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Development of a Measurement Model for International Employee Surveys

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Abstract

Employee surveys are widely used instruments for managing organizations; however, a cross-culturally validated measurement model based on scientific knowledge is pending. We developed a measurement model that incorporates meta-analytical results including objective organizational outcomes. Empirical tests supported the models' structure and its cross-cultural equivalence (except of equivalence of mean values). The model comprises categories that address employee's perception of the management, the socio-technical system, transactional aspects, transformational aspects, and employee's behavioral intentions and attitudes. The model may stimulate theory development and research that establishes causal relationships between the model's components and provides a basis for conducting employee surveys in organizations.

Development of a Measurement Model for International Employee Surveys

Employee surveys are widely used instruments for managing organizations and their change (Borg & Mastrangelo, 2008; Kraut, 2006). Different surveys including the largest companies in the USA and European countries showed that about 60% - 70% of the companies conduct employee surveys on a regular basis (for details see Borg & Mastrangelo, 2008, p. 1). Employee surveys are used to quantitatively measure employees' experiences at work in order to gain an overview of the status quo and design actions toward improvement of organizational functioning. Employee surveys are among the few instruments that enable management to stay in touch with their workforce and to systematically monitor and manage the "soft factors" that are important for an organization's productivity and success (Borg & Mastrangelo, 2008; Kraut, 2006; Schneider, Ashworth, Higgs, & Carr, 1996). Employee surveys are one possibility to identify root causes and evidence within a specific organization that informs management decisions. In other words employee surveys can be used for evidence based management (ebm), where the "little 'e' evidence" (Rousseau, 2006, p. 260) refers to evidence gathered within the organizations itself and is, therefore, local and organization specific. In order to make optimum use of employee surveys it is necessary to design and conduct employee surveys based on the available scientific knowledge regarding the relationships of employees' experiences and outcomes relevant to organizations. This refers to Evidence based management (Ebm) where the "big 'E' evidence" (Rousseau, 2006, p. 260) symbolizes generalizable, theoretically founded and empirically sound knowledge (for E/ebm also see Brodbeck, 2008; Pfeffer & Sutton, 2006).

However, the extensive body of empirical research on employees' attitudes, experiences, and behaviors on the one hand, and the measurement models used for employee surveys in practice, on the other hand, are largely disconnected. Many models for employee surveys lack empirical validation (as also noted by Borg & Mastrangelo, 2008). Furthermore, there is little

scientific evidence guiding the use of employee surveys and ensuring measurement equivalence across cultures (as also addressed by Aycan, 2000; Gelfand, Leslie, & Fehr, 2008; Kraut, 2006; Scott & Mastrangelo, 2006; for exceptions see e.g., Liu, Borg, & Spector, 2004; Mueller, Hattrup, & Straatmann, 2011; Ryan, Chan, Ployhart, & Slade, 1999). Yet, many organizations are global players and conduct employee surveys internationally (Liu et al., 2004; Mueller et al., 2011).

Our goals were to: (a) develop a measurement model for international employee surveys that systematically builds on meta-analytical results regarding employee's attitudes and experiences and their relationship to organizational outcomes, (b) empirically validate the model's structure, and (c) test the models' cross-cultural equivalence.

Employee Surveys

Generally, employee surveys describe a "systematic process of data collection designed to quantitatively measure specific aspects of an organizational member's experience as it relates to work" (Church & Waclawski, 1998, p. 4). Employee surveys serve different functions including: a diagnostic function (e.g., diagnosis of job satisfaction), an evaluation function (e.g., evaluation of change programs), a control function (e.g., monitoring leadership behaviors), and intervention function (e.g., initiating organizational development based on the results; Borg & Mastrangelo, 2008; Bungard & Jöns, 1997). In sum, employee surveys provide information for managerial decisions for improving organizational functioning (Kraut, 1996).

There are various theoretical models available serving as a basis for questionnaire design, data analysis, and reporting of employee surveys as well as action planning based on employee surveys (Borg & Mastrangelo, 2008). Examples are: the Employee Engagement Model (Harter, Schmidt, Killham, & Agrawal, 2009), the Organizational Culture Model (Denison, 2011), the High Performance Model (Wiley, 2009), the Alignment, Capabilities, Engagement Model

(Schiemann & Morgan, 2006), or the Performance-Satisfaction Motor (Borg & Mastrangelo, 2008). At the bottom line, the models specify aspects of employees' attitudes, experiences, and behaviors that are suggested to be surveyed in employee surveys. However, what is often missing are measurement models for employee surveys that (a) build on the extensive body of existing empirical research regarding employees' attitudes, experiences and behaviors and their relationship to organizational outcomes, and (b) are cross-culturally validated and, thus, shown to be suited for international organizations.

Our goal was to address this gap when developing a measurement model for international employee surveys. First, we systematically reviewed meta-analysis on the relationship between employees' experiences, attitudes, behaviors and organizational outcomes. Building on the review we specified a measurement model, which we validated for cross-culturally. These steps are described in the following.

Development of a Model for Employee Surveys Based on Meta-analytic Results

First, we searched meta-analyses, which focused on the relationships between employees' experiences, attitudes, and behaviors relevant for organizational functioning. Because a major goal of employee surveys is to gather information within the organization in order to improve organizational functioning, we also searched for meta-analyses that investigated the relationship between employees' experiences, attitudes, and behaviors, on the one hand, and objective outcomes on the organizational level such as venture growth, turnover, innovation, and productivity, on the other hand. The search resulted in a list of constructs specifying employees' experiences, attitudes, and behaviors that are relevant to organizational functioning and thus relevant for employee surveys. Several criteria were employed to include/excluded constructs: Because employee surveys are based on individual's answers, we limited the search to constructs that reflect individual's experience as they work in their immediate environment and their team

as well as relate to colleagues, supervisors, and management. Constructs that can only be assessed on the group or organizational level were only considered when being crucial outcome variables showing why specific individual level constructs matter to organizations. Furthermore, we focused on constructs that were conceptualized as variables subject to change. One major goal of employee surveys is to intervene and initiate change as well as develop individuals, teams and organizations. Therefore, concepts that describe characteristics that cannot (or rather can hardly) be changed, trained, or developed – like stable personality traits – were excluded. Our search yielded more than 150 meta-analyses. Because a detailed outline of all included constructs and meta-analyses would exceed the scope of this paper, we provide the details upon request. In this paper, we provide a list with exemplary constructs and exemplary meta-analyses in Table 1.

Second, the concepts for capturing employees' experiences, attitudes, and behaviors relevant to organizations' functioning were grouped. The grouping was based on conceptual similarity as described in the respective literature and based on the rating of three individuals, who were experts in the field of employee surveys (i.e., they had a background in social sciences and at least 10 years of practical experience in conducting employee surveys). The categorization resulted in 20 first-order categories. These 20 first-order categories could again be summarized in the following five second-order categories: (a) *corporate level leadership*, which represents employees' perceptions of the company's vision, management, and system as they provide direction; (b) *socio-technical system*, which refers to employees' perceptions of the immediate work environment; (c) *transformational variables*, which include employees' perceptions of change and transformation oriented aspects at work; (d) *transactional variables*, which refer to employees' perceptions of social exchange processes that are designed to provide a stable reward and feedback system; (e) *people outcomes*, which include employees' perceptions of their

performance, employees' work attitudes and negative behavioral intentions. The latter (e.g., counterproductive work-behavior) were included reverse coded subsequently. All first- and second- order categories are displayed and described in more detail in Table 1. Table 1 also shows examples of psychological constructs that are covered by the first-order categories.

Third, we specified the relationships between the second-order categories and ensured their relevance for organizations based on relationships to organizational outcomes such as venture growth, turnover, innovation, and productivity. The body of meta-analyses that resulted from our search showed positive relationships between constructs from all second-order categories. In other words, aspects of each second-order category positively related to aspects of each other second-order category. Furthermore, we were interested in the relationship between the model's categories and organizational level outcomes in order to show the relevance of the model for organizations. The available meta-analyses were analyzed for interrelations between the model's first- or second-order categories (or rather constructs that were be assigned to the categories) and organizational outcomes that were measured independent from employees' perceptions. Examples for organizational level outcomes were: product development speed (Chen, Damanpour, & Reilly, 2010), venture growth (Baum, Locke, & Kirkpatrick, 1998), customer satisfaction (Whitman, van Rooy, & Viswesvaran, 2010), organizational turnover (Griffeth, Horn, & Gaertner, 2000; Whitman et al., 2010), and profit (Harter, Schmidt, & Hayes, 2002). We found evidence for a positive relationship between each second-order category (i.e., constructs that were assigned to the categories) and organizational outcomes. Again, a detailed description of all relationships between the second-order categories and the relationships between the second-order categories and the organizational outcomes are provided upon request.

Based on the search, the subsequent categorization, and the exploration of relationships reported in meta-analyses, we developed our measurement model for international employee

surveys, which is visualized in Figure 1 (i.e., basic model for international employee surveys) and Figure 2 (measurement model for international employee surveys). The model includes all categories and relationships described above. Our next step was to empirically test the structure of the proposed model for international employee surveys and to show its cross-cultural measurement equivalence.

Empirical Test of the Model for Employee Surveys

Method

Participants and procedure. Data was provided from three international organizations from the producing sector with headquarters in Germany, which conducted international employee surveys on a regular basis. The data from one employee survey of each company constitutes the basis for the analysis. Employees answered the employee survey via paper-pencil (41%) or online (59%) questionnaires in their mother tongue. After excluding all participants with missing data we obtained N = 6,068 individuals from Company 1, N = 151,197 individuals from Company 2, and N = 48,986 individuals from Company 3. The individuals were from diverse cultural backgrounds and worked in different countries. Table 2 summarizes the companies' and employees' characteristics including the sample's distribution across different cultural regions.

Measures. We depended on the items that were used in the standard employee surveys of the three companies. We used the items that could be matched to one of the first-order categories of our proposed model. The matching was conducted by two experts separately resulting in an interrater reliability of Cohen's $\kappa = 85$. Discrepancies were resolved by discussion. All second-order categories were covered by items from the employee surveys of all three companies. Only three first-order categories were not included in any of the three surveys (i.e., vision, PE-value fit, and negative people outcome) all other first-order categories were included by in at least one of

the three surveys. Table 2 displays, which first-order categories were included in the employee surveys of the three companies. Sample items for each first-order category that was covered by at least one company's employee survey are also shown in Table 1. Most of the first-order categories were assessed by at least two items, except of two categories in the survey of Company 1, two categories in the survey of Company 2, and one category in the survey of Company 3, which were measured by one item.

Data analyses. The data of each company was analyzed separately. For all analyses, we transformed the items, which were originally assessed on 5-point scales, to 3-point scales as suggested by Eid, Langehein, and Diener (2003) and treated them as categorical variables.

To assess the goodness-of-fit of our measurement model for international employee surveys we conducted confirmatory factor analysis (CFA) for categorical data using Mplus 6.1.1 (Muthén & Muthén, 1998-2010).

In order to test cross-cultural measurement equivalence we compared the answers to the employee from different cultural regions. The cultural regions were chosen according to the 10 GLOBE-clusters (Gupta, Hanges, & Dorfman, 2002; House, Hanges, Javidan, Dorfman, & Gupta, 2004). "Measurement equivalence exists, when items measuring a given construct are perceived and interpreted in the same way and the response scale is used in the same way, across different samples" (Robert, Lee, & Chan, 2006, p. 66). The statistical analyses were conducted with eight steps as recommended by Schmitt and Kuljanin (2008) and Vandenberg and Lance (2000): The first five steps address issues of measurement invariance: (1) the model fit in each group; (2) configural equivalence; (3) metric equivalence; (4) scalar equivalence; (5) equivalence of the uniqueness associated with observed variables. The steps six through eight address the structural invariance: (6) equivalence of the factor variances; (7) equivalence of the factor covariances; (8) equivalence of the factor means. Analyses were run with CFAs for categorical

data and multiple groups (which implies hierarchical series of nested constraints on parameters across the groups) in Mplus 6.1.1 (Byrne, 2012, Muthén & Muthén, 1998-2010). In addition, the influence of a potential response tendency was analyzed following Hanges (2004), who suggest that no response bias exists if standardized residual t-values do not exceed the threshold of 2.0.

Results

Model fit. By conducting CFAs we determined the overall goodness-of-fit of the proposed measurement model for international employee surveys (see Figure 2) and compared the model to two alternative models: the first alternative model presumed that all items load on one general first-order factor; the second alternative model presumes that the items load on the proposed model's first-order categories but that the 20 first-order categories load on one general latent second-order factor. The results, which are displayed in Table 3, show that our proposed model for international employee surveys had a satisfactory fit as the goodness-of-fit statistics of all three companies exceeded the respective cutoff values suggested by Hu and Bentler (1999): index > .95 for CFI and TFI, index < .05 for RMSEA. Furthermore, the fit was significantly better than the fit of the alternative models as indicated by the significant $\Delta\chi^2$-values (see Table 3). Both alternative models also did not meet the criteria for a satisfactory fit suggested by Hu and Bentler (1999).

Cross-cultural measurement equivalence. First, we tested whether the proposed structure of the model for international employee surveys was equivalent across cultural regions (steps 1, 2, 3, 5, 6, 7 suggested by Schmitt and Kuljanin, 2008 and described above): The goodness-of-fit statistics when calculated for each cultural region separately, confirmed the proposed model in all cultural regions (step 1). We found: RMSEA-values < .050, TLI-values > .950, CFI-values > .957. Furthermore, the results (see Table 4) supported configural equivalence (step2; i.e., same factors and patterns of factor loadings explain variance-covariance matrices),

metric equivalence (step 3; same factor loadings), and equality of the uniqueness associated with each observed variable (step 5; equivalence of residual´s covariance). The results show that the structure of the model was equivalent in all cultural regions.

Second, we were interested whether the means of the items and factors were comparable across cultures (steps 4 and 8 suggested by Schmitt and Kuljanin, 2008 and described above). The results showed that the actual values of the observed means (or rather the thresholds) differed across cultures (i.e., we did not find scalar equivalence, step 4; see Table 4, which indicates a $\Delta CFI > .01$). Given that step 4 is a prerequisite for step 8 (i.e., equivalence of factor means), the test of step 8 was not performed.

Third, we showed that there was no systematic response bias across the different cultural regions, as respective t-values did not exceed the criteria of 2.0. Therefore, non-equivalence of the means/thresholds is not due to a response bias.

Discussion

We developed a measurement model for international employee surveys based on meta-analytical results. An empirical test with data from three international companies supported the structure of the model. Furthermore, we showed the models' structural equivalence across cultural regions. However, the means of the items were not equivalent across cultures, which implies that they cannot be directly compared. The differences in means were not due to systematic response biases across cultures, which suggests actual cultural differences regarding the (perceptions of) the model's categories.

A measurement model for international employee surveys that builds on existing psychological research and was cross-cultural validated was long time pending. Therefore, this paper contributes by providing a measurement model that can be practically used and hopefully inspires future theory development and empirical research in the area of employee surveys.

By building on a comprehensive search of meta-analyses investigating employees' attitudes, experiences, and behaviors relevant for organizational functioning we intended to create a model that was *complete* with respect to the scientific knowledge up to date. We also consider the model *relevant* to practice as all categories of the model were meta-analytically shown to relate to objective organizational outcomes such as venture growth, customer satisfaction, innovation, productivity, or turnover. By testing the cross-cultural measurement equivalence of the model we also provide a model applicable for *international* organizations.

However, causal relationships between the models' components – or rather the different first- and second-order categories – cannot be derived at the current status. Future theory development and research is asked to establish and test causal relationships of the model's categories. Causal relationships will help organizations better target leverage points for interventions based on results from employee surveys.

Nevertheless, organizations can already benefit from the measurement model for international employee surveys. When organizations' management aim at obtaining a broad overview of employees' experiences that are relevant to organizations' functioning the model provides an overview of what aspects should be included. Organizations can use these employee surveys internationally without needing to expect problems from cultural differences as long as means are not directly compared across cultures. In sum, we provide a basis for designing employee surveys based on a measurement model that incorporates scientific knowledge and was cross-culturally validated. Thus, when building on the model, organizations can directly apply the principles of the "big 'E' evidence" of Ebm when gathering their information for the "little 'e' evenidence" of ebm via employee surveys (cf. Rousseau, 2006).

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Table 1

First- and second-order categories of the measurement model for employee surveys

Category	Description	Exemplary underlying psychological constructs	Exemplary conceptual basis and exemplary meta-analyses	Sample item as used in the employee surveys
Corporate level leadership	*This dimension summarizes all variables that directly relate to the top management. From an individual's perspective, top managers must develop a challenging vision, define strategically goals, and build trust. Furthermore, it is the top manager's task to create a socio-technical system and design transactional processes that enable individual's to perform well.*			
Vision	From an employee's perspective, one of the major tasks of top managers is to develop and communicate an inspiring vision that excites the staff for the future direction.	Shared vision and systems, vision attributes, vision content	Baum et al., 1998; Van Wijk, Jansen, & Lyles, 2008	(Not included in any employee survey)
Strategy	Derived from the vision, a strategy that involves operational goals for the entire organization and its units must develop and communicate with the top management to the staff. At the end, employees must be clear about the contents of the strategy and identify with it.	Strategy clarity, top management support	Beehr Glazer, Fischer, Linton, & Hansen, 2009; Baum, Locke, & Smith, 2001; Combs & Ketchen Jr., 2002	I understand my operating unit's strategy well enough to explain it to a new colleague.
Trust in systems	It is important for the functioning of an organization that employees have trust in the overall systems of the organization, particularly perceive their job as secure and trust the top management regarding their decisions and integrity.	Psychological contract, job security	Rousseau, 1995; Zhao, Wayne, Glibkowski, & Bravo, 2007	I trust in the management/ the executive management of my company.

Table 1 (continued)

Category	Description	Exemplary underlying psychological constructs	Exemplary conceptual basis and exemplary meta-analyses	Sample item as used in the employee surveys
Transactional Variables	*The dimension of Transactional Variables describes social exchange processes. Organizational behavior concepts that are associated with the principles of transactional leadership such as the structuring of work roles and tasks, setting goals, providing feedback, and rewarding performance are summarized in this dimension.*			
Trans-actional leadership	In addition to the facets of the transformational leadership, organizational leaders should also behave according to the principles of transactional leadership in order to lead efficiently.	Transformational leadership theory,	Bass, 1985, 1999; Judge & Piccolo, 2004	I get useful performance feedback from my immediate boss (timely, specific, understandable, motivating).
Roles & tasks	This category provides an overview about how the individual's tasks and the work roles should be structured. Employees must be clear about their unambiguous work roles and self-efficient to master the challenges that come with the work role. Tasks must be structured to have a high motivational potential, e.g. provide a high degree of autonomy and allow the usage of a wide variety of skills.	Job characteristics, work roles, role characteristics, role clarity, role conflict, role overload	Bowling & Beehr, 2006; Gilboa, Shirom, Fried, & Cooper, 2008; Humphrey, Nahrgang, & Morgeson, 2007	In my actual work, I am able to fully deploy my skills and competencies.
Goal Setting	Individual's goals should be clear, specific, measurable, challenging but attainable, terminated, and significant.	Goal setting theory	Locke & Latham, 2002, 2007	I am clear about the demands on the quality for my work.
Feedback	Constructive feedback, provided by supervisor, peers, and other persons, helps individuals to distinguish between effective and ineffective behavior.	Feedback interventions	Kluger & DeNisi, 1996; Locke & Latham, 2002, 2007	I am well informed about the current level of performance of my team (e.g., customer satisfaction, quality).
Rewards	Performance leads to both material and non-material rewards. The recipient should be able to evaluate these rewards as fair in terms of distribution, process, and interaction.	Equity theory, organizational justice theory	Bolino & Turnley, 2008; Cohen-Charash & Spector, 2001	I feel that my pay is appropriate for my responsibilities and performance.

Table 1 (continued)

Category	Description	Exemplary underlying psychological constructs	Exemplary conceptual basis and exemplary meta-analyses	Sample item as used in the employee surveys
Transform-ational variables	*All variables that relate to transformational processes are summarized in this dimension. Particularly the principles of the transformational leadership and associated concepts have proven to be relevant for various outcome variables.*			
Trans-formational leadership	Transformational leaders behave according to the four dimensions of the transformational leadership theory, such as lead in an admirable way, articulate an appealing vision, challenge employees, and attend to the follower's needs.	Transformational leadership theory	Bass, 1985, 1999; Judge & Piccolo, 2004	My immediate boss supports my professional development.
Strategy alignment	To have an effect, the organization's strategy must consequently cascade down by the middle- and shop floor management to each employee. This also helps employees to recognize what are their individual contributions to the overall business goals.	Strategy alignment to individual goals	Beehr et al., 2009; O'Reilly, Cardwell, Chatman, Lapiz, & Self, 2010; Schiemann & Morgan, 2006	I clearly understand what my personal contribution should be to achieving our goals and targets.
Change- & innovation culture	A professionally managed transformation process, including the timely communication about the transformation's goals, the involvement of the staff in the implementation, etc., ensures that employees do not resist to organization's change programs. If the climate for innovations is positive, e.g. with a constructive handling of errors, then employees are likely to be creative and implement new ideas in their working environment.	Change management programs, readiness for change, resistance to change, innovation	Doppler & Lauterburg, 2008; Hammond, Neff, Farr, Schwall, Huelsheger, Anderson, & Salgado, 2009; Oreg, 2003, 2006; Werther, 2010	In my working environment everyone is willing to learn new things in order to adapt to changing market requirements.
Trust	In order to work efficiently and feel comfortable, individuals should trust another in the direct work environment, particularly the next level manager and colleagues. Central is whether all involved people can rely on each other and walk the talk.	Trustworthiness (integrity, benevolence, ability), trust in leadership	Colquitt, Scott, & LePine, 2007; Dirks & Ferrin, 2002	In my team / department, the associates trust, respect and support each other.
PE-value fit	Employees must perceive a high level of fit between their personal values and the values and practices of the organization.	Fit between a person and the vocation, job, team, supervisor, or company	Kristof-Brown, Zimmerman, & Johnson, 2005	(Not included in any employee survey)

Table 1 (continued)

Category	Description	Exemplary underlying psychological constructs	Exemplary conceptual basis and exemplary meta-analyses	Sample item as used in the employee surveys
Socio-technical system	*This dimension comprises all social and technical variables that are needed to provide the basic conditions for the work, such as the provision of tools, venues, teamwork, skill development, communication, etc.*			
Working conditions	The basic working conditions must ensure that individuals can do their job. This includes the provision of the necessary equipment, suitable venues, and a focus on health and safety.	Suitable venues (e.g., noise), health & safety programs, safety climate	Christian, Bradley, Wallace, & Burke, 2009; Clarke & Robertson, 2008; Humphrey et al., 2007; Stadler & Spieß, 2002	My workplace fulfills the necessary requirements needed for a good working environment (e.g., cleanliness, lighting, noise levels, ventilation, location)
Processes and cooperation	To ensure that processes and cooperation run smoothly, work groups must be cohesive, integrate people with diverse backgrounds, solve conflicts constructively, and its members support each other mutually. The processes that occur within a team and between teams and units are perceivable as efficient and useful for the achievement of the goals.	Cohesion, Diversity, social support, inter-personal conflict, working processes	Bowers, Pharmer, & Salas, 2000; Bowling & Beehr, 2006; De Dreu & Weingart, 2003; Horwitz & Horwitz, 2007; Humphrey et al., 2007; LePine, Erez, & Johnson, 2008	Workflows are very well organized in my team / department.
Communi-cation	The transparent communication regarding decisions, ongoing changes, business indicators, etc., serves to set individuals performances in the context of the organization.	Communication about goals and objectives, communication quality, information sharing ,communication climate	Bartels Pruyn, De Jong, & Joustra 2007; Baum et al.,1998; Beehr et al., 2009; Mesmer-Magnus & De Church, 2009	I am informed about the background to important decisions in good time.
Personnel Develop-ment	This category covers the description of what extent personnel development programs successfully train and develop employees.	Cognitive ability, person-job fit, self-efficacy,job training, personnel development	Arthur Jr. & Bennet Jr., Edens, & Bell, 2003; Baldwin & Fold, 1988; Judge & Bono, 2001; Stajkovic & Luthans, 1998	I am satisfied with the training programs available to me.

Table 1 (continued)

Category	Description	Exemplary underlying psychological constructs	Exemplary conceptual basis and exemplary meta-analyses	Sample item as used in the employee surveys
People Outcomes	*The dimension of People Outcomes summarizes all work related attitudes, states, motivational variables, and performance criteria on the organization's bottom-line that are relevant for the individual as well as for the organization's functioning*			
Perfor-mance	Performance behaviors that are independent from formal agreements play an important role in the functioning of an organization. The concepts of OCB and Proactivity were hereby identified as beneficial variables.	OCB, Proactivity, in-role-performance	LePine, Erez, & Johnson, 2002; Organ, 1997	I go beyond the responsibilities defined in my job role to contribute to the success of my operating unit.
Job attitudes & work engage-ment	This category summarizes work related attitudes, states, and motivational outcome variables. Findings from literature revealed that job satisfaction, combined with commitment to the organization, are positively associated with various performance outcomes. Work engagement and job involvement address motivational aspects of the job that explain additional variance of individual's effectivity.	Job satisfaction, work engagement, commitment	Harrison, Newman, & Roth, 2006; Judge, Thoresen, Bono, & Patton, 2001; Meyer, Stanley, Herscovitch, & Topolnytsky, 2002; Riketta, 2008;	I am proud to work for [name of the company].
Negative people outcomes	Negative People Outcomes comprises factors that directly harm the goals of the organization such as counterproductive work behavior, turnover (intentions), work stress, and burnout.	Counterproductive work behavior, turnover (intentions), work stress, burnout	Berry, Ones, & Sackett, 2007; Harrison et al., 2006	(Not included in any employee survey)

Note. Second-order categories are displayed in italic; first-order categories are displayed in standard letters. PE-value fit = Person-environment-value fit.

Table 2

Description of companies, employees, and surveys

	Company 1	Company 2	Company 3
Size of the company (approximate number of employees)	10,000	210,000	80,000
Participation rate in employee survey	82%	82%	81%
Overall no. of participants included in analyses	6,068	151,197	48,986
No. of participants in managerial positions of the overall no. of participants	735	12,506	6,582
Number of participants from different regions categorized according to GLOBE clusters			
Nordic Europe	491	1,771	2,850
Germanic Europe	2,531	62,244	16,596
Eastern Europe	237	12,256	13,692
Latin Europe	398	14,799	252
Anglo	1,421	13,143	12,187
Middle East	86	4,545	0
Latin America	133	11,981	0
Confucian Asia	619	17,623	0
Southern Asia	118	12,835	0
Could not be assigned to one of the regions	34	0	5,974
First- and second-order categories that were included in the employee surveys			
Corporate level leadership	Strategy, system trust	Strategy	Strategy, system trust
Socio-technical system	Working conditions, processes & cooperation, development, communication	Working conditions, processes & cooperation, development, communication	Working conditions, processes & cooperation, communication
Transformational variables	Change- & innovation culture, strategy alignment, transformational leadership	Change- & innovation culture, transformational leadership, trust	Change- & innovation culture, transformational leadership, trust
Transactional Variables	Rewards, roles & tasks, transactional leadership, goal setting	Rewards, roles & tasks, transactional leadership, goal setting	Rewards, feedback, roles & tasks, transactional leadership
People Outcomes	Performance, work engagement, satisfaction	Performance, work engagement	Performance, work engagement

Note. No. = Number.

Table 3

Confirmatory factor analyses for testing the model fit

	Fit indices					Comparison with Model 1
	χ^2	df	CFI	TLI	RMSEA	$\Delta\chi^2$
Model 1 (proposed model, see Figure 2)						
Company 1	8,357.02**	756	.963	.959	.041	
Company 2	128,111.32**	473	.974	.971	.042	
Company 3	41,575.19**	540	.972	.969	.039	
Model 2 (one general first-order factor)						
Company 1	28,529.66**	702	.856	.848	.081	20172.64**
Company 2	655,610.52**	495	.852	.843	.094	527499.20**
Company 3	226,535.75**	560	.846	.836	.091	184960.56**
Model 3 (five first-order factors and one second-order factor)						
Company 1	20,559.81**	692	.897	.890	.069	12202.79**
Company 2	374,390.93**	485	.925	.918	.071	246279.61**
Company 3	119,255.83**	550	.919	.913	.066	77680.64**

Note. * $p < .05$, ** $p < .01$. CFI = Comparative Fit Index; TLI = Tucker-Lewis-Index; RMSEA = Root Mean Square Error of Approximation.

Table 4

Cross-cultural equivalence of the measurement model for international employee surveys

Company, step of test for equivalence	χ^2	df	CFI	TLI	RMSEA	Δ CFI from previous step
Company 1						
(2) Model testing configural equivalence	11,285.031**	6,788	.976	.974	.031	
(3) Model testing metric equivalence	11,245.076**	7,020	.977	.976	.030	-.001
(3) Model testing metric equivalence (scaling factors freely estimated) [a]	11,285.001**	6,788	.976	.974	.031	
(5) Model testing equivalence of uniqueness	11,251.639**	7,052	.977	.976	.030	.000
(6/7) Model testing equivalence of factor variances/ -covariances [b]	11,346.717**	7,170	.977	.977	.029	.000
(4) Model testing scalar equivalence	14,007.997**	7,818	.967	.968	.034	.010
(4) Model testing scalar equivalence (scaling factors freely estimated) [b]	13,671.073**	7,514	.967	.967	.035	
Company 2						
(2) Model testing configural equivalence	142,758.01**	4,249	.972	.969	.044	
(3) Model testing metric equivalence	111,448.62**	4,425	.979	.977	.038	-.007
(3) Model testing metric equivalence (scaling factors freely estimated) [a]	142,758.16**	4,249	.972	.969	.044	
(5) Model testing equivalence of uniqueness	111,337.17**	4,454	.979	.977	.038	.000
(6/7) Model testing equivalence of factor variances/ -covariances [b]	77,497.29**	4,639	.986	.985	.031	-.007
(4) Model testing scalar equivalence	136,716.73**	5,167	.974	.976	.039	.012
(4) Model testing scalar equivalence (scaling factors freely estimated) [b]	186,965.36**	4,903	.964	.965	.047	
Company 3						
(2) Model testing configural equivalence	39,503.054**	2,692	.972	.970	.039	
(3) Model testing metric equivalence	31,536.206**	2,992	.978	.977	.034	-.006
(3) Model testing metric equivalence (scaling factors freely estimated) [a]	39,503.798**	2,692	.972	.970	.039	
(5) Model testing equivalence of uniqueness	26,972.139**	2,844	.982	.981	.031	-.004
(6/7) Model testing equivalence of factor variances/ -covariances [b]	25,877.796**	2,889	.983	.982	.030	-.001
(4) Model testing scalar equivalence	46,184.704**	3,169	.968	.970	.039	.015
(4) Model testing scalar equivalence (scaling factors freely estimated) [b]	49,652.784**	3,029	.965	.966	.041	

Note: **p<.01. CFI = Comparative Fit Index; TLI = Tucker-Lewis-Index; RMSEA = Root Mean Square Error of Approximation. [a] Eleven scale factors had to be fixed in order that Mplus could estimate the goodness-of-fit. [b] The covariance "Strategy with System Trust" had to be relaxed in order that Mplus could estimate the goodness-of-fit. The numbers of the steps refer to the number of the steps suggested by Schmitt and Kuljanin (2008) and described in the method section.

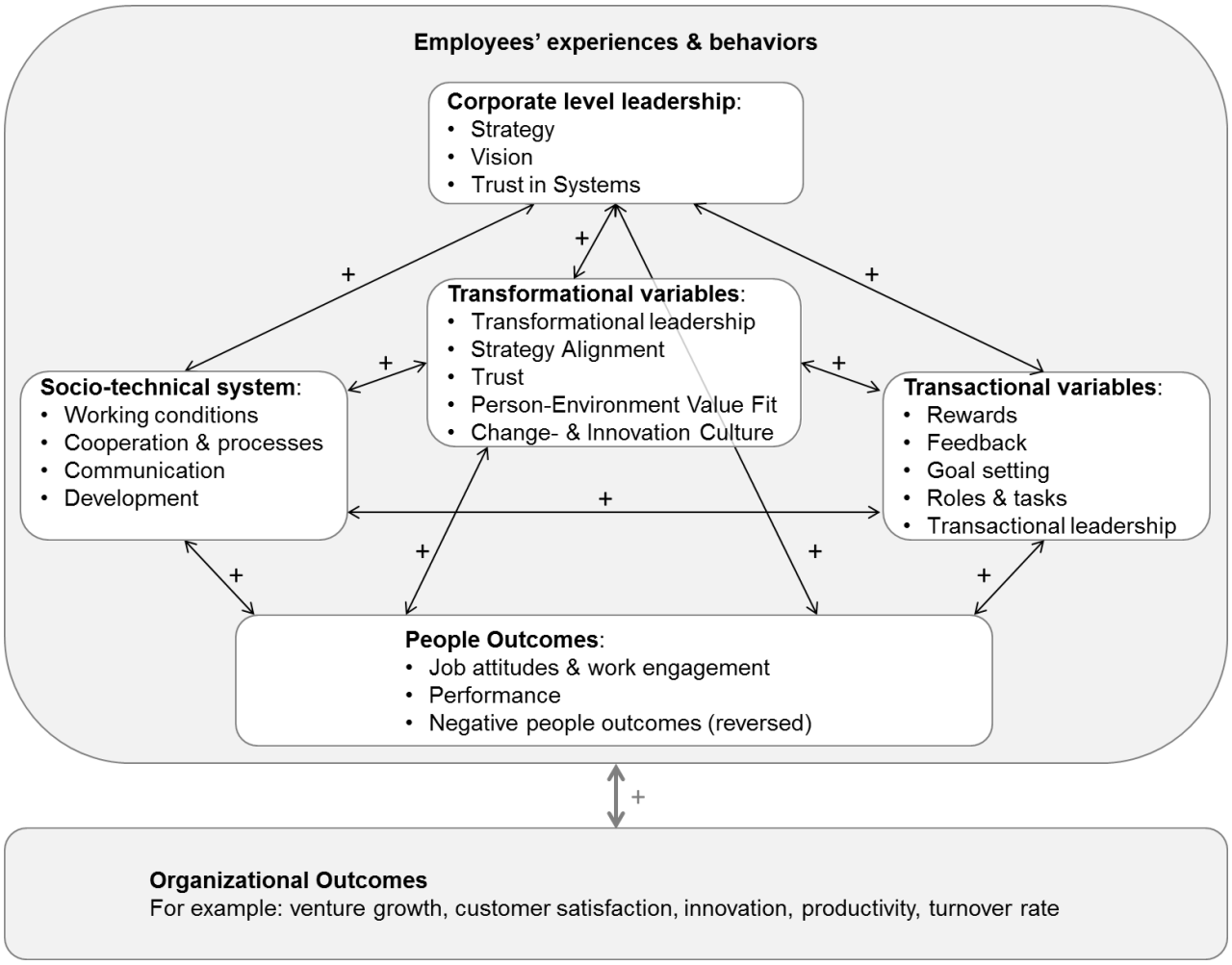

Figure 1. Model for International Employee Surveys

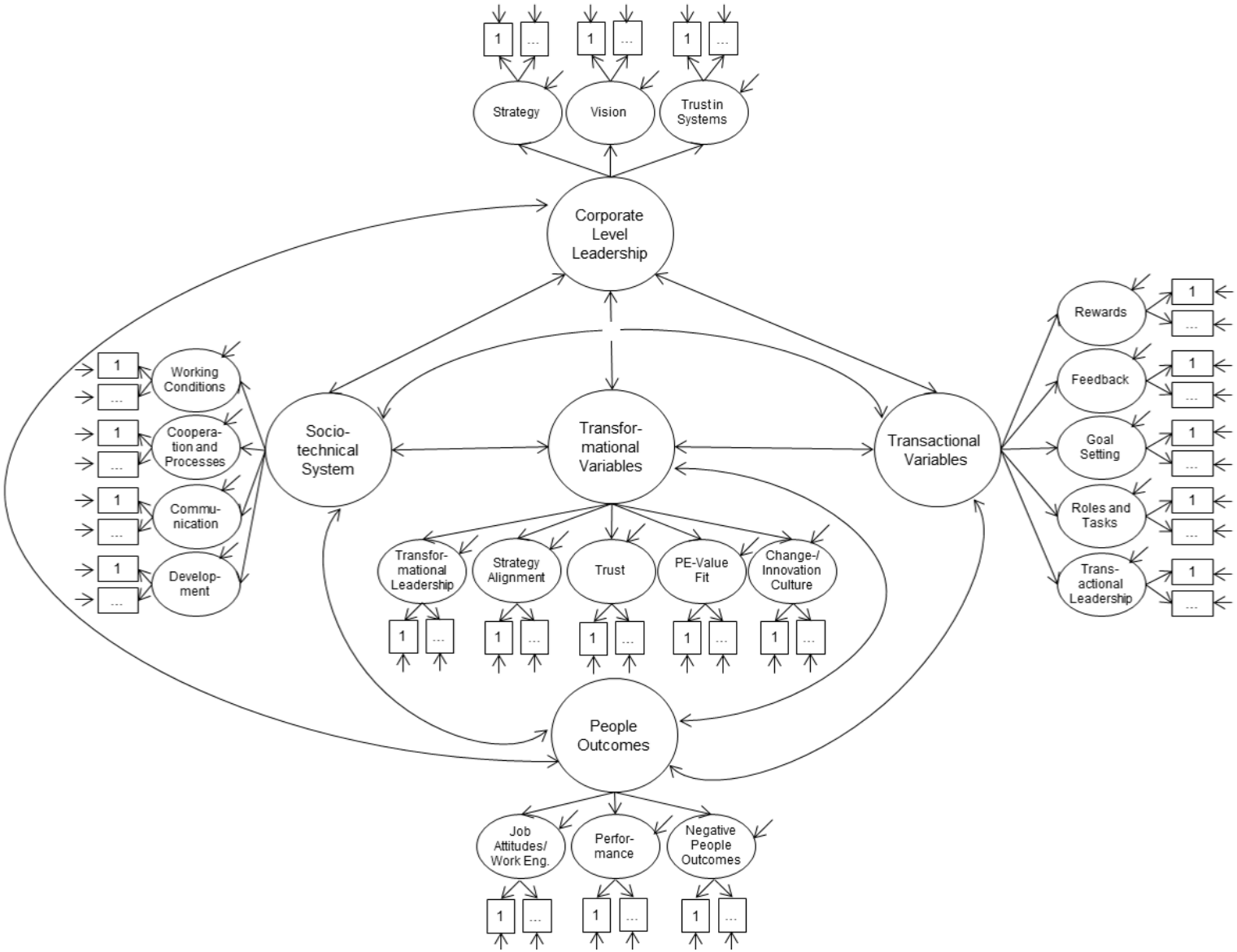

Figure 2. Measurement Model for International Employee Surveys