The Effectiveness of Team Work on Virtual Classroom in Higher Education

Antonius Atosökhi Gea[1]

[1]Character Building Development Center, Computer Science Department, School of Computer Science
Bina Nusantara University Jakarta, Indonesia 1180
antoniusgea@binus.edu

Abstract. The advancement of information and communication technology (ICT), especially the use of internet-based systems, has given people the ability to work and learn together virtually, no bound by place and time. This study aims to find out the effectiveness of teamwork in a virtual classroom, a higher education level. The trigger question that want to be answered is: How to realize effective teamwork in virtual groups, and how effective teamwork is in virtual classes, in the Binus Online Learning Program. There are two important indicators of effective teamwork on virtual groups that are: the atmosphere of leadership and trust that binds all members, and the performance they achieved. The effectiveness of teamwork can be seen from the performance and the satisfaction upon leadership and trust that accompany teamwork. The first thing to do is conducting a literature study, then survey by distributing questionnaires in two virtual classes in the first period of odd semester 2017-2018. The respondents of this survey is consist of 34 students. The results of data processing qualitatively descriptive show that the effectiveness of teamwork in virtual classes - Binus Online Learning Program - runs well. Effectiveness occurs because leadership and trust that lives and develops binds every group member to do their best in carrying out and completing their tasks, and submits on time.

Keywords: Virtual Classroom; effectiveness; leadership; trust; performance.

1   Introduction

Triggered by the economic globalization and the availability of social media information and communication technologies (ICT), the existence of virtual groups has become commonplace in companies (Tang, 2018). Virtual groups can be understood as "two or more people working together to achieve goals, interact and work together using information and communication technology" (Knapp, 2016; Milman, 2015). In a virtual group, people can work together independently, both in terms of time and place.

In the world of education, there are many instances of virtual classes for certain subjects. Bina Nusantara (Binus) University Jakarta is one of the private universities in Indonesia that has conducted lectures with virtual classroom models. In this program lectures are carried out virtually using Binusmaya, a Learning Management System (LMS), developed by Bina Nusantara University.

In a virtual classroom, collaboration between students in one group to do their classroom assignments is not as easy as in regular classes run onsite (Milman, 2015; Tang, 2018). In a virtual class, the students are located apart from each other, residing in different regions, cities or countries. For virtual classes, all the lecture tasks, including group tasks, are usually performed virtually. Students in one group will interact with each other virtually using the social media they choose (Milman, 2015).

In a virtual class, there are multiple ways of interacting: One-to-many, one-to-one, many-to-many, and many-to-one. The instructions or communication can occur in a number ways, such as webinars, printed materials, on websites, podcasts, message boards, chat, email, and phone (Knapp, 2016; Tang, 2018). In the Binus University Online Learning (BOL) Program, the mechanism for implementing forum discussions, submitting personal tasks and group assignments, as well as video conferencing, are well organized

The virtual world is a computer-based environment that simulates reality. The environment here can include people and also tools that can be manipulated in cyberspace. Kirkman (in Knapp, 2016) define virtual teams as "groups of people who work interdependently with shared purpose across space, time and organization boundaries using technology to communicate and collaborate". To participate in the virtual world, participants must be able to access the internet through high-speed connections. Participants in cyberspace can do whatever it can do in "the real world," can perform various skills, engage in role-playing, collaborate with interdisciplinary teams, create case scenarios, hold conferences, or engage in classroom activities (Knapp, 2016; Tang, 2018)

The advancement of information and communication technology (ICT), especially the use of internet-based systems, has given people the ability to work and learn remotely while retaining or replacing traditional team performance. The virtual group differs from the traditional face-to-face (F2F) group, mainly because of the virtual group's dependence on ICTs as a medium for communicating and connecting people. From a survey that has been done, it was found that the main problems faced by many virtual teams were related to the motivation and behavior of members, lack of control mechanisms, and technology issues (Davenport, 2016). Today's leaders must be able to understand environmental conditions that are increasingly complicated, constantly changing and often ambiguous to continue to encourage organizational effectiveness (Byun, 2016; Zehir et al., 2016; Mathieu & Babiak, 2015)

This study particularly discusses the leadership and trust, both important aspects (among other aspects) that are related to the virtual team (Dube, 2016). Leadership and trust are important criteria that drive the effectiveness of a virtual group, leading to the achievement of desired performance. The leader increases the intrinsic motivation in each group member by increasing their perception that the goals of the task are consistent with their authentic interests and values (Bowling & Cucina, 2015; Dabke, 2016). Leaders in this way will be able to encourage each group member to work well because they feel that the goals to be achieved are in line with their needs and motives (Caldwell, 2016; Mekraz & Gundala, 2016). That is why there is an assumption that an effective leader is an individual who can lead others towards a common goal, making the organization successful (Ramseur, 2018; Jones, 2015)

1.1 The Role of Leadership in a Virtual Team

The topic of virtual team leadership is interesting to researchers because many virtual team leaders do not understand how to motivate virtual team members more effectively to maximize performance or productivity (Davenport, 2016, p. 6). There are many definitions what leadership is. In a simple way, leadership can be understood as the process by which a person influences a group of people to achieve a common goal Northouse, (2016). The tasks that contain important aspects of leadership include: envisioning goals, affirming values, motivating people, explaining and teaching, representing the group externally, reaches out for new ways (Leman, 2017; Mathieu & Babiak, 2015). Effective organizations generally have goals they want to achieve, and the leaders help the organization to set that goal. A leader identifies and builds or outlines the values held by an organization and uses those values to give meaning and motivation to help achieve the goals.

A leader must build a good image of himself in the hearts of his members because generally, the employee's perception of leadership is that the leader is honest, fair, and a good communicator (Zehir et al., 2016; Jones, 2015; Dabke, 2016). The leader becomes the center of attention of its members. They pay attention to his behavior, about the way he communicates, the way he faces and overcomes problems, the way he makes decisions, the way he treats his subordinates and the people who depend on him, and so on. Therefore, ethical behavior is an important element of leader credibility and has an important influence on employee behavior and attitudes (Ramseur, 2018; Bowling & Cucina, 2015).

Research indicates that one of the most critical challenges facing organizations is getting leaders with the skills needed to succeed in a global and complex work environment (Davenport, 2016; Mekraz & Gundala, 2016). "The complexity theory of leadership behavior emphasizes the importance of leaders who can demonstrate the diversified leadership in terms of roles to improve team effectiveness. Research on effective leadership shows that some successful leaders can bring organizations to the gate of success (Northouse, 2016; Jones, 2015).

A leader must be able to quickly take turns playing various leadership roles to overcome everyday challenges. Leaders are agents of change who motivate or modify group competencies, which will bring the group to the achievement of shared goals (Hanna, 2018; Bowling & Cucina, 2015) Today, one of the most important types of leadership behaviors is empowering leadership, which refers to the behavior of leaders who dare to make the distribution of power or give more responsibility or autonomy to their group members (Byun, 2016; Hana, 2018). Leaders are responsible for their followers, communicating goals, driving results, and praising success (Lussier and Achua, 2016; Mathieu & Babiak, 2015).

Leaders in virtual groups face new challenges, such as ICT-based communications, cross-cultural communication, global logistics design, technological complexity, information overload, lack of social cues, and quick friendship creation. In a virtual group, the need for effective leaders to recognize differences among team members is even greater than in the F2F group environment. Leading virtual project teams set several expectations for a virtual project team leader that is more expert in many aspects and willing to release or share some responsibility (Mekraz & Gundala, 2016; Lussier and Achua, 2016). The role of leadership in the virtual project team is the most important factor that ensures high team performance. The ability to execute decisions that have been made ultimately leads to the project team's success (Perey, 2015).

1.2 Leadership and Trust in Virtual Teams

Leadership influences the behavior of members of an organization, especially through trust that is continually developed in it (Hsieh & Wang, 2015). Trust is not something that can be forced but something voluntary. Trust cannot be ordered, it must always be obtained (Jachowicz, 2016). To be an effective leader, someone needs to articulate a vision clearly, realize value and create an environment for accomplishing something with team members (Leman, 2017). In the F2F group, a leader is required to implement the project plan, oversee the progress of the project, and handle project constraints.

However, in a virtual group, leaders rely heavily on ICTs to communicate with members and to disseminate information, and leaders with dependence on ICT as a primary means of communication can undermine his ability as a leader in virtual teams. Thus, an effective strategy for a leader is to actively build relationships and trust between team members and encourage members to do the same for each other. This strategy can help improve the overall confidence in the virtual team. Leadership effectiveness applied by a leader that can increase trust among team members in virtual teams. Thus, leadership behavior can be interpreted as an effort to promote trust and respect within the work team (Caldwell, 2016; Hsieh & Wang, 2015).

Trust is a very important factor that has been studied in various fields, including organizational science, economics, psychology, and marketing. Discussion of trust, concerning leadership, scholars have not reached consensus on whether it is an individual attribute, behavioral approach, or organizational climate. However, the meaning of trust can cover all three areas (Jachowicz, 2016). In the F2F environment, trust is an influential factor for healthy working relationships: more open communication, intensive creation of collective knowledge, higher levels of cooperation, improved quality of decision-making processes, and so on. Leadership and trust are closely related, acting as a mechanism by which leaders influence their subordinates (Coxen, 2016; Mekraz & Gundala, 2016). In a virtual environment, the increased physical and psychological distance between team members and the need to build trust in the early formation of virtual teams more clearly reinforces the importance of this trust problem (Tang, 2018).

Empirical research has shown a positive relationship between team learning and team performance. More recently Ortega (in Knapp, 2016) demonstrated a positive relationship between team learning and team performance in virtual teams. Team learning not only enhances team performance, but the satisfaction and success of life felt by team members (Mekraz & Gundala, 2016). To be successful in a virtual team, a higher level of trust needs to be present in the initial period until the end of a project (Tang, 2018). This trust will grow and thrive by the diversified leadership that takes place within it. So leadership and trust are two things closely related, being a driver of achieving the results or performance of the group. With diversified leadership and growing trust, teamwork will become effective (Coxen, 2016; Perey, 2015; Bowling & Cucina, 2015).

2 Research Method

This research is done by using a qualitative approach. Discussion focuses on finding out the effectiveness of teamwork in a virtual classroom. Beginning with relevant literature studies, then

374

proceed with spreading the questionnaires with the aim of finding out their assessment of the leadership and trust atmosphere that goes on and they feel in their virtual teamwork, which makes their teamwork become effective and produces good performance. The population in this study consist of 34 a virtual class student, in the first period of odd semester 2017-2018, Binus Online Learning Program. The collected answers are then processed to get a description of their views and assessment on the satisfaction of the leadership and trust atmosphere that develops in their group and the performance they achieved.

3   Finding

The things that can be used to measure the effectiveness of teamwork in a virtual team are about team performance and satisfaction. Related to that, there are two major measures of team effectiveness, which include performance and attitudes (which leads to satisfaction) indicators. Performance indicators are related to the percentage of goals achieved, while the attitude indicator relates to team relationships (about the leadership and trust they experienced in the group). Performance indicators can be measured subjectively or objectively, measuring how far the project objectives have been achieved. Attitude indicators can be assessed using cooperative satisfaction measures, including satisfaction in decision-making processes (Jachowicz, 2016; Lussier and Achua, 2016). From this explanation, it appears that leadership and trust factors are important prerequisites for team success.

This study will to know the effectiveness of virtual teamwork in the Binus Online Learning Program class. Effectiveness is demonstrated by leadership and trust in virtual teamwork, leading to the achievement of group performance. To measure the effectiveness of virtual teamwork needs to be seen from the side of the performance and the satisfaction of team members. The performance indicators are related to the results they have achieved, and the satisfaction indicator is about an attitude that develops in the relationship between team members, which is an expression of the leadership and trust atmosphere that takes place in the relationship between all group members.

To get a descriptive overview of these two indicators, several questions have been spread and answered by the students. For satisfaction indicators, they were asked to rate their level of satisfaction over the leadership and trust atmosphere they practice and feel, which leads them to the achievement of good team performance. The answer choices are four, namely, 1 = Did Not Meet Expectations, 2, Fairly Satisfactory, 3 = Satisfactory, and 4 = Very Satisfactory. For the performance indicators, they were asked about their assessment of the work they have accomplished. The answer choices are four, namely, 1 = Poor, 2, Average, 3 = Good, and 4 = Very Good. The performance, in this case, is the result of their work, that is their complete answers to the group assignments given to them, and then they submit it on time.

Statements related to the two indicators, satisfaction (upon leadership and trust) and performance (the work result and timely submit):

1. We always discuss with all members of our group to produce a shared understanding of the tasks we have to do, clarify the targets and goals to be achieved, encourage each other and communicate effectively.
2. For group assignments, we trust each other, believe that each of us wants to do group work, can finish it on time according to the quality expected by the group
3. After completing all of our work as a group member, providing input and making improvements, we are finally convinced that the results are worth submitting.
4. The results of the group work that we have completed we submit on time

34 virtual class students are the respondents in this survey, 32 of them fill out and return the completed questionnaires. Their assessment of the satisfaction over the atmosphere of leadership they felt in their group, 7 people answered Very Satisfactory, 20 people answered Satisfactory; and 5 people answered Fairly Satisfactory; while for the atmosphere of trust, 10 people answered Very Satisfactory, 18 people answered Satisfactory, and 4 people answered Fairly Satisfactory. Their assessment of the work result of their group, 8 people answered Very Good, 21 people answered Good, and 3 people answered Average; while for timely submit task, 30 people answered Very Good, and 2 people answered Good.

Tabel. 1 The level of satisfaction over the leadership and trust atmosphere

Level of Satisfaction		Did Not Meet Expectations	Fairly Satisfactory	Satisfactory	Very Satisfactory
Leadership	-	-	5	20	7
Trust	-	-	4	18	10

Tabel. 2 The performance achieved by grups

Performance	Poor	Average	Good	Very Good
The work result	-	3	21	8
Timely submit	-	-	2	30

From the processing of the data collected it appears that the atmosphere of leadership and trust that exist in the virtual class teamwork - Binus Online Learning Program - feels satisfactory. This atmosphere has led them to the achievement of good performance. This conclusion is drawn from their good assessment of the performance they have achieved (they can complete their answers and submit on time). This is in line with the good assessment they provide for the satisfaction they feel or experience over the leadership and trust atmosphere that lives and thrives in their working group, especially in terms of working on and completing their lecture assignments.

4   Discussion

Both in traditional project teams as well as in virtual project teams there can always be improved performance when team members have access to a variety of knowledge bases,

electronic resources, and electronic information. Even though virtual project team members live far away and the frequency of face-to-face communication is very low, technology allows members to collaborate and work effectively (Tang, 2018). Technology facilitates the effective sharing of information among team members and has a way of connecting all team members.

Effective leadership is an important component of an organization. Behaviors and skills of leaders have an impact on the results of employee motivation, job satisfaction, and performance (Zehir et al., 2016; Perey, 2015). The project leaders communicate effectively and increase collaboration among members of the virtual project team as well as deliver better team performance. From many literature, it is known that the performance of the virtual project team consists of three levels, namely individual performance, team performance, and project performance. These three levels of performance can be individually and collectively assessed, which as a whole becomes both decisive and mirrored for the performance of the virtual project team (Dube, 2016). Empowering leadership strongly encourages the achievement of these three types of performance because the delegation of power allows members to be quick in making decisions and taking action (Byun, 2016; Northouse, 2016).

Generally, people agree that trust is an important variable in many types of relationships. In terms of leadership, trust is an increasingly important and urgent matter (Jachowicz, 2016; Perey, 2015). The atmosphere of leadership and trust that lives and thrives in teamwork collaboration in virtual classes has led the group to achieving good performance. Concerning the class surveyed in this study, the performance in question is that they can do the tasks of the lecture group, and can submit it on time. The issue of leadership and trust mentioned here is not only linked to one of them, who has been appointed as a chairman or a group leader but something that must be real in every member of the group.

The overall discussion and results derived from this research contribute to the optimism that virtual teamwork can still work effectively, just as in traditional real workgroups. But as has been explained in the theory about its distinctive characteristics, the atmosphere of leadership and trust is an increasingly important demand in virtual groups. A useful thing to do next, as a follow-up to this research is to find out how to grow and develop better leadership and trust in a group, especially in virtual groups or classes.

5   Conclussion

From the results of literature studies and linked it to the survey results can be concluded that teamwork in the virtual classroom - Binus Online Learning Program - takes place effectively. The effectiveness occurs because of the leadership and trust that lives and thrives in the virtual classroom, which ties every member of the group to do their best in running and completing their tasks, and submitting it on time. Actually, this conclusion applies not only to groups of virtual classes but also to groups in the world of work, both virtual and traditional.

Effectiveness ultimately resulting in the performance, a result of cooperation, in which each member contributes positively to it. The good grading they provide for their performance is in line with the lecturers' assessment of their work. Their answers to the group assignments they convey

are also well-rated by the lecturer. So it can be said that the group members in the virtual class, who are the respondents in this survey both judge and feel satisfied for the performance they achieve and for the process they take in achieving the performance.

The author convinced that this conclusion applies not only to groups of virtual classes but also to groups in the world of work, both virtual and traditional. If there is a diversified leadership atmosphere (to respond to the existing conditions) as well as an atmosphere of trust that binds each member, then the cooperation in the group, both traditional and virtual, will take place effectively. This effectiveness will lead to the achievement of group performance, including personal performance that is an integral part of it.

References

[1] Bowling, N., & Cucina, J. M.: Robert Hoppock: Early job satisfaction and vocational guidance pioneer. *TIP: The Industrial-Organizational Psychologist, 53*(2), 109-116 (2015)

[2] Byun, Gukdo: The antecedents and consequences of empowering leadership: A test of trickle-down effects Southern Illinois University at Carbondale, ProQuest Dissertations Publishing, 10163455 (2016)

[3] Caldwell, Cindy: A case study exploring leadership, work team engagement, and safety performance in a high-risk work environment. Fielding Graduate University, ProQuest Dissertations Publishing, 10016588 (2016)

[4] Coxen, Lynelle; van der Vaart, Leoni; Stander, Marius W. SA: Authentic leadership and organisational citizenship behaviour in the public health care sector: The role of workplace trust. Journal of Industrial Psychology; Auckland Park Vol. 42, Iss. 1, 1-13. DOI:10.4102/sajip.v42i1.1364 (2016)

[5] Dabke, D.: Impact of leader's emotional intelligence and transformational behavior on perceived leadership effectiveness: A multiple source view. *Business Perspectives & Research*, *4*(1), 27-40. doi:10.1177/2278533715605433 (2016)

[6] Davenport, Nichole D.: Motivation and success strategies of successful virtual team leaders in the United States: A phenomenological study. Capella University, ProQuest Dissertations Publishing, 10253149 (2016)

[7] Dube, S. & Marnewick, C.: 'A conceptual model to improve performance in virtual teams', South African Journal of Information Management 18(1), a674. http://dx.doi.org/10.4102/ sajim.v18i1.674 (2016)

[8] Hanna, Mary Charlsa: Department Managers' Perception of Store Managers' Leadership Style, Subordinate Job Satisfaction and Ultimately Intent to Stay: A Correlational Study. Grand Canyon University, ProQuest Dissertations Publishing, 10747697 (2018)

[9] Hsieh, C.C., & Wang, D.S.: Does supervisor-perceived authentic leadership influence employee work engagement through employee-perceived authentic leadership and employee

trust? International Journal of Human Resource Management, 1-22. http://e-resources.perpusnas.go.id:2102/10.1080/09585192.2015.1025234 (2015)

[10] Jachowicz, Lynette Marie: Trust, leadership, and communication satisfaction in higher education: Faculty perceptions of their department and division chairs. University of Kansas, ProQuest Dissertations Publishing, 10162975 (2016)

[11] Jones, J.: Effective leadership in the 21st century. *Radiology Management*, *37*(6), 16-19. (2015)

[12] Knapp, Randall J.: The Effects of Psychological Safety, Team Efficacy, and Transactive Memory System Development on Team Learning Behavior in Virtual Work Teams. University of Minnesota, ProQuest Dissertations Publishing, 10141958 (2016)

[13] Leman, Amy: Youth Leadership Development: An Evaluation of 4-H Teen Leadership Competencies. University of Illinois at Springfield, ProQuest Dissertations Publishing, 10635646 (2017)

[14] Lussier, R., & Achua, C.: Leadership: Theory, application, & skill development (7th ed.). Mason, OH: South-Western Cengage Learning. (2016)

[15] Mathieu, C., & Babiak, P.: Tell me who you are, I'll tell you how you lead: Beyond the full-range leadership model, the role of corporate psychopathy on employee attitudes. *Personality and Individual Differences,* 87, 8-12. doi: 10.1016/ j.paid.2015.07.016 (2015)

[16] Mekraz, A., & Gundala, R.: Leadership style and retail store performance – A case study of discount retail chain. Journal of Business & Retail Management Research, 10 (2), 1 (2016)

[17] Milman, Natalie B.:Navigating Online Virtual Group Work: Tips for Instructors and Students Distance Learning; Greenwich Vol. 12, Iss. 4, 51-54 (2015)

[18] Northouse, P.: Leadership: Theory and practice (7th ed). Los Angeles, CA: Sage (2016)

[19] Perey, JTransformational leadership and employee satisfaction in two-year postsecondary institutions in rural Arizona. (Doctoral Dissertation). Retrieved from ProQuest, from Grand Canyon Dissertations. 3705100.(2015)

[20] Ramseur, Andrea Gayle: The Relationship Between Servant Leadership, Effective Leadership, and Ethical Leadership: A Non-profit Organization Correlational Study. Grand Canyon University, ProQuest Dissertations Publishing, 10974715 (2018)

[21] Tang, Lifang: Social Capital, Sense of Virtual Community, and Network Group Behavior: An Empirical Study based on Virtual Community Users. Revista de Cercetare si Interventie Sociala; Iasi Vol. 62, 231-253 (Sep 2018)

[22] Zehir, C., Akyuz, B., Eren, M. S., & Turhan, G.: The indirect effects of servant leadership behavior on organizational citizenship behavior and job performance: Organizational justice as a mediator. *International Journal of Research in Business and Social Science, 2*(3), 1-13 (2016)