THE IMPACT OF ELECTRONIC COMMUNICATION WITHIN ORGANIZATIONS' MEDIA ON MANAGERIAL LEADERSHIP BEHAVIOUR

– Theoretical Analyses and Empirical Evidence: Operationalisation / Indicalisation of Measured Variables –

Dipl. Inform. (Univ.) **Stefan Schwerd,** *MBA (Univ.)*
Doctorate student at the University of Latvia
Sandoz International GmbH / HEXLA AG
Industriestraße 25, 83607 Holzkirchen, Germany
Phone: +49 8024 908 1441
Cell: +49 170 8547107
E-mail (business): stefan.schwerd@sandoz.com
E-mail (private): stefan@schwerd.eu

Abstract

Nowadays big global enterprises with thousands of employees, all spread around the world, benefit of the new communication technology like virtual conferencing, chatting, emailing etc..

Real time communication is key success factor number one. This also enables to group the best people around the world in virtual teams, without any loss of private inconvenience, of any relocation. People are getting used to work in so called "virtual" teams, maybe never meet face to face, just using the new communication channels to interact and align.

This article gives an overview on the impact on the management style and the specialties in leading such virtual teams. It is based on a broad literature research from various areas of science e.g. management science, communication science and social science. The aim is only to give a correct indication but further in-depth studies would be necessary to prove interdependencies and statements made.

Introduction

Virtual team interactions are almost always assisted by some form of computer-mediated communication technology. Computer-mediated communication is different in many ways from traditional face-to-face communication, perhaps most significantly because the communication is usually asynchronous instead of synchronous. Temporal independence of communication changes the patterns of work, decision making, and understandings about the work and the relationships between the individuals involved in the work [1]. It is key to

understand the basic principles of team dynamics even better than in common team interaction, as there is no face to face interaction as well for the team leader. It is key for the leader to identify even faster and more precise the tendencies in the virtual team than in normal teams, because personal "theses" of "what's going on" could be proven immediately in a normal team, and corrective actions could be taken immediately as well – but not in a virtual team, situation is getting more complex.

Definitions

Team: Generically, a team is a group of individuals who interact interdependently and who are brought together or come together voluntarily to achieve certain outcomes or accomplish particular tasks. Some research claims that the use of teams increases capability, responsiveness, and flexibility within organizations [2] partly because synergies are created among team members who have different types of expertise, experience, or knowledge [3].

Computer mediated (asynchronous) communication (CM(A)C): CMAC is communication that allows many individuals to speak to many other individuals, 24/7, regardless of geography or time zone. CMAC is a specific genre of communication characterized by a generally recognized communicative purpose and with common aspects. Common CMAC attributes include that CMAC team members can access computer-mediated virtual sites devoted to their tasks or problems at their individual convenience, have access to read and study contributions made by others on these sites 24/7, and then make their own contributions when personally convenient. [4]

Leadership has been described as the "process of social influence in which one person can enlist the aid and support of others in the accomplishment of a common task [5]

Decision making: Decision making, team processes, and communication effectiveness are influenced by various organizational characteristics, including organizational structure, culture, information technology systems, and leadership style [6]. Communication, therefore, is embedded in social process [7] and is central to the organizing process [8].

Characteristics of face to face interaction following McGrath & Hollingshead [9]:
- All members present are at the same place at the same time.
- Only one person speaks at a time.
- Speakers often exercise some control over who speaks next.
- Speakers often exercise some control over whether interruptions are allowed.
- Members who are present share time unequally; those absent have no voice at all.
- The audience is usually everyone present and rarely those who are not present.
- The set of potential speakers is everyone present, but only those present.
- There is no anonymity, and so social, power, and status cues are obvious.
- Paralanguage such as nodding affirmatively or frowning is apparent to those paying attention.
- Immediate verbal and paralanguage feedback is possible.
- Enthusiasm or charisma can be conveyed.

Table 1

Comparing Asynchronous Online Discussion with Face to Face Discussions by Berry [10]

Differences between Asynchronous Online Discussions and Face-to-Face Discussions	
Asynchronous Online Discussion	**Face-to-Face Discussion**
Discussion is from one person to another, or one to many, but also many to many	Discussion is one to one, or one to many, but not many to many
Multiple discussions are under way at the same time, and participants are often expected to participate in several discussions at the same time	There can be only a single discussion under way at a given time in a conference room, and everyone is restricted to a single discussion at a time
Everyone is able to talk simultaneously, so no one is physically blocked, and all participants can be active at the same time	Only one person talks at any one time, and everyone else is blocked, so participants are in listening mode most of the time
The discussion can be democratic, with everyone equally participating and having a voice	The discussion tends to be dominated by a few, with many not having any voice at all (sometimes by choice)
There are few social and political or power cues and no body language	There are many social and political and power cues, with much body language
The discussion operates 24/7 within time frames that can be weeks long, and participants have freedom of choice as to when they participate	The discussion operates for a specific time frame that is rarely more than several hours long, at a specific place, and participants must be physically present to contribute
The discussion can be free of time and geographic space constraints	The discussion is constrained by specific time and geographic limitations
The discussion is archived, creating a permanent record of all discussion	The discussion is not archived, so there is rarely an accurate record of all discussion
Feedback is sometimes slow	Feedback can be instant

Substitution Effects

Mc Aulay [11] found out, that there are substitution effects, where CMC replaces significantly the non CMC communication channels. In this research work he compared:
CMC channels:

- Email;
- Net;
- Video;

and non CMC channels of communication:

- Face to Face;
- Telephone;
- Others.

Mc Aulay reflected these channels on 3 communication layers/dimensions within concrete situational aspects.

Table 2

**Comparing substitution usage of CMC channels with non CMC/classic
communication channel, by Mc Aulay [11]**

	Electronic			Other		
	Email	**Net**	**Video**	**Face-to-face**	**Telep-hone**	**Other**
Content reasons						
To convey confidential, private or delicate information	9	1	0	75	15	0
To describe a complicated situation or proposal	29	3	2	53	13	0
To influence, persuade, or sell an idea	12	5	1	65	17	0
To express feelings or emotions	11	0	2	65	22	0
To keep someone informed	52	11	1	15	20	1
To follow up earlier communication	49	4	0	13	27	1
To share useful, wider information, not related to specific tasks	52	25	3	8	10	2
Situation reasons						
To respond to a straightforward telephone message	17	1	0	12	70	0
To communicate to someone close by	11	0	0	78	11	0
To communicate something complicated to someone far away	42	9	5	7	36	0
To use the communication medium you prefer	24	5	1	47	23	0
To communicate the same thing to many people	54	19	5	17	4	1
When working remotely, away from your office	38	8	2	6	47	0
Symbolic reasons						
When you want to be casual or informal	18	0	0	51	31	0
When you want to convey urgency	21	0	0	39	40	0
When you want to convey personal concern or interest	10	0	0	62	28	0
When you want to obtain an immediate response or action	12	0	0	49	38	0
When you want to show authority, status or position	28	1	2	51	17	0
When you want to show that your communication is official	53	1	1	26	9	11
Total	**29**	**5**	**1**	**39**	**25**	**1**

Table 2 shows significantly substitution through CMC communication in the dimension of "Content Reasons" esp. if pure information transfer is intended:

- Keep someone informed;
- To follow up earlier communication;
- To share useful, wider information, not related to specific tasks.

In the dimension of "Situation Reasons" the most significant substitution is seen in:

- To communicate sth. complicated to someone far away;
- To communicate to many people.

Finally in the dimension of "Symbolic reasons" the significant substitution is researched in only one aspect:

- When you want to show that your communication is official.

On the other hand, it is seen, that various other aspects researched and questioned have no relevant substitution effects driven by CMC although there is the technical opportunity to do.

Leadership Basics – Comparison of Virtual Team Structures and Internal Teams

One characteristic, as examined in the definitions section, is the fact of non face to face (or at least strongly reduced face to face) communication. Not only must the leader oversee the work of other team members, but as a member of the team the leader also sets the standards for collaboration and the expectations for how the team functions [13]. Wakefied and Leidner [14] propose a theory they call "Behavioral Complexity in Leadership" where they posit a portfolio of leadership roles or functions that allows a leader to react to varied demands encountered in team settings. Effective leaders draw from a repertoire of leadership roles as situations warrant, and these roles are relatively transparent to subordinates [14]. Effective leaders are also highly competent in perceiving the needs of their constituencies and altering their behaviors to meet those needs [15]. One of the major findings of Westfield and Leidner was, that the better a leader performs in internal leadership, the better will the leader perform in a virtual environment [14]. Based on the model described in Figure 1 [16] it means, that all dimensions and roles of leadership applying to common internal leaders will be found and are essential for leaders of virtual teams as well.
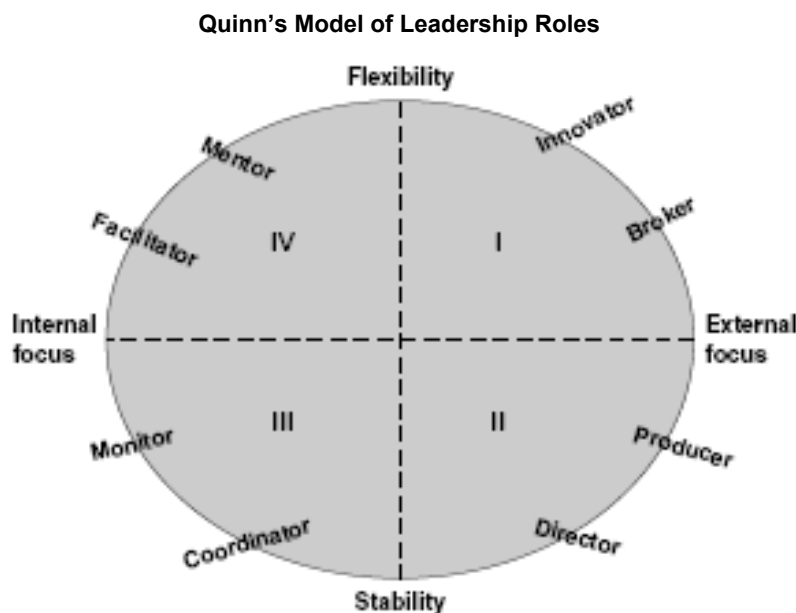
Quinn's Model of Leadership Roles

Figure 1. Defined roles of teamleaders to effectively respond on conflict situations derived Quinn's Framework [16]

Team Members – a Key Success Factor

Another key success factor for virtual or CMC team cooperation are the team members. Although any member of a team might initiate an ICT (Information and Communication Technology) adaptation, formally designated project team leaders, if present, are in the position of responsibility for noticing interaction problems related to ICT usage and making improvements happen, particularly when ineffective ICT use is leading to a drop in team productivity [17].

The final trigger involved team members' ICT knowledge or lack thereof and consequent use or disuse of tools. The inadequacy of ICT knowledge, skills, and abilities represents the degree to which team members know how to use various ICTs and their preferences in using the ICTs available. Two sub dimensions indicated this trigger:

(1) a tool was workable but not effective in the way members were understanding it or using it,

(2) evidence that team members lacked knowledge or experience to use a tool.

In the first theme, team members were found failing to follow critical ICT usage procedures due to ignorance, apathy, or inability, resulting in major problems [17]. Here it is proposed that the team leader also has to force corrective actions and first showing the team which errors occurred, what consequences were triggered and why this led to problems. Also a strict proposal for "ideal" behavior must be shown to the team members also control mechanisms for early warning must be implemented by the team leader an accepted by team members.

For example, a leader or researcher encountering scenarios dominated by external interference might apply work analyzing organizational context and task structure such as:

- strategic alignment [18],
- project escalation [19],
- outsourcing and interorganizational arrangements [20],
- boundary spanning [21].

To understand a context characterized by internal constraints (technology–task–team fits), one can look to work on:

- demographic/cultural diversity[22];
- setting up virtual team [23],
- understanding dispersion and team size [24],
- power and status impacts [25],
- cultural issues [26],
- general project design and management [27].

Thomas [17] examines therefore the five factors model resulting of (1) external constraint, (2) internal constraint, (3) information and communication technology (ICT) inadequacy, (4) ICT knowledge, skills, and abilities inadequacy, and (5) trust and relationship. The aim of his work is to give a diagnostic tool for examining real, multitrigger team technology adaptation contexts, enabling better leader training and evaluation as well as improved research on team technology adaptation and interventions and a better understanding of the relationship between the technology structure strength indicators in adaptive structuration theory and the need for team technology adaptation intervention [17].

Limitations in Current Models

Broad literature research shows that there is no model in place covering this multi channel communication from multi sources at the same time and especially the reverse impact on the mid management.

It could be claimed, that known "matrix organization models" cover this aspect. This has to be rejected clearly. In matrix organization the employee is clearly dedicated to a strictly defined number of tasks (e.g. projects, maintenance etc.) where the management is also dedicated to.

But with CMC real-time communication about various and several different topics is ad hoc in place, not controlled by mid managers – but relevant and binding for staff members.

The mid-managers do have less control over the communication and the tasks coming from outside. This decision power is unintentionally shifted to the employee, which forces them more than in the past to prioritize ad hoc on their own and reduces the power of information on the mid managers side – which makes a changes in management and a different leadership style necessary.

Introducing a New Model – Covering the Lack of Leadership and the Changing Communication Aspects

Star-Model by Stefan Schwerd – Showing the Increasing Lack of Management Influence

The "Star-Model" reflects the various dimensions and layers of CMC communication. Departments are shown as "triangles" in one color. Whereas each peek is reflecting one regional organization pyramid – basically well known from old hierarchical models. Difference is, that the regional factor is also reflected. Each angle reflects here the different regional (or country/site) head per function, each triangle reflects a function – so, the number of angles is for illustration reasons chosen as 3 – which means here 3 different regions/sites. Also the number of triangle is for illustration reasons chosen as 4 – which reflect only four functions within the enterprise – this also could be adapted to several.

Definition:

Function (functional Unit (FU))	=	Color coded polygon with n edges
n (organizational Unit (OU))	=	number of regional different organizational Units (Country organizations e.g. LV, DE, US)
Inter-selection of polygons	=	cross functions / cross functional interference
Hierarchical setup	=	Peak of the n-Polygon = FUn/BUn Head, further OU Layers below – staff positions/cross functions including
Headquarters functions	=	could be reflected a separate n-Polygon

Limitation of the model:

Hierarchical interrelation Between HQ and BUs is not reflected hierarchical. As this model focuses on the management needs based on communications streams between staff members and the organization as a whole – special modeling of this aspect is not necessary, as there is no differentiation from employee and mid managers point of view – the model is explicitly not a "organizational" model.

Stefan Schwerd   **609**
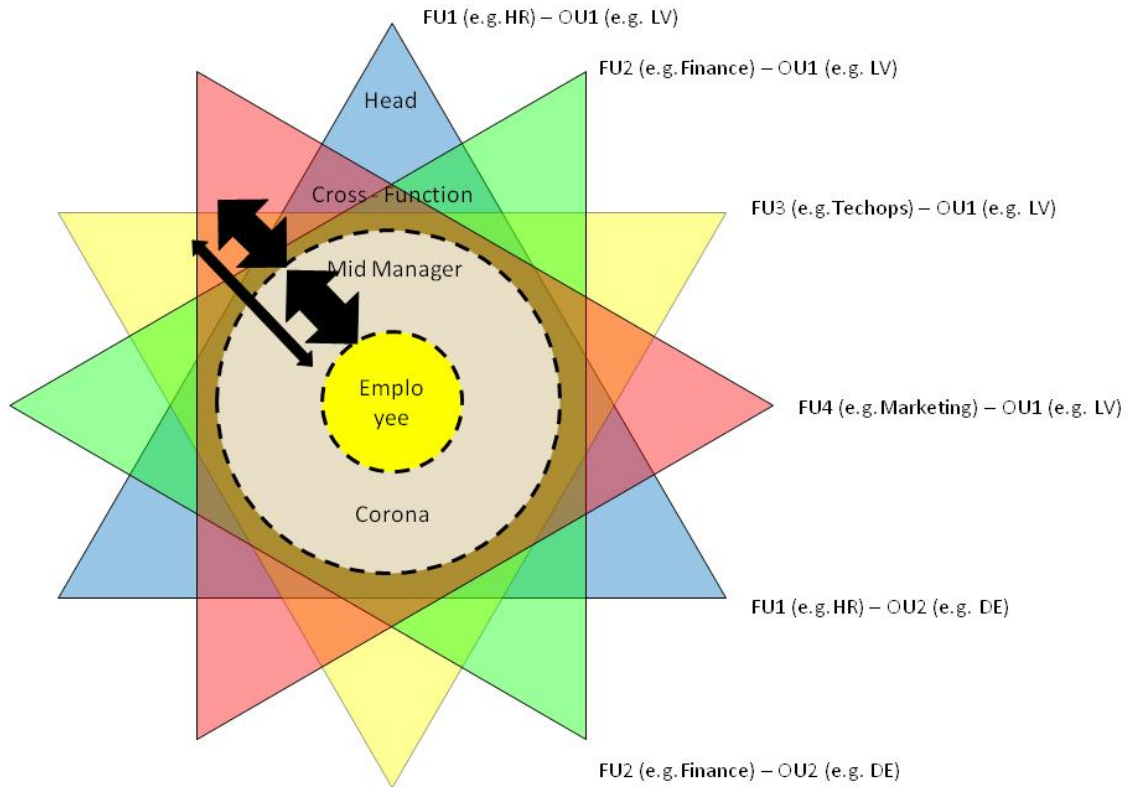
Figure 2. Star Model – "As was" communication in Global Enterprises with multiple organizational Units (OUs) and Functional Units (FUs)

The Star Model as in Figure 2 shows the multiple involvement of employees (knowledge workers only) which are part of various processes where they formally (as by conservative organizational theories) are not belonging to. In former times, the mid manager acts as a "filter" – function for the staff members, incoming information was adopted for better understanding and relevance. Priority and necessary actions were clearly communicated by mid managers.

Also the outside communication of a department was mostly done by mid managers only. Needs and results were also adopted to senior managements knowledge, information was polished and shaped, also for long-term strategy of mid managers. The mid managers could be compared with the "corona" of the sun – very bright shining and the only part which could be seen of a department (where as the nuclear chain reaction is which feeds the corona is going on in the inner part of the department).

Only a few communications was really going directly from employee to senior executives e.g. like Q&A after a "End year result presentation" – but not during and according "day to day" business.

As a matter of fact, big enterprises introduce multiple standard processes and give responsibility to the employees. Supported mostly by IT-systems were all employees are asked to precisely use on their own. Various examples from budgeting, cost controlling up to "do it your-

self" bookings in an ERP systems could be referred. A simple example, the booking of travel expenses, illustrates the change in communication and decision making very drastically:

E.g. employees are forced to do their travel booking item by item on their own in an adequate system. Various choices could be made – with various consequences. Automatic calculations are made etc. like reduction of allowance because of claimed "breakfast". Which also leads to wrong taxations. This pops up in controlling department later. Now, a communication tray between Controlling and the employee about the real circumstances starts – the employee bypasses his direct manager, because he/she could anyway not help or neither is interested in. If things like this happens more often (wrong travel expenses) this becomes a "pattern" for people in controlling, who claim that the department and the head of department were this happens is unserious and not reliable even if this is the R&D department, where mostly no one knows anything about financial details…
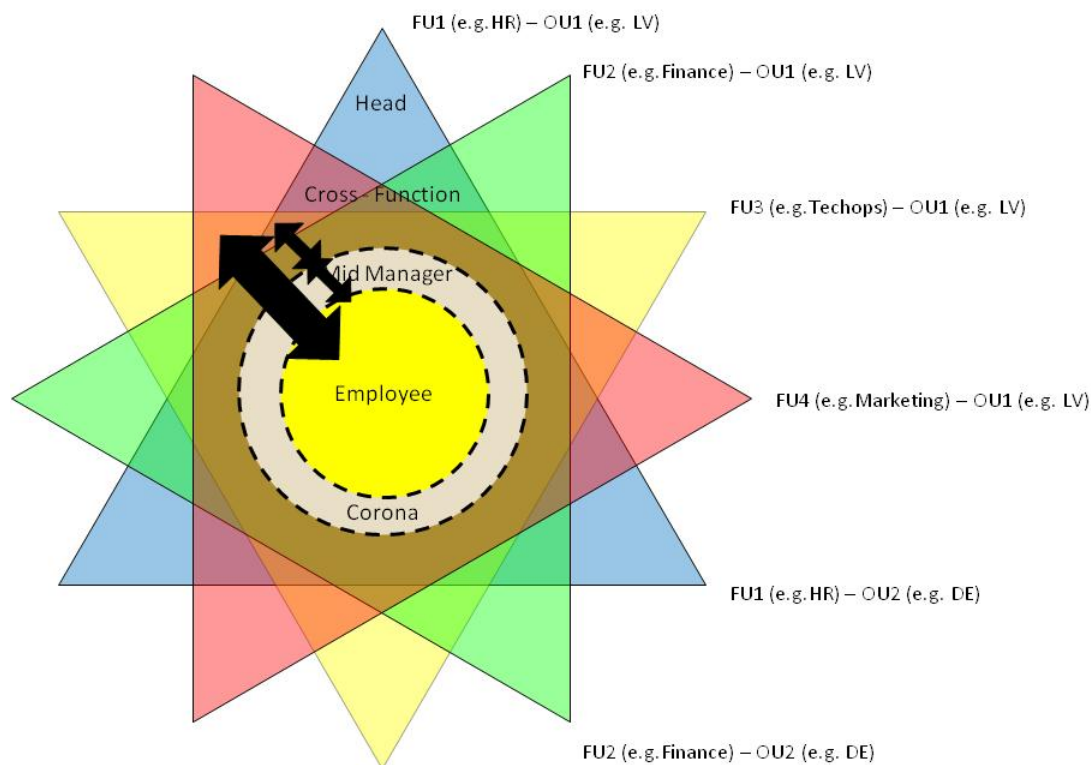

Figure 3. Star Model –"As is" communication in Global Enterprises with multiple organizational Units (OUs) and Functional Units (FUs)

Generically this is reflected in the Star Model now (Figure 2). The filter function decreases ("melting" of the corona) – communication and information passes the departmental head without "polishing" and shaping.

This leads to a loss of control for the mid manager there. Management and Leadership behavior must be adopted immediately – otherwise this could lead to an irreversible and long

lasting reputational loss of the appropriate department and of the manager personally.

The aim of future investigation here is to statistically prove this observation with solid figures first, and develop a "role model" for mid managers which changes are necessary to be made in their management style. Finally also prove with an adequate clinic of candidates this concept.

Outlook:

Unproven observations lead to the conclusion, that less formal controlling mechanisms will be successful counter actions than more long lasting the improvement of certain leadership (not management [28]) skills is highly required, e.g. improve "sensoring" and personal visioning.

On top virtual team leaders need to have explicitly excellent communication skills, guiding, directing and adjusting communication within the virtual team.

The communication itself needs to be explicitly on separate defined task for cooperation for various situations in the virtual team – and must be followed and agreed by all team members.

As a consequence this needs separately to be trained to all team members. The social processes need to be actively visualized, the awareness of this needs to be kept on a very high level.

Outer factors (e.g. Senior Management, 3rd party support and other teams) of the team need to be as well made aware of the special requirements that apply to the virtual team.

The aim of the authors ongoing research work is, resulting on the shown "state of the arte" research results, to further provide a general management communication model proven by a broad clinic.

References

1. Berry, G. R. (2011): Enhancing Effectiveness on Virtual Teams: Understanding Why Traditional Team Skills Are Insufficient. In: *Journal of Business Communication* 48 (2), pp. 186-206.
2. Griffith, T. L., Sawyer, J. E., & Neale, M. A. (2003). Virtualness and knowledge in teams: Managing the love triangle of organizations, individuals, and information technology. In: *MIS Quarterly* 27, pp. 265-287.
3. Grimshaw, D. J., & Kwok, F. T. S. (1998).The business benefits of the virtual organization. In M. Igbaria & M. Tan (Eds.), *The virtual workplace,* pp. 45-70.
4. Orlikowski, W. J., & Yates, J. (1994). Genre repertoire: The structuring of communicative practices in organizations. *Administrative Science Quarterly*, 39(4), pp. 541-574.
5. Chemers M. (1997) *An integrative theory of leadership*. Lawrence Erlbaum Associates, Publishers
6. Chu, P. C., & Spries, E. E. (2001). Does time constraint on use negate the efficacy of decision support systems? *Organizational Behavior and Human Decision Processes*, *85*, pp. 226-249.
7. Orlikowski, W. J., & Yates, J. (2002). It's about time: Temporal structuring in organizations. *Organizational Science*, *13*(6), pp. 684-700.
8. Weick, K. E. (1987). Theorizing about organizational communication. In F. M. Jablin, L. L. Putnum, K. H. Roberts, & L. W. Porter (Eds.), *Handbook of organizational communication,* pp. 97-122.
9. McGrath, J. E., & Hollingshead, A. B. (1990). *Effects of technological enhancements on the flow of work in groups: Preliminary report of a systematic review of the research literature* (Report 90-1).

10. Berry, G. R. (2006): Can Computer-Mediated Asynchronous Communication Improve Team Processes and Decision Making? Learning From the Management Literature. In: *Journal of Business Communication* 43 (4), pp. 344-366.

11. McAulay (2007): United consequences of computer-mediated communications. In: *Behaviour & Information Technology,* Vol. 26, No. 5, pp. 385-398.

12. Katz, D., R. L. Kahn. (1978). John Wiley and Sons, New York.; *The Social Psychology of Organizations*.

13. Van Knippenberg, D., M. A. Hogg. 2003. A social identity model of leadership effectiveness in organizations. R. M. Kramer, B. M. Staw, eds. *Research in Organizational Behavior*, Vol. 25. Elsevier, Amsterdam, pp. 245-297.

14. Wakefield, Robin L.; Leidner, Dorothy E.; Garrison, Gary (2008): A model of conflict, leadership, and performance in virtual teams. In: *Information systems research* 19 (4), pp. 434-455.

15. Kenny, D. A., S. J. Zaccaro. 1983. An estimate of variance due to traits in leadership. *J. Appl. Psych.* 68(4), pp. 678-686.

16. Quinn, R. E. 1988. *Beyond Rational Management: Mastering the Paradoxes and Competing Demands of High Performance*. Jossey-Bass, Inc., San Francisco.

17. Thomas, Dominic M.; Bostrom, Robert P. (2010): Vital signs for virtual teams. An empirically developed trigger model for technology adaptation interventions. In: *Management information systems.* 34 (1), pp. 115-142.

18. Henderson, J. C., and Venkatraman, N. 1999. "Strategic Alignment:Leveraging Information Technology for Transforming Organizations," *IBM Systems Journal* (38:2/3), pp. 472-487.

19. Keil, M. 1995. "Pulling the Plug: Software Project Management and the Problem of Project Escalation," *MIS Quarterly* (19:4), pp. 421-448.

20. Kaiser, K. M., and Hawk, S. R. 2004. "Evolution of Offshore Software Development: From Outsourcing to Cosourcing," *MIS Quarterly Executive* (3:2), pp. 69-81.

21. Ancona, D. G., and Caldwell, D. F. 1992a. "Bridging the Boundary: External Activity and Performance in Organizational Teams," *Administrative Science Quarterly* (37:4), pp. 634-665.

22. Ancona, D. G., and Caldwell, D. F. 1992b. "Demography and Design: Predictors of New Product Team Performance," *Organization Science* (3:3), pp. 321-341.

23. Gibson, C. B., and Cohen, S. G. (eds.). 2003. *Virtual Teams That Work: Creating Conditions for Virtual Team Effectiveness*, San Francisco: Jossey-Bass.

24. Hare, A. P. 1992. *Groups, Teams, and Social Interaction: Theories and Applications*, New York: Praeger.

25. Jasperson, J. S., Carte, T. A., Saunders, C. S., Butler, B. S., Croes, H. P., and Zheng, W. 2002. *"Review: Power and Information Technology Research: A Metatriangulation Review,"* MIS Quarterly (26:4), pp. 397-459.

26. Leidner, D. E., and Kayworth, T. 2006. "*Review*: A Review of Culture in Information Systems Research: Toward a Theory of Information Technology Culture Conflict," *MIS Quarterly* (30:2), pp. 357-399.

27. Abdel-Hamid, T. K., Sengupta, K., and Swett, C. 1999. "The Impact of Goals on Software Project Management: An Experimental Investigation," *MIS Quarterly* (23:4), pp. 531-555.

28. Toor, S. R., Ofori, G (2008), *Leadership&Management in Engineering,* Vol. 8 (2), pp. 61-71.