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Kai-Gerhard Bosch

Steffen Bernius

Andreas Eckhardt

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Bosch, Kai-Gerhard, Goethe University Frankfurt, Grueneburgplatz 1, 60323 Frankfurt am Main, Germany, kbosch@wiwi.uni-frankfurt.de

Bernius, Steffen, Goethe University Frankfurt, Grueneburgplatz 1, 60323 Frankfurt am Main, Germany, bernius@wiwi.uni-frankfurt.de

Eckhardt, Andreas, Goethe University Frankfurt, Grueneburgplatz 1, 60323 Frankfurt am Main, Germany, eckhardt@wiwi.uni-frankfurt.de

Abstract

Throughout the whole history of IS adoption research, researchers struggled to frame, conceptualize, and define social norms in a sufficient way. While research during the last three years provided helpful advice to overcome this challenge, it still remains the question, why other shapes of norms (e.g. cultural norms, religious norms, moral norms, or legal norms) were hardly ever framed or discussed for IS adoption research. To provide a first step within this direction, this research offers a conceptual extension of normative beliefs for the Model of Adoption of Technology in Households (MATH) (Venkatesh and Brown 2001, Brown and Venkatesh 2005) using the norm topology by Gibbs (1965) of sociology research. An operationalization of the new constructs is provided and further steps of this research in progress are discussed.

Keywords: Norms, Adoption, Typology of Norms, MATH.

1 Introduction

Research on the prediction of IS usage based on theories adapted from other disciplines (e.g. social psychology) is a frequently researched field in the IS domain (Williams et al. 2009). A majority of the developed theories and models is grounded in the Theory of Reasoned Action (Fishbein and Ajzen 1975), the Theory of Planned Behavior (Ajzen 1991), or the UTAUT model (Venkatesh et al. 2003) (Williams et al. 2009). The stream of IS adoption literature, which provided several contributions around the Technology Acceptance Model (TAM) (Davis et al. 1989) typically applied the subjective norm construct to capture the social norms of an individual's environment, whether it has an impact on an individuals' intention to use an information system. In IS adoption research over the last ten years, the role of social norms has got into an emerging focus (Eckhardt et al. 2009, Sykes et al. 2009, Titah and Barki 2009), as Ritu Agarwal stated: *"A need for additional research that clarifies the precise role of social pressure in technology acceptance and isolates the contingencies under which such norms are likely to be more salient"* (Agarwal 2000).

However, in addition to the specification of the role of social norms, researchers within the IS adoption field need to understand the impact of all different kinds of norms in general. These may for instance include cultural, religious, moral, or legal norms. Concerning the use of an information system, the latter come into play e.g. with regard to software license contracts or copyright regulations. Furthermore, concerns about privacy and security affect individuals' intention to use an information system, depending on the present legislation (Culnan 1993).

On the other hand, norms are exceptionally important for IS related decision processes in "microsocial systems" like households (Godin et al. 2005). For instance, Lacity and Iyer (2008) provide evidence for the importance of family pressure regarding turnover intentions of Indian IS professionals. Espe-

cially with regard to the adoption of IS, individuals in households are strongly influenced by their normative beliefs (Venkatesh and Brown 2001, Brown and Venkatesh 2005). However, only few approaches have observed adoption in this field: Since adoption in households differs in a number of ways (e.g. variety of deciders, income structure, or acquisition purpose) from the individual adoption in the workplace context, traditional models for individual IS adoption in enterprises are not sufficient for the analysis of households (Beck and Ajzen 1991, Venkatesh and Brown 2001, Brown and Venkatesh 2005, Brown et al. 2006). Venkatesh and Brown (2001) therefore developed the Model of Adoption of Technology in Households (MATH). The authors integrate outcomes of social psychology and marketing research in order to provide a model adjusted to the specifics in the household context. They point out that norms transferred through the social environment (e.g. family, friends, or relatives) or through mass media (e.g. TV, radio, or newspapers) provide a high influence on the adoption decision of households (Brown et al. 2006). For further research, the authors on the one hand propose a more detailed analysis of these normative beliefs. On the other hand, they claim a comprehensive investigation of the role that legal norms play regarding security and privacy issues in information sharing (Brown et al. 2006).

With the aim to provide a proper conception of the impact of norms on individual adoption decisions in households, we address those research gaps by integrating a consideration of legal norms together with a more sophisticated view of social norms. In particular, we extend MATH (Venkatesh and Brown 2001) by a conceptual norm topology construct mainly based on the work of Gibbs (1965) from sociology research. In doing so, five types of norms (conventions, moral, mores, rules, laws) are differentiated, which might affect individual IS adoption in households.

This research-in-progress paper is structured follows. After a detailed description and classification of norms and IS adoption in households in section 2, we present our extended version of MATH in section 3. The closing section 4 briefly outlines how our extended model could contribute to IS adoption research in general and to household adoption in particular. Additionally, we provide information regarding our own further research to evaluate this model with empirical survey data.

2 Research background

This section provides an understanding of norms and their definition and classification in sociology and social psychology. Furthermore, it discusses the transferability of this understanding of norms towards the IS adoption domain.

2.1 Classification of norms

Sumner (1906) classified norms into folkways, mores, and laws. This classification dominated the sociological domain for at least fifty years without serious attempts to refine it (Morris 1956). Since the 1950s, sociologists discussed various approaches towards a valid and robust classification of norms (Gibbs 1965, Labovitz and Hagedorn 1973). According to Gibbs (1965), the generalized distinction of norms needs to be made explicit. After reviewing norm classifications from several researchers, he postulates: *"(…) Moreover, they are ad hoc and lack a generalized rationale in that they do not explicitly identify the dimensions to which their components might be referable*" (Gibbs 1965). Instead of giving a one-size-fits-all definition, Gibbs provides a multidimensional framework, in which social and legal norms can be explicitly identified. The typology has three basic normative dimensions. The first dimension (collective evaluations of behavior) is defined as *"a shared belief that persons ought or ought not to act in a certain way"* (Gibbs 1965). The second dimension (collective expectations) refers to predictions as to what persons will do, e.g. sharing music and video files via the internet, even if most people think, that one ought not do this. The third dimension (reactions to behavior) focuses on the type of the sanction mechanism and the probability of its appliance in case of violating a specific norm. This last dimension contains two attributes. The first distinguishes whether the sanction is applicable by anyone (social norm) or just by persons with a particular status (legal norm). The second attribute distinguishes between means that include or exclude the use of force when apply-

ing a sanction. As an outcome of this framework, Gibbs identifies 19 different types of single norms, aggregated in five meta-classes, which are sufficient for the purpose of this paper. Norms can therefore be classified into conventions (unsanctifiable), morals, mores (both sanctifiable by anyone), rules, and laws (sanctifiable by persons who have a particular status) (Gibbs 1965).

2.2 A classification of normative beliefs in IS adoption

As members of a community, humans underlie influences of their social networks (e.g. family, friends, colleagues, or superiors). With regard to the expression of this influence, it can be distinguished between pressure applied directly by other individuals and groups (Asch 1951), subjective perception of individual cultural norms resulting in an internalization process to achieve a self-identification with those norms (Gibbs 1965, Fishbein and Ajzen 1975, Triandis 1980), and the conformity driven adaption of individuals' behavior (Festinger 1954). In the following section we address the previously introduced different types of norms and attach them to the IS context.

Conventions: Compared to other norms, conventions do not underlie a sanction mechanism (Gibbs 1965). They are mainly determined by cultural influences, what links them to the Theory of Interpersonal Behavior provided by Triandis (1980). Triandis describes social norms as social factors based on normative beliefs. The behavior of individuals is determined by what they think people *should* do (according to Weber (1960) and Gibbs (1965) this is defined as convention) and by the *expected consequences* of the behavior concerning the act. Triandis extended his theoretical framework and refined his interpretation of social factors by pointing out the importance of "*the individuals' internalization of the reference groups' subjective culture"* (Triandis 1980). In general, Hofstede (1980) defined culture as the "*collective programming of the mind which distinguishes the members of one human group from another*" (Hofstede 1980). In IS adoption research, Srite and Karahanna (2006) made a first approach to apply Hofstede's criteria (individualism/collectivism, masculinity/femininity, power distance, and uncertainty avoidance), in order to analyze the role of espoused national cultural values for individual technology acceptance. Their findings did not verify the entire construct of Hofstede's criteria but were able to show that individual values are influenced among others by national culture (Srite and Karahanna 2006).

Morals: Beck and Ajzen added a moral component to the Theory of Planned Behavior, which addresses the moral norm in order to clarify the distinction between rational cost-based-benefit driven decisions, and those who are based on feelings of "*inherently right or wrong*" (Beck and Ajzen 1991). The term moral norm needs some more explanation for achieving a better distinction of the original construct subjective norm: Even if an individual has internalized a certain (e.g. religious or philosophical) code due to its social environment, the individual might still have own convictions that do *not* fit to those of its cultural background, family, friends, colleagues, or spouse (Hornsey and Hogg 2000). Only few attempts were made so far to treat this construct as conceptually independent. For example, Conner and Armitage (1998) were able to show the predictive validity of moral norms (Conner and Armitage 1998). Although their results provide a limited generalizability, moral norms are considerable to be added as additional predictors (Abraham and Sheeran 2004, Godin et al. 2005). In social psychology, two theoretical frameworks (the Norm-Activation Theory (NAT) (Schwartz 1977) and the Self-Determination Theory (SDT) (Ryan et al. 1996, Deci and Ryan 2000)) postulate that the prediction of behavior has a better fit, if intentions based on moral norms are focused, rather than focusing intentions based on attitudes. Godin et al. (2005) tested both theories and were able to point out the impact of moral norms on people's intentions towards behavior. With regard to their findings, this impact depends on the autonomy, beneficence, non-maleficence and justice beliefs an individual has towards a certain action (Godin et al. 2005).

Mores: Mores differ from moral norms in their sanction mechanism – a violation of mores can be sanctified through exclusion from a social group or network, whilst moral violations will usually not lead to such a forceful sanction (Morris 1956, Jones et al. 1997). Mores reflect the behavioral part of social behavior that comes from the past, influenced by the social environment of an individual

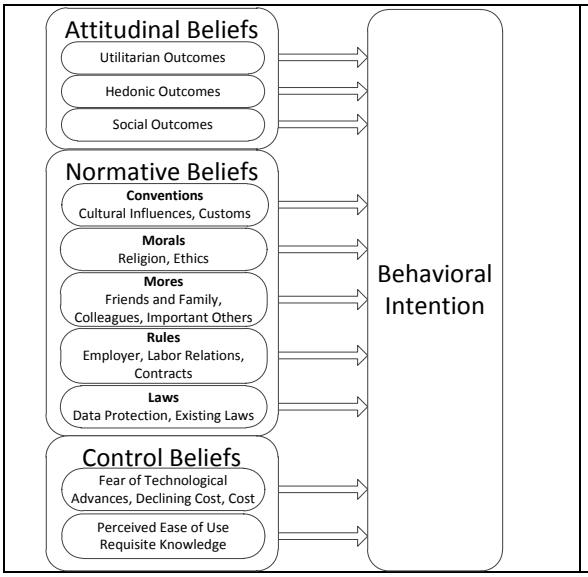
(Sumner 1906, Morris 1956). Additionally, they are determined by current interests or trends of others in order to arrange the daily routine (Weber 1960). Mores in our conceptual construct represent social influences applied by friends, family, spouse, and colleagues (Brown and Venkatesh 2005). According to Rogers (1995), secondary sources (mass media like newspapers, radio, or TV) influence the adoption decision of individuals as well (Rogers 1995).

Rules and Laws: Compared to social norms, rules and laws represent legal norms, which can only be sanctified by persons in particular statuses (Gibbs 1965). The distinction of legal norms from social norms has a quite philosophical character due to the fact that legal norms represent an institutionalization of social norms in order to regulate behavior (Weber 1960). Rules and laws both represent formalized and expatiated norms concerning certain acts and conduct in order to govern them (Groot and Vrielink 1998). Rules (e.g. agreements, contracts, statutes, standing rules, etc.) differ from laws by the fact that their enforcement may *not* include the use of force. The sanctification of laws in all consequences is reserved to the state in particular (Gibbs 1965). As a further distinction from social norms, legal norms are attached to a palpable sanction by an authority (Labovitz and Hagedorn 1973).

In the household context, authority from a child's perspective can be represented either by parents or officials (like teachers) as rule setters (MacCormick 1998). From an adults' perspective, a wider range of authority is reflected exemplarily by the employer, contracts, laws, officials, etc. (Groot and Vrielink 1998).

3 Extending the Model of Adoption of Technology in Households:

MATH was developed synthesizing relevant contributions from IS, marketing and social psychology (Venkatesh and Brown 2001, Brown and Venkatesh 2005, Brown et al. 2006). As the key dependent variable, behavioral intention is determined by attitudinal beliefs, normative beliefs and control beliefs. MATH differs from traditional technology acceptance approaches through underlining social and non-utilitarian (e.g. hedonism) influence factors towards attitudinal beliefs (Venkatesh and Brown 2001, Brown and Venkatesh 2005). Workplace-related attitudinal beliefs are represented through the utilitarian outcome construct.



CONSTRUCT	OPERATIONALIZATION
CONVENTIONS	My culture allows me to use a (PC) at home
MORALS	My religion allows me to use a (PC) at home
MORALS	It is ethically acceptable for me to use a (PC) at home
MORES	My friends suggest me to use a (PC) at home
MORES	My children want me to use a (PC) at home
MORES	My spouse recommends me to use a (PC) at home
MORES	My kinsmen/kinswomen think that it would be a good idea for me to use a (PC) at home
MORES	My colleagues would like me to use a (PC) at home
RULES	My superiors recommend me to use a (PC) at home
RULES	Due to my work contract i need to use a (PC) at home
RULES	Other existing contracts/contractors require me to use a (PC) at home
LAWS	The current data and security legislation allows me to use a (PC) at home
LAWS	Other legislation allows me to use a (PC) at home

Figure 1: MATH including the new normative belief structure and the related operationalization.

MATH also provides the capability to analyze the behavior of both adopters and non-adopters of a certain technology. In the model, normative beliefs represent the social influence towards an individual in order to perform or to not perform a certain action (Venkatesh and Brown 2001, Brown and Venkatesh 2005). Three normative beliefs were identified: relevant others (friends and family), secondary sources' and workplace referents' influences (Brown and Venkatesh 2005). Our approach ex-

tends these normative beliefs by integrating the previously introduced extension of normative belief constructs. Regarding labor relations, we have split the original construct of normative beliefs into social (represented by mores) and contractual (rules) sources of influence. By doing so, we expect some insightful findings towards the question, if formal or informal sources of influence affect an employees' intention. The law construct consists of permissive beliefs, whereas rules apply to enforcement beliefs. The extended MATH and a first attempt of operationalization for the newly developed indicators are presented in Figure 1.

4 Discussion and further research

This paper contributes to research with a conceptual extension of MATH by the refinement of normative beliefs. This should support IS adoption researchers to evaluate the impact of several different kinds of normative beliefs on the behavioral intention of household members toward IS adoption in a more precise way. Our current conceptual model has several limitations. First, the constitution of households in our research is assumed to be of an occidental culture. Biases in the results may occur if this view is transferred to the analysis of cultures with other hierarchical or social structures – without consideration of the differences. On the other hand, precisely because this paper provides a thoroughly specification of the normative belief construct, our approach could help illustrating such cultural differences. Second, the significance of the normative belief constructs has to be proved through evaluation of survey data. By doing so, we expect a selective differentiation especially between conventions, morals, and mores.

We currently evaluate a large data sample collected from 2116 doctoral students and professors via an online survey, which includes the newly developed and operationalized constructs. For further research, we also propose the integration of the extended normative belief structure into the organizational context (e.g. the UTAUT model (Venkatesh et al. 2003)).

References

Abraham, C. and Sheeran, P. (2004). Deciding to exercise: The role of anticipated regret. British Journal of Health Psychology, 9, 269-278.

Agarwal, R. (2000). Individual Acceptance of Information Technologies. In Framing the domains of IT management : Projecting the future through the past. (Zmud, R.W. Ed.), Pinnaflex Education Resources, Inc., Cincinnati, Ohio.

Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2), 79-211.

Asch, S.E. (1951). Effects of group pressure upon the modification and distortion of judgments. In Groups, Leadership, and Men. (Guetzkow, H. Ed.), 177-190, Carnegie Press.

Beck, L. and Ajzen, I. (1991). Predicting dishonest actions using the theory of planned behavior. Journal of Research in Personality, 25(3), 285-301.

Brown, S.A. and Venkatesh, V. (2005). Model of Adoption of Technology in Households: A baseline model test and extension incorporating household life cycle. MIS Quarterly, 29(3), 399-426.

Brown, S.A., Venkatesh, V. and Bala, H. (2006). Household technology use: Integrating household life cycle and the model of adoption of technology in households. Information Society, 22(4), 205-218.

Conner, M. and Armitage, C.J. (1998). Extending the Theory of Planned Behavior: A review and avenues for further research. Journal of Applied Social Psychology, 28(15), 1429-1464.

Culnan, M.J. (1993). "How Did They Get My Name?": An exploratory investigation of consumer attitudes toward secondary information use. MIS Quarterly, 17(3), 341-363.

Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. (1989). User acceptance of computer technology: a comparison of two theoretical models. Management Science, 35(8), 982-1003.

Deci, E.L. and Ryan, R.M. (2000). The "What" and "Why" of goal pursuits: human needs and the self-determination of behavior. Psychological Inquiry, 11(4), 227-268.

Eckhardt, A., Laumer, S. and Weitzel, T. (2009). Who influences whom? Analyzing workplace referents' social influence on IT adoption and non-adoption. Journal of Information Technology, 24(1), 11-24.
Festinger, L. (1954). A theory of social comparison processes. Bobbs-Merrill, Indianapolis.
Fishbein, M. and Ajzen, I. (1975). Belief, attitude, intention, and behavior : An introduction to theory and research. Addison-Wesley, Reading, Mass.
Gibbs, J.P. (1965). Norms: The problem of definition and classification. The American Journal of Sociology, 70(5), 586-594.
Godin, G., Conner, M. and Sheeran, P. (2005). Bridging the intention-behaviour gap: The role of moral norm. British Journal of Social Psychology, 44, 497-512.
Groot, M.D. and Vrielink, M.O. (1998). Legal theory and sociological facts. Law and Philosophy, 17(3), 251-270.
Hofstede, G. (1980). Culture's consequences, international differences in work-related values. Sage Publications.
Hornsey, M.J. and Hogg, M.A. (2000). Assimilation and diversity: an integrative model of subgroup relations. Personality and Social Psychology Review, 4(2), 143-156.
Jones, C., Hesterly, W.S. and Borgatti, S.P. (1997). A general theory of network governance: Exchange conditions and social mechanisms. The Academy of Management Review, 22(4), 911-945.
Labovitz, S. and Hagedorn, R. (1973). Measuring social norms. The Pacific Sociological Review, 16(3), 283-303.
Lacity, M., Iyer, V. and Rudramuniyaiah, P. (2008). Turnover intentions of Indian IS professionals. Information Systems Frontiers, 10(2), 225-241.
MacCormick, N. (1998). Norms, institutions, and institutional facts. Law and Philosophy, 17(3), 301-345.
Morris, R.T. (1956). A typology of norms. American Sociological Review, 21(5), 610-613.
Rogers, E.M. (1995). Diffusion of innovations. Free Press, New York.
Ryan, R.M., Sheldon, K.M., Kasser, T. and Deci, E.L. (1996). All goals are not created equal: An organismic perspective on the nature of goals and their regulation. In The psychology of action: Linking cognition and motivation to behavior. (Gollwitzer, P.M. and Bargh, J.A. Eds.), 7-26, Guilford Press, New York.
Schwartz, S.H. (1977). Normative influences ona. In Advances in Experimental Social Psychology. (Leonard, B. Ed.), 221-279, Academic Press.
Srite, M. and Karahanna, E. (2006). The role of espoused national cultural values in technology acceptance. MIS Quarterly, 30(3), 679-704.
Sumner, W.G. (1906). Folkways: A study of the sociological importance of usages, manners, customs, mores and morals. Ginn, Boston.
Sykes, T.A., Venkatesh, V. and Gosain, S. (2009). Model of acceptance with peer support: A social network perspective to understand employees' system use. MIS Quarterly, 33(2), 371-393.
Titah, R. and Barki, H. (2009). Nonlinearities between attitude and subjective norms in information technology acceptance: A negative synergy? MIS Quarterly, 33(4), 827-844.
Triandis, H.C. (1980). Values, attitudes, and interpersonal behavior. Nebraska Symposium on Motivation, 27, 195-259.
Venkatesh, V. and Brown, S.A. (2001). A longitudinal investigation of personal computers in homes: Adoption determinants and emerging challenges. MIS Quarterly, 25(1), 71-102.
Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 25(3), 425-478.
Weber, M. (1960). Soziologische Grundbegriffe. Mohr, Tübingen.
Williams, M.D., Dwivedi, Y.K., Lal, B. and Schwarz, A. (2009). Contemporary trends and issues in IT adoption and diffusion research. Journal of Information Technology, 24(1), 1-10.