

## Thesis Summary

### **The Influence of Context on Mobile Payment Technology's Usage, Continuance, and Role in Sustainable Development: Evidence from India**

India, as a nation, was traditionally cash-centric and had historically been low on mobile payment adoption, even in comparison to other developing economies (Dasgupta, Paul, & Fuloria, 2011). The heavy cash dependence of India changed when the government announced its demonetization scheme in November 2016, invalidating 86 percent banknotes in circulation and creating a policy shock for the nation (Chakravorti, 2017). This cash shortage 'pushed' users to rapidly adopt mobile payments, and other digital options, as an alternative to cash and sustain their daily transactions. The sudden rise of mobile payment usage during demonetization, and subsequent uneven but increasing trajectory, is reported by RBI (RBI Database, 2019). The uneven growth can be attributed to various events occurring subsequently around the same time frame, like price drop Internet data cost by the service provider, Reliance Jio, discounts and cashback offers by mobile payment companies, and regulations for customers. In this thesis, we study how these events impacted mobile payment usage, as they evolved into facilitators or barriers (FactorDaily, 2017; Mehta, 2017; The Economic Times, 2018). The thesis consists of three essays focussing on mobile payments usage literature, factors affecting usage and role in sustainable development as briefly explained below.

In the first essay, we review existing literature to observe that there is a heavy predominance of behavioral models in the past literature of mobile payment adoption and usage studies. This shows the limitation and necessity of the development of a theoretical framework that includes contextual variables. We identify all the factors as used in previous studies from an in-depth analysis of 103 relevant papers (See Appendix of Essay-1 for the categorization of the papers and constructs). Drawing inferences from both the environmental conditions in India during the demonetization period, as well as, the identified constructs from the literature, we develop a framework for conducting future research in mobile payments. The framework includes contextual facilitators and barriers –both environmental and cultural.

Observing the importance of the context and the environment (Karahanna, Straub, & Chervany, 1999), the second essay studies mobile payment usage with the theoretical lenses of affordances and constraints as they evolve into facilitators and barriers. Technology affordances and constraints theory (TACT) offers to understand the factors developed through the interplay between humans, technology, and the environment (Majchrzak & Markus, 2012). We develop the research model using the set of affordances-based facilitators and constraints causing barriers, from existing affordance theory-related studies, mobile payment literature, and technology continuance studies (Bhattacharjee,

2001; Conole & Dyke, 2004; Kalinic & Marinkovic, 2016; Zhou, 2013). We also identified that the literature has a limitation of actual usage as a dependent variable, and they treat single-dimensional intention as a proxy to usage. Addressing these issues, we (1) develop a three-dimensional usage, using recency-frequency-monetary value (RFM) framework (Chen, Kuo, Wu, & Tang, 2009), that includes variety of transactions, frequency of payments, and amount transacted through mobile payment apps; and, (2) capture both actual usage and future intention to further analyze the impact of the factors on the two dependent variables separately, and to understand how they play out differently for the actual and future usage. The 551 data samples from the survey conducted across four Indian locations, including a metropolitan (Bangalore), tier-II cities (Ludhiana and Sonipat), and suburban town (Thane), ensure that there is generalizability across the varying infrastructural differences in the locations. The findings have interesting implications for policymakers and payment app providers, as it shows how certain factors are important for future continuity of the technology, whereas others impact immediate actual usage only.

In the third essay, we evaluate the societal and developmental implications of mobile payment services. While mobile payments have aided socioeconomic development through greater financial inclusion, in developing countries like Kenya and the Philippines (Donovan, 2012), the question related to its capability to aid sustainable development is yet to be answered. Sustainable development involves economic to social changes, and environmental to individual growth, which may vary based on the context and needs of the community (Qureshi, 2015). We investigate the role of mobile payment technology in aiding sustainable development and human empowerment, using the theoretical lenses by renowned development theorists, Schumacher and Sen. Combining Schumacher's small appropriate technology features (Akubue, 2000; Schumacher, 1973) and Sen's theory of human freedom (Sen, 2001), a set of design features are developed. These features promote human-centric ICTs for sustainable development. The role of mobile payments is validated using this framework, through interpretive analysis of primary data from user interviews, and support from secondary data from a digital payments survey conducted by USAID, in collaboration with, the Ministry of Finance of India (usaid.gov, 2019). The results show mixed implications, with both the promise of mobile payments as a driver for sustainable development, but gaps that need to be addressed to ensure the engagement of the marginalized sectors.

The thesis is a substantial contribution to both research and practice. The thorough literature review, the development of new usage scales, the development of research model using affordances theory, and the role of mobile payments for sustainable development, are some of the novel theoretical contributions of this thesis to the mobile payments and the broader IT adoption/usage literature, as

well as, to the area of ICT4D<sup>1</sup>. The importance of context, the factors that can lead to continuity of the technology, and the social impact of the technology, has implications for the government, policymakers, and payment app providers.

## REFERENCES

- Akubue, A. (2000). Appropriate Technology for Socioeconomic Development in Third World Countries. *Journal of Technology Studies*, 26(1).
- Bhattacharjee, A. (2001). Understanding Information Systems Continuance: An Expectation-Confirmation Model. *MIS Quarterly*, 25(3), 351–370.
- Chakravorti, B. (2017, March 14). Early Lessons from India's Demonetization Experiment. *Harvard Business Review*. Retrieved November 28, 2017, from <https://hbr.org/2017/03/early-lessons-from-indias-demonetization-experiment>
- Chen, Y.-L., Kuo, M.-H., Wu, S.-Y., & Tang, K. (2009). Discovering recency, frequency, and monetary (RFM) sequential patterns from customers' purchasing data. *Electronic Commerce Research and Applications*, Special Issue: Marketing and Electronic Commerce, 8(5), 241–251.
- Conole, G., & Dyke, M. (2004). What are the affordances of information and communication technologies? *ALT-J*, 12(2), 113–124.
- Curtis, M. B., & Payne, E. A. (2008). An examination of contextual factors and individual characteristics affecting technology implementation decisions in auditing. *International Journal of Accounting Information Systems*, 2007 Research Symposium on Information Systems Assurance, 9(2), 104–121.
- Dasgupta, S., Paul, R., & Fuloria, S. (2011). Factors Affecting Behavioral Intentions towards Mobile Banking Usage: Empirical Evidence from India. *Romanian Journal of Marketing; Bucharest*, (1), 6–28.
- Donovan, K. P. (2012). Mobile Money, More Freedom? The Impact of M-PESA's Network Power on Development as Freedom. *International Journal of Communication*, 6(0), 23.
- FactorDaily. (2017). Amazon Pay plans mobile recharges, could be tough competition for Paytm, MobiKwik. *FactorDaily*. Retrieved January 24, 2018, from <https://factordaily.com/news/amazon-pay-mobile-wallet-recharge-paytm-mobikwik/>
- Kalinic, Z., & Marinkovic, V. (2016). Determinants of users' intention to adopt m-commerce: An empirical analysis. *Information Systems and e-Business Management*, 14(2), 367–387.
- Karahanna, E., Straub, D. W., & Chervany, N. L. (1999). Information Technology Adoption Across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs. *MIS Quarterly*, 23(2), 183–213.
- Majchrzak, A., & Markus, M. L. (2012). Technology affordances and constraints in management information systems (MIS).
- Mehta, I. (2017, June 1). Reliance Jio Is Driving Indian Internet Growth, Says The Mary Meeker Report. *Huffington Post India*. Retrieved January 24, 2018, from [http://www.huffingtonpost.in/2017/06/01/reliance-jio-is-driving-indian-internet-growth-says-the-mary-me\\_a\\_22120777/](http://www.huffingtonpost.in/2017/06/01/reliance-jio-is-driving-indian-internet-growth-says-the-mary-me_a_22120777/)
- Qureshi, S. (2015). Are we making a Better World with Information and Communication Technology for Development (ICT4D) Research? Findings from the Field and Theory Building. *Information Technology for Development*, 21(4), 511–522.
- RBI Database. (2019, January 28). Reserve Bank of India—Database. Retrieved January 28, 2019, from [https://rbi.org.in/Scripts/bs\\_viewcontent.aspx?Id=1365](https://rbi.org.in/Scripts/bs_viewcontent.aspx?Id=1365)
- Schumacher, E. (1973). *Small is beautiful* (Vol. 90). New York: Harper & Row.
- Sen, A. (2001). *Development as Freedom*. OUP Oxford.
- The Economic Times. (2018, March 2). Customers threaten to dump e-wallets as KYC norms kick in. *The Economic Times*. Retrieved from <https://economictimes.indiatimes.com/small-biz/startups/newsbuzz/page->

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<sup>1</sup> ICT4D is an abbreviation for 'ICT for Development', which is a field in Information Systems literature that focuses on socioeconomic development and societal role of technology.

- 1-customers-threaten-to-dump-e-wallets-as-kyc-norms-kick-in-\_-domestic-remittance-business-hit/articleshow/63132646.cms  
usaid.gov. (2019). U.S. Agency for International Development. *USAID*. Retrieved August 13, 2019, from <https://www.usaid.gov/>
- Zhou, T. (2013). An empirical examination of continuance intention of mobile payment services. *Decision Support Systems*, 54(2), 1085–1091.