagement? And does age influence the relationship between mobile technology usage factors and employee engagement?

2.0 Literature Review

Technology is crucial to connect an organization's entire workforce to increase employee's contribution to an organization. Intranets and corporate social networks have unlimited functionalities in exchanging resources and knowledge between employees. Yet, unable to encourage feedback, can be overwhelmed quickly, cannot evaluate engagement levels, and cannot be used offsite. In contrast, mobile technology can reach the entire global workforce, collect data, provide feedback, and could generate insights and reports on engagement-related matters, encouraging on-site and offsite employees with facilities to remain engaged and have a voice. Besides, information management and mobile technology accessibility are directly associated with employer-employee trust (Hightower et al., 2012).

2.1 Employee Engagement

Employees who are intellectually and emotionally linked to their job are said to be more engaged at work (Gibbons, 2006). Commitment, passion for one's work and devotion are among primary attitude and behavior-based components of work engagement (Gallup, 2012). Well-equipped employees led to a more organized job which drives future engagement (Bakker & Demerouti, 2008). Employee engagement plays a significant role in an organization's competitiveness and innovation (Mametsaitova, 2017). Organizations with strong employee engagement have doubled the rate of success compared to the lower one's (Baldoni, 2013). Employee engagement led to lower absenteeism, higher retention, fewer safety incidents, increased productivity, higher firm profits, and increased customer loyalty and satisfaction (Gallup, 2012).

2.2 Mobile Technology Functions and Employees Engagement

Five categories of acceptance for mobile technologies: digital access devices, communication tools, capture tools, representational tools, and analytical tools (Churchill & Churchill, 2008). Most employees and managers now use mobile technologies to share and communicate ideas and tasks. Through digital tools, documents and workflows are accessible from anywhere enabling employees to collaborate with colleagues in real-time. Full support given by the employer increases employees satisfaction and maximizes operational effectiveness (KitelyTech, 2019).

H1: There is a positive and significant relationship between the function of mobile technology and employee engagement.

2.3 Mobile Technology Accessibility and Employees Engagement

Mobile technology accessibility is the degree to which everyone can use an object, visit a place, or access a service (Acosta-Vargas, 2019). It facilitates portability for its user because of the ability to work wirelessly. It allows employees to work outside of their usual workplace, changing the relevance of location in the workplace (Cox, 2009). For employees who use a mobile technology app such as cloud file sharing, the collaboration between them becomes more fluid (Carlos, 2017) and enables them to connect from anywhere, providing them with immediate access to the documents and materials needed for collaborative work. Information and knowledge flow in and out of an organization without borders, creating a rich and potentially effective information environment (Nestian & Tita, 2019). Conversely, it also pressures the workers to be readily accessible and responsive to work demands. All these cause stress and tension in both work and non-work domains (Day et. al., 2010).

H2: There is a positive and significant relationship between the accessibility of mobile technology and employee engagement.

2.4 Cost of Mobile Technology and Employees Engagement

The shortcomings of mobile technology are device cost and cyber security (Anckar & D'Incau, 2002). Employees may spend an amount of money each month for work-related activities with the use of mobile technology. Newest technologies and devices are often costly and require ongoing maintenance and upkeep. People may see that spending on this is a waste. Yet, smaller handheld design and the slow reduction of usage charges made people's expectations change that mobile technology, such as smartphones, was more helpful than fixed phones (Harris & Cooper, 2019). In addition, cloud-based services are cheaper than any system technology and can also give organizations more flexibility and boost employee efficiency (Sandra, 2019). While mobile technology devices are the essential first step to getting online for billions of people worldwide, they remain too expensive, especially in 70 low and middle-income countries

(Woodhouse, 2020). These make the most significant factor that keeps people offline and not using mobile technology.

H3: There is a positive and significant relationship between the cost of mobile technology and employee engagement.

2.5 Security of Mobile Technology Devices and Employees Engagement

Mobile technology has become a delightful tool because of its security appliances. Security features ranked second among the factors considered when the employee selects a mobile technology (Clarke & Furnell, 2005). Mobile technology security refers to programs designed to secure the confidential information that notebooks, smartphones, tablets, wearable, and other handheld devices store and distribute. Indeed, there are four types of security services which are authentication (entity authentication, message authentication), confidentiality (data confidentiality, privacy), availability, and integrity (Fang, Qian & Hu, 2017). Those securities make employees delighted to use mobile technology when doing their work. They know that their confidential information can be secured and easy access whenever and wherever they are.

H4: There is a positive and significant relationship between the security of mobile technology devices and employee engagement.

2.6 Employee's Age - Moderating Variable

Many corporations have four Gens of employees working side by side, and each Gen has its own set of requirements for the workplace (Lester *et al.*, 2012). This age group is typically connected with early technology adoption and uses relatively advanced mobile technology features (Kowalski & Goldstein, 2006). Baby boomers and Gen X displayed a lower sense of overall functionality, usefulness, and ease of use than Gen Y and Z even though they undertake the same job using the same mobile technology (Zhou, Rau & Salvendy, 2014). Workers with different ages, and consistently different needs, may respond differently to the same technological development practices (Maurer, Weiss & Barbeite, 2003). Age is relevant in these studies as it represents the evolutions in people's lives over time (Kooij *et al.*, 2010). There is much evidence that employees' motives change with age. Grover (2020) found that satisfaction with mobile technology development in organizations' practices has a stronger negative relationship with willingness to change companies for younger workers than older workers. Practices related to mobile technology usage and commitment diminishes with age (Kooij *et al.*, 2010) and need further study (Karatepe & Ngeche, 2012) where most of the study focused on developed countries such as the United States (Clarke, *et al.*, 2020).

H5: There is a positive influence of the moderator (age of user) on the relationship between the independent variables (function, accessibility, cost, and security provider) and employee engagement.

3.0 Methodology

The population involves employees who work with KPJ Tawakkal Specialists. The total number of employees in the management department is 156 people. The selection of a management department due to several reasons, such as the viability of an organization, asset specificity (need for mobile technology investment), uncertainty, and the economic aspect, support from all organizational factors, especially the management department, is crucial (Liang, Huang, Yeh, & Lin, 2007). This study uses cluster sampling, which divides the population into smaller groups, but each segment should share traits with the entire sample. Therefore, the researcher randomly selects entire subgroups instead of sampling individuals from each subgroup. The sample size is 113 (Krejcie & Morgan, 1970). Questionnaires served as an instrument for data collection.

4.0 Findings

All instruments have only modest reliability, so reliabilities of 0.60 or 0.50 will suffice (Sekaran, 2003). Cronbach alpha for all independent variables, functions, accessibility, cost, and security, is .851, 0.833, 0.767, and 0.841, respectively. Meanwhile, Cronbach's alpha for the dependent variable, employee engagement, has an excellent value of 0.913. Mahalanobis Distance was used to test the multivariate outliers indicating two multivariate outliers. According to Chi-square statistics table $P=.001$, the five independent variables are 19.73 (20.52). The initial data screening process shows no outliers. In addition, results from the Kolmogorov-Smirnov, and Shapiro-Wilk and Skewness and Kurtosis test show that the residuals are all distributed normally. The Durbin-Watson value was 2.470 indicates non-autocorrelation, both positive and negative, occurs between the residuals in the regression models.

4.1 Demographics

Out of 116 respondents, most of the respondents which are 74 (63.8%) are female employees. Meanwhile, 42 (36.2%) of them are male employees. Moreover, 46 (39.7%) are between 31-39 years old, 36 (31%) are between 21-30 years old, and 27 (23.3%) are between 40-49 years old, and only six respondents (6%) are 50 years old and above. Most of the respondents, 63 (54.3%), are diploma holders, 27 (23.3%) are bachelor's degrees, 17 (14.7%) are SPM, 7 (6.00%) are STPM, and 2 (2%) are master's degrees. For the respondents' job level, 54 (46.6%) work at the intermediate level, 37 (31.9%) work in middle-level management, 12 (10.3%) work in other levels of management, 5 (4.3%) works at the executive level, 6 (5.2%) works at entry level. Lastly, 2 (1.7%) are the senior manager. For the technological adoption level, most of the respondents, 66 (56.9%), are the average technology adopter.

5.0 Discussion

H1: There is a positive and significant relationship between the function of mobile technology and employee engagement. Mobile technology functions have a positive relationship with employee engagement. The p-value is ($r = 0.774$, $p = 0.000$, $p < 0.01$) and standardized Beta value is ($\beta .427$, $p = 0.000$, $p < 0.05$), means an increase in 1 unit in functions of mobile technology will cause the employee engagement to increase by 0.427 units. Hence, strong, positive, and significant relationships exist. The finding is consistent with Alley & Gardiner (2012), where mobile technology functions were essential determinants and significantly affected employee engagement. Furthermore, the mobile technology's hardware (external look-and-feel) and software (apps) components are the standard criteria to define its usefulness or ease of use. Many of the internal tools in mobile technology used today are like their external counterparts Miller-Merrell (2012). Onyema, Deborah & Faluyi (2019) suggested the potential and usefulness of mobile technology can boost employees' productivity and job performance where the applications make employees' jobs more accessible, faster, and more rewarding. Moreover, mobile technology provides access to innovative applications and information critical for the company's survival and competitiveness in the digital age.

H2: There is a positive and significant relationship between the accessibility of mobile technology and employee engagement

There is a positive relationship between the accessibility of mobile technology and employee engagement ($r = 0.647$, $p = 0.000$, $p < 0.01$), and the standardized Beta coefficients value for the accessibility variable is ($\beta .236$, $p = 0.000$, $p < 0.05$). This finding exhibits that the increase of 1 unit of accessibility will cause employee engagement to increase by 0.236 units. Hence, there is a strong, positive, and significant relationship between the accessibility of mobile technology and employee engagement. The finding is confirmed with Lebioda, Hahn & Mattos Martins (2019). The usefulness and ease of use factor increase the mobile technology usage behavior among the employees as the technology changes the living standards and transforms how employees interact, increasing work performance and employee engagement. Employees agreed that they finished work tasks more efficiently with mobile technology usage (Allen & Bryant, 2011). Digital and mobile technology devices greatly benefited healthcare by increasing access to information across states and hospitals and improving professionals' ability and accuracy to assess and monitor health-related symptoms (Nemec & Chan, 2017). Hence, job satisfaction increases, and engagement improves tremendously.

H3: There is a positive and significant relationship between the cost of mobile technology and employee engagement.

The cost of mobile technology has a weak positive relationship with employee engagement. The $r = 0.233$, $p = 0.161$, $p < 0.01$, and the standardized Beta coefficients value for the cost variable is ($\beta .024$, $p = 0.000$, $p > 0.05$), which means the increase in 1 unit of the cost will cause the employee engagement to decrease by 0.024 units. Hence there needs to be a more robust, positive, and significant relationship between the cost of mobile technology and employee engagement. The result is consistent with (Kuerbis, et al., 2016). Older generations on fixed incomes will not be able to purchase any mobile technology devices, much less the newer ones. Nearly half (48%) of individuals who owned mobile technology like smartphones in the U.S. terminated their service due to its burdensome cost (Pew Research Center, 2014) and insufficient to explain employee engagement.

H4: There is a positive and significant relationship between the security of mobile technology devices and employee engagement.

There is a moderate positive relationship between mobile technology security and employee engagement. $r = 0.458$, $p = 0.000$, $p < 0.01$, and the standardized Beta coefficient is ($\beta .235$, $p = 0.000$, $p < 0.05$) indicates the increase of 1 unit of security will cause employee engagement to increase by 0.235 units. Thus, a moderate, positive, and significant relationship exists. Users tend to have increased confidence in their abilities to protect their mobile devices with the security of contemporary mobile technology (Weichbroth & Lysik, 2020). Employees feel more secure in storing and

saving their work on their mobile devices and become more engaged in work without worrying about losing any data and information as maintaining privacy and confidentiality is essential (Zhou, Rau & Salvendy, 2013). The older Gens and younger Gens cared about protection of private information. Therefore, security and privacy features are the issues of securing private information stored in mobile technology.

H5: There is a positive influence of the moderator (age of user) on the relationship between the independent variables (function, accessibility, cost, and security provider) and employee engagement.

The age of a user of mobile technology has a very weak relationship with employee engagement ($r = 0.092$, $p = 0.333$, $p < 0.05$), and the standardized Beta coefficients value for the age variable is ($B = 0.008$, $p = 0.000$, $p > 0.05$). It shows that the increase in 1 unit of the age of the user will cause employee engagement to increase by 0.078 units. A weak and insignificant relationship between mobile technology users' age and employee engagement exists and is likely to be confirmed with Pheeraphuttharakoon (2015) where there was no significant gap in mobile technology usage among different Gens. Although there is a small gap between the young Gen and the older Gen, the older Gen is still using mobile technology at a basic level, such as making phone calls, emailing, and browsing. All Gens, including the older Gen, can and are often willing to engage with mobile technology (Kuerbis, 2016).

6.0 Conclusion & Recommendations

Future studies need to include other variables that may influence employee engagement, such as the employee's emotional exhaustion and organization rules and policy, as additional variables that may affect employee engagement. For example, with a growing number of technologies in the workplace, some employers have become concerned with how availability to work during off-job time could impact employees' engagement and well-being (Ohly & Latour, 2014). Therefore, it is crucial to consider the policy companies might have implemented in mobile technology usage during work times. In addition, functions, accessibility, and security factors in mobile technology significantly enhance employee engagement in the organization. These results can provide ideas on how to develop and improve technology in the organization to make them more accessible and inclusive.

References

- Aaron Smith (2015) U.S. Smartphone Use in 2015. Pew Research Center. Retrieved from <https://www.pewresearch.org/internet/2015/04/01/us-smartphone-use-in-2015/>.
- Ben-Asher, N., Sieger, H., Ben-Oved, A., Kirschnick, N., Meyer, J., & Moller, S. (August 30 - September 2, 2011). On the Need for Different Security Methods on Mobile Phones. Proceedings of the Conference on Human-Computer Interaction with Mobile Devices and Services, Mobile HCI 2011 (pp. 466-473). Stockholm, Sweden: ResearchGate.
- Chesley, N. and Johnson, B. E. (2014) 'Information and Communication Technology Use and Social Connectedness over the Life Course', *Communication & Media*, 8(6), pp. 589-602.
- Dubbelt, L., Demerouti, E. and Rispen, S. (2019) 'The Value of Job Crafting for Work Engagement, Task Performance, And Career Satisfaction: Longitudinal and Quasi- Experimental Evidence', *European Journal of Work and Organizational Psychology*, 28(2), pp. 1-15.
- Elias G. Carayannis & Stephen C. Clark (2011) 'Do Smartphones Make for Smarter Business? The Smartphone CEO Study', *Journal of the Knowledge Economy* volume, (2), pp. 201 [Online]. Available at: <https://doi.org/10.1007/s13132-011-0044-9> (Accessed: 02 December 2020).
- Gruman, G. (2012, October 12). Afraid of BYOD? Intel shows a better way. Infoworld, Inc. Retrieved from <http://www.infoworld.com/>
- J. Goodman, S. Brewster, and P. Gray, (2004) 'Older People, Mobile Devices and Navigation', Department of Computing Science, University of Glasgow, pp. 13-14.
- Kaarthic, G. V. V., Arfath, M. M. and Divya, D. (2017) 'Data Attacks and Security Techniques in Mobile Computing', *International Journal of Scientific & Engineering Research*, 8(4), pp. 129-135.
- Kahn, W. H. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33, 692-724. doi:10.2307/256287
- Kahle-Piasecki, L., C. Miao and S. Ariss, (2012). Managers and the mobile device: m-learning and m-business: Implications for the United States and China. *Journal of Marketing Development & Competitiveness*, 6 (1), p. 58-68.
- Miller-Merrell, J. (2012). The workplace engagement economy where HR, social, mobile, and tech collide. *Employment Relations Today*. n.d. 1-9.
- Moyi, E. D. (2019). The effect of mobile technology on self-employment in Kenya. *Journal of Global Entrepreneurship Research*, 9-56.
- Sandra Melo (2019) 7 Advantages of mobile technology, Available at: <https://mydatascope.com/blog> (Accessed: 27 December 2020).

Schaufeli, W. B., Salanova, M., González-romá, V. and Bakker, A. B. (2002) 'The Measurement of Engagement and Burnout: A Two Sample Confirmatory Factor Analytic Approach', *Journal of Happiness Studies*, (3), pp. 71-92.

Weichbroth, P., and Łysik, Ł. (2020) 'Mobile Security: Threats and Best Practices', *Mobile Information Systems*, pp. 1-15 [Online]. Available at: <https://doi.org/10.1155/2020/8828078> (Accessed: 20 June 2021).

Xie, K., Heddy, B. C., and Vongkulluksn, V. W. (2019) 'Examining Engagement in Context Using Experience-Sampling Method with Mobile Technology', *Contemporary Educational Psychology*, 59(1), pp. 80-88.

Zhou, J., Rau, P. P. & Salvendy, G. (2014) 'Older Adults' Text Entry on Smartphones and Tablets: Investigating Effects of Display Size and Input Method on Acceptance and Performance', *International Journal of Human-Computer Interaction*, 30(9), pp. 727- 739.