The Effect of Virtual Distance on Determinants of Work and Organizational Commitment

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Abstract

A theoretical model of the causal effects of virtual (physical) distance on employee motivations, job satisfaction, and organizational and work commitment was formulated based on findings from previous studies. The model was tested and developed using data collected by questionnaire from a sample of 238 employees based in Thailand and Indonesia who work in virtual environments in a multinational mobile telecoms equipment joint venture company. Theoretical and practical conclusions are drawn in relation to the role of virtual distance among other factors in the determination of work commitment and organizational commitment. Full or partial support was found for many of the relationships reported in previous studies. People with high levels of responsibility showed high levels of commitment to their work and organization as did individuals who were satisfied with their job and the job itself. Virtual distance had important positive effects on job satisfaction and employee recognition with no serious negative effects on work or organizational commitment and this finding was different from some previous studies.

Key Words: Virtual distance; Virtual Organization; Motivation; Job Satisfaction; Work Commitment; Organizational Commitment; Telecommunication Organization.

Introduction

Improvements in communication technologies and the convergence of several broadband technologies have had a significant impact on how people work together. Organizations no longer need to co-locate work teams and this provides opportunities for cost savings, flexibility, innovation, and high resource utilization as well as increased competitiveness and global growth (Coggins, 2011). These virtual organizations have the potential to defy the constraints of space and time and allow team members to collaborate when and how they need to. However, Bjorn and Ngwenyama (2009), Peters and Manz (2007), and others found that virtual organizations with work teams distributed in multiple locations present problems as well as benefits and in the context of information technology companies Sobel-Lojeski and Reilly (2008) reported increased complexity in work operations, misunderstandings, and risks of breakdown in communication.

The concept of a virtual organization was evident first in the early works by economists in the 1970s studying transaction cost theory as the basis for outsourcing practices which emerged in the 1980s and different approaches to developing virtual organizations have evolved in conjunction with organizational restructuring practices and advances in communication technologies (Camarinha-Matos and Afsarmanesh, 2005). A well known model of a virtual organization is the virtual distance model developed by Sobel-Lojeski and Reilly (2008) which characterized virtual distance in three dimensions: physical distance; affinity distance; and operational distance. Physical distance is based on real differences in organizational location in terms of space and time. Affinity distance concerns cultural, social, relationship, and interdependency differences while operational distance is concerned with communications, multitasking, readiness, and distribution asymmetry. Physical distance is the focus of this study and it represents a situation where team members rarely meet, they are in different time zones, they are not in very regular contact, they have the same leaders but they rarely see them but they need to contribute to the company and have the same goals as other members of the team. Understandably, these conditions may have an impact on a member's motivation, job satisfaction, and commitment to their work and the organization.

Motivation is a set of activation or energetic forces of goal-oriented behavior. It is intrinsic or extrinsic to the employee and initiates and determines the direction, intensity, and persistence of work-related effort (Colquitt et al., 2009; Latham and Pinder, 2005; Jones and Page, 1984). Content and process motivation theories are the two main approaches to the study of motivation developed since the 1950s (Frence et al., 2005). Content theories emphasize what motivates people at work while process theories explain how motivation behavior is initiated. Herzberg's motivation-hygiene theory (two-factor theory) is a content theory of motivation which defines two separate sets of factors: motivational factors associated with satisfaction; and hygiene factors associated with dissatisfaction (Herzberg, 1987). Hygiene factors which include: salary; company and administrative policies; fringe benefits; physical working conditions; employee status; and job security are not included in this study because these factors are almost the same for all of the participants in the study who are all employed by the same organization. Instead, motivation factors including: recognition; sense of achievement; growth and promotional opportunities; responsibility; and the nature of work itself are included in the study as factors that are expected to vary among the participants and are expected to be affected to varying degrees by virtual (physical) distance.

Job satisfaction represents an individual's attitude toward specific and general aspects of their job (Siegal and Lance, 1987; Vroom, 1982). Three conceptual frameworks may be used to describe job satisfaction: content theory; process theory; and situational theory (Worrell, 2004). Content theory explains job satisfaction in terms of the employee's achievement of self-actualization based on a five-tier model of human needs (Maslow, 1954). Process theory focuses on how well the job satisfies the employee's expectations and values while situational theory explains job satisfaction in terms of the characteristics of the organization. In this study a predominantly process approach is adopted whereby job satisfaction represents a pleasurable emotional state resulting from a combination of psychological, physiological, and environmental circumstances that cause a person to say that they are satisfied with their job (Johnson, 2009; Hoppock, 1935).

Work commitment represents the desire of employees to remain with their job because of the job itself (Cohen, 1993; Loscoeco, 1989). Work commitment also represents the willingness of an employee to increase their job performance believing that their work will help them to achieve their goals and values (Porter et al., 1974). Affective organizational commitment is used in order to assess an employee's level of commitment to the organization. Affective organizational commitment or engagement is the form of commitment that is most often measured by organizations and it occurs when an employee has satisfaction with their work, their colleagues, and their work environment. Employees who have high affective commitment are those who will go beyond the call of duty for the good of the organization (Robinson, 2000). Those who display affective commitment identify strongly with the company and its objectives and may turn down offers from other companies even if they are more financially attractive. Variations in affective organizational commitment can be explained by age, perceived fairness, organizational tenure, and perceived and organizational support (Hawkins, 1998) and many studies have reported an association between affective commitment and absenteeism, poor performance, and turnover (Mayer and Allen 1997; Mathieu and Zajac, 1990; Mowday et al., 1982). The structural features of the organization and personal characteristics of employees have less association with affective commitment compared with work experiences such as organizational rewards, procedural justice, and supervisor support (Rhoades et al., 2001).

Against this background the purpose of this study is to identify the significant determinants of organizational and work commitment in a work environment where the effects of virtual (physical) distance are included. Following a discussion of the research design and methodology a theoretical model is derived from a comprehensive review of the related literature. This model is tested using data from a final sample size of 238 individuals who work for a multinational mobile telecoms equipment joint venture company in either Thailand or Indonesia. The company was the result of a merger between mother companies in Finland and Germany in October 2008. Its product patterns are a combination of large standardization quantities,

personalized custom products, and outsourcing. The company has operations in 150 countries. The sample of participants in the study from Thailand and Indonesia are employed in positions where they have experience of working in a virtual environment separated from others by physical distance and includes individuals in the positions: Engineer; Manager; Team Assistant; Human Resources; Trainer; Financial and Control' and Solution Provider. Based on the results of the analysis of the theoretical model it is further developed to arrive at a final model which is the basis for the discussion of the theoretical and practical findings, and the overall conclusions of the study.

Related Literature

The focus of the review concerns recent studies that used quantitative methods and empirical data to evaluate theoretical causal models concerned with virtual distance, employee motivations, job satisfaction, and organizational and work commitment. An overview of these studies is presented first followed by discussion of important model variables.

An Overview of Previous Studies

Table 1 presents an overview of the nature of previous studies since year 2000 which identifies the variables examined in these studies.

Table 1 An overview of the nature of previous related studies

Reference	Context/Dependent Variable	Project Focus	Approach/ Data Collection
Sobel-Lojeski and Reilly (2008)	Virtual distance/ Motivation and job satisfaction	Making Virtual Distance Work in the Digital Age.	Quantitative/Personal interview/Survey
	Variables: *Virtual distance, Motivation, Job satisfaction, Commitment*		
Chen et al. (2008)	Location-based /Privacy, trust, justice and job satisfaction	Privacy, trust, and justice considerations for location-based mobile telecommunication services.	Quantitative/Survey
	Variables: *Virtual distance, Motivation, Job satisfaction*		
Markus et al., (2000)	Virtual organization/ Motivation and job satisfaction	What makes a virtual organization work?	Quantitative/Survey
	Variables: *Virtual distance, Motivation, Job satisfaction*		
Akkirman and Harries (2005)	Virtual organization/ Communication satisfaction	Organizational communication satisfaction in the virtual workplace	Quantitative/Survey
	Variables: *Virtual distance, Communication satisfaction, Motivation*		
Mihhailova and Oun (2011)	Virtual organization/ Job satisfaction and motivation	Virtual work usage and challenges in different service sector branches	Quantitative/Personal interview/Survey
	Variables: *Virtual distance, Job satisfaction, Motivation*		

Reference	Context/Dependent Variable	Project Focus	Approach/ Data Collection
Barney and Elias (2010)	Virtual organization/ Job stress and motivation	Flex-time as a moderator of the job stress-work motivation relationship: A three nation investigation	Quantitative/Survey
	Variables: *Virtual distance, Job stress, Motivation*		
Prasad and Akhilesh (2002)	Virtual distance/ Work performance	Global virtual teams: what impacts their design and performance?	Quantitative/Survey
	Variables: *Virtual distance, Work performance*		
Yingjun (2004)	Virtual organization/ Motivation and job satisfaction	Virtual organization (VO) and inter-organizational relationships (IOR)	Quantitative/Survey
	Variables: *Virtual distance, Motivation, Job satisfaction*		
Piccoli et al. (2004)	Virtual distance/ Team effectiveness	Virtual teams: team control structure, work processes, and team effectiveness	Quantitative/Survey
	Variables: *Virtual distance, Communication satisfaction, Motivation*		
Anderson and Shane (2002)	Virtual distance/ Work performance	The impact of net centricity on virtual teams: The new performance challenge	Quantitative/Survey
	Variables: *Virtual distance, Communication satisfaction, Motivation, Performance*		
Wang (2007)	Virtual organization/ Job satisfaction and commitment	Learning, job satisfaction and commitment: an empirical study of organizations in Chin	Quanttative/Survey
	Variables: *Virtual distance, Job satisfaction, Commitment*		

Reference	Context/Dependent Variable	Project Focus	Approach/ Data Collection
Yousef (2000)	Organizational commitment/Work performance	Organizational commitment: a mediator of the relationships of leadership behavior with job satisfaction and performance in a non-western country	Quantitative/Survey
	Variables: *Organizational commitment, Job satisfaction, Performance*		
Michael et al. (2009)	Job stress/ organizational commitment	Job stress and organizational commitment among mentoring coordinators	Quantitative/Survey
	Variables: *Organizational commitment, Job stress*		
Altindis (2011)	Job motivation/ Organizational commitment	Job motivation and organizational commitment among the health professionals: A questionnaire survey	Quantitative/Survey
	Variables: *Organizational commitment, Motivation*		
Cohen and Shamai (2010)	Individual value/ Organizational commitment	The relationship between individual values, psychological well-being, and organizational commitment among Israeli police officers	Quantitative/Survey
	Variables: *Organizational commitment, Achievement*		

Reference	Context/Dependent Variable	Project Focus	Approach/ Data Collection
Bjarnason (2009)	Social recognition/ Organizational commitment, intent to stay and service improvements	SOCIAL RECOGNITION AND EMPLOYEES' ORGANIZATIONAL SUPPORT: The Impact of Social Recognition on Organizational Commitment, Intent to Stay, Service Effort, and Service Improvements in an Icelandic Service Setting	Quantitative/Survey
	Variables: *Organizational commitment, Recognition*		
Aydogdu and Asikgil (2011)	Organizational commitment/ Job satisfaction	An Empirical Study of the Relationship Among Job Satisfaction, Organizational Commitment and Turnover Intention	Quantitative/Survey
	Variables: *Organizational commitment, Work Itself*		
Ebeid (2010)	Corporate social responsibility/ Organizational commitment	Corporate social responsibility and its relation to organizational commitment	Quantitative/Survey
	Variables: *Organizational commitment, Responsibility*		
Schmidt (2007)	Workplace training/ Job satisfaction	The relationship between satisfaction with workplace training and overall job satisfaction	Quantitative/Survey
	Variables: *Organizational commitment, Advancement*		
Haines III et al. (2008)	International assignment/ Motivation	Intrinsic motivation for an international assignment	Quantitative/Survey
	Variables: *Work commitment, Motivation*		

Reference	Context/Dependent Variable	Project Focus	Approach/ Data Collection
Teck-Hong and Waheed (2011)	Herzberg's two-factor theory/ Motivation and job satisfaction	Herzberg's motivation-hygiene theory and job satisfaction in the Malaysian retail sector: The mediating effect of love of money	Quantitative/Survey
	Variables: *Motivation, Job satisfaction*		
Ruthankoon and Ogunlana (2003)	Herzberg's two-factor theory/ Motivation and job satisfaction	Testing Herzberg's two-factor theory in the Thai construction industry	Quantitative/Survey
	Variables: *Motivation, Job satisfaction*		
Wang (2007)	Job satisfaction/ work commitment	Learning, job satisfaction and commitment: an empirical study of organizations in China	Quantitative/Survey
	Variables: *Work commitment, Job satisfaction*		
Falkenburg and Schyns (2007)	Job satisfaction/ Withdrawal behaviors	Work satisfaction, organizational commitment and withdrawal behaviors	Quantitative/Survey
	Variables: *Work commitment, Organizational commitment/Job satisfaction*		
Ngamchokchaicharoen (2003)	Job satisfaction/ Organizational commitment	The study of organizational commitment in Thailand	Quantitative/Survey
	Variables: *Organizational commitment*		

Model Variables

Based on previous studies the following variables are identified as having important influences and are appropriate to include in the theoretical model.

Virtual Distance (Physical Distance): Physical distance is represented by measurable geographic, temporal and organizational distance or separation among employees which creates the sense that others are far away. Physical distance is based on real differences in location in terms of space and time (Sobel-Lojeski and Reilly, 2008).

Achievement concerns success in challenging work completed though exertion, skill, and perseverance. Achievement is related to personal characteristics and background and the associated competitive drive to meet standards of excellence (Williamson et al., 2005). Achievement includes personal satisfaction from completing a job, solving problems, and seeing results. Achievement fulfills an internal need for appreciation and respect concerned with an individual's level of esteem (Gawell, 1997; Maslow, 1954).

Recognition means being accepted or acknowledged (Wynne, 2000). Ideally, after an employee has completed challenging work they should be praised and recognized for their accomplishments by co-workers and managers. Work should be interesting, encourage creativity and innovation, and engage the employee's capabilities (Lawrence and Jordan, 2009). Those who achieve the recognition of others tend to feel confident in their abilities while those who lack self-esteem and the recognition of others can develop feelings of inferiority, and negative reactions such as blaming and criticism (Ruthakoon and Ogunlana, 2003).

Work Itself is the actual content of the job or what employees do (Bassett-Jones and Lloyd, 2005: Pelit, Ozturk and Arslonturk, 2010). It involves an employee's feelings about their work tasks including whether those tasks are too easy or too difficult or interesting or boring (Herzberg, 1959; Wellens, 1970). Work itself is assessed by the extent to which an individual feels that their work tasks are challenging and interesting.

Responsibility refers to the employee's control over their job and being including both responsibility and authority in relation to the job (Herzberg et al., 1959). Responsibility translates into self-regulation (Herzberg, 1959; Bassett-Jones and Lloyd, 2005) which represents "the self's" capacity to alter its behaviors in accordance with standards, ideals, or goals either stemming from internal or societal expectations (Baumeister and Vohs, 2007; Bassett-Jones and Lloyd, 2005; Herzberg, 1959).

Advancement is the degree to which an individual experiences new learning and growth in their carrier. When an employee constantly achieves the work task or target then advancement is required as a motivation for the employee to continue to perform well and remain in organization (Ruthakoon and Ogunlana, 2003). Growth advancement translates into the central dynamic of new learning leading to new expertise and leads to upward change in status in the organization (Bassett-Jones and Lloyd, 2005; Herzberg, 1959).

Job Satisfaction represents a pleasurable emotional state resulting from how people feel and what people think about their job (Johnson, 2009; Dunnette and McNally, 1976) Job satisfaction is the combination of psychological, physiological, and environmental circumstances that cause a person truthfully to say I am satisfied with my job (Hoppock, 1935). It represents a set of factors that cause a feeling of internal satisfaction and it is closely linked to an individual's behavior in the work place (Davis et al., 1985). Positive and favorable attitudes towards the job indicate job satisfaction while negative and unfavorable attitudes indicate job dissatisfaction (Armstrong, 2006).

Work Commitment represents the desire of employees to remain with their particular job because of the job itself (Cohen, 1993; Loscoeco, 1989). Work commitment also represents the willingness of an employee to increase their job performance believing that their work will help them to achieve their goals and values (Porter et al., 1974).

Organizational Commitment (Affective Commitment) is the definite desire to remain the member of an organization (Colquitt et al., 2009; Sheldon, 1971; Buchanan, 1974). Affective organizational commitment

has been referred to as engagement and is the form of commitment that is most often measured by organizations. Affective commitment occurs when an employee has satisfaction with their work, their colleagues, and their work environment. Employees who have high affective commitment are those who will go beyond the call of duty for the good of the organization (Robinson, 2000; Allen and Meyer, 1991).

Research Design and Methodology

A field study approach is used which is partly basic and applied, partly descriptive and explanatory, and cross-sectional in time. Descriptive statistical techniques are used for data preparation and analysis and structural equation modeling (SEM) techniques are used for the analysis and development of a model of cause and effect relationships designed to develop theoretical knowledge with practical implications about the effect of virtual distance on characteristics of an employee's motivation, job satisfaction and commitment.

Data was collected using a self administered structured questionnaire developed in the English language with the assistance of a focus group of 20 representatives of the target population. Suggested modifications were included in a revised version of the questionnaire which was then administered in a pilot study using a sample of 20 suitable participants. Their responses and comments were noted and any modifications were incorporated into the final version of the questionnaire. A notated version of the final questionnaire is included in Appendix A1.

The unit of analysis is an employee working for a multinational mobile telecoms equipment joint venture company in either Thailand or Indonesia who is employed in a position where they are expected to work with others who are separated from them by physical distance and consequently they have experience of working in a virtual environment. The target population included 620 such individuals and using a level of precision of 5 percent and a 95 percent confidence interval the minimum sample size for the study was determined to be 240 (https://edis.ifas.ufl.edu/pd006). Using the list of company employees as a sampling frame the questionnaires were

distributed in hard copy form with a cover letter introducing the purpose of the study, instructions for its completion and return, and a contact address for enquiries in accordance with Neuman (2006). A final sample of 253 completed questionnaires was obtained.

Theoretical Model

Figure 1 presents the proposed theoretical model which was derived from existing theories and previous studies reviewed in the previous section. The theoretical model includes nine variables. Virtual Distance is the independent (exogenous) variable while Work Commitment and Organizational Commitment are dependent (endogenous) variables. The independent and dependent variables are linked by six intervening (endogenous) variables which are Job Satisfaction and a set of five variables associated with motivations (Achievement, Recognition, Work Itself, Responsibility, and Advancement) based on Herzberg (1959).

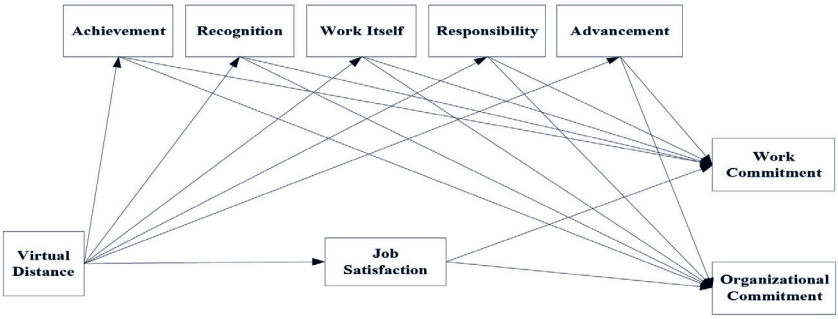

Figure 1 Theoretical model.

The direct causal effects in the theoretical model in Figure 1 are associated with 18 research hypotheses which are tested in the study. Table 2 shows the research hypotheses with references to previous studies from which the hypotheses were derived.

Table 2 Research hypotheses

Research Hypothesis	Reference
H1: Virtual distance has a significant negative direct effect on Achievement.	Putnam, 2001; Chen Ross and Huang, 2008; Sobel-Lojeski and Reilly, 2008
H2: Virtual distance has a significant negative direct effect on Recognition.	Putnam, 2001; Chen Ross and Huang, 2008; Sobel-Lojeski and Reilly, 2008
H3: Virtual distance has a significant negative direct effect on Work Itself.	Putnam, 2001; Chen Ross and Huang, 2008; Sobel-Lojeski and Reilly, 2008
H4: Virtual distance has a significant negative direct effect on Responsibility.	Putnam, 2001; Chen Ross and Huang, 2008; Sobel-Lojeski and Reilly, 2008
H5: Virtual distance has a significant negative direct effect on Advancement.	Putnam, 2001; Chen Ross and Huang, 2008; Sobel-Lojeski and Reilly, 2008
H6: Virtual distance has a significant negative direct effect on Job Satisfaction.	Putnam, 2001; Chen Ross and Huang, 2008; Sobel-Lojeski and Reilly, 2008
H7: Achievement has a significant positive direct effect on Work Commitment.	Tsai and Tai, 2003; Milne, 2007; Haines III et al., 2008
H8: Achievement has a significant positive direct effect on Organizational Commitment.	Tsai and Tai, 2003; Milne, 2007; Haines III et al., 2008
H9: Recognition has a significant positive direct effect on Work Commitment.	Tsai and Tai, 2003; Milne, 2007; Haines III et al., 2008
H10: Recognition has a significant positive direct effect on Organizational Commitment.	Bjarnason, 2009
H11: Work Itself has a significant positive direct effect on Work Commitment.	Tsai and Tai, 2003; Milne, 2007; Haines III et al., 2008
H12: Work Itself has a significant positive direct effect on Organizational Commitment.	Aydogdu and Asikigil, 2011; Hsu and Chen, 2009

Research Hypothesis	Reference
H13: Responsibility has a significant positive direct effect on Work Commitment.	Tsai and Tai, 2003; Milne, 2007; Haines III et al., 2008
H14: Responsibility has a significant positive direct effect on Organizational Commitment.	Al-bdour et.al, 2005; Ebeid, 2010; Madison et.al, 2012
H15: Advancement has a significant positive direct effect on Work Commitment.	Tsai and Tai, 2003; Milne, 2007; Haines III et al., 2008
H16: Advancement has a significant positive direct effect on Organizational Commitment.	Schmidt, 2007; Sharma and Bajpai, 2010
H17: Job Satisfaction has a significant positive direct effect on Work Commitment.	Williamson et al., 2009; Cohen and Veled-Hecht, 2008
H18: Job Satisfaction has a significant positive direct effect on Organizational Commitment.	Wang, 2007; Boles et al., 2007; Falkenburg and Schyns, 2007

Table 3 presents the operational definitions for the nine variables in the theoretical model with references to previous studies from which the definition was derived.

Table 3 Operational definitions for model variables

Model Variable	Operational Definition	Reference
Virtual Distance	Physical distance based on real location differences in space and time.	Sobel-Lojeski and Reilly, 2008
Achievement	The extent to which an individual needs appreciation and respect in their work environment.	Lawrence and Jordan, 2009
Recognition	The degree to which an individual feels accepted and recognized by co-workers and managers.	Lawrence and Jordan, 2009
Work Itself	The extent to which an individual feels that their work tasks are challenging and interesting.	Pelit et al., 2010
Responsibility	The degree to which an individual is given the freedom to make decisions in their work.	Ruthakoon and Ogunlana, 2003
Advancement	The degree to which an individual experiences new learning and growth in their carrier.	Herzberg, 1959; Bassett-Jones and Lloyd, 2005
Job Satisfaction	The degree to which employees feel satisfaction with their job.	Lawler and Porter, 1967; Locke, 1976; Rogers et al., 1994
Work Commitment	The degree to which an individual has the desire to remain with their particular job because of job itself.	Cohen, 1993; Loscocco, 1989
Organization Commitment	The degree to which an individual wishes to be a member of the organization.	Sheldon, 1971; Buchanan, 1974; Colquitt et al., 2009

All of the model variables are measured as latent variables. Table 4 indicates the label used for each model variable, the number of indicators used to measure it and their labels, and a reference to an existing measuring instrument that was used to develop the questions associated with the indicators. Each of the indicators for the nine latent variables is measured on a 5-point Likert scale and these measures are treated as interval scale measures in the analyses.

Table 4 Measurement scales and instruments

Variable (Label)	Number of Indicators and Labels	Measuring Instrument
Virtual Distance (VD)	2 indicators: VD3, VD4	Sobel-Lojeski and Reilly, 2008
Achievement (ACH)	4 indicators: EM8, EM9, EM10, EM11	Ruthakoon and Ogunlana, 2003
Recognition (REC)	4 indicators: EM12, EM13, EM14, EM15	Lawrence and Jordan, 2009
Work Itself (WOI)	4 indicators: EM16, EM17, EM18, EM19	Pelit et al., 2010
Responsibility (RES)	4 indicators: EM20, EM21, EM22, EM23	Ruthakoon and Ogunlana, 2003
Advancement (ADV)	4 indicators: EM24, EM25, EM26, EM27	Ruthakoon and Ogunlana, 2003
Job Satisfaction (JS)	6 indicators: JS28, JS29, JS30, JS31, JS32, JS33	Lawler and Porter, 1967
Work Commitment (WC)	6 indicators: WC34, WC35, WC36, WC37, WC38,WC39	Fink, 1992
Organization Commitment (OC)	6 indicators: OC40, OC41, OC42, OC43, OC44, OC45	Fink, 1992

Data Preparation and Preliminary Analyses

For the sample of 253 questionnaires there were no missing values among the measures of the model variables and a check on data entry for a random sample of 10 percent (26) of the questionnaires did not reveal any

data entry errors. There were 15 questionnaires which contained at least one outlier value for a model variable (i.e. a value 3 or more standard deviations from the mean) and these were removed from the sample leaving a final satisfactory sample size of 238.

Principle Component factor analysis was used to evaluate the construct (convergent and discriminant) validity of the nine latent variables in the theoretical model. The results of the factor analysis are displayed in Appendix Table A1 and all of the latent variables have satisfactory construct validity because the factor loadings for their indicators exceed 0.4 in magnitude and the associated eigenvalues are greater than 1 (Straub et al., 2004). The internal consistency reliability for the indicators for the latent variables was assessed using Cronbach's alpha coefficients which are displayed in Appendix Table A2 and it is seen that in all cases the reliability is at least a "good" according to the interpretation of the value Cronbach alpha by George and Mallery (2003). Consequently, at the completion of these data preparation procedures the nine model variables have satisfactory construct validity and internal consistency validity.

Characteristics of the Respondents

From Appendix Table A3: 69 percent of the responders were male. The average age of respondents was 35 years. Half of respondents hold a bachelor degree, 44 percent have a master degree, and the remaining 6 percent hold a diploma. Appendix Table A4 shows that most of the respondents (81 percent) are managers (32 percent) or solution providers (25 percent) or engineers (24 percent). Work functional levels indicate that all of the respondents are engaged in work where there is a physical distance between them and their colleagues forming a virtual work environment. Working at a distance with other members of a cluster accounted for the largest proportion (41 percent) followed by 32 percent engaged with colleagues at a distance with a single country, 23 percent working with others on a global scale, and some (4 percent) working at a distance with multiple clusters.

Overall the respondents are considered to have characteristics and work experiences that are appropriate to ensure the validity and reliability of their responses to the study questionnaire items.

Descriptive Analysis of Model Variables

Appendix Table A5(a) displays descriptive statistics for the indicators for the latent model variables. It is seen that for each indicator the magnitudes of the values of skewness and kurtosis are within the acceptable limits of 3 and 7, respectively, as recommended by Kline (2005) for the use of maximum likelihood estimation as the structural equation modeling (SEM) technique for model analysis.

For the purpose of further descriptive analyses each of the nine latent variables was converted to a single scale interval variable with values computed for each respondent as the mean of the values which the respondent assigned to the associated indicators. Descriptive statistics for these single scale measures of the latent model variables are displayed in Appendix Table A5(b) and show that on average none of the model variables has a value less than 3 which represents a *neutral* point on their 5-point measurement scales corresponding to a neutral opinion about the questionnaire item. Notably, the mean values for Achievement and Responsibility are both highest at 4.47 indicating that the respondents experience very positive feelings of achievement and recognition in working at a distance from colleagues in a virtual environment. In addition, t-tests showed that there were no significant differences between males and females for the mean values of these measures for any of the model variables.

Appendix Table A6 displays the correlation coefficients for associations among Age, Education, and Work Functional Level and the nine model variables where again the single scale measures of the latent variables have been used. As expected, virtual distance and work functional level are significantly positively correlated. People who work in a high (low) functional level (e.g. their colleagues are distributed across the globe (a single country)) experience high (low) levels of recognition. Job satisfaction has a significant negative correlation with age and so older people experience less job satisfaction compared to younger people. Considering the correlations among the model variables in Appendix Table A6 it is seen from the shaded cells that these significant correlations provide partial support for the corresponding causal effects in the theoretical model although there is

a need for further evidence based on a SEM analysis of the model because significant correlations alone do not establish significant causal effects. Similarly, there are several other correlations in Appendix Table A6, which are not statistically significant, and this may suggest that the corresponding causal effects in the theoretical model are not statistically significant. These are suggestions only from Appendix Table A6 and they will be examined and tested in the SEM analyses.

Model Analysis and Development

Figure 2 shows the results of the SEM analysis of theoretical model using Amos 18 software. In Figure 2 direct effects are shown using the following notations which are used throughout subsequent sections: **(a)** The direct unstandardized effect is shown first followed by the symbol *, **, or *** to indicate if the effect is statistically significant at a level of 0.05, 0.01, or 0.001, respectively. No symbol indicates that the effect is not statistically significant at a level of 0.05 or less; **(b)** Next in parentheses the standardized effect is shown with S, M, or L to indicate if the magnitude of the effect is small, medium, or large, respectively. Small effects have a magnitude of 0.1 or less, medium are between 0.1 and 0.5, and large effects have a magnitude of 0.5 or more.

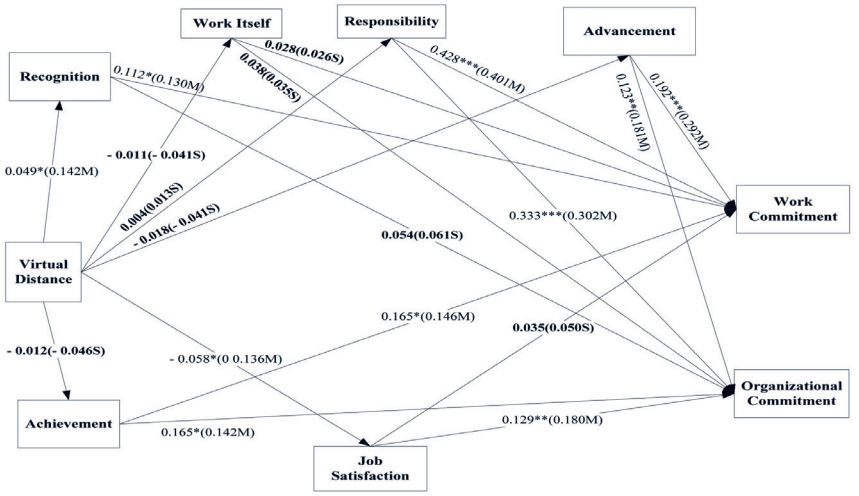

Figure 2 Analysis of direct effects in the theoretical model.

Table 5 shows the values of the range of fit statistics for the theoretical model in Figure 2 as recommended by Kline (2005).

Table 5 Fit statistics for the theoretical model

Model	N	N_c	NC (χ^2/df)	RMR	GFI	AGFI	NFI	IFI	CFI	RMSEA
Theoretical Model	238	79	2371.587/722 = 3.285	.125	.647	.599	.735	.799	.798	.098
			R^2: JS (0.019); ACH (0.002); REC (0.020); WOI (0.002); RES (0.000); ADV (0.002); OC (0.182); WC (0.287)							

Note: R^2 is the proportion of the variance of each endogenous variable that is explained by the variables affecting it.

From Figure 2 it is seen that there are eight direct effects (highlighted) which are not statistically significant at a level of 0.05 or less and are small in magnitude. It may be that there removal from the model will lead to improved fit statistics. Also, based on the statistically significant correlations among the model variables (Appendix Table A6) it is plausible to suggest that each of the five variables Achievement, Recognition, Work Itself, Responsibility, and Advancement may have a significant direct influence on Job Satisfaction even though these five direct effects are not currently included in the theoretical model. Furthermore, since Virtual Distance has indirect effects on both Work Commitment and Organizational Commitment in the theoretical model then it is reasonable to suggest that it may also have direct effects on both of these variables. Consequently, there 15 optional direct effects in the theoretical model (the inclusion of up to 5 + 2 = 7 direct effects and the removal of up to 8 direct effects). In order to evaluate each of the 2^{15} = 32,768 models in the hierarchy associated with these 15 optional effects the specification search facility available within Amos was used and following the recommendation by Kline (2005) the model with the smallest value for the fit statistic Normed Chi Square (NC) was selected as the final model.

The final model is shown in Figure 3 using the same format for the direct effects as in Figure 2 and the fit statistics associated with the final model are presented in Table 6.

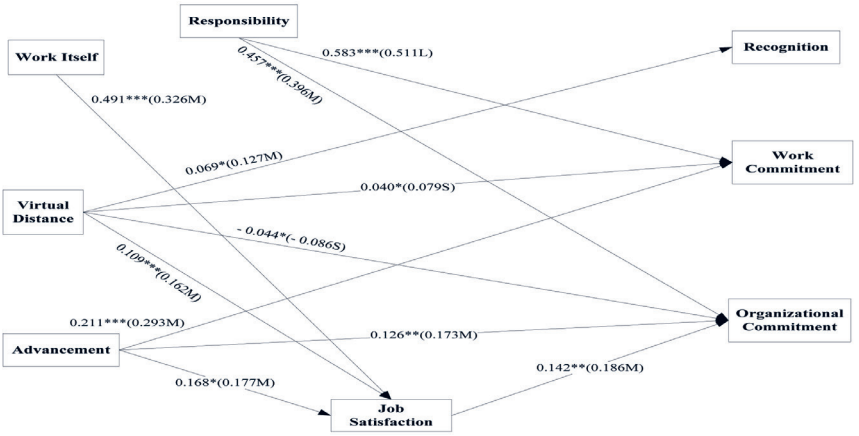

Figure 3 Final model

Table 6 Fit statistics for the final model

Model	N	N_c	NC (χ^2/df)	RMR	GFI	AGFI	NFI	IFI	CFI	RMSEA
Final Model	238	89	1689.97/577 = 2.929	.078	.912	.897	.909	.940	.949	0.071
			R^2: JS (0.430); OC (0.494); WC (0.404); REC (0.016)							

Note: R^2 is the proportion of the variance of the endogenous variable that is explained by the variables affecting it in the model.

The final model has a very satisfactory set of values for the fit statistics and reasonable proportions of the variance associated with the endogenous variables is explained by the model. All effects in the final model are statistically significant at a level of 0.05 or less and the only small effects are VD → WC and VD → OC. The full analyses of all effects in the final model are shown in Table 7. The determination of the statistical significance of indirect effects used the method proposed by Sobel (1986) and for totals of effects nonparametric bootstrapping was used based on 1000 random samples.

Table 7 Analysis of the final model

Variable		Effect	Endogenous Variable			
			Intervening	Dependent		
			Job Satisfaction (JS)	Recognition (REC)	Work Commitment (WC)	Organizational Commitment (OC)
Exogenous	Virtual Distance (VD)	Direct	0.109***(0.162M)	0.069*(0.127M)	0.040*(0.079S)	- 0.044*(- 0.086S)
		Indirect	Nil	Nil	Nil	VD-JS-OC 0.015**(0.030S)
		Total Indirect	Nil	Nil	Nil	0.015**(0.030S)
		Total	**0.109*****(0.162M)**	**0.069*(0.127M)**	**0.040*(0.079S)**	**- 0.029*(- 0.056S)**
	Advancement (ADV)	Direct	0.168*(0.177M)	Nil	0.211***(0.293M)	0.126**(0.173M)
		Indirect	Nil	Nil	Nil	ADV-JS-OC 0.024*(0.033S)
		Total Indirect	Nil	Nil	Nil	0.024*(0.033S)
		Total	**0.168*(0.177M)**	**Nil**	**0.211*****(0.293M)**	**0.150*(0.206M)**
	Responsibility (RES)	Direct	Nil	Nil	0.583***(0.511L)	0.457***(0.396M)
		Indirect	Nil	Nil	Nil	Nil
		Total Indirect	Nil	Nil	Nil	Nil
		Total	**Nil**	**Nil**	**0.583*****(0.511L)**	**0.457*****(0.396M)**
	Work Itself (WOI)	Direct	0.491***(0.326M)	Nil	Nil	Nil
		Indirect	Nil	Nil	Nil	WOI-JS-OC 0.070**(0.061S)
		Total Indirect	Nil	Nil	Nil	0.070**(0.061S)
		Total	**0.491*****(0.326M)**	**Nil**	**Nil**	**0.070**(0.061S)**
Intervening	Job Satisfaction (JS)	Direct	Nil	Nil	Nil	0.142**(0.186M)
		Indirect	Nil	Nil	Nil	Nil
		Total Indirect	Nil	Nil	Nil	Nil
		Total	**Nil**	**Nil**	**Nil**	**0.142**(0.186M)**

Note: *, **, and *** indicate statistical significance at levels of 0.05, 0.01, and 0.001, respectively.

From Table 7 it is seen that: **(a)** all of the effects are statistically significant at a level of 0.05; **(b)** There are several small effects which are statistically significant which highlights the importance of considering the magnitude of effects and not only their statistical significance; **(c)** There are no situations where the magnitude of the direct effect of one variable on another is exceeded by the magnitude of indirect effects through intervening variables except for the effect of Work Itself on Organizational Commitment where there no direct effect and only a small indirect effect; and **(d)** although Virtual Distance has a small negative direct effect on Organizational Commitment through Job Satisfaction it has a small positive effect with a total effect that is small and negative.

Discussion of the Findings

Characteristics of the Respondents

The respondents represent different work positions in a virtual organization where they are separated by physical distance. Most respondents were males, hold a bachelor or master degree, work in the positions of manager, solution provider, or engineer, and have an average age of 35 years. There are no significant differences among the means of any the model variables associated with the gender of the respondents.

As expected, those who work in positions where virtual distance is greatest are very likely to be in multi-cluster and global roles (i.e. at high work functional levels). Employees who work in multi-cluster and global roles are responsible for coaching the local or country team, solving country and cluster problems. These individuals have expertise in team and time management. The organization provides competency and management skills training for those who work in multi-cluster and global positions. Their work tasks are focused on supporting and advising local teams with many members in different countries. Not surprisingly, it was found that respondents who have a high work functional level also experience high levels of recognition. Among the correlations between characteristics of the respondents and model variables the only other significant association suggested that older respondents tend to have a lower level of job satisfaction

compared with younger respondents. This may reflect a situation where older employees have reached their upper limits in terms of recognition, remuneration, responsibilities, and promotion and although they may not be dissatisfied with their work it does not present the opportunities that it did when they were younger and in less senior positions.

Interpretation of Causal Effects

The effects in the final model are summarized in Table 8 based on the totals of effects shown in Table 7.

Table 8 Summary of effects

Variable		Intervening	Dependent		
		Job Satisfaction	Recognition	Work Commitment	Organizational Commitment
Exogenous	Virtual Distance	Medium, Positive, Only direct	Medium, Positive, Only direct	Small, Positive, Only direct	Small, Negative, Mainly direct
	Advancement	Medium, Positive, Only direct	Nil	Medium, Positive, Only direct	Medium, Positive, Mainly direct
	Responsibility	Nil	Nil	Large, Positive, Only direct	Medium, Positive, Only direct
	Work Itself	Medium, Positive, Only direct	Nil	Nil	Small, Positive, Mainly direct
Intervening	Job Satisfaction	Nil	Nil	Nil	Medium, Positive, Only direct

The effects on dependent variables (Recognition, Work Commitment, and Organizational Commitment) indicate that only virtual distance has a medium direct positive effect on ***recognition*** and the more an employee's work involves colleagues distributed across many countries (i.e. a high work functional level) the more they feel a high level of recognition. The more distant they are from the work team the more they communicate with the team members and the more recognition they receive from the team. There are no other factors that have such an important effect on an

employee's recognition. The result implies that individuals involved at high work functional levels in multi-cluster and global roles supporting many people in different countries are proud of their competencies and they gain trust which causes them to feel that they are well recognized.

Three factors affect ***work commitment***. The most influence is due to responsibility which has a large direct positive effect. Employees with more responsibility are more committed to their work and this finding is exactly aligned with existing theory and common understanding. Employees who are granted ownership of the work because they demonstrate a high level of ability normally complete the task assigned ensuring the quality of work and this leads to a high work commitment. The most important effect on work commitment is due to advancement which reflects the growth and development of an employee's skills, competencies, and expertise in the job. Employees who have high levels of advancement are the ones who constantly achieve the work tasks which produces a high level of work commitment. The least and small influence on work commitment is due to virtual distance. As the virtual distance of an employee from their work tasks and associates increases there is very little effect on their work commitment.

There are three factors that have a medium positive direct effect on ***organizational commitment***: responsibility; advancement; and job satisfaction. As an employee's level of responsibility increases then so does their level of commitment to the organization. Similarly, as job satisfaction increases then so does organizational commitment. When an organization provides opportunities for employees to develop expertise in their work then employees feel that the organization values their work and consequently as advancement opportunities for employees increase then so does the employee's commitment to the organization. The nature of the work itself has only a small positive effect on organizational commitment. Also, as virtual distance increases there is only a small negative effect on organizational commitment.

As noted above, ***job satisfaction*** only has an important effect on increasing organizational commitment. However, it does have an important mediating effect in the positive indirect effect of advancement on

organizational commitment. Its mediating effect is much less important in the effects of virtual distance and the work itself on organizational commitment.

Virtual distance, advancement, and the nature of the work itself each has an important positive direct effect on job satisfaction. Employees who work at high functional levels are normally provided the best facilities and travel budget to communicate with their distant teams and physically visit them quarterly on average and this results in strong job satisfaction. Advancement reflects how well employees are provided with opportunities to development skills and knowledge in order to be able to handle their work tasks and problem solving expertise and employees feel increased levels of job satisfaction if matters concerned with their advancement are provided for by the organization. A similar positive influence on job satisfaction results from organizations paying attention to the nature of the work itself. Interesting and challenging tasks enhance the nature of work and give employees an increased level of job satisfaction. When the level of job satisfaction and work commitment are high, the level of organizational commitment is also high.

Comparison of the Findings with Previous Studies

The research hypotheses associated with the theoretical model are compared to the findings in the final model in Table 9 which shows the hypotheses that were: supported by the findings; partially supported because although a significant direct causal effect was not found there were significant correlations between the variables; and not supported by the finding of this study.

Table 9 Decisions for research hypotheses

Research Hypothesis Supported by the Findings	Reference
H13: Responsibility has a significant positive direct effect on Work Commitment.	Tsai and Tai, 2003; Milne, 2007; Haines III et al., 2008
H14: Responsibility has a significant positive direct effect on Organizational Commitment.	Al-bdour et.al, 2005; Ebeid, 2010; Madison et.al, 2012
H15: Advancement has a significant positive direct effect on Work Commitment.	Tsai and Tai, 2003; Milne, 2007; Haines III et al., 2008
H16: Advancement has a significant positive direct effect on Organizational Commitment.	Schmidt, 2007; Sharma and Bajpai, 2010
H18: Job Satisfaction has a significant positive direct effect on Organizational Commitment.	Wang, 2007; Boles et al., 2007; Falkenburg and Schyns, 2007
Research Hypothesis Partially Supported by the Findings	
H7: Achievement has a significant positive direct effect on Work Commitment.	Tsai and Tai, 2003; Milne, 2007; Haines III et al., 2008
H8: Achievement has a significant positive direct effect on Organizational Commitment.	Tsai and Tai, 2003; Milne, 2007; Haines III et al., 2008
H9: Recognition has a significant positive direct effect on Work Commitment.	Tsai and Tai, 2003; Milne, 2007; Haines III et al., 2008
H10: Recognition has a significant positive direct effect on Organizational Commitment.	Bjarnason, 2009
H11: Work Itself has a significant positive direct effect on Work Commitment.	Tsai and Tai, 2003; Milne, 2007; Haines III et al., 2008
H12: Work Itself has a significant positive direct effect on Organizational Commitment.	Aydogdu and Asikigil, 2011; Hsu and Chen, 2009
H17: Job Satisfaction has a significant positive direct effect on Work Commitment.	Williamson et al., 2009; Cohen and Veled-Hecht, 2008
Research Hypothesis Not Supported by the Findings	
H1: Virtual distance has a significant negative direct effect on Achievement.	Putnam, 2001; Chen Ross and Huang, 2008; Sobel-Lojeski and Reilly, 2008

Research Hypothesis Supported by the Findings	Reference
H13: Responsibility has a significant positive direct effect on Work Commitment.	Tsai and Tai, 2003; Milne, 2007; Haines III et al., 2008
H14: Responsibility has a significant positive direct effect on Organizational Commitment.	Al-bdour et.al, 2005; Ebeid, 2010; Madison et.al, 2012
H2: Virtual distance has a significant negative direct effect on Recognition.	Putnam, 2001; Chen Ross and Huang, 2008; Sobel-Lojeski and Reilly, 2008
H3: Virtual distance has a significant negative direct effect on Work Itself.	Putnam, 2001; Chen Ross and Huang, 2008; Sobel-Lojeski and Reilly, 2008
H4: Virtual distance has a significant negative direct effect on Responsibility.	Putnam, 2001; Chen Ross and Huang, 2008; Sobel-Lojeski and Reilly, 2008
H5: Virtual distance has a significant negative direct effect on Advancement.	Putnam, 2001; Chen Ross and Huang, 2008; Sobel-Lojeski and Reilly, 2008
H6: Virtual distance has a significant negative direct effect on Job Satisfaction.	Putnam, 2001; Chen Ross and Huang, 2008; Sobel-Lojeski and Reilly, 2008

From Table 9 it is seen that overall the findings supported fully or partially 12 of the 18 research hypotheses associated with the theoretical model and derived from the results of previous studies.

New Findings

Table 10 shows four statistically significant effects in the final model that have not been reported in previous studies. These four new findings are feasible but certainly require further validation.

Table 10 New findings

New Findings
Virtual distance has a significant positive direct small effect on work commitment
Virtual distance has a significant negative mainly direct small effect on organizational commitment
Advancement has a significant positive direct medium effect on Job satisfaction
Work itself has a significant positive direct medium effect on Job satisfaction

Among the new findings shown in Table 10 virtual distance has a positive direct on work commitment and a mainly negative direct effect on organizational commitment whereas in the theoretical model virtual distance was proposed to only have indirect effects on work commitment and organizational commitment. The directions of these effects in the final model are compatible with the directions of the indirect effects proposed in the theoretical model. However, the direct effects of virtual distance on both work and organizational commitment require further study because although they are statistically significant in the final model they are only small in magnitude which implies that they may be of little importance.

In the theoretical model advancement and the nature of work itself were proposed to be intervening variables in the effect of virtual distance on both work and organizational commitment with no causal relationships with job satisfaction. Consequently, the new findings in the final model of direct effects of advancement and the nature of work on job satisfaction are important and intuitively sensible.

Conclusion

Summarizing the preceding discussion of the findings from a theoretical perspective it is seen that responsibility (i.e. the degree to which an individual is given the freedom to make decisions in their work) and the advancement of employees (i.e. the degree to which an individual experiences new learning and growth in their carrier) have important positive influences on work and organizational commitment. Job satisfaction has an

important positive influence on organizational commitment but it does not have an important influence on work commitment. The factors that have important positive influences on job satisfaction are advancement and the work itself (i.e. the extent to which an individual feels that their work tasks are challenging and interesting), which have not been reported in previous studies, as well as virtual distance (i.e. physical distance between employees based on real location differences in space and time). However, the nature of work itself has only a small positive effect on organizational commitment. Similarly, virtual distance has only a small negative effect on organizational commitment and a small positive effect on work commitment and these findings have not been reported in previous studies. Nonetheless, if the understanding and treatment of issues related to the nature of the work and virtual distance are not addressed by management then these may have strong negative effects on organizational and work commitment.

The practical implications of the findings of the study are described in Table 11 in the form of two major practical objectives and the associated actions needed to achieve the objectives. For each objective the actions for achieving the objectives have been organized in sequence from the most effective to the least effective based on effects in the final model.

Table 11 Summary of objectives and actions to improve work and organizational commitment

Major Objective	Action	Related Construct in the Final Model
1. Increase work commitment	**1.1** Creating check lists of tasks; ensuring that all employees understand what the tasks are; assigning employees the authority to handle the tasks; allowing flexibility for employees to perform their work and develop a feeling of trust; and treating mistakes as opportunities for learning and development.	Responsibility
	1.2 Managers are advised to constantly develop employee's competencies.	Advancement
2. Increase organizational commitment	**2.1** Increase responsibility **(**see **Action 1.1)**.	Responsibility
	2.2 Increase advancement **(**see **Action 1.2)**.	Advancement
	2.3 Ensuring that an individual feels that their work tasks are challenging and interesting.	Job Satisfaction Work itself
	2.4 Provide proper competency plan and allocate training budget for individual or team.	Job Satisfaction Advancement
	2.5 Balancing the need for travel for employees to meet their teams physically and the use of virtual communication technologies.	Job Satisfaction Virtual distance

In the findings of this study virtual distance has not had any significant negative effects on job satisfaction, recognition, and work or organizational commitment and instead it has important positive effects on recognition and job satisfaction. However, this may be a result of studying the effects of virtual distance in a single organization where it appears that issues related to virtual distance (e.g. communication facilities and a professional management team) may be well understood and accommodated so as to reduce any negative influences it may have. The main benefits from a virtual

organization are to better utilize the workforce, minimize the cost of office space, and gain flexibility on a global scale and such organizations are not easy to manage. It is strongly recommended for this study to be repeated with other organizations in order to establish the external validity of the findings and further studies should also take account of two other dimensions of virtual distance (operational distance and affinity distance) because this study focused on the single dimension of physical distance based on real location differences among employees in space and time.

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APPENDIX

A1. Notated Questionnaire

Section A

Measuring Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

Statement	Indicator
Virtual Distance (VD)	
I work in the location that has different time zone from my boss.	VD3
I work in the location that has different time zone from my team.	VD4
Achievement (ACH)	
I am proud of myself when I completed the task.	EM8
I feel I have contribute the quality work to the company.	EM9
I have competency to complete the task.	EM10
My job gives me accomplishment.	EM11
Recognition (REC)	
I am aware that company recognized the value of my work.	EM12
I am important to my team.	EM13
I am important to my manager.	EM14
I gain the respect from my team.	EM15
Work Itself (WOI)	
My job is challenging.	EM16
I enjoy doing my job.	EM17
My job enhanced my knowledge.	EM18
I love my job.	EM19
Responsibility (RES)	
I have responsibility to my work.	EM20
My manager gives me the ownership of my work.	EM21
I am confident and know what to do when the problem occur.	EM22
I know well how my job contributes to company.	EM23
Advancement (ADV)	
I am doing this job because it helps me develop my carrier path.	EM24
My job increases my competency.	EM25
My job provides me an opportunity to be promoted.	EM26

I got promotion response on my performance.	EM27
Job Satisfaction (JS)	
I am satisfied with the pay I received.	JS28
I am satisfied with my colleague.	JS29
I am satisfied with my manager.	JS30
I am satisfied with office's working environment.	JS31
I am satisfied with company financial.	JS32
I am satisfied with my job.	JS33
Work Commitment (WC)	
I become absorbed in my work to the point where I shut out everything else.	WC34
I take pride in the quality of my own work.	WC35
My workday rarely drags or seems endless.	WC36
I think about what happens to my work even after i leave my department.	WC37
I am normally able to concentrate on my work without thinking about other things.	WC38
My work is a major source of need satisfaction in my life.	WC39
Organization Commitment (OC)	
I feel please to learn about my organization's achievements.	OC40
I pay attention to how my organization is doing overall.	OC41
My organization's goals help me to fulfill my own goals.	OC42
I have a clear sense of how my work contributes to the whole organization.	OC43
I often offer help to others even before finishing my own work.	OC44
I tend to get defensive when I hear negative comments about my organization.	OC45

Section B

1. Gender ☐ Male (**1**) ☐ Female (**2**)
2. Age ☐ 21 – 30 years old (**1**) ☐ 31 – 40 years old (**2**) ☐ 41 – 50 years old (**3**) ☐ over 50 years old (**4**)
3. Education ☐ Diploma (**1**) ☐ Bachelor's Degree (**2**) ☐ Master Degree (**3**) ☐ Doctoral Degree (**4**)
4. Position ☐ Engineer (any field) (**1**) ☐ Manager (**2**) ☐ Team Assistant (**3**) ☐ Human Resources (**4**) ☐ Trainer (**5**) ☐ Financial and Controller (**6**) ☐ Sale/Account Manager (**7**) ☐ Solution Provider (e.g. Solution Manager, Solution Consultant) (8)
5. Work Functional level ☐ Country (**1**) ☐ Cluster (**2**) ☐ Multi-Clusters (**3**) ☐ Global (**4**)

Table A1 Factor analysis

Latent Variable	Indicator	Latent Variable								
		JS	OC	ADV	WC	REC	WOI	RES	ACH	VD
Job Satisfaction (JS)	JS29	**.910**	.073	.086	.104	.041	.076	.166	.104	.003
	JS32	**.896**	.133	.095	.071	.053	.125	-.015	-.002	.046
	JS30	**.865**	.098	.115	.077	.075	.114	.134	.142	.021
	JS31	**.859**	.150	.233	-.094	.005	.138	.117	.047	.010
	JS28	**.836**	.137	.190	.060	-.001	.210	-.021	.060	.037
	JS33	**.815**	.046	.181	.098	.049	.302	.039	.117	-.095
Organizational Commitment (OC)	OC42	.051	**.817**	.105	.220	.084	.161	.016	.070	-.032
	OC41	.118	**.792**	.159	.211	.103	.101	.153	.132	-.024
	OC44	.126	**.745**	.076	.272	.028	.095	.053	.073	.057
	OC45	.134	**.734**	.060	.190	-.092	.235	.141	.049	-.166
	OC40	.077	**.729**	.041	.241	.150	-.012	.142	.222	-.001
	OC43	.146	**.728**	.094	.204	.225	.005	.333	.086	-.009
Advancement (ADV)	EM26	.138	.065	**.899**	.078	-.019	.206	.057	-.015	-.024
	EM24	.096	.094	**.875**	.148	.133	.171	.116	.023	-.024
	EM27	.119	.119	**.868**	.112	.032	.218	-.086	-.035	-.050
	EM25	.224	.037	**.819**	.152	-.033	.279	.034	.186	-.062
Work Commitment (WC)	WC38	.005	.254	-.005	**.748**	.130	.085	.123	.038	.119
	WC37	-.072	.243	.212	**.726**	.096	.128	.186	.072	-.089
	WC36	.087	.178	.245	**.713**	.038	.060	.201	.036	-.020
	WC35	.066	.213	.091	**.710**	.148	.088	.274	.250	.041
	WC34	.227	.223	.050	**.693**	.170	.162	.181	.186	.105
	WC39	.024	.235	.215	**.677**	.094	.101	-.005	.155	.142

Table A1 Factor analysis (Continue)

Latent Variable	Indicaontor	Latent Variable								
		JS	OC	ADV	WC	REC	WOI	RES	ACH	VD
Recognition (REC)	EM13	.009	.068	-.003	.089	**.885**	.033	.187	.139	.140
	EM14	-.094	.035	-.039	.059	**.867**	-.001	.200	.228	.102
	EM15	.119	.148	.067	.118	**.793**	.069	.183	.245	.196
	EM12	.082	.004	.109	.103	**.767**	.208	.051	.246	.103
Work Itself (WOI)	EM19	.212	.121	.123	.077	.158	**.822**	.064	-.005	-.004
	EM18	.095	-.012	.397	.131	.074	**.777**	.024	.202	-.057
	EM17	.187	.101	.213	.047	.155	**.745**	.133	.192	-.155
	EM16	.058	.113	.259	.089	-.089	**.682**	.201	.190	.005
Responsibility (RES)	EM23	.100	.020	.061	.138	.257	.035	**.799**	.135	.117
	EM21	.052	.159	.027	.022	.104	.191	**.795**	.148	.084
	EM20	.058	.084	-.011	.135	.121	.344	**.723**	.272	.012
	EM22	-.011	.127	.019	.310	.163	-.140	**.690**	.304	-.142
Achievement (ACH)	EM8	.117	.085	.000	.034	.113	.219	.160	**.828**	-.013
	EM10	.044	.146	-.035	.114	.244	.076	.269	**.757**	.055
	EM9	-.051	.079	-.075	.143	.368	-.008	.269	**.714**	-.082
	EM11	.119	.008	.287	.061	.268	.251	.099	**.671**	.033
Virtual Distance (VD)	VD4	-.057	-.030	-.045	.036	.134	-.046	.024	-.020	**.962**
	VD3	.070	-.049	-.034	.064	.118	-.055	.037	.002	**.957**

Table A1 Factor analysis (Continue)

Total Variance Explained									
Latent Variable	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Job Satisfaction	11.907	29.768	29.768	11.907	29.768	29.768	4.896	12.239	12.239
Organizational Commitment	5.049	12.623	42.391	5.049	12.623	42.391	4.012	10.029	22.269
Advancement	3.469	8.674	51.065	3.469	8.674	51.065	3.768	9.420	31.689
Work Commitment	2.970	7.426	58.490	2.970	7.426	58.490	3.693	9.233	40.923
Recognition	2.320	5.799	64.290	2.320	5.799	64.290	3.463	8.658	49.580
Work Itself	1.674	4.186	68.475	1.674	4.186	68.475	3.202	8.006	57.586
Responsibility	1.432	3.580	72.055	1.432	3.580	72.055	3.088	7.720	65.306
Achievement	1.325	3.312	75.368	1.325	3.312	75.368	3.033	7.582	72.888
Virtual Distance	1.116	2.790	78.158	1.116	2.790	78.158	2.108	5.270	78.158
Extraction Method: Principal Component Analysis; Rotation Method: Equamax with Kaiser Normalization. Rotation converged in 9 iterations; Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .876; Bartlett's Test of Sphericity: Approx. Chi-Square 8407.739, Degrees of Freedom 780, Significance 0.000, Only components with eigenvalues 1 or more are shown.									

Table A2 Cronbach alpha coefficients

Latent Variable (Label)	Indicator	Cronbach Alpha	Latent Variable (Label)	Indicator	Cronbach Alpha	Latent Variable (Label)	Indicator	Cronbach Alpha
Advancement (ADV)	EM 24-26	0.942**	Responsibility (RES)	EM 20-23	0.855*	Organizational Commitment (OC)	OC 41-45	0.911**
Recognition (REC)	EM 12-15	0.916**	Achievement (ACH)	EM 8-11	0.854*	Work Commitment (WC)	WC 34-39	0.890*
Work Itself (WOC)	EM 16-19	0.872*	Job Satisfaction (JS)	JS 28-33	0.957**	Virtual Distance (VD)	VD 3-4	0.958**

Note: * indicates good and ** indicates excellent (George and Mallery, 2003).

Table A3 Personal characteristics of respondents

Personal Characteristics			
Gender	Frequency		Percent
Male	164		68.9
Female	74		31.1
Total	*238*		*100.0*
Age	Frequency	Percent	Cumulative Percent
21-30 years	24	10.1	10.1
31-40 years	105	44.1	54.2
41-50 years	106	44.5	98.7
over 50 years	3	1.3	100.0
Total	*238*	*100.0*	*Av. Age = 35 years , Standard Deviation = 0.7*
Education			
Diploma	15	6.3	6.3
Bachelor	119	50.0	56.3
Master	104	43.7	100.0
Total	*238*	*100.0*	

Table A4 Work characteristics of respondents

Work Characteristics					
Work Position	Frequency	Percent	**Work Functional Level**	Frequency	Percent
Engineer	58	24.4	Country	76	31.9
Manager	77	32.4	Cluster	98	41.2
Team Assistant	9	3.8	Multi-Clusters	9	3.8
Human Resources	1	.4	Global	55	23.1
Trainer	20	8.4	*Total*	*238*	*100.0*
Financial Controller	7	2.9			
Sales/Account Manager	7	2.9			
Solution Provider	59	24.8			
Total	*238*	*100.0*			

Table A5(a) Descriptive statistics for indicators of the latent model variables

Latent Variable/ Indicator	Mean	Standard Deviation	Skewness	Kurtosis	Latent Variable/ Indicator	Mean	Standard Deviation	Skewness	Kurtosis
Virtual Distance (VD)					**Job Satisfaction (JS)**				
VD3	3.21	1.609	-.260	-1.517	JS28	3.25	.916	-.493	.071
VD4	3.00	1.453	-.150	-1.305	JS29	3.71	.899	-.590	.118
Achievement (ACH)					JS30	3.56	.900	-.593	.038
EM8	4.61	.612	-1.318	.656	JS31	3.50	.939	-.709	.196
EM9	4.53	.614	-.941	-.129	JS32	3.07	.960	-.541	-.184
EM10	4.57	.611	-1.100	.173	JS33	3.49	.894	-.425	.043
EM11	4.18	.691	-.255	-.899	**Work Commitment (WC)**				
Recognition (REC)					WC34	3.66	.739	.013	-.356
EM12	3.67	.827	-.427	.157	WC35	3.93	.689	.098	-.883
EM13	4.02	.803	-.482	-.277	WC36	3.65	.707	.173	-.471
EM14	3.84	.787	-.301	-.315	WC37	3.55	.726	.301	-.393
EM15	3.99	.735	-.695	1.143	WC38	3.76	.667	-.049	-.266
Work Itself (WOI)					WC39	3.53	.721	-.246	-.194
EM16	3.99	.728	-.097	-.765	**Organization Commitment (OC)**				
EM17	3.98	.748	-.423	-.058	OC40	3.60	.764	.035	-.392
EM18	3.83	.766	-.279	-.220	OC41	3.68	.780	-.112	-.377
EM19	3.98	.704	-.205	-.363	OC42	3.32	.761	-.046	.163

Table A5(a) Descriptive statistics for indicators of the latent model variables (Continue)

Latent Variable/ Indicator	Mean	Standard Deviation	Skewness	Kurtosis	Latent Variable/ Indicator	Mean	Standard Deviation	Skewness	Kurtosis
Virtual Distance (VD)					**Job Satisfaction (JS)**				
Responsibility (RES)					OC43	3.62	.826	-.352	.092
EM20	4.56	.611	-1.082	.136	OC44	3.58	.746	-.199	-.230
EM21	4.54	.613	-.975	-.069	OC45	3.45	.714	.354	-.142
EM22	4.43	.565	-.316	-.897					
EM23	4.35	.676	-.732	.117					
Advancement (ADV)									
EM24	3.54	.906	-.474	.058					
EM25	3.57	.952	-.297	-.468					
EM26	3.20	.998	-.594	-.095					
EM27	3.09	.975	-.357	-.250					

Table A5(b) Descriptive statistics for single scale measures of latent variables

Latent Variable	Mean	Standard Deviation	Skewness	Kurtosis	Latent Variable	Mean	Standard Deviation	Skewness
Virtual Distance	3.11	1.501	-.268	-1.436	Advancement	3.35	.884	-.547
Achievement	4.47	.528	-1.011	.088	Job Satisfaction	3.43	.832	-.736
Recognition	3.88	.705	-.570	.397	Work Commitment	3.68	.569	.123
Work Itself	3.95	.626	-.252	-.330	Organization Commitment	3.54	.637	-.085
Responsibility	4.47	.516	-.833	-.015				

Table A6 Correlations among characteristics of respondents and model variables

Variable		Latent Model Variable								
		VD	ACH	REC	WOI	RES	ADV	JS	WC	OC
Characteristics of Respondents	Age	-.068	.012	.006	-.064	.088	-.065	**- .132**	-.045	.007
	Education	-.055	.017	-.071	.037	.090	-.022	-.021	-.029	-.124
	Work Functional Level	**.858**	.014	**.222**	-.124	.049	-.082	-.070	.011	-.112
Latent Model Variable	Virtual Distance (VD)	1								
	Achievement (ACH)	.030	1							
	Recognition (REC)	**.263**	**.558**	1						
	Work Itself (WOI)	-.095	**.402**	**.241**	1					
	Responsibility (RES)	.071	**.548**	**.442**	**.326**	1				
	Advancement (ADV)	-.086	**.181**	.115	**.549**	**.144**	1			
	Job Satisfaction (JS)	.005	**.229**	**.139**	**.404**	**.209**	**.370**	1		
	Work Commitment (WC)	.101	**.381**	**.340**	**.349**	**.460**	**.355**	**.236**	1	
	Organization Commitment (OC)	-.046	**.330**	**.260**	**.321**	**.382**	**.275**	**.312**	**.597**	1

Notes: (a) Highlighted correlations are statistically significant at a level of 0.05; (b) Shaded cells correspond to causal effects in the theoretical model.