

A Conceptual Model for IT Work Autonomy

Michael Kleisel^{1,2}

¹ University of Siegen, Siegen, Germany

² University of Twente, Enschede, The Netherlands

E-Mail: michael.kleisel@uni-siegen.de

Abstract

Autonomy is considered an important predecessor of job-related outcomes such as job satisfaction, job motivation, and work-life-balance. Although widely used in information systems (IS) research, most studies ignore its multi-dimensional nature and technology-related facets related to autonomy. This study contributes to existing literature by proposing IT work autonomy as a rich conceptualization that includes three existing dimensions of autonomy (work method autonomy, work scheduling autonomy, and work criteria autonomy) and a new technology-related dimension (i.e., work instrument autonomy). A conceptual model is proposed and discussed. For IS theory, conceptualizing IT work autonomy promises to enlighten future research that seeks to explore work-related phenomena. Moreover, this new conceptualization has the potential to guide organizations in designing future jobs.

Keywords: Autonomy, Instrument Autonomy, IT-related Dimensions

1. Introduction

Digital technologies have significantly changed modern workplaces by increasing employees' autonomy (Mazmanian et al. 2013). Autonomy is commonly understood as *"the degree to which the job provides substantial freedom, independence, and discretion to the employee in scheduling the work and in determining the procedures to be used in carrying it out"* (Hackman and Oldham 1975, p. 162). Hence, employees' autonomy is widely affected by the prevalence of mobile devices as they allow to schedule and carry out tasks more flexibly in terms of time and space. As a consequence, a great number of employees and knowledge workers in particular receive a considerable amount of autonomy (Ahuja et al. 2007; Mazmanian et al. 2013). For both practice and academia the concept is of vital interest, because it is considered a predecessor of job motivation and job satisfaction (Morris and Venkatesh 2010; Spector 1986; Tripp et al. 2016).

Previous literature has acknowledged the role of autonomy in numerous studies (Ahuja and Thatcher 2005; Elie-Dit-Cosaque et al. 2011; Moore 2000; Ye and Kankanhalli 2018). What most of these studies have in common is the fact that they operationalize autonomy as an overall job characteristic.

Contrary to those studies, it has been argued that autonomy is a rich concept with a multi-dimensional factorial structure (Breugh 1999; Ye and Kankanhalli 2018) including work scheduling autonomy, work method autonomy, and work criteria autonomy. Moreover, with the rise of individual information systems (Baskerville 2011), being autonomous in choosing technology is becoming a vital aspect in modern workplaces. In fact, recent studies suggest that being free to choose a specific technology has a significant impact on how individuals perceive a specific technology (Murray and Häubl 2011), which in turn has an impact on job performance. Although autonomy is gaining importance, IS literature lacks a conceptual notion that includes a technology-related dimensions. Therefore, IS-related phenomena cannot be investigated in detail. Against this background, this study proposes a conceptual model for IT work autonomy, which includes existing dimensions of autonomy. It extends this notion through the inclusion of work instrument autonomy, which refers to the degree to which a job provides substantial freedom to choose work-related technologies.

2. Towards IT Work Autonomy

Autonomy has been a subject of interest in various disciplines including philosophy (Castoridiadis 1991),

psychology (Deci et al. 1989; Hackman and Oldham 1976; Karasek 1979), organizational sciences (Mazmanian et al. 2013; Trevelyan 2001), and IS research (Ahuja et al. 2007; Ahuja and Thatcher 2005; Moore 2000). Previous IS literature has extensively used autonomy in various research streams. Most notably, autonomy has been used on the individual level as part of job-related theories including the job characteristic model (Hackman and Oldham 1976; Tripp et al. 2016) and self-determination theory (Deci et al. 1989; Weiling and Ping 2010). Since autonomy is often used as a job characteristic, several studies use autonomy to explain job-related outcomes including innovation behavior (Ahuja and Thatcher 2005), job-satisfaction (Morris and Venkatesh 2010; Tripp et al. 2016), or work-to-life conflict (Ahuja et al. 2007; Köffer et al. 2014). In the domain of agile methodologies, Maruping et al. (2009) and Lee and Xia (2010) consider team autonomy to be an important factor that influences software development agility and, thus, performance variables. Autonomy is also used on the organizational level. For instance, Durcikova et al. (2011) provide evidence that autonomy is an important aspect

when it comes to psychological climate within an organization. Specifically, their study demonstrates that a higher degree of autonomy leads to a higher degree of solution innovation.

Apart from explicit conceptualizations of autonomy, IS research has also proposed several constructs that relate to autonomy. For example, Sanders and Courtney include task authority in their study on Decision Support Systems success. With an explicit emphasize on technology, Murray and Häubl (2011) provide the results of an experiment with different user-interfaces and demonstrate that freedom of choice plays a vital role in terms of user perception (e.g., perceived ease of use). Another example is voluntariness, which plays an important role within the domain of technology acceptance research. According to Wu and Lederer (2009), who provide evidence from a comprehensive meta-analysis, environment-based voluntariness has a significant influence on belief-variables such as usefulness and ease of use. An overview of autonomy and autonomy-related constructs in IS research is provided in Table 1.

Table 1: Overview of Autonomy Constructs in IS Research

Construct	Entity	Dimensionality	Focus	Reference
Contextualized autonomy constructs				
Job Autonomy	I	Uni	Job characteristic	(Ahuja and Thatcher 2005; Elie-Dit-Cosaque et al. 2011; Moore 2000; Tripp et al. 2016)
Design Autonomy	I	Multi	Job characteristic	(Ye and Kankanhalli 2018)
Feelings for Autonomy	I	Uni	External Pressure	(Malhotra et al. 2008)
Task Autonomy	I	Uni	Job Characteristic	(Ozer and Vogel 2015)
Team Autonomy	G	Uni	Group characteristic	(Jain et al. 1998; Lee and Xia 2010; Maruping et al. 2009)
IT Project Autonomy	G	Uni	Paradoxes	(Gregory et al. 2015)
Climate for Autonomy	O	Uni	Psychologic climate	(Durcikova et al. 2011)
Autonomy-related constructs				
Task authority	I	Uni	Focus on tasks	(Sanders and Courtney 1985)
Freedom of Choice	I	Uni	Alternatives	(Murray and Häubl 2011)
Voluntariness	O	Uni	Environmental	(Brown et al. 2002; Wu and Lederer 2009)

I: Individual G: Group O: Organization, Uni: Unidimensional, Multi: Multidimensional

This review highlights two interesting aspects: First, autonomy is commonly used as a unidimensional construct that captures a contextualized form of autonomy. For instance,

job autonomy is operationalized as a generic, overall concept that seeks to reflect a general feeling in terms of a current job (e.g., Ahuja et al. 2007). Although an overall

conceptualization of autonomy has helped research to explain import aspects, it neglects the multi-dimensionality of the construct (Breugh 1999; Ye and Kankanhalli 2018). Thus, explanatory power has not been fully exploited yet.

Secondly, previous IS research has not yet taken technology-related dimensions into consideration. Since autonomy is understood as “the degree to which the job provides substantial freedom, independence, and discretion to the employee [...]” (Hackman and Oldham 1975, p. 162), it is also relevant to technology-related autonomy including the freedom to choose a technology (Murray and Häubl 2011). Through the advancements of consumer technologies and with the rise of Individual Information Systems (Baskerville 2011), employees have been able to use privately owned technologies for business-related purposes (Köffer et al. 2015). This development significantly increases the number of technologies that are suitable for work. Having an increasing

number of technological alternatives in place and being able to choose a technology that best fits to idiosyncratic preferences becomes important. Specifically, previous literature clearly indicates that the freedom to choose technology is important in terms of technology-related perceptions and beliefs. For example, Murray and Häubl (2011) draw from reactance theory (Brehm 1966, 1989; Brehm and Brehm 1981) to show that individuals that are free to choose an interface have a higher degree of positive perception of technology-related aspects (e.g., perceived ease of use) compared to individuals that are restrained. Consequently, we suggest to extend current conceptualizations of autonomy through the inclusion of a technology-related dimension: Work Instrument Autonomy which accounts for the increasing autonomy in terms of choosing technologies for work (c.f. Figure 1).

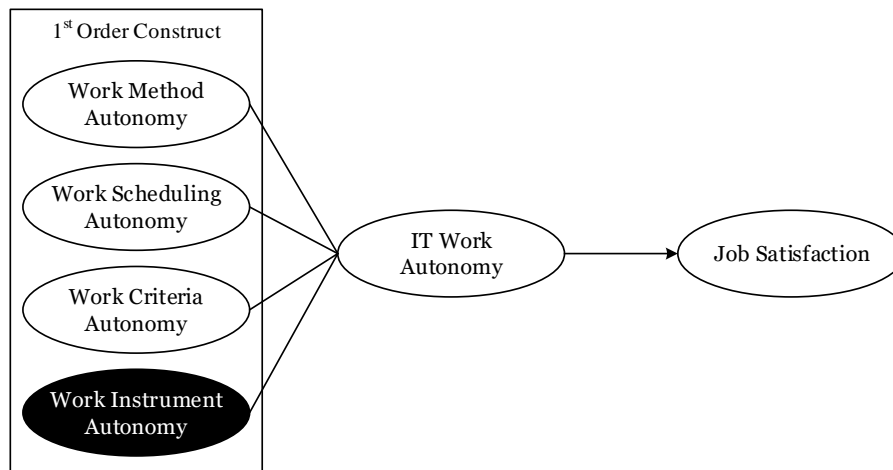


Figure 1: Proposed Conceptual Model

3. Future work and expected contributions

The proposed research model will be evaluated based on quantitative data (e.g., survey data). First, the factorial structure of IT work autonomy will be investigated carrying out a confirmatory factor analysis. Thereafter the concept of IT work autonomy will be further investigated within a nomological net. For that purpose, job satisfaction will be included in order to investigate whether the multidimensional conceptualization of IT work autonomy has indeed a positive effect on job satisfaction. For that purpose, Structural Equation Modeling (SEM) will be used.

Since this research relates to an important aspect of workplace characteristic, we expect important outcomes for theory and practice. For theory, we expect that this can contribute to research that focuses on job-related aspects. Since existing research used the concept of autonomy as an overall construct to address various outcome variables, we expect that IT work

autonomy is able to provide a more detailed perspective. For example, research related to innovation behavior (e.g., Ahuja and Thatcher 2005) can benefit from IT work autonomy. For practice those insights can also be beneficial as organizations are able to significantly influence the autonomy dimensions used here. For example, work instrument autonomy can be enhanced by implementing corresponding policies that allows employees to choose their devices such as their laptops. Against this background, we expect that this research provides important implications for organization on how to design workplaces in order to enhance desirable effects such as job satisfaction or innovation behavior.

References

- Ahuja, M. K., Chudoba, K. M., Kacmar, C. J., McKnight, D. H., and George, J. F. 2007. “IT Road Warriors: Balancing Work-Family Conflict, Job Autonomy, and Work Overload to Mitigate Turnover Intentions,” *MIS Quarterly* (31:1), pp. 1–17.

- Ahuja, M. K., and Thatcher, J. B. 2005. "Moving Beyond Intentions and Toward the Theory of Trying: Effects of Work Environment and Gender on Post-Adoption Information Technology Use," *MIS Quarterly* (29:3), pp. 427–459.
- Baskerville, R. 2011. "Individual Information Systems as a Research Arena," *European Journal of Information Systems* (20:3), pp. 251–254.
- Breaugh, J. A. 1999. "Further Investigation of the Work Autonomy Scales: Two Studies," *Journal of Business and Psychology* (13:3), pp. 357–373.
- Brehm, J. W. 1966. *A Theory of Psychological Reactance*, Academic Press.
- Brehm, J. W. 1989. "Psychological Reactance: Theory and Applications," *Advances in Consumer Research* (16:1), pp. 72–75.
- Brehm, S. S., and Brehm, J. W. 1981. *Psychological Reactance: A Theory of Freedom and Control*, Academic Press.
- Brown, S. A., Massey, A. P., Montoya-weiss, M. M., and Burkman, J. R. 2002. "Do I Really Have to? User Acceptance of Mandated Technology," *European Journal of Information Systems* (11:4), pp. 283–295.
- Castoridiadis, C. 1991. *Philosophy, Politics, Autonomy*, New York: Oxford University Press.
- Deci, E. L., Connell, J. P., and Ryan, R. M. 1989. "Self-Determination in a Work Organization," *Journal of Applied Psychology* (74:4), pp. 580–590.
- Durcikova, A., Fadel, K. J., Butler, B. S., and Galletta, D. F. 2011. "Knowledge Exploration and Exploitation: The Impacts of Psychological Climate and Knowledge Management System Access," *Information Systems Research* (22:4), pp. 855–866.
- Elie-Dit-Cosaque, C., Pallud, J., and Kalika, M. 2011. "The Influence of Individual, Contextual, and Social Factors on Perceived Behavioral Control of Information Technology: A Field Theory Approach," *Journal of Management Information Systems* (28:3), pp. 201–234.
- Gregory, R. W., Keil, M., Muntermann, J., and Mähring, M. 2015. "Paradoxes and the Nature of Ambidexterity in IT Transformation Programs," *Information Systems Research* (26:1), pp. 57–80.
- Hackman, J. R., and Oldham, G. R. 1975. "Development of the Job Diagnostic Survey," *Journal of Applied Psychology* (60:2), p. 159.
- Hackman, J. R., and Oldham, G. R. 1976. "Motivation through the Design of Work: Test of a Theory," *Organizational Behavior and Human Performance* (2), pp. 250–279.
- Jain, H., Ramamurthy, K., Hwa-Suk, R., and Masoud, Y.-A. 1998. "Success of Data Resource Management in Distributed Environments: An Empirical Investigation," *MIS Quarterly* (22:1), pp. 1–29.
- Karasek, R. A. 1979. "Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign," *Administrative Science Quarterly* (24:2), pp. 285–308.
- Köffer, S., Junglas, I., Chiperi, C., and Niehaves, B. 2014. Dual Use of Mobile IT and Work-to-Life Conflict in the Context of IT Consumerization, presented at the 35th International Conference on Information Systems, Auckland, Australia.
- Köffer, S., Ortbach, K., Junglas, I., Niehaves, B., and Harris, J. 2015. "Innovation Through BYOD? The Influence of IT Consumerization on Individual IT Innovation Behavior," *Business & Information Systems Engineering* (57:3), pp. 363–375.
- Lee, G., and Xia, W. 2010. "Toward Agile: An Integrated Analysis of Quantitative and Qualitative Field Data on Software Development Agility," *MIS Quarterly* (34:1), pp. 87–114.
- Malhotra, Y., Galletta, D. F., and Kirsch, L. J. 2008. "How Endogenous Motivations Influence User Intentions: Beyond the Dichotomy of Extrinsic and Intrinsic User Motivations," *Journal of Management Information Systems* (25:1), pp. 267–299.
- Maruping, L. M., Venkatesh, V., and Agarwal, R. 2009. "A Control Theory Perspective on Agile Methodology Use and Changing User Requirements," *Information Systems Research* (20:3), pp. 377–399.
- Mazmanian, M., Orlikowski, W. J., and Yates, J. 2013. "The Autonomy Paradox: The Implications of Mobile Email Devices for Knowledge Professionals," *Organization Science* (24:5), pp. 1337–1357.
- Moore, J. E. 2000. "One Road to Turnover: An Examination of Work Exhaustion in Technology Professionals," *MIS Quarterly* (24:1), pp. 141–168.
- Morris, M. G., and Venkatesh, V. 2010. "Job Characteristics and Job Satisfaction: Understanding the Role of Enterprise Resource Planning System Implementation," *MIS Quarterly* (34:1), pp. 143–161.
- Murray, K. B., and Häubl, G. 2011. "Freedom of Choice, Ease of Use, and the Formation of Interface Preferences," *MIS Quarterly* (35:4), pp. 955–976.
- Ozer, M., and Vogel, D. 2015. "Contextualized Relationship Between Knowledge Sharing and Performance in Software Development," *Journal of Management Information Systems* (32:2), pp. 134–161.
- Sanders, G. L., and Courtney, J. F. 1985. "A Field Study of Organizational Influencing DSS Success," *MIS Quarterly* (9:1), pp. 77–93.
- Spector, P. E. 1986. "Perceived Control by Employees: A Meta-Analysis of Studies Concerning Autonomy and Participation at Work," *Human Relations* (39:11), pp. 1005–1016.
- Trevelyan, R. 2001. "The Paradox of Autonomy: A Case of Academic Research Scientists," *Human Relations* (54:4), pp. 495–525.
- Tripp, J. F., Riemenschneider, C., and Thatcher, J. B. 2016. "Job Satisfaction in Agile Development Teams: Agile Development as Work Redesign," *Journal of the Association for Information Systems* (17:4), pp. 267–307.
- Weiling, K., and Ping, Z. 2010. "The Effects of Extrinsic Motivations and Satisfaction in Open Source Software Development," *Journal of the Association for Information Systems* (11:12), pp. 784–808.
- Wu, J., and Lederer, A. 2009. "A Meta-Analysis of the Role of Environment-Based Voluntariness in Information Technology Acceptance," *MIS Quarterly* (33:2), pp. 419–432.
- Ye, H., and Kankanhalli, A. 2018. "User Service Innovation on Mobile Phone Platforms: Investigating Impacts of Lead Userness, Toolkit Support, and Design Autonomy," *MIS Quarterly* (42:1), pp. 165–188.