

Please quote as: Söllner, M.; Pavlou, P. & Leimeister, J. M. (2016): Understanding the Development of Trust: Comparing Trust in the IT Artifact and Trust in the Provider. In: Academy of Management Annual Meeting (AOM), Anaheim, CA, USA.

**UNDERSTANDING THE DEVELOPMENT OF TRUST OVER TIME:
COMPARING TRUST IN THE IT ARTIFACT AND TRUST IN THE PROVIDER**

Matthias Söllner, University of St.Gallen, Institute of Information Management (IWI-HSG), St.Gallen, Switzerland, matthias.soellner@unisg.ch & University of Kassel, Information Systems, Research Center for IS Design (ITeG), Kassel, Germany, soellner@uni-kassel.de

Paul A. Pavlou, Temple University, Fox School of Business, Philadelphia, PA, USA, pavlou@temple.edu

Jan Marco Leimeister, University of St.Gallen, Institute of Information Management (IWI-HSG), St.Gallen, Switzerland, janmarco.leimeister@unisg.ch & University of Kassel, Information Systems, Research Center for IS Design (ITeG), Kassel, Germany, leimeister@uni-kassel.de

ACKNOWLEDGEMENTS

The results presented in this article were partly developed in the research project “The Impact of the Digital Transformation on our Understanding of Key Drivers of Technology Usage – A Longitudinal Perspective on Trust” funded by the Basic Research Fund of University of St.Gallen. We thank the Research Committee of the University of St.Gallen for supporting our research. For further information on the project please see: <https://www.alexandria.unisg.ch/id/project/246820>

**UNDERSTANDING THE DEVELOPMENT OF TRUST OVER TIME:
COMPARING TRUST IN THE IT ARTIFACT AND TRUST IN THE PROVIDER**

The importance of trust has been shown in numerous studies in the IS discipline, including but not limited to IT adoption and diffusion. Although researchers agree that trust is not only relevant for one-time interactions, but that trust develops gradually during an interaction and needs to be maintained over time, most studies rely on research designs that only capture a cross-sectional snapshot of trust development. We aim to address this gap in the trust literature by conducting a five-wave longitudinal field study to investigate how trust in a new IT artifact – a new student information system – and trust in the provider of the system emerges. The results of our latent growth modeling analysis indicate that trust in a new IT artifact develops as follows. First, the users confirm whether their level of initial trust was correct and adapt their level of trust accordingly. Next, the users start to build trust, resembled by a linear growth in trust. Finally, trust stops to increase and remains stable. Furthermore, this development does not vary comparing new and experienced users. For trust in the provider, the results differ between new versus experienced users. New users also confirm whether their level of initial trust was correct and adapt their level of trust in the provider accordingly. Next, new users start building trust, but the trust-building process is characterized by a *quadratic* growth. In contrast, for experienced users, we observed a constant linear growth throughout the study. Based on our results, a sixth stage called *confirmation of initial trust* should be added into the trust lifecycle in between the stages of *initial trust building* and *trust building*.

Keywords: Trust, Trust in IT Artifacts, Trust in the Provider, Latent Growth Modeling, Trust Lifecycle, Confirmation of Initial Trust, Five-wave Longitudinal Field Study.

weeks to adjust their interpersonal trust – in our case trust in the provider. Afterwards, it takes the users about another six weeks to build trust in IT artifacts (we observed a linear growth) until stability is reached. For trust in the provider, even experienced users did not reach the phase of trust stability within the duration of our study.

REFERENCES

- Becker, J.-M., Klein, K., & Wetzels, M. 2012. Hierarchical Latent Variable Models in PLS-SEM: Guidelines for Using Reflective-Formative Type Models. *Long Range Planning*, 45(5–6): 359–394.
- Benlian, A. 2015. IT Feature Use over Time and its Impact on Individual Task Performance. *Journal of the Association for Information Systems*, 16(3).
- Bentler, P. M. 1990. Comparative fit indexes in structural models. *Psychological Bulletin*, 107(2): 238–246.
- Bentler, P. M., & Bonett, D. G. 1980. Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, 88(3): 588–606.
- Bhattacharjee, A. 2001. Understanding Information Systems Continuance: An Expectation-Confirmation Model. *MIS Quarterly*, 25(3): 351–370.
- Cenfetelli, R., & Bassellier, G. 2009. Interpretation of Formative Measurement in Informations Systems Research. *MIS Quarterly*, 33(4): 689–707.
- Chan, D. 1998. The Conceptualization and Analysis of Change Over Time: An Integrative Approach Incorporating Longitudinal Mean and Covariance Structures Analysis (LMACS) and Multiple Indicator Latent Growth Modeling (MLGM). *Organizational Research Methods*, 1(4): 421–483.
- Chaudhuri, A., & Holbrook, M. B. 2001. The Chain of Effects from Brand Trust and Brand Affect to Brand Performance: The Role of Brand Loyalty. *Journal of Marketing*, 65(2): 81–93.
- Chin, W. W. 1998. The Partial Least Squares Approach to Structural Equation Modeling. In G. A. Marcoulides (Ed.), *Modern Methods For Business Research*. London: LEA.
- Cyr, D. 2008. Modeling Web Site Design Across Cultures: Relationships to Trust, Satisfaction, and E-Loyalty. *Journal of Management Information Systems*, 24(4): 47–72.
- Duncan, T. E., & Duncan, S. C. 2009. The ABC's of LGM: An Introductory Guide to Latent Variable Growth Curve Modeling. *Social and Personality Psychology Compass*, 3(6): 979–991.
- Ebert, T. 2009. Facets of Trust in Relationships – A Literature Synthesis of Highly Ranked Trust Articles. *Journal of Business Market Management*, 3(1): 65–84.

- Gefen, D. 2000. E-commerce: the role of familiarity and trust. *Omega*, 28(6): 725–737.
- Gefen, D., Benbasat, I., & Pavlou, P. A. 2008. A Research Agenda for Trust in Online Environments. *Journal of Management Information Systems*, 24(4): 275–286.
- Gefen, D., Karahanna, E., & Straub, D. W. 2003. Trust and TAM in Online Shopping: An Integrated Model. *MIS Quarterly*, 27(1): 51–90.
- Gefen, D., & Straub, D. W. 2004. Consumer trust in B2C e-Commerce and the importance of social presence: experiments in e-Products and e-Services. *Omega*, 32(6): 407–424.
- Geiser, C. 2013. *Data analysis with Mplus*. New York: Guilford Press.
- Gillespie, N., & Dietz, G. 2009. Trust Repair after an Organization-Level Failure. *Academy of Management Review*, 34(1): 127–145.
- Hair, J. F., Hult Thomas M., Ringle, C. M., & Sarstedt, M. 2013. *A primer on partial least squares structural equation modeling (PLS-SEM)*. Thousand Oaks, CA, USA: Sage.
- Hosmer, L. T. 1995. Trust: The Connecting Link Between Organizational Theory and Philosophical Ethics. *Academy of Management Review*, 20: 379–403.
- Jarvenpaa, S. L., Shaw, T. R., & Staples, D. S. 2004. Toward Contextualized Theories of Trust: The Role of Trust in Global Virtual Teams. *Information Systems Research*, 15(3): 250–267.
- Kanawattanachai, P., & Yoo, Y. 2002. Dynamic nature of trust in virtual teams. *The Journal of Strategic Information Systems*, 11(3-4): 187–213.
- Kehr, F., & Kowatsch, T. 2015. Quantitative Longitudinal Research: A Review of IS Literature, and a Set of Methodological Guidelines. *European Conference on Information Systems (ECIS) 2015*.
- Kline, R. B. 2010. *Principles and practice of structural equation modeling* (3rd ed.). New York: Guilford Press.
- Lankton, N. K., McKnight, D. H., & Tripp, J. F. 2015. Technology, Humanness, and Trust: Rethinking Trust-in-Technology. *Journal of the Association for Information Systems*, 16(10).
- Lee, J. D., & See, K. A. 2004. Trust in Automation: Designing for Appropriate Reliance. *Human Factors*, 46(1): 50–80.
- Leimeister, J. M., Ebner, W., & Krcmar, H. 2005. Design, Implementation, and Evaluation of Trust-Supporting Components in Virtual Communities for Patients. *Journal of Management Information Systems*, 21(4): 101–135.
- Luhmann, N. 1979. *Trust and power*. Chichester, UK: Wiley.
- Mayer, R. C., & Davis, J. H. 1999. The Effect of the Performance Appraisal System on Trust for Management: A Field Quasi-Experiment. *Journal of Applied Psychology*, 84(1): 123–136.

- Mayer, R. C., Davis, J. H., & Schoorman, F. D. 1995. An Integrative Model of Organizational Trust. *Academy of Management Review*, 20(3): 709–734.
- McKnight, D. H., Carter, M., Thatcher, J. B., & Clay, P. F. 2011. Trust in a specific technology: An investigation of its components and measures. *ACM Transaction on Management Information Systems*, 2(2).
- McKnight, D. H., Choudhury, V., & Kacmar, C. 2002a. Developing and Validating Trust Measures for e-Commerce: An Integrative Typology. *Information Systems Research*, 13(3): 334–359.
- McKnight, D. H., Choudhury, V., & Kacmar, C. 2002b. The impact of initial consumer trust on intentions to transact with a web site: a trust building model. *The Journal of Strategic Information Systems*, 11(3-4): 297–323.
- McKnight, D. H., Cummings, L. L., & Chervany, N. L. 1998. Initial Trust Formation in New Organizational Relationships. *Academy of Management Review*, 23(3): 473–490.
- Meredith, W. 1993. Measurement invariance, factor analysis and factorial invariance. *Psychometrika*, 58(4): 525–543.
- Muthén, L. K., & Muthén, B. O. 1998-2012. *Mplus User's Guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.
- Oliver, R. L. 1980. A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions. *Journal of Marketing Research*, 17(4): 460.
- Pavlou, P. A., & Dimoka, A. 2006. The Nature and Role of Feedback Text Comments in Online Marketplaces: Implications for Trust Building, Price Premiums, and Seller Differentiation. *Information Systems Research*, 17(4): 392–414.
- Pavlou, P. A., & Gefen, D. 2004a. Building Effective Online Marketplaces with Institution-Based Trust. *Information Systems Research*, 15(1): 37–59.
- Pavlou, P. A., & Gefen, D. 2004b. Building Effective Online Marketplaces with Institution-Based Trust. *Information Systems Research*, 15(1): 37–59.
- Petter, S., Straub, D., & Rai, A. 2007. Specifying Formative Constructs in Information Systems Research. *MIS Quarterly*, 31(4): 623–656.
- Ployhart, R. E., & Vandenberg, R. J. 2010. Longitudinal Research: The Theory, Design, and Analysis of Change. *Journal of Management*, 36(1): 94–120.
- Ringle, C. M., Wende, S., & Becker, J.-M. SmartPLS; www.smartpls.de.
- Robert Jr, L. P., Dennis, A. R., & Hung, Y.-T. C. 2009. Individual Swift Trust and Knowledge-Based Trust in Face-to-Face and Virtual Team Members. *Journal of Management Information Systems*, 26(2): 241–279.
- Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. 1998. Not so different at all: A cross disciplinary view of trust. *Academy of Management Review*, 23(3): 393–404.
- Satorra, A. 2000. Scaled and adjusted restricted tests in multi-sample analysis of moment structures. In R. D. H. Heijmans, D. S. G. Pollock & A. Satorra (Eds.), *Innovations in*

- Multivariate Statistical Analysis. A Festschrift for Heinz Neudecker*: 233–247. Boston, MA: Springer US.
- Satorra, A., & Bentler, P. M. 2010. Ensuring Positiveness of the Scaled Difference Chi-square Test Statistic. *Psychometrika*, 75(2): 243–248.
- Schumann, J. H., Wangenheim, F. v., Stringfellow, A., Zhilin Yang, Praxmarer, S., Jimenez, F. R., Blazevic, V., Shannon, R. M., G., S., & Komor, M. 2010. Drivers of Trust in Relational Service Exchange: Understanding the Importance of Cross-Cultural Differences. *Journal of Service Research*, 13(4): 453–468.
- Serva, M., Kher, H., & Laurenceau, J.-P. 2011. Using Latent Growth Modeling to Understand Longitudinal Effects in MIS Theory: A Primer. *Communications of the Association for Information Systems*, 28(1).
- Simons-Morton, B., Chen, R., Abroms, L., & Haynie, D. L. 2004. Latent growth curve analyses of peer and parent influences on smoking progression among early adolescents. *Health psychology : official journal of the Division of Health Psychology, American Psychological Association*, 23(6): 612–621.
- Söllner, M., Hoffmann, A., Hoffmann, H., Wacker, A., & Leimeister, J. M. 2012. Understanding the Formation of Trust in IT Artifacts. *International Conference on Information Systems (ICIS) 2012*.
- Söllner, M., & Leimeister, J. M. 2013. What We Really Know about Antecedents of Trust: A Critical Review of the Empirical Information Systems Literature on Trust. In D. Gefen (Ed.), *Psychology of trust. New research*: 127–155. Hauppauge, New York: Nova Science Publishers.
- Söllner, M., Pavlou, P. A., & Leimeister, J. M. 2013. Understanding Trust in IT Artifacts - A new Conceptual Approach. *Academy of Management Annual Meeting, Orlando, Florida, USA*.
- Steiger, J. H. 1990. Structural Model Evaluation and Modification: An Interval Estimation Approach. *Multivariate Behavioral Research*, 25(2): 173–180.
- Tomlinson, E. C., & Mayer, R. C. 2009. The Role of Causal Attribution Dimensions in Trust Repair. *Academy of Management Review*, 34(1): 85–104.
- van der Werff, L., & Buckley, F. 2014. Getting to Know You: A Longitudinal Examination of Trust Cues and Trust Development During Socialization. *Journal of Management*.
- Vance, A., Elie-Dit-Cosaque, C., & Straub, D. W. 2008. Examining Trust in Information Technology Artifacts: The Effects of System Quality and Culture. *Journal of Management Information Systems*, 24(4): 73–100.
- Wang, W., & Benbasat, I. 2005. Trust in and Adoption of Online Recommendation Agents. *Journal of the Association for Information Systems*, 6(3): 72–101.
- Widaman, K. F., & Reise, S. P. 1997. Exploring the measurement invariance of psychological instruments: Applications in the substance use domain. In K. J. Bryant, M. T. Windle & S. G. West (Eds.), *The science of prevention. Methodological advances from alcohol and*

substance abuse research: 281–324 (1st ed.). Washington, DC: American Psychological Association.

Zahedi, F. M., & Song, J. 2008. Dynamics of Trust Revision: Using Health Infomediaries. *Journal of Management Information Systems*, 24(4): 225–248.

Zheng, Z., Pavlou, P. A., & Gu, B. 2014. Latent Growth Modeling for Information Systems: Theoretical Extensions and Practical Applications. *Information Systems Research*, 25(3): 547–568.