

Personal Cloud Computing Adoption: Integrating IT Mindfulness with TAM

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Abstract: While extant literature is replete with studies on cloud computing adoption by organizations, there is a dearth of empirical literature on personal cloud computing adoption. This study aims at understanding how individuals adopt cloud computing within the Kenyan context. Specifically, the study integrates IT Mindfulness (ITM) with TAM in order to understand Intention to Adopt (ITA) personal cloud storage services. A priori model consisting of ITM, TAM and ITA variables was constructed. Structural Equation Modelling (SEM) was used with a convenient sample of 98 students drawn from two public universities to test and validate the model. The results indicate significant positive relationships amongst 1) ITM and ITA, 2) ITM and Perceived Usefulness (PU) and 3) PU and Perceived Ease of Use (PEU). The study, by introducing IT Mindfulness, enriches the theoretical repertoire of IT innovation adoption literature. The cloud services vendors will find the results useful in understanding how personal traits determine adoption.

Keywords: Cloud Computing Adoption, IT Mindfulness, SEM, TAM, Cloud Storage

1. Introduction

The classical definition of cloud computing is that it is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction [1]. Cloud computing is a technological paradigm that can be described as a way of extending computing resources through virtualization [2]. The primary use of cloud computing has traditionally been an outsourcing alternative, where an organization can transfer their IT-infrastructure from their own datacentre to the ‘Cloud’, and thereby increase cost-effectiveness and rationalization [3]. Generally, cloud computing eliminates the high upfront and maintenance costs associated with the captive on premise IT infrastructure installation and avails economies of large scale that accompany pooling of resources [4]. A recent study predicts that by the year 2020, more than \$1 trillion in IT expenditure will be directly or indirectly toward migration to cloud computing systems [5]. As such, a fierce competition is expected among major cloud service providers such as Amazon, Microsoft, Salesforce, and Google for a share in the cloud’s expanding market.

The growing importance of cloud computing to businesses and individuals has not only attracted business entities and investors but also researchers and practitioners. While cloud computing services have grown dramatically in the recent past and continue to increase in popularity for both individual users and organization users, most research on cloud computing have focused on organizational or business users. Despite the fact that personal use of cloud services by individual consumers is an important component in the cloud computing ecosystem [3], researchers have paid less attention to individual adoption of cloud computing [6]–[8]. In fact, many well-known cloud solutions such as Microsoft’s

OneDrive, Google drive and Dropbox target not only organizations but also individuals who are critical in determining the popularity and success of these solutions. Therefore, it is necessary to expand our knowledge on when, how and why individuals adopt cloud services for personal use.

Personal cloud computing use is growing in popularity as users are choosing to not only store their personal data onto online platforms but also work with cloud-based applications. By uploading their personal data onto cloud infrastructure, individual users are able to access the data from various devices (computers, tablets and smartphones), in addition to allowing them to collaborate and share the data with others. According to an analysis by Allied Market Research, the global personal cloud computing market is expected to be worth \$89.9 billion by 2020 [6]. Further, a growing customer awareness is expected to promote the growth of personal cloud computing in the future.

Extant literature in cloud computing adoption has examined a handful of factors that determine adoption decisions by individuals. Most of these studies are based on the technology acceptance model (TAM; [9], theory of planned behaviour (TPB; [10], diffusion of innovation (DOI; [11] and unified theory of acceptance and use of technology (UTAUT; [12] or a combination of two or more of these theories. Studies that have employed TAM and DOI (for example, [13]–[15] have focussed more on technological aspects of cloud computing adoption at the expense of the effect of individual factors in the adoption process. A number of studies have also used UTAUT, which was developed as an integrated model that incorporates TAM, TPB and DOI variables. A number of UTAUT based studies [16] have described it as a newer theoretical approach with qualities to strengthen the weaknesses of the previous models. In order to achieve a higher explanatory power, researchers have proposed integrated models primarily based on TAM and TPB/DOI for investigating users' technology acceptance behaviour[6]. Given the unique features of cloud computing, current studies [6], [7], [16], [17] have incorporated personal data risks and trust as essential indicators of cloud computing adoption for personal use. This study extends the current models by integrating IT Mindfulness with TAM. IT Mindfulness reflects an individual's propensity to actively pursue new ways of using and getting involved with IT [18].

2. Objectives

The main objective of this study is to integrate IT Mindfulness into TAM as a way of seeking extended understanding of the Intention to Adopt personal cloud computing storage services. More specifically:

- i) The relationship between Perceived Usefulness (PU) and the Intention to Adopt (ITA) personal cloud computing storage services.
- ii) The relationship between Perceived Ease of Use (PEU) and the Intention to Adopt (ITA) personal cloud computing storage services.
- iii) The relationship between Perceived Usefulness (PU) and the Perceived Ease of Use (PEU) of personal cloud computing storage services.
- iv) The relationship between IT Mindfulness (ITM) and the Intention to Adopt (ITA) personal cloud computing storage services.
- v) The relationship between IT Mindfulness (ITM) and the Perceived Usefulness (PU) of personal cloud computing storage services.
- vi) The relationship between IT Mindfulness (ITM) and the Perceived Ease of Use (PEU) of personal cloud computing storage services.

3. Business Case

As a metaphor, the notion of “cloud” gives a constantly shifting and evolving construct a simpler and more abstract form [2]. This abstraction hides the complex systems of computer resources like datacenters, hard drives, routers, cables, switches, networks and people, which form a cloud computing ecosystem. This abstraction makes it possible for non-technical users to view cloud computing not in its technical composition but as a utility just like electricity and piped water. The business value of cloud computing has surged due to the conceptualization of IT resources as services that are priced on the basis of “pay-as-you-use” rather than “pay-as-you-own”. Cloud computing services are delivered as Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS) through the SPI model [19]. SaaS layer provides applications that run on the cloud eliminating the need to install and run the applications on the users’ computer [3]. SaaS is a software that is owned, delivered and managed remotely by one or more providers and offered on a pay-per-use mode[20]. PaaS is a cloud service targeting developers. It facilitates the development and deployment of applications by providing operating system support and software development frameworks that frees the developers from managing the underlying software and hardware layers. IaaS comprise computing resources like computational power (processors) and data servers that can be virtualized and instances provided as a service to individual users [21].

This study is focussed on the use of personal cloud storage services offered under the IaaS cloud layer. The justification for this decision is that a number of IaaS providers offer their services using a freemium model. For example, cloud storage providers include a free cloud storage space for users. From a business perspective, these cloud storage services have morphed from being simple storage facilities to cloud storage platforms. The value of a platform as a business model is to reduce transactional costs and spur innovation [22]. The cloud storage platforms provide services to corporate users as well as individual users. The individual users’ storage platforms not only provide storage services but also provide tools for file sharing, team collaboration and multi-device access. These personal cloud storage platforms therefore act as intermediaries that facilitate transactions between parties [2]. The personal cloud storage platforms act as intermediaries between the cloud storage service vendors, cloud storage service consumers, cloud storage service brokers and Internet service providers. For the cloud storage vendors, the personal cloud storage usage presents a growing market expected to rise to over 2.3 billion users by 2020 [23]. Table 1 below gives a summary of some popular personal cloud storage vendors in 2019 [24].

Table 1: Cloud Service Models

| Company (Provider) | Cloud Storage Service |
|---------------------------|------------------------------|
| Google | Google Drive |
| Microsoft | OneDrive |
| Dropbox | Dropbox |
| Box | Box |
| Pro Softnet Corporation | IDrive |
| J2 Global | SugarSync |
| Spider Oak | OneBackup |
| Apple | iCloud Drive |

4. Theoretical Perspectives and Research Model

The technology acceptance model (TAM) that was proposed by Davis [25] has become a widely accepted model for predicting and explaining user behaviour and IT adoption at a personal level. Apart from being used to explain and understand IT innovations adoption in

general [26], [27], the TAM has also been used to understand and explain cloud computing adoption in particular [28]–[31]. The TAM constructs are Perceived Ease of Use (PEU), Perceived Usefulness (PU) and Intention to Adopt (ITA). Studies have provided evidence that there is impact of PU and PEU on ITA [17], [32]. Therefore, this paper presents the following hypotheses:

H1: There is a relationship between Perceived Usefulness (PU) and the Intention to Adopt (ITA) personal cloud computing storage services.

H2: There is relationship between Perceived Ease of Use (PEU) and the Intention to Adopt (ITA) personal cloud computing storage services.

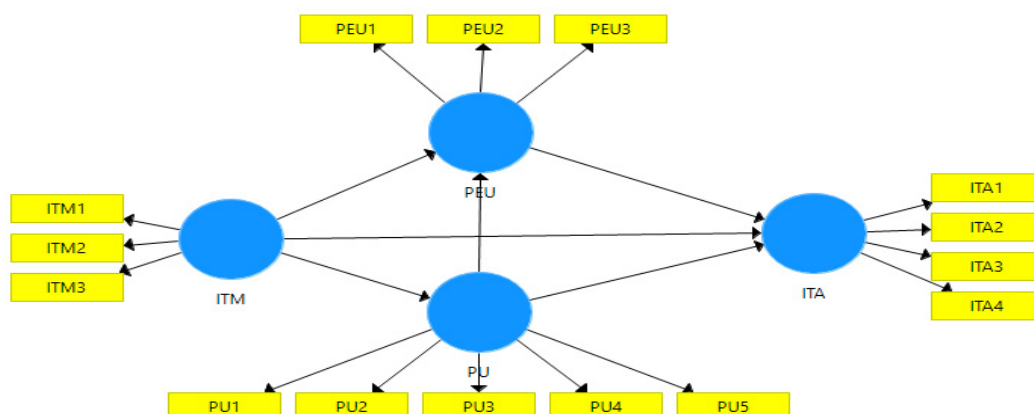
H3: There is a relationship between Perceived Usefulness (PU) and the Perceived Ease of Use (PEU) of personal cloud computing storage services

Cloud computing has garnered increasing attention for both organizations and individuals. For individual users, there are a variety of cloud services and vendors. When seeking to perform a task, users are exposed to a variety of cloud storage services to choose from and they usually lack adequate prior knowledge about the technologies. An important factor in overcoming the uncertainties arising from inadequate knowledge is one’s IT Mindfulness. IT Mindfulness reflects an individual’s propensity to actively pursue new ways of using and getting involved with IT [18]. Further, Mindfulness in technology acceptance is seen as the vigilant state of mind of a person that allows him/her to examine the technology being considered more comprehensively and within context [33]. Studies show that Mindfulness supports making discriminatory adoption decisions due to extended environmental scanning [34], [35]. Since mindfulness implies that one is aware of local contexts, a person who is mindful in accepting a technology is more likely to think more carefully about how this technology could meet his/her own needs [33]. In Information Systems research, Mindfulness has been used as a prerequisite for IT innovation adoption [34]. These arguments lead to the following hypotheses:

H4: There is a relationship between IT Mindfulness (ITM) and the Intention to Adopt (ITA) personal cloud computing storage services.

H5: There is a relationship between IT Mindfulness (ITM) and the Perceived Usefulness (PU) of personal cloud computing storage services.

H6: There is a relationship between IT Mindfulness (ITM) and the Perceived Ease of Use (PEU) of personal cloud computing storage services.



5. Methodology

To empirically test the research model, a questionnaire was designed to collect data from students drawn from two public universities in Kenya. Students were chosen not only for convenience but because for their early adoption of freemium cloud services. The two

universities were chosen because the author has affiliations with both of them. The questionnaire items included indicators for measuring IT Mindfulness (ITM), Perceived Usefulness (PU), Perceived Ease of Use (PEU) and Intention to Adopt (ITA) personal cloud storage services. The measures for all the study constructs were either adopted or adapted from extant literature. The measures for PU and PEU and ITA were adapted from prior studies ([17], [36], [37]). The measures of ITM were adapted from Thatcher et al. [38]. All the study constructs in the instrument used a five-point Likert type scale ranging from 1= strongly disagree to 5= strongly agree. A link to the online questionnaire was distributed to students were either taking Computing and Business courses within the two universities. A total of 98 students filled the questionnaire.

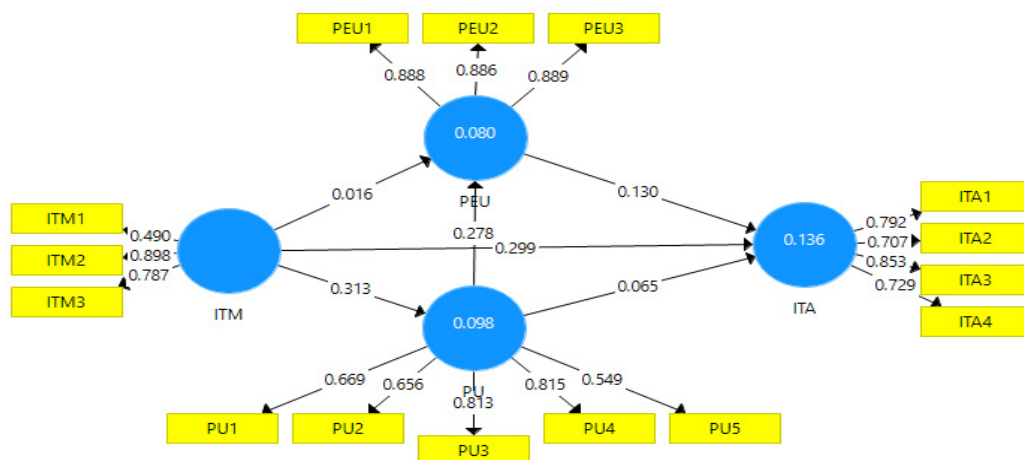
Data was analyzed using the Structural Equation Modelling (SEM) technique. SEM tests were conducted using SmartPLS[39]. SmartPLS was used to estimate the relationships among the study variables. Data screening was done before importing the data to SmartPLS software package for both measurement and structural estimation. After data screening, all the 98 observations were found to be usable for data analysis.

6. Results

The latent variables PU, PEU, ITM and ITA were each estimated through a number of indicators. The internal consistency of the indicators was assessed using composite reliability (CA) with a threshold value of 0.700 and above [40], [41]. The convergent validity which assesses the extent to which indicators measuring a particular latent variable load highly on that variable compared to other latent variables was evaluated using the average variance extracted (AVE) with a threshold of 0.500 and above[40], [41]. The values for CA and AVE are summarized in Table 1.

Table 2 Reliability and validity of Latent Variables

| Latent Variable | CA | AVE |
|-----------------|-------|-------|
| PU | 0.831 | 0.501 |
| PEU | 0.918 | 0.788 |
| ITM | 0.780 | 0.546 |
| ITA | 0.855 | 0.597 |



The structural model was evaluated through the coefficient of determination (R²) criterion and Q². The values for R² were 0.080, 0.098 and 0.136 with all indicating a weak explanatory power[42]. The values for Q², which measures the predictive relevance of the model were PU (0.041, PUE (0.050) and ITA (0.060). All of the values met the Q²>0

criterion meaning that the model has predictive relevance [42]. The findings are summarized in Figure 1 above.

7. Discussions and Business Implications

According to the results, IT Mindfulness (ITM) has a significant positive effect on Intention to Adopt (ITA) personal cloud storage services. Mindfulness in general is known to support making of discriminating adoption due to extended environmental scanning and information processing which allows a potential adopter to evaluate the real options provided by an application [34]. IT Mindful users are aware of multiple perspectives and therefore keen on novelty [38]. For cloud storage service providers to capture a market of IT Mindful users, their products should be novel and provide a variety of functionalities. A personal cloud storage product should not just be service but a platform [2]. A platform enables an infrastructure to intermediate between user groups and coordinate peer-to-peer transactions like file sharing or group collaboration. It is for the same reason that IT Mindfulness (ITM) was found to have a significant positive effect on Perceived Usefulness (PU). Users with multiple perspectives are able to discern the usefulness of a service within their context. Perceived Usefulness was found to have a significant positive effect on Perceived Ease of Use (PEU). This finding confirms the results of prior studies [17], [36], [43]. If a person perceives a cloud storage service as useful, then it will be perceived as easy to use.

The results also indicated that Perceived Ease of Use (PEU) and Perceived Usefulness (PU) did not have a significant relationship with Intention to Adopt (ITA) personal cloud storage services. There have been mixed results in extant literature regarding the relationship between PEU and ITA. For example, in a study about the individual adoption of E-commerce, it was found that PEU had a significant effect on ITA [36] while a study on personal adoption of cloud computing found that the relationship between PEU and ITA was not significant [17]. It is important for personal cloud storage providers to stress the usefulness as this will have a secondary impact on the products' ease of use. ITM did not have a significant influence on PEU. This can be attributed to the fact that users who are IT Mindful possess openness to novelty [34] and are therefore able to figure out ways of using an application. Cloud storage providers should design their products as platforms to enable variety and innovation by users.

8. Conclusions

The results of this study showed that IT Mindfulness has a significant positive effect on the intention to adopt personal cloud storage services. This finding confirms the increasing relevance of the concept of mindfulness in Information Systems (IS) research. It is an addition to the theoretical basket of IS as a discipline. The study also underscores the growing market of personal cloud storage services. The findings of the study points to the conceptualization of personal cloud storage not just as services but platforms through which IT mindful users can innovate. The fact that IT Mindfulness has a significant effect on perceived usefulness should spur cloud storage vendors to anchor their products on novelty and fashion them as intermediaries and not just stand alone services [2]. Like any empirical study, this study has weaknesses to do with the sample and the instrument. A convenient sample was used instead of a random sample. Future studies can validate this study by randomly sampling to non-student users. Further, the scale used for measuring IT Mindfulness is still new and more studies need to be done to further confirm its validity.

References

- [1] P. Mell and T. Grance, "The NIST Definition of Cloud Computing." NIST, 2011.

- [2] M. Gustavsson and J. Ljungberg, "Platformization of a Cloud Service," *ICIS 2019 Proceedings*, Nov. 2019.
- [3] S. Marston, Z. Li, S. Bandyopadhyay, J. Zhang, and A. Ghalsasi, "Cloud computing — The business perspective," *Decision Support Systems*, vol. 51, no. 1, pp. 176–189, Apr. 2011, doi: 10.1016/j.dss.2010.12.006.
- [4] J. Oredo, J. Njihia, and X. Iraki, "The Role of Organizing Vision in Cloud Computing Adoption by Organizations in Kenya," *American Journal of Information Systems*, vol. 5, no. 1, p. 38, Nov. 2017, doi: 10.12691/ajis-5-1-6.
- [5] Gartner, "Gartner Says by 2020 'Cloud Shift' Will Affect More Than \$1 Trillion in IT Spending," 2016. [Online]. Available: <https://www.gartner.com/newsroom/id/3384720>. [Accessed: 05-Nov-2017].
- [6] S.-L. Chen, J.-H. Chen, and S. C. Chang, "Understanding the Antecedents of Individuals Intention of Using Cloud Services," *Journal of Economics and Management*, vol. 13, no. 2, pp. 139–166, 2017.
- [7] A. Li and K.-C. Chang, "Antecedents to Individual Adoption of Cloud Computing," in *Business Technologies in Contemporary Organizations: Adoption, Assimilation, and Institutionalization*, A. Haider, Ed. IGI Global, 2015.
- [8] P. K. Senyo, E. Addae, and R. Boateng, "Cloud computing research: A review of research themes, frameworks, methods and future research directions," *International Journal of Information Management*, vol. 38, no. 1, pp. 128–139, Feb. 2018, doi: 10.1016/j.ijinfomgt.2017.07.007.
- [9] F. D. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *MIS Q.*, vol. 13, no. 3, pp. 319–340, Sep. 1989, doi: 10.2307/249008.
- [10] I. Ajzen, "The theory of planned behavior," *Organizational Behavior and Human Decision Processes*, vol. 50, no. 2, pp. 179–211, Dec. 1991, doi: 10.1016/0749-5978(91)90020-T.
- [11] E. M. Rogers, *Diffusion of Innovations, 5th Edition*, 5th edition. New York: Free Press, 2003.
- [12] V. Venkatesh, M. Morris, G. Davis, and F. Davis, "User Acceptance of Information Technology: Toward a Unified View," *Management Information Systems Quarterly*, vol. 27, no. 3, Sep. 2003.
- [13] D. Burda and F. Teuteberg, "The role of trust and risk perceptions in cloud archiving — Results from an empirical study," *The Journal of High Technology Management Research*, vol. 25, no. 2, pp. 172–187, Jan. 2014, doi: 10.1016/j.hitech.2014.07.008.
- [14] P. Gupta, A. Seetharaman, and J. R. Raj, "The usage and adoption of cloud computing by small and medium businesses," *International Journal of Information Management*, vol. 33, no. 5, pp. 861–874, Oct. 2013, doi: 10.1016/j.ijinfomgt.2013.07.001.
- [15] N. Opitz, T. F. Langkau, N. H. Schmidt, and L. M. Kolbe, "Technology Acceptance of Cloud Computing: Empirical Evidence from German IT Departments," in *2012 45th Hawaii International Conference on System Sciences*, 2012, pp. 1593–1602, doi: 10.1109/HICSS.2012.557.
- [16] H. Hashim and Z. Hassan, "Factors that Influence the Users' Adoption of Cloud Computing Services at Iraqi Universities: An Empirical Study," *Australian Journal of Basic and Applied Sciences*, vol. 9, no. 27, pp. 379–390, 2015.
- [17] M. Moqbel and V. Bartelt, "Consumer Acceptance of Personal Cloud: Integrating Trust and Risk with the Technology Acceptance Model," *AIS Transactions on Replication Research*, vol. 1, no. 1, Aug. 2015, doi: 10.17705/1attr.00005.
- [18] M. Carter, J. Clements, J. Thatcher, and J. George, "Unraveling the 'paradox of the active user': Determinants of individuals' innovation with it-based work routines," *AMCIS 2011 Proceedings - All Submissions*, Aug. 2011.
- [19] S. Ahson and M. Ilyas, *Cloud computing and software services: theory and techniques*. Boca Raton, FL: CRC Press, 2011.
- [20] K. Stanoevska-Slabeva and T. Wozniak, "Cloud Basics – An Introduction to Cloud Computing," in *Grid and Cloud Computing*, K. Stanoevska-Slabeva, T. Wozniak, and S. Ristol, Eds. Springer Berlin Heidelberg, 2010, pp. 47–61.
- [21] J. Oredo, J. Njihia, and X. Iraki, "Institutional Pressures and Cloud Computing Adoption: The Moderating Effect of Organizational Mindfulness," in *2019 IST-Africa Week Conference (IST-Africa)*, 2019, pp. 1–9, doi: 10.23919/ISTAFRICA.2019.8764832.
- [22] P. C. Evans and A. Gawer, "The Rise of the Platform Enterprise: A Global Survey," The Centre for Global Enterprise, 2016.
- [23] "Personal cloud storage user numbers worldwide 2014-2020," *Statista*. [Online]. Available: <https://www.statista.com/statistics/499558/worldwide-personal-cloud-storage-users/>. [Accessed: 01-Dec-2019].
- [24] B. M. M. and J. Duffy, 2019 11:06AM EST June 14, and 2019 June 14, "The Best Cloud Storage and File-Sharing Services for 2019," *PCMag*, 2019. [Online]. Available: <https://www.pcmag.com/roundup/306323/the-best-cloud-storage-providers-and-file-syncing-services>. [Accessed: 01-Dec-2019].

- [25] F. D. Davis, "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," *MIS Quarterly*, vol. 13, no. 3, pp. 319–340, Sep. 1989, doi: 10.2307/249008.
- [26] M. Koufaris, "Applying the Technology Acceptance Model and Flow Theory to Online Consumer Behavior," *Information Systems Research*, vol. 13, no. 2, pp. 205–223, 2002.
- [27] N. O. Ndubisi and M. Jantan, "Evaluating IS usage in Malaysian small and medium-sized firms using the technology acceptance model," *Logistics Information Mngt*, vol. 16, no. 6, pp. 440–450, Dec. 2003, doi: 10.1108/09576050310503411.
- [28] H. Gangwar, H. Date, and R. Ramaswamy, "Understanding determinants of cloud computing adoption using an integrated TAM-TOE model," *Journal of Ent Info Management*, vol. 28, no. 1, pp. 107–130, Jan. 2015, doi: 10.1108/JEIM-08-2013-0065.
- [29] I. Gottschalk and S. Kim, "Cloud Computing As a Tool for Enhancing Ecological Goals?: Analyzing Necessary Preconditions on the Consumer Side," *Business & Information Systems Engineering*, vol. 5, no. 5, pp. 299–313, Oct. 2013, doi: 10.1007/s12599-013-0284-2.
- [30] V. Ratten, "Indian and US consumer purchase intentions of cloud computing services," *Journal of Indian Business Research*, vol. 6, no. 2, pp. 170–188, Jun. 2014, doi: 10.1108/JIBR-07-2013-0068.
- [31] M. Stieninger, D. Nedbal, W. Wetzlinger, G. Wagner, and M. A. Erskine, "Impacts on the Organizational Adoption of Cloud Computing: A Reconceptualization of Influencing Factors," *Procedia Technology*, vol. 16, pp. 85–93, Jan. 2014, doi: 10.1016/j.protcy.2014.10.071.
- [32] D. D. Essel and O. A. Wilson, "Factors Affecting University Students' Use of Moodle: An Empirical Study Based on TAM," *IJICTE*, vol. 13, no. 1, pp. 14–26, Jan. 2017, doi: 10.4018/IJICTE.2017010102.
- [33] H. Sun and Y. Fang, "Toward a Model of Mindfulness in Technology Acceptance," *ICIS 2010 Proceedings*, Jan. 2010.
- [34] S. Dernbecher and R. Beck, "The concept of mindfulness in information systems research: a multi-dimensional analysis," *Eur J Inf Syst*, vol. 26, no. 2, pp. 121–142, Mar. 2017, doi: 10.1057/s41303-016-0032-z.
- [35] S. Goswami, H. Teo, and H. Chan, "Decision-Maker Mindfulness in IT Adoption: The Role of Informed Culture and Individual Personality," *ICIS 2009 Proceedings*, Jan. 2009.
- [36] P. A. Pavlou, "Consumer Acceptance of Electronic Commerce: Integrating Trust and Risk with the Technology Acceptance Model," *Int. J. Electron. Commerce*, vol. 7, no. 3, pp. 101–134, Apr. 2003.
- [37] Y. Li and K. Chang, "A Study on User Acceptance of Cloud Computing: A Multi-Theoretical Perspective," *AMCIS 2012 Proceedings*, Jul. 2012.
- [38] J. Thatcher, R. Wright, H. Sun, T. Zagenczyk, and R. Klein, "Mindfulness in Information Technology Use: Definitions, Distinctions, and a New Measure," *Management Information Systems Quarterly*, vol. 42, no. 3, pp. 831–847, Sep. 2018.
- [39] C. M. Ringle, S. Wende, and J.-M. Becker, *SmartPLS*. Bonnigstedt: smartpls, 2015.
- [40] J. F. Hair, C. M. Ringle, and M. Sarstedt, "PLS-SEM: Indeed a Silver Bullet," *Journal of Marketing Theory and Practice*, vol. 19, no. 2, pp. 139–152, Apr. 2011, doi: 10.2753/MTP1069-6679190202.
- [41] H. Latan and I. Ghozali, "Partial Least Squares: Concepts, Techniques and Applications Using SmartPLS 2.0 M3," 2012.
- [42] N. Urbach and F. Ahlemann, "Structural Equation Modeling in Information Systems Research Using Partial Least Squares," *Journal of Information Technology Theory and Application (JITTA)*, vol. 11, no. 2, Oct. 2010.
- [43] J. Wang and J. Wang, "Critical Factors for Personal Cloud Storage Adoption in China," *Journal of Data and Information Science*, vol. 1, no. 2, pp. 60–74, Jun. 2016, doi: 10.20309/jdis.201614.