

December 2004

Determinants of Risk Mitigation in Virtual Organizations

Vineet Banwet
Florida Atlantic University

Follow this and additional works at: <http://aisel.aisnet.org/amcis2004>

Recommended Citation

Banwet, Vineet, "Determinants of Risk Mitigation in Virtual Organizations" (2004). *AMCIS 2004 Proceedings*. 155.
<http://aisel.aisnet.org/amcis2004/155>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 2004 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Determinants of Risk Mitigation in Virtual Organizations

Vineet Banwet

College of Business

Department of Information Technology and Operations Management

Florida Atlantic University

777 Glades Road, Boca Raton, Florida

vbanwet@fau.edu

ABSTRACT

The paper examines the problem of risk mitigation in virtual organizations (VOs). In a virtual organizational setting, various information technologies provide employees freedom to work from any place and at any time. Such temporal and spatial dispersion however weakens the ties that bind the organizations and their members. The paper examines the problem of risk mitigation in VOs. The paper posits that organizational structuring, communication, culture, trust, self-efficacy beliefs, organization identification and leadership influence risk mitigation in a virtual organizational setting. Virtual organizations need to understand these factors in order to be efficient in their operations.

Keywords

Virtual organizations, determinants of risk, risk mitigation.

INTRODUCTION

The appearance and structure of organizations is changing as we enter the new millennium (Fitzpatrick and Burke, 2000). These changes in organizations have evolved through various forms, from catalogue mail ordering, corporate downsizing and mergers, and flattened organizational hierarchies to Internet online ordering and services (Werther, 1999). These organizational characteristics all appear to be converging towards a common theme; changing organizational boundaries that lead to operating in nontraditional ways with fewer people (Markus, Manville, and Agres, 2000).

Organizations are cutting cost and streamlining operations by reducing or eliminating the need for facilities, levels of management, and work sites (Cleaver, 2000) For the most part of the 20th century, large organizations created mass production systems that have required congregation of organizational employees at central places of work (Garud and Kotha, 1994). The advent of information technologies however has enabled decentralization of work (Lucas and Baroudi, 1994). Specifically, it is now possible for organizational members to work together while being spatially and temporally coupled from one another. The aforementioned description of operation gives birth to the formation of a virtual organization (VO). Virtual organizations are organizations comprised of multiple, distributed members, temporarily linked together for competitive advantage, who share common value chains and business processes, supported by distributed information technology (Davidow and Malone, 1992).

Virtual organizations are characterized by several of the same factors that determine a traditional organization's risk propensity. Tasks executed by the VO, although distributed, may still be inherently risky as in traditional organizations. Technology used to execute the VO's tasks may also be inherently risky. Human and organizational errors will continue to propagate in VOs as long as humans and organizations are a part of them (Grabowski and Roberts, 1999). Risk propensity in VOs is unique in interesting ways. Virtual organizations are distributed, networked organizations with fluid and shared business processes. Risk in VO can migrate between organizational members, making risk identification and mitigation difficult (Grabowski and Roberts 1997). Virtual organizations are comprised of members with their individual goals, policies, and cultures, and because the members are bound in temporary alliances that reflect changing marketplace opportunities, developing a shared culture of reliability and commitment to reliability goals is difficult. The presence of simultaneous interdependence and autonomy creates an inherent tension in a VO (Grabowski et al, 1997). Finally, because VOs are organizations with complex interactions between their members, precipitating incidents and accidents may have long incubation periods, making identification of a leading error chain difficult (Grabowski et al 1997). These risk propensities can provide important clues for effective risk mitigation in VOs.

Virtual organizations and systems of organizations have been little studied by IS and organizational researchers. The aim of this paper is to explore important risk mitigation processes in VOs. The paper discusses the risk propensity in VOs and

examines in detail characteristics of VOs important to mitigating risk, including their implication for management. Scope for future research work is suggested in the discussion section.

RISK PROPENSITY IN VIRTUAL ORGANIZATIONS

Risks in VOs are the same as those found in traditional teams. These risks could be financial, operating or managerial in nature. Within a traditional network organization, functional and hierarchical boundaries are more permeable, employees communicating directly with whosoever is most relevant for their current task (Symon, 2000). Indeed, most organizational tasks are accomplished in temporary project teams (which may consist of core organizational employees and individuals employed on temporary contracts). The core individual employee is seen to be empowered, enterprising and innovative (Symon et al, 2000). Although members of VOs may occasionally meet face-to-face as well as electronically, members are not co-located and VO success hinges on shared, interdependent business processes that are designed to achieve shared business objectives (Grabowski et al, 1999). Virtuality thus has two features: the creation of a common value chain among the distinct entities of the VO (Benjamin and Wigand 1995) and business processes supported by distributed information technology. Virtual organizations are distinguished from traditional network organizations by the temporary linkages that tie together the distinct organizations, by the members' shared business processes and common value chains supported by distributed information technology (Grabowski et al, 1999).

Research shows that risk propensity in traditional organizations has its roots in number of factors (Grabowski et al, 1999). One cause of the risk is that the activities performed are inherently risky; another cause is that the technology is inherently risky or exacerbates risks in the system. Yet a third cause is that the individuals and organizations executing tasks and technology or coordinating both can propagate human and organizational errors.

MODEL

The paper explores factors which influence risk mitigation in virtual organizations. Inter-relationships between various constructs are demonstrated in the figure 1 below.

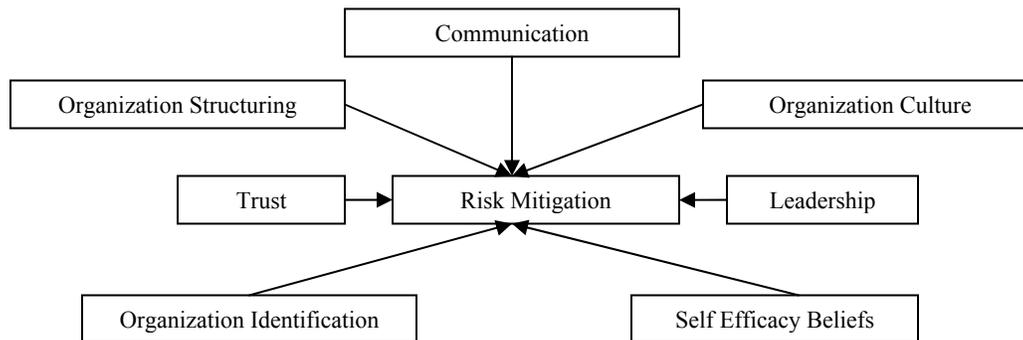


Figure 1: The Research Model

The model posits that risk mitigation in VOs is influenced by organization structuring, communication, organization culture, trust, organization identification and self efficacy beliefs. The paper first discusses the outlined constructs in the proposed model, then develops propositions and finally ends with a discussion of factors affecting risk.

ORGANIZATION STRUCTURING

Structuring is the organizational process for solving two fundamental problems: “division of labor into various tasks to be solved and coordination of these tasks to accomplish the activity” (Lucas et al, 1994). Redundant organization structures that provide operational slack and the assurance of task performance in dynamic environments are linked to risk mitigation in organizations (LaPorte and Consolini, 1991). A number of organizations comprise a VO, therefore some amount of redundancy in them is inevitable (Davidow et al, 1992). Redundancy in VO tasks can cause difficulties if duplicate tasks are executed in geographical dispersed operational settings by organizational members who do not share each other's values, roles and responsibilities. Distributed VOs must synchronize their goals and respond quickly in face of changing requirements. It can be deduced that risk mitigation in VOs is primarily linked to fluidity in organizational structures, rather than to redundancy. Fluidity in organizational structures can allow disparate structures the flexibility to respond in different ways to varied conditions and situations. This is critical for VOs faced with frequent changes in requirements in their

environments and resources (Grabowski et al, 1999). Virtual organizations that can vary their organizational structures can also create opportunities to dampen the risks of miscommunication, disjointed decision making, misunderstanding, or disparate organizational goals by providing multiple paths through which structuring and communications can occur (Grabowski et al, 1999).

Proposition 1: Fluid organizational structuring positively influences risk mitigation in virtual organizational setting.

COMMUNICATION

The theory of uncertainty reduction suggests that people communicate to reduce uncertainty, thereby, making their environments more predictable. As the trend toward virtuality continues to redefine organizational structure and boundaries, the importance of electronic communication media has increased (O'Hara-Devereaux and Johnson 1994). Successful performance of a task requires not only that group members convey their ideas and understanding of the task, but also that members develop a common shared understanding of the issues and the group's strategy. (Baker, 2002). The communication process in distributed VOs can clarify goals, relationships among and responsibilities of their members. It can also provide opportunities for members to discuss improvements, including explicit discussion of risk mitigation strategies and approaches, as well as what the probable impact of different risk mitigation measures might be (Grabowski et al, 1999). For geographically dispersed, networked alliances of workers, communication can also serve social support needs, which can reduce individual and organizational stress (Lin and Ensel, 1989). Such communication can contribute to the development of a shared culture of safety and can mitigate risk (Weick, 1987, 1993) which is especially important in organizations that cannot presume the same set of values, or the development of heedful interrelating (Weick, 1998) that conventional and face-to-face contact have.

Communication provides opportunities for clarification, for sense making, for organizational growth, and for people to discuss improvements to the organization and the impacts of different risk mitigation strategies. It serves social support needs for geographically dispersed but technologically linked groups and it can contribute to the development of a shared culture of safety and reliability (Grabowski et al, 1999).

Proposition 2: Rich communication positively influences risk mitigation in virtual organizational setting.

ORGANIZATIONAL CULTURE

Schein (1992, 1996) defines culture as a set of basic tacit assumptions that a group of people share about how the world is and ought to be; it determines their perceptions, thoughts, feelings and to some degree, their overt behavior. Developing strong cultures in VOs is difficult because they are often comprised of several cultures. Thus, developing a single culture of reliability from these many cultures can prove challenging. The existence of shared deep tacit assumptions and values across all members of the VOs or of similar educational backgrounds or experience, is unlikely in such organizations, particularly is the virtual organization which crosses cultural lines (Chesbrough and Teece, 1996). The various cultures represented in different members of the virtual organization's will almost surely introduce dysfunctionalities and miscommunications, as communication and functionality in VOs takes place across organizations that do not share common values, assumptions or perceptions. (Porter 1993).

Risk mitigation in VOs requires melding the varied cultures that comprise the system into a cohesive whole. This is extremely difficult in distributed, multicultural systems aligned by temporary linkages that may dissolve as business opportunities and requirements change. Attention to incentive and control systems can help prevent situations where shared cultures of deep and espoused values are required for success but are undermined by individual member's reward and control systems, or by competing business opportunities. Establishing slack and safe areas in virtual organization to discuss incentive and control system issues can be a first step in creating an environmental condition conducive to resolution of these sensitive inter- and intra organizational issues, and to dampen overall risk in a VO (Grabowski et al, 1999).

Proposition 3: Strong organization culture positively influences risk mitigation in virtual organizational setting.

TRUST

Trust among team members is defined as 'the extent to which a person is confident in, and willing to act on the basis of, the words, actions, and decisions of another' (McAllister, 1995). It is basically made up of two aspects which are *cognitive* and *affective* in nature (Lewis and Weigert, 1985). Cognition-based trust refers to the calculative and rational characteristics demonstrated by trustees (Kanawattanachai, 2002). These include reliability (McAllister et al, 1995), integrity, competence (Meyerson, Weick and Kramer, 1996), and responsibility (Cook and Wall, 1980). The highpoint of cognition-based trust is reached when 'social actors no longer need or want any further evidence or rational reasons for their confidence in the objects

of trust' (Lewis et al, 1985). Affect-based trust involves the emotional elements and social skills of trustees (Kanawattanachai et al, 2002). Care and concern for the welfare of partners form the basis for affect-based trust (McAllister et al, 1995).

In VOs, people working in a temporary system deal with each other primarily in terms of the professional roles each individual performs, not in terms of developing social relationships. Therefore in a VO setting, the cognitive dimension of trust seems more useful. Communication media has a tremendous influence on how a virtual team is eventually formed (Kanawattanachai et al, 2002). Virtual organizations rely on computer-mediated communication tools as their primary means of communication (Majchrzak, Rice, Malhotra, King and Ba, 2000). Although past research has shown that individuals can develop social relationships in computer-mediated communication environments when given enough time (Walthe, 1995) It is more difficult to develop social relationships through computer-mediated communications due to the depersonalization effect (Kiesler and Sproull, 1991). In practical day life we still find that some VOs will eventually achieve greater amount of trust than others will actually achieve. Therefore it will be wrong to pinpoint one single factor that contributes entirely to building trust. Developing trust in VOs is a complex task. It requires fairly constant, small group activities among members, because it is difficult to trust unknown people, whom you have not observed in action over time, and who are not committed to the same goals (Frey and Schollosser, 1993). Trust plays an important synthesis role because with trust, VOs with fluid (flexible) organizational structures can leverage the ability and willingness to learn. (Coyle and Schnarr, 1995). This helps in enhancing performance and attention to reliability over time. Virtual organizations with high levels of cognitive trust among their members can effectively utilize interactions and communication processes at their interfaces so members can develop shared mental models of reliability and a culture of safety.

Proposition 4: Cognitive trust positively influences risk mitigation in virtual organizational setting.

ORGANIZATION IDENTIFICATION

Identification is a means by which organizational members define the self in relation to the organization (Turner, 1987). Thus, identification represents the social and psychological tie binding the employees and the organization—a tie that exists even when employees are dispersed (Wisensfield, Raghuram and Garud 2001). An organization's identity provides members with an answer to the question, "What is the nature of this organization?" Furthermore, by defining the organization, an organization's identity guides member's feeling, beliefs and behaviors (Dutton and Dukerich, 1991).

Identification defines the norms and conventions that individuals utilize to coordinate their behavior, and it creates opportunities for organizational learning (Kogurt and Zander, 1996). Identification may be essential to sustaining VOs because it facilitates critical organizational functions that pose particular challenge and risk in virtual contexts, such as following: a) coordination and control of dispersed organizational actors; b) work group functioning; c) encouragement of extra role helping behaviors; and d) retention of valuable employees. Organizational identification provides a psychological link between the organization and a dispersed work force, may facilitate coordination by promoting convergent expectations (Kogurt et al, 1996). Identification motivates members to coordinate their efforts to achieve organizational goals by enhancing interpersonal trust and cooperation. (Brewer, 1981). Additionally research suggests that members who identify strongly with organization are more likely to (1) accept organizational goals as their own personal goals (2) attend to super ordinate goals and (3) be loyal and obedient (Dutton, 1994). Organizational identification is expected to correlate with work effort, willingness to perform extra role behaviors, and performance (Dutton et al, 1994). Thus, through its impact on employees' motivation, organizational motivations, organizational identification facilitates coordination and control without the need for costly (and possibly ineffective) systems of supervision and monitoring. In short, organizational identification helps in mitigating risk in VOs.

Proposition 5: Organization identification positively influences risk mitigation in virtual organizational setting.

SELF EFFICACY BELIEFS

Self-efficacy has been used as the theoretical framework because it has consistently been found to be associated with work-related performance in numerous studies especially in VO context (Staples, Hullund and Higgins, 1999). Bandura (1978) defined self efficacy as "a judgment of ones ability to execute a particular behavior pattern". Self efficacy beliefs form a central role in regulatory process through which an individual's motivation and performance attainments are governed. Self efficacy judgments also determine how much effort people will spend on a task and how long they will persist with it. People with strong self efficacy beliefs exert greater efforts to master a challenge while those with weak self efficacy are likely to reduce their efforts or even quit (Bandura and Schunk, 1981). The theory appears to be well suited to studying VOs. The remote employees in such organizations typically work with minimal supervision and rely heavily on their own abilities and initiative to perform their job tasks. Information technology is the typical medium used to communicate with management since face to face interaction is rare. Often the employee works in a location with few or no coworkers, so the potential for

isolation can be high and the availability of coworker advice is often low (Staples, et al, 1999). Since remote employees enjoy considerable work autonomy, the potential impact that their own motivation and beliefs in their abilities (i.e self efficacy judgments) can have on their outcomes may be considerably higher than for employees' whose behaviors are under tight supervision (Staples et al, 1999). Therefore, VOs that learn how to maximize employees' self efficacy beliefs with respect to working remotely may reap greater benefits by reducing the risk from a virtual working environment.

Proposition 6: Self efficacy beliefs positively influences risk mitigation in virtual organizational setting.

LEADERSHIP

Most models of group and team effectiveness recognize the critical role of team leaders. The leader's functional role is to develop them into a coherent, seamless, and well-integrated work unit (Kozlowski, Gully, McHugh, Salas and Cannon-Bowers, 1996). The ability of leaders to monitor team member performance and to implement solutions to work problems is severely restricted by the lack of face-to-face contact within VO. It is also difficult for a VO leader to perform typical mentoring, coaching, and developmental functions. The challenge for VO leadership is that these functions must be accomplished by substitutes and by distributing the functions to the VO team itself. To accomplish this, virtual organizational leaders need to provide clear and specific individual goals. Clear direction and goals enhance individual self-regulation and enable team members to monitor their own performance, gather their own feedback, and evaluate their own performance (Kozlowski, Nason and Smith, 1999). Although this is relevant in all teams, VO leaders need to be more proactive and structuring. Virtual organizational leaders need to develop mechanisms and processes that become reinforced by the team members themselves to regulate team performance patterns (Zaccaro and Burke, 1998).

One way virtual organizational leaders can do this is by developing appropriate habitual routines early on in the team's lifecycle (Gersick and Hackman, 1990). Habitual routines operate automatically and perpetuate existing patterns of behavior, unless some extraordinary event occurs. Leaders can develop habitual routines by pre-specifying desired routines (e.g., standard operating procedures), training members in the desired routines, and providing motivational incentives sufficient to ensure compliance with them (Gersick et al, 1990). Team member self-regulation can also be enhanced by leaders who set explicit objectives, create a clear mission, and develop an appropriate climate or tone (Kozlowski et al., 1996). Leaders can also set forth rules and guidelines that specify appropriate team member behavior.

Virtual organizational leaders also need to closely monitor any changes in environmental conditions. Virtual organizational members are distributed, they are less aware of the broader situation and the dynamics of the overall team environment. So, as external conditions change, such as modified task specifications, a new deadline, or changes in the team's goals, leaders need to facilitate adaptive and appropriate changes within their team. And finally, virtual organizational leaders need to motivate team members to commit strongly to the overall team effort and need to facilitate team coherence, especially under high intensity conditions (McGrath, 1962). Team coherence, which is characterized by seamless group processes, is facilitated by developing linked individual goals, creating a repertoire of team task strategies, and building a compatible network of role expectations across team members (Kozlowski et al., 1996).

Among more renowned leadership theories; the contingency approach to leadership (Fiedler, 1967) assumes that there is no one best style and that effective leadership depends on the fit between the leaders' variables and situational variables. According to behavioral approach (Hoy and Forsyth, 1986), effective leadership can be characterized in terms of specific sets of observable activities that can then be used as a basis of comparison for leadership effectiveness. Based on the discussion of effective leadership style in VO context it appears that behavioral approach of leadership is more appropriate (Kayworth and Leidner, 2001).

Proposition 7: Effective behavioral VO leadership positively influences risk mitigation in virtual organizational setting.

DISCUSSION

The paper discusses a broad array of organizational theory literature that can be used to describe the process of risk mitigation in a virtual organizational setting. The characteristics discussed previously- organizational structuring, communication, culture, trust, self-efficacy judgments, organization identification and leadership- present particular challenges in mitigating risk. In virtual organizations in which risk mitigation is as important an outcome as is productivity, organizations need to develop a cohesive management team that can maintain the "big picture". The latent potential of virtual work can be realized if they pay attention to factors that tie organizational members together. The primary contribution of the paper is an attempt to capture few variables which can effectively help in mitigating risk in a VO setting.

The paper has some limitations attached to it. Firstly, the model proposed needs to be empirically tested. Without empirical testing, propositions cannot be validated. Secondly, there could be many constructs that can be added or deleted, so that development of a parsimonious model takes place. Thirdly, the paper covers a broad array of organizational theory literature,

and it is possible that many theories used in the proposed model could be replaced or redefined. Lastly, there could be some multi-collinearity issues involved with model constructs. Future research can empirically test the proposed model and perhaps refine and redefine the model to make it more practical and useful in a typical virtual organizational setting.

ACKNOWLEDGMENTS

The author would like to thank Dr. Qing Hu, Dr. Mark F. Peterson and anonymous reviewers for their thoughtful suggestions and comments on earlier drafts of this manuscript.

REFERENCES

1. Baker, G. (2002). The effects of synchronous collaborative technologies on decision making: A study of virtual teams. *Information Resources Management Journal*, 15, 4, 79-94.
2. Bandura, A. (1978) reflections of self efficacy. *Advances in Behavioral Research and Therapy*, 1, 4, 237-269.
3. Bandura, A. and Schunk, D.H. (1981). Cultivating competence, self efficacy and intrinsic interest through proximal self motivation. *Journal of Personality and Social Psychology*, 41, 3,586-598.
4. Bandura, A. (1986). Social foundations of thought and action. Prentice Hall, Englewoods Cliffs, NJ.
5. Benjamin, M. and Wigand, R. (1995). Electronic markets and virtual value chains on the information superhighway. *Sloan Management Review*, 36, 62-72.
6. Brewer, M.B. (1981).Ethnocentrism and its role in interpersonal trust. M.B Brewer, B.E. Collins, eds. Scientific Inquiry and the Social Sciences. Jossey-Bass, New York, 345-360.
7. Chesbrough, H.W. and Teece, D. J. (1996). When is virtual virtuous? Organizing for innovation. *Harvard Business Review*, 74, 65-73.
8. Cleaver, J. (2000). Out of sight. *Crain's New York Business*, 16, 44, 31- 46.
9. Cook, J. and Wall, T. (1980), New work attitude measures of trust, organizational commitment and personal need non-fulfillment. *Journal of Occupational Psychology*, 53, 1, 39-52.
10. Coyle, J. and Schnarr, N. (1995). The soft-side challenge of the virtual corporation. *Human Resource Planning*, 18, 41-42
11. Davidow, W.H. and Malone, M.S. (1992). The virtual corporations: Structuring and revitalizing the corporation for the 21st century. *Edward Burlingame Books/Harper Business press*, New York.
12. Dutton, J.E. and Dukerich, J.M. (1991). Keeping an eye on the mirror: The role of image and identity in organizational adaptation. *Academy of Management Journal*, 34, 517-554.
13. Dutton, J.E, Dukerich J. M. and Harquail, C.V. (1994) organizational images and member identification *Administrative Science Quarterly*, 39, 2, 239-263
14. Fiedler, F.E. (1967). A Theory of Leadership Effectiveness. New York, McGraw-Hill.
15. Fitzpatrick, W. M. and Burke, D. R. (2000). Form, functions, and financial performance realities for the virtual organization. *Advanced Management Journal*, 65, 3, 13-20.
16. Frey, S.C. and Schollosser, M. (1993). ABB and Ford. Creating value through cooperation. *Sloan Management Review*, 65-72.
17. Garud, R.S. and Kotha, S. (1994). Using the brain as a metaphor model flexible productive units. *Academy of Management Review*, 19, 4, 671-698.
18. Hoy, W. and Forsyth, P. (1986). Effective Supervision: Theory into Practice. New York, McGraw-Hill.
19. Gersick, C.J.G. and Hackman, J. R. (1990). Habitual routines in task-performing groups. *Organizational Behavior and Human Decision Processes*, 47, 65-97.
20. Grabowski, M., Harrald, J.H. and Roberts, K.H. (1997). Decision support and organizational forms in a high velocity environment; Responses to catastrophic oil spills. *Advances in Expert Systems for Management*. Vol. 2 JAI Press Greenwich, CT.
21. Grabowski, M. and Roberts, K.H. (1999). Risk mitigation in virtual organizations. *Organizational Science*, 10, 6, 704-721.
22. Hill, T., Smith, N.D. and Mann, M. F. (1987). Role of efficacy expectations in predicting the decision to use advanced technologies. *Journal of Applied Psychology*, 72, 2, 307-314.
23. Kanawattanachai Prasert and Yoo Youngjin (2002). Dynamic nature of trust in virtual teams. *The Journal of Strategic Information Systems*.
24. Kayworth, T. R. and Leidner, D.E. (2001-2002) Leadership effectiveness in global virtual teams *Journal of Management Information Systems*, 18, 3, 7-41.
25. Kiesler, S. and Sproull, L. (1991) *Connections: New Ways of Working in the Networked Organization*, The MIT Press, Cambridge.
26. Kogurt, B., Zander,R. (1996). What firms do? Coordination and organizational identification. *Organization Science*. 7 , 502-518.
27. Kozlowski, S.W.J., Gully, S. M., Nason, E. R., and Smith, E. M. (1999). Developing adaptive teams: A theory of compilation and performance across levels an time. In D. R. Ilgen and E. D. Pulakos (Eds.), *The changing nature of work and performance: Implications for staffing, personnel actions, and development* (SIOP Frontiers Series). San Francisco: Jossey-Bass
28. Kozlowski, S.W.J., Gully, S. M., McHugh, P. P., Salas E. and Cannon-Bowers, J. A.(1996). A dynamic theory of leadership and team effectiveness: Developmental and task contingent leader roles. In G. R. Ferris (Ed.), *Research in personnel and human resource management* (Vol. 14, 253-305). Greenwich, CT: JAI.

29. LaPorte, T.R. and Consolini, P. (1991). Working in theory but not in practice: Theoretical challenges in high reliability organizations. *Journal of Public Administration*, 1, 19-47.
30. Lewis, J. D. and Weigert, A. (1985). Trust as social reality. *Social Forces*, 63 967-985.
31. Lin, N. and Ensel, W.M. (1989). Life stress and health: Stressors and resources *American Sociological Review*, 54, 382-399.
32. Lucas, H.C. and Baroudi, J. (1994). The role of information technology in organization design. *Journal of Management Information Systems*, 10, 9-23.
33. McAllister, D.J. (1995) Affect- and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal*, 38, 1, 24–59.
34. Markus, M. L., Manville, B., and Agres, C. E. (2000). What makes a virtual organization work? *Sloan Management Review*. 42(1), 13-26.
35. Majchrzak, A., Rice, R.E., Malhotra, A., King, N. and Ba, S. (2000). Technology adaptation: the case of computer-supported inter-organizational virtual team. *MIS Quarterly*, 24, 4,569–600.
36. McGrath, J. E. (1962). Leadership behavior: Some requirements for leadership training. Washington, DC: U.S. Civil Service Commission.
37. Meyerson, D., Weick, K.E. and Kramer, R.M. (1996), Swift trust and temporary groups. In: R.M. Kramer and T.R. Tyler, Editors, *Trust in Organizations: Frontiers of theory and Research*, Sage, Thousand Oaks, CA, 166–195.
38. O'Hara-Devereaux, M and Johansen, R. (1994). Bridging Distance, Culture, and Time. San Francisco CA: Jossey-Bass.
39. Porter, A.L. (1993) Virtual Companies reconsidered. *Technology analysis and Strategic Management*, 5, 413-420.
40. Schein, E.A. (1992). Organizational culture and leadership, 2nd ed. Jossey-Bass, San Francisco.
41. Schein, E.A. (1996). Three cultures of management. The key to organizational learning. *Sloan Management Review*, 9-20
42. Staples, D. S., Hullund, J.S. and Higgins, C.A. (1999). A self efficacy theory explanation for management of remote workers in virtual organizations, *Organization Science*, 6, 758-776
43. Siegel, J., Dubrovsky, V., Kiesler, S., and McGuire, T. W. (1986). Group processes in computer mediated communication. *Organizational Behavior and Human Decision Processes*, 37, 157-187.
44. Symon, G. (2000). Information and communication technologies and network organization: A critical analysis. *Journal of occupational and organizational psychology*, 73, 4, 389-415
45. Turner, J. (1987). Rediscovering the social group: A self categorization theory. Basil Blackwell, Oxford, U.K.
46. Walthe, J.B. (1995), Relational aspects of computer-mediated communication: experimental observations over time. *Organization Science*, 6, 2, 186–203.
47. Weick, K.E. (1993). The collapse of sense making in organizations. The Mann Gulch disaster. *Administrative Science Quarterly*, 38 628-652.
48. Werther, W. B. (1999). Structure-driven strategy and virtual organization design *Business Horizons*. 42(2), 13-18.
49. Weick, K.E. (1987). Organization culture as a source of high reliability. *California Management Review*, 29, 116-136.
50. Weick, K.E. (1998). Improvisation as a mindset for organizational analysis. *Organization Science*, 9, 5, 543-555.
51. Wiesenfeld, B.M., Raghuram, S. and Garud, R. (1999). Communication patterns as determinants of organizational identification in a virtual organization. *Organizational science*. Nov.-Dec, 777-790.
52. Zaccaro, S. J., and Burke, C. S. (1998). Team versus crew leadership: Differences and similarities. In R. J. Klimoski (Chair), When is a work team a crew-and does it matter? Symposium conducted at the 13th annual Conference of the Society for Industrial and Organizational Psychology, Dallas, TX.