

Journal of Business & Leadership: Research, Practice, and Teaching (2005-2012)

Volume 5
Number 1 *Journal of Business & Leadership*

Article 5

1-1-2009

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Burchell, Jodine (2009) "The Practical Application of Transformational Theory Vs. Complexity Leadership Theory On The Challenges of Leading Information Technology (It) Software Development Teams," *Journal of Business & Leadership: Research, Practice, and Teaching (2005-2012)*: Vol. 5: No. 1, Article 5.

DOI: 10.58809/TYCZ1026

Available at: <https://scholars.fhsu.edu/jbl/vol5/iss1/5>

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THE PRACTICAL APPLICATION OF TRANSFORMATIONAL THEORY VS. COMPLEXITY LEADERSHIP THEORY ON THE CHALLENGES OF LEADING INFORMATION TECHNOLOGY (IT) SOFTWARE DEVELOPMENT TEAMS

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Since the turn of the 20th century many leadership theories have emerged and evolved over time. Transformational leadership is one of the older, more prominent theories and has been used in organizations and in political arenas for many years. Complexity leadership theory, on the other hand, is relatively new in practice and academia. To date, there is very little literature addressing the similarities and differences between the transformational and complexity leadership theories as well as their comparative value in organizational contexts. Both the Complexity Leadership and Transformational Leadership theories are presented and the similarities and differences of each theory are discussed and evaluated. The purpose of this comparison and evaluation is present the theory's foundations so that they may be applied to the challenges presented by IT software development teams. The application will result in determining and recommending the more effective leadership style for IT-based teams as well as presenting tips for successful IT software development projects. Understanding different leadership styles and their response to team challenges can ultimately contribute to the leader's ability to effectively manage IT teams and successfully leading IT software development projects in organizations.

INTRODUCTION

In order for an organization to remain fit and competitive in today's increasingly global market, leaders must be mindful of the organization's goals, mission, and strategies. Leaders must also be willing to utilize all available resources to the successful achievement of those goals. There is no one leadership style or theory that is the fit for all types of organizations and the challenges that they face; however, each theory has its merits. Transformational leadership and complexity leadership theories have different foundational differences and their research methodologies tend to be somewhat different as well. Both theories are useful in organizations especially with regards to effective ways to utilize human resources to achieve organizational goals. Recent research themes include team innovation, team performance, interaction, and communication. It is important to understand how these themes are approached by each of the two leadership theories, if at all; therefore, this essay will review the foundational and research methodological differences for transformational and complexity leadership theories as well as their approaches to important organizational research themes in an effort to determine which theory is more effective when dealing with the challenges presented by IT software development teams.

TRANSFORMATIONAL LEADERSHIP

Theoretical Foundation

According to Avolio and Bass (1994), it was Bernard Bass in 1985 that expanded James MacGregor Burns's (1978) original ideas of transforming leadership into a formal transformational leadership theory. Burns (1978) maintained that within a leader-follower relationship there is interaction

between people having different skills and motivations for a common purpose. This interaction can be either transactional or transformational in form. Bass & Riggio (2006) asserted that instead of being two separate theories as Burns suggested, transformational leadership is an extension of transactional leadership. Thus, this theory leads to Avolio and Bass's full range of leadership model that includes aspects of both transactional and transformational leadership as well as laissez-faire leadership (Avolio & Bass, 1994; Bass & Riggio, 2006).

Even though TL can be used in almost any type of setting (Bass & Riggio, 2006), the underlying concepts can be useful in realizing organizational success. Based on studies from various theorists, four components of TL have been identified: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Idealized influence describes leaders who are strong role models and give followers a vision and a sense of mission. Using inspirational motivation, leaders act in motivating ways to encourage followers to be a part in the shared vision of an organization. Intellectual stimulation involves stimulating creativity and innovation in followers to create new ways of dealing with organizational or environmental issues. Individualized consideration involves creating a climate of support and meeting the needs of employees for the betterment of followers within the organization (Avolio & Bass, 1994; Bass & Riggio, 2006).

Innovation

It is within the intellectual stimulation component of TL that there is support for innovation. Transformational leaders stimulate followers and their efforts to be create or innovative by soliciting new ideas, encouraging new approaches to old situations or problems, and reframing

problems (Avolio & Bass, 1994; Bass & Riggio, 2006). Avolio and Bass (2006) add that in a team-based structure, the transformational leader's role is to interact with the team as a whole, individuals, and leaders outside the team; however, the concepts of intellectual stimulation and support of innovation are much the same at the individual level or in team structures.

Similarly, while accepting the relationship between TL and innovation, others have looked for variables that explain how and when TL influences team innovation. For example, Boerner, Eisenbeiss, and Konstanz (2008) assert that it is within factors of team climate that TL's effect on team innovation is enabled. Specifically, these factors include support for innovation and climate for excellence. Thus, Boerner, Eisenbeiss, and Konstanz (2008) theorize that TL influences team innovation through support for innovation, but only under high levels of climate for excellence. In practical terms, the research supports the idea that in organizational settings where innovation is required to remain competitive, transformational leaders should strive to provide clear performance criteria, promote high quality standards, and elicit team members commitment to the team and organizational goals (Boerner, Eisenbeiss, & Knippenberg, 2008).

TL Influence on Individual Performance

While TL is generally accepted as a popular approach of effective leaders in organizations, much research is geared towards the mechanisms that more fully explain the influences of TL. According to Bass and Riggio (2006), a transformational leader will motivate and inspire followers to transcend their own needs in an effort to gain their commitment towards the vision and goals of the organization. In essence, the leader will motivate the follower to higher levels of performance. So, one might ask, what exactly are the effects of TL on job performance? Are there mediators that affect the relationship between TL and higher performance?

One line of thought is that high levels of performance include the existence of organizational citizenship behaviors (OCB). Transformational leaders are able to raise task performance and encourage OCB through follower's perceptions of their core job characteristics. For example, leaders can enhance the follower's perceptions of variety and autonomy in their jobs by seeking new perspectives or developing new ways for the followers to perform their job tasks (Colquitt & Piccolo, 2006). This is only one example of the historical studies of the factors that mediate the relationship between TL and performance. Boerner, et al. (2008) mention some examples of the mediators that have been supported by past research: empowerment, trust, value congruence, cohesiveness, collective efficacy, goal clarity, and support for creative thinking.

TL Influence on Team Performance

In order to encourage increased performance in teams, transformational leaders help team members to work towards collective pride, optimism, identification with the team, and cohesive commitment to the goals or mission. Once the team is more cohesive, committed, and its focus has shifted to achieving team goals, then the team can become highly productive and achieve beyond expectations (Bass & Riggio, 2006). Again, many theorists have explored these topics in an effort to understand how and when TL affects team performance within organizations.

Assuming that in some organizations part of the measurement of team's high performance requires the presence of innovation, there is the implication that team factors that contribute to team innovation are also involved. This further suggests that certain factors of team climate play a role in the relationship between TL and team innovation (Boerner, et al., 2008). Similarly, TL behaviors such as confidence in the team's ability to achieve goals, modeling desired behaviors, concern for follower's needs, and promoting cooperation are considered behaviors that enhance team potency. Therefore, this suggests that team potency also has a mediating effect on the relationship between TL and team performance (Cha, Lam, & Schaubroeck, 2007).

In TL, The Multifactor Leadership Questionnaire (MLQ 5x) (Bass & Avolio, 1990) is the most widely used measurement in research. Much of the research is geared towards examining the relationship between TL and performance, as well as trying to identify other variables that will help in understanding how and when TL influences performance. In organizations where innovation and high performance are directly related to its ability to remain competitive, it is beneficial to understand the leadership behaviors that are best suited for individuals or teams for the achievement of the organization's goals.

COMPLEXITY LEADERSHIP THEORY

Theoretical Foundation

Today's business environment tends to be complex due to being more globalized, knowledge-based, and dependent on technology and innovation for success. According to Marion and Uhl-Bien (2001), it is interaction and adaption within complex systems that influences emergence, innovation, and organizational fitness. Marion (2008) asserts that complex environments can change rapidly and are highly interconnected. These environments create unanticipated problems, opportunities, and challenges that require conditions where agents can respond quickly and effectively. Leaders should be able to encourage the mechanisms, or processes that emerge in complex systems, in order to enable emergent creativity, adaptability, and learning. It is within emergence, adaptability, and innovation

that rules, structures, interactions, interdependencies, culture, and tension are created so that mechanisms emerge, unanticipated outcomes occur, and complex organizations thrive (Marion, 2008; Marion & Uhl-Bien, 2001).

While transformational leadership is a top down approach with a focus on control, structure, planning, and encouraging followers to meeting organizational goals, Marion (2008) argues that adaptability, creativity, complex tasks, and rapid response call for a new approach to leadership. Complexity approaches change processes as emergent events that are non-linear by nature which interferes with traditional top-down leadership approaches.

Complexity Leadership Theory Framework

Building on complexity theory, authors such as Marion, et al. (2008) and Marion and Uhl-Bien (2001) present complexity leadership theory (CLT) as a “framework for leadership that enables the learning, creative, and adaptive capacity of complex adaptive systems (CAS) in knowledge producing organizations or organizational units” (Marion, McKelvey, & Uhl-Bien, 2008, p. 196). Marion, et al. (2008) argue that CLT recognizes the need for bureaucratic or control structures for coordination within formal organizations while fostering CAS dynamics. Thus, the CLT framework includes three leadership functions: adaptive, administrative (bureaucratic), and enabling. Adaptive leadership involves the “adaptive, creative, and learning actions that emerge from the interactions of CAS as they strive to adjust to tension” (Marion, et al., 2008, p. 198) and enabling leadership “works to catalyze the conditions in which adaptive leadership can thrive and the manage the entanglement between bureaucratic (administrative leadership) and emergent (adaptive leadership) functions of the organization” (Marion, et al., 2008, p. 198). Unfortunately, while there has been some valuable research performed on various components of complexity theory, because CLT is a newly emerging leadership theory, there is little empirical research that supports the effectiveness of the framework.

Research Methodologies

Marion, et al. (2008) theorize that because complexity dynamics involve mechanisms, or processes that emerge in systems, that are non-linear, complex, interactive, and unpredictable, research should be designed to capture the nature of those mechanisms. These mechanisms can include interactions among agents, information flows, catalyzing activities, and nonlinear emergence. Appropriate research methodologies include computer modeling procedures, mathematical models, qualitative procedures such as case studies, and studies that allow for temporal evaluation (Marion, et al., 2008). Schneider and Somers (2006) add that complexity theory variables, such as the number of agents or the level of inter-relatedness, can be used to create

a mathematical model which can then be used in non-linear models like dynamic systems simulation and artificial neural networks. As another example of using mixed methods, Dal Forno and Merlone (2006) used a grounded study to collect data regarding roles, role selection, effort, etc. to identify interactions in a group environment. Based on the analysis of the grounded study, a simulation model was created that tests outcomes of differing leadership styles. Carley and Schreiber (2006) also use computational modeling as a methodology to evolve networks through simulation. Dynamic network analysis is able to quantify complexity leadership theory by capturing and analyzing the interactions between agents in a network.

Interaction and Communication

Much of the research in the area of complexity theory usually involves either studying the occurrence, length, frequency, etc. of specific interactions between agents or studying emergence in a system through all-inclusive methods like case studies. In their CLT framework, Marion, et al. (2008) describes one of the roles of the enabling leadership component as encouraging the conditions that catalyze adaptive leadership thus allowing for emergence. Part of catalyzing occurs through interaction where network links are created as information flows and connects. Practical application of fostering interaction in organizations might include promoting self-formed work groups, electronic email work groups, and open work places. Creating an environment that fosters interaction allows for more creativity and ultimately increases the organizations ability to adapt to challenges presented.

Baker, et al. (2007), further that ongoing and free-flowing interaction in systems leads to emergent and self-organizing behavior which can ultimately lead to emergent outcomes for organizations. This concept is an important fundamental component of complexity theory. In the Baker, et al. (2007) case study of Mission Church, it was through informal groups of church members interacting that an idea emerged and leads to the total transformation of their church. It's important to note that while the Baker et al. study is a successful example of the use of CLT, it involves a church organization which has very different dynamics than a for-profit organization.

There are other conditions that must exist in order for emergence to occur to the benefit of an organization; however, one of the key initiating components is free-flowing interaction. The idea of organizations unfolding in self-organizing processes of free-flowing conversations and interactions is also evident in Simpson's 2007 study of groups tasked with finding a treasure. One group missed a clue and found the treasure anyway. Simpson (2007) analyzed this phenomenon and concluded that the key to this positive outcome was that the leader adopted a participative role and allowed for free-flowing idea exchange between the group members. This enabling mentality leads to their

innovative and creative approach to the problem and the resulting correct solution.

Other Components of Complexity Leadership Theory

It is important to note that facilitating free-flowing interaction is not the only factor that must be present in CLT in order for emergence to occur. According to Marion, et al. (2008) and Marion and Uhl-Bien (2001), the system must also be near a state of chaos, leaders must act as tags, tension has to be introduced into the system, and there must be simple rules for the followers. A tag is something that helps to enable social behaviors. Examples might be a symbolic act or new technology. In the case of CLT, tags are the leaders that exist or emerge through group interactive dynamics. Baker, et al. (2007), showed in their case study analysis that the leaders became tags by mobilizing community-wide attention to social issues around the homeless. The leaders provided simple rules to solve their dilemma. One of the rules was "what would Jesus do?" The leaders promoted non-linear interactions and added tension pushing the organization further into chaos by introducing uncertainty and correctly addressing the conflict that surfaced almost immediately from their newly conceived unconventional idea of directing their efforts and resources to helping the homeless (Baker, et al., 2007).

Innovation

In complexity theory, interaction is the foundation for most all other concepts including innovation. Many organizations rely on their ability to innovate in order to remain competitive. Hazy and Surie (2006) theorize that innovation can be associated with uncertainty and rapid change. Because outcomes are not certain or predictable under complexity theory, leaders must focus on the process of creating conditions where a team or collections of people can interact to generate new understanding or new information. Those are the conditions that catalyze innovation. Thus, Hazy and Surie (2006) created a model of generative leadership that focuses on specific aspects of interactions. The goal is to create the conditions that enable team members to interact effectively, to appropriately regulate complexity to ensure a continued focus on innovation and problem solving, and to institutionalize innovation. Institutionalizing innovation is essentially the management of the information created in the innovation process. In practical terms, this may mean dealing with constraints, getting rapid feedback, evaluating progress, or moving a new product to market testing.

TL AND CLT COMPARATIVE ANALYSIS

There are obviously some similarities between transformational leadership (TL) and complexity leadership theory (CLT); however there are also some striking

differences. Much like the full range of transformational leadership model has a foundation based in TL and is comprised of components of both TL and transactional leadership (Avolio & Bass, 1994), the CLT framework has a foundation based in complexity science and is functionally comprised of adaptive leadership, administrative leadership, and enabling leadership (Marion & Uhl-Bien, 2001).

Most TL research involves scales that measure the degree of TL behaviors that are present. The Multifactor Leadership Questionnaire (MLQ) (Bass & Avolio, 1990) is the most widely used measurement and is generally used with other surveys or methodologies for more robust and meaningful analyses. The MLQ has been refined over time and includes the transactional components in addition to the TL components (Bass & Riggio, 2006). In complexity theory, much of the research is based on complexity science. The methods are largely mathematical or computational and involve various analyses of interactions and the effects of interactions (Dooley & Lichtenstein, 2008; Marion, et al., 2008). While there are many examples of CT research available, there is very little research based on the CLT framework specifically. This may be due to the fact that the CLT framework is relatively new compared to TL; however it is clear that this is a limitation. Appropriate measurements will have to be created and empirical research conducted if the CLT framework is ever to be accepted as a viable leadership option for both academic and practical purposes.

Another difference between TL and CLT is in the settings in which they are used. Leaders utilizing transformational behaviors can be witnessed in most any type of setting including business or political, public or private, in interactions with individuals or team structures, and across organizational cultures (Avolio & Bass, 1994; Bass & Riggio, 2006). Conversely, complexity leadership theory tends to be directed more towards organizational use, especially those organizations that are technology-based or knowledge-based and open to emergent or innovative outcomes. While the complexity leadership framework can be used at any level of an organization, it is more appropriate for higher levels in the hierarchy where interactions include those who have decision-making abilities and are responsible for innovation and growth in the organization (Marion, 2008; Marion & Uhl-Bien, 2001). Consequently, TL is more versatile and globally used; whereas CLT is much more situational and its usability is at least partially dependent on the existence of specific conditions.

Both theories address various themes that are important in organizational settings. Much of the current research conducted in the area of TL concerns the effects of TL on work performance or on the mechanisms that explain how and when TL influences performance. Additionally, current TL research examines follower-leader interaction at both the individual and team level and introduces organizationally relevant topics such as the factors contributing to high performance, innovation, and project success. Research in

the area of CT involves the study of agent and network interactions and patterns at multiple levels and across time in order to understand the effect on innovation and emergent outcomes in social organizations.

Again, the amount of complexity leadership research that has been conducted pales in comparison to TL; however, CLT is fairly new in leadership theory and academia which just indicates that there are plenty of opportunities for future studies and the development of applicable measures and instruments. From the foundational analysis, it is clear that TL and CT are fundamentally different theories.

APPLICATION OF THE THEORIES

Drawing on the information presented thus far, transformational and complexity leadership styles approach organizational themes from differing perspectives. One common organizational theme involves the effective utilization of Information Technology (IT) teams towards increased innovation and performance.

What is a Team?

There are many different, but similar definitions of teams as well as different types of teams. A high performing team can be defined as “a group of people committed to a common purpose, common performance goals, and an approach for which the hold themselves collectively responsible”. (Donnellon, 2006) A team can also be described as “a group of people with complementary skills who interact to achieve a common objective” (Donnellon, 2006, p. 5). The definition of a team may depend on the type of output required or the functional units involved. It is important to note that an IT team can be either a functional team or a cross-functional team depending on its collective purpose. Donnellon (2006) describes a functional team as one where the members report to a single boss and the members do not necessarily have to work together to achieve objectives. An IT software development team can also serve in a cross-functional capacity. Donnellon (2006) describes cross-functional teams as including members from multiple areas in an organization where their time is not spent wholly on the team’s efforts. An example of a cross-functional IT team would likely include diverse members who have sufficient expertise in their respective IT areas and are joined with members from other non-IT areas in an effort to create innovative solutions to the challenges or opportunities presented in today’s organizations. These types of teams can be involved in any number of projects including the creation of software or technical solutions for customers, the creation of new technology in an effort to increase market share, or the creation of solutions for the challenges presented by internal systems. For the purposes of this application, the focus will be on innovative, cross-functional IT software development teams that are locally distributed.

Benefits and Challenges of Teams

Utilizing team structures can be very beneficial in organizations; however, many times what is considered a benefit will also present challenges in terms of effectively utilizing team strengths to their greatest potential. A common challenge for team leaders is to foster open, useful communication that promotes interaction and maximizes the richness and flow of information. In addition, leaders must create a structure that ensures collaboration by promoting participation while avoiding obstacles that may inhibit members from actively joining in the discussion such as other members who dominate the conversation. Leaders must also be able to create a team culture where there is a commitment to the team goals, trust, cohesiveness between the members, and a climate of respect, mutual support, and information sharing. Leaders must be able to introduce certain tensions or ‘good conflict’ into the team to inspire creativity and support innovative thinking. Other potential issues must be addressed such as resolving negative conflict. Team leaders also have to perform more bureaucratic tasks such as securing the appropriate team resources (Donnellon, 2006; West, 2004).

ADDRESSING THE CHALLENGES OF IT TEAMS

Interaction and Communication

Part of creating and utilizing a successful team environment means that all members should be able to interact with each other and that positive communication is wholly encouraged. This is especially important in innovative teams where it is within and among interactions that creative ideas can emerge (Marion, et al., 2008; Marion & Uhl-Bien, 2001). Interactions can occur within task performance or in informal settings. In settings of task performance, members share information and ideas that enable coordination of efforts towards the team goals (West, 2004). Thus, multiple types of interaction are important, especially team meetings, for effective team functioning. In addition, the lack of team meetings or other interactions may cause a reduction in information flow and the possibility that the team will lose focus. Misunderstanding may also occur which can be detrimental to the team (West, 2004).

According to Marion, et al. (2008), in complexity leadership theory (CLT) interaction is the foundation for creativity, innovative ideas, and emergent outcomes. For optimal interaction to occur, complexity theory (CT) calls for networks of linkages, or team members, across which information can flow and connect. CT calls for these networks to be self-organizing as much as possible to allow for the free-flow of information. The function of leaders is to create an environment or structure that allows for these networks to evolve (Marion, et al., 2008). Formal team meetings are helpful to define team goals, address administrative issues, and may produce innovative ideas;

however, leaders should foster the conditions that will allow for self-organizing networks to develop. Thus, under CLT, in order to promote interaction and communication, leaders can provide open work places, allow subgroups to evolve from the team, and create electronic work groups.

One practical way a transformational leader can encourage interaction and communication is to make sure that there are many different, but appropriate, functional units involved in the team. Involving persons from different functional groups allows for more diverse conversations to occur. Additionally, leaders should encourage team members to form links with one another and to the team's customers which not only encourages more interactions, but also allows for a deeper understanding of others needs and perspectives. The challenge for transformational leaders can involve balancing their need to control excessive external interactions with the need to encourage interaction and stimulate creative thinking. Sometimes a member's best ideas may emerge outside of a formal team meeting and may involve informal interactions with a team member. Thus, the transformational leader should develop a method for members to communicate this information to the rest of the team. Obviously, this can be achieved through technical means such as an electronic work group.

Innovation and Creativity

West (2004) makes a distinction between creativity and innovation. While creativity involves new ideas, innovation involves taking creative ideas and implementing them. According to Marion et al. (2008), within CLT, support for innovation is a multifunctional process and occurs within all three forms of leadership: adaptive, administrative, and enabling. In practical terms, to foster creativity and innovation, CLT leaders should encourage interactions among members allowing for them to increase their personal networks, ensure that there is fresh and adequate information coming into the team so that members feel knowledgeable and informed, and discuss issues in such a way that they are appropriate to the perspectives of others. For example, in a cross-functional team, it may be more appropriate to discuss technology at higher levels. Team members from marketing or operations may not understand all the details, nor should they. Members from non-IT functional areas need to understand how new technology or changes to existing technology will be of benefit to them or their organizational units. Leaders should be able to recognize when people are getting information overload or are getting lost in the details. Additionally, leaders should monitor the environment for issues that will affect or influence the team and the dynamics of their innovative process.

CLT leaders should introduce tensions that assist in the innovative process. These tensions are healthy, include the pressures or challenges presented by the need for results, and are enhanced by differences between team members regarding skills, needs, and preferences (Marion, et al.,

2008). Under conditions that pressure team members to be creative or innovative, team members are also pressured to adapt to the differences of others. In order to capitalize on these tensions, leaders should promote an atmosphere that respects diversity of the members and of ideas, promotes healthy disagreement, and collectively finds resolutions to problems.

In an administrative capacity, CLT leaders should also assume the responsibility for taking any innovative products up through formal managerial systems. Additionally, leaders should work to protect the members from external politics, deal with the planning, policies, and strategic issues of organizational leaders, and address any crises that may derail the creative process. In organizations, there will always be restrictions or parameters placed on projects or teams, which can threaten to impede the creative process. It is the responsibility of the leader to be aware of the restrictions and work to manage the relationship between the team and the bureaucratic forces.

Transformational leaders approach team leadership holistically, albeit from different perspectives, including individually considering each of the team members to make sure they have what they need, motivating members to high performance, inspiring members to high confidence in the team meeting its goals, being a role model to all the members, providing the team with whatever inputs it needs, and dealing external forces (Avolio & Bass, 1994). However, creativity and innovation is supported mainly through the intellectual stimulation factor of TL. Thus, transformational leaders should find ways to intellectually stimulate members in an effort to create conditions that promote creativity (Avolio & Bass, 1994).

In practical terms, members can be challenged by being involved in the process of reaching an agreement on major task assignments or the team's mission, solving problems, and creating an atmosphere where members are challenged to think beyond current ideas, policies, and assumptions to create alternative viewpoints. At appropriate intervals during the process, the leader should clarify and summarize the information being given and make sure that there is a group understanding or consensus before continuing.

Additionally, beyond the intellectual stimulation factor of TL, leaders who need to encourage creativity and innovation in teams have to ensure that individual needs are met and that barriers to creativity are addressed (Avolio & Bass, 1994). For example, if an individual has too many constraints on their time, they may not be able to commit the time and energy needed to be part of an innovative team. If the team members are being pressured by the demands of their respective units then that must be addressed as well. Leaders should make sure that the team has all the information needed as well as inclusion of diverse team members from all the necessary functional units that are or will be affected. Additionally, leaders should create an environment where there is sufficient time to contribute and

everyone has the chance to speak rather than a just few who may dominate the flow of communication.

Collaboration

In CLT, leaders should work to increase interdependence among team members. This allows for positive relationships between team members and among functional groups. It also allows for more dynamic information flows to and from the team and for autonomy of team members rather than operating under the constraints of leader direction (Marion, et al., 2008). Thus, CLT leaders should promote team members working together and autonomously with minimal interference from external management. Team leaders should control their own impulse to interfere and control because important team functions may be impeded such as knowledge sharing and creativity. Leaders should also encourage members to resist the urge to immediately turn to management to resolve problems or issues. Additionally, CLT leaders should create rules or structures that will benefit collaborative efforts. As an example, a team may be composed of subgroups or smaller teams. The product outputs of these teams are compared to the outputs of other teams. Any differences can be examined and resolved. This dynamic provides for increased quality assurance, understanding, and flexibility. If new information is introduced, then other subgroups can do a preliminary review before it is considered in the creative process.

In TL, promoting collaboration is treated much the same as promoting team success. Leaders should communicate the importance of achieving the team's mission to the members. Leaders should try to understand each team member's abilities so that the team will consist of an optimal mix of expertise to meet the team goals. The leader can then match each member's responsibilities to each other's which helps to build relationships amongst the members and will encourage collaboration. Additionally, leaders can also encourage autonomy and empower members to be responsible for their own efforts and tasks which ultimately will push them to actively work with others. As an example, the team leader may assign a specific process for one team member to analyze which will force them to seek out others who have functional knowledge in this area. The need for collaboration also calls for less leader direction which indicates that transformational leaders move towards more of a facilitating role rather than a controlling role (Avolio & Bass, 1994).

Summary

It is clear that the theoretical basis of CLT and TL and how each theory approaches leading people are somewhat different; however, many of the ways that each theory address the challenges presented by innovative, cross-functional teams are similar. For example, both theories work towards promoting informal interactions between

members, protecting the members from external distractions, and creating a safe, effective structure of collaboration. Both suggest dealing with negative conflicts as quickly as possible. While some specific methods are suggested to address the challenges, it is clear that each theory's fundamental focus is different.

In CLT, the focus is on creating an environment where people can freely exchange ideas. If people are allowed to freely interact and other conditions, such as an organization being in a state of near chaos and the introduction of tensions, are present, then creativity is enhanced and emergent outcomes are possible. In organizations faced with the challenges of volatile, more globalized markets, emergent outcomes can be described as new or innovative ideas. While the creation of new or innovative ideas within teams is necessary for many organizations, there are many other functions and potential outputs of teams. Thus, the best use of CLT may be seen in creative or innovative teams; however there is seemingly little benefit for its use in other types of teams.

CLT's framework includes a piece that provides for fostering conditions of interaction, a piece that provides for the administrative function, and a piece that handles the relationship between the first two pieces (Marion, et al. 2008). Clearly, this framework is not conducive for all types of teams. Additionally, with the focus of CLT primarily on interaction and emergence, any other issues considered to be bureaucratic in nature are all grouped under administrative leadership. On the other hand, TL is an established and very well rounded theory. TL is adaptable enough to be used in most any type of team or any type of leader-follower situation. The theory of TL is based on one's ability to motivate and lead people to higher commitment and performance (Bass & Riggio, 2006). However, increasing high levels of commitment and performance can be applied to most any setting, not just within an organization. CLT is more of a situational leadership approach, appropriate and effective when the conditions are right for emergent outcomes.

RECOMMENDATIONS

After examining how TL and CLT can be applied to the challenges of innovative, cross-functional teams, and understanding the focus of both theories, it is obvious that either leadership style would be effective in this specific situation. So, rather than making a recommendation based on how each theory individually addresses the challenges, it is more appropriate to make recommendations based on the type of organization involved. If the organization is fundamentally and predominately concerned with innovative solutions in order to remain competitive in a turbulent and fast-paced market, then CLT would be a viable option. Even then, the conditions that would result in usable emergent outcomes are based on other conditions being present. Otherwise, TL would be the more appropriate form of

leadership as it is more easily and effectively used across all types of teams and organizations. Even when organizations are in need of innovative solutions, they likely have other needs as well, which can be achieved through forming and utilizing other types of teams. Thus, the more effective style of leadership that will more universally meet the needs of most organizations that utilize team structures is transformational leadership.

Having applied both the CLT and TL to the challenges of leading IT teams and assuming that most IT teams fit under the category of cross-functional teams, there are some general techniques that leaders under any leadership style can utilize that will help ensure successful IT software development projects. Based on the previously discussed works by Marion et al. (2008), Marion and Uhl-Bien (2001), and Avolio and Bass (1994), some of these tips include:

1. Address any issues that arise immediately. Whether it is a problem that the team collectively solves or an issue that the team leader needs to address, addressing it immediately will go a long way towards reinforcing the members trust in the leader, the team, and the process.
2. Include team members input in the process of planning a project timeline. The members are the ones with the most expertise in their areas. Let them indicate how long their piece of the process will take to complete. Even if it is longer or shorter than the leader expects, allowing the member to be fully involved in the process will enhance their commitment to the project.
3. Be honest and vocal about the dealings with upper management regarding the project. Team members need to know if there is pressure from external sources and how the leader is addressing it. Discussing these issues will effectively reinforce the leader's commitment to the team's success and willingness to buffer them from bureaucracy.
4. Regularly check in with the individual team members outside of formal team meetings. This allows team members the opportunity to give the leader a quick status update and discuss any issues that may have developed without having to wait for the next team meeting. It also reinforces the idea that members can approach the team leader and discuss issues in a one-on-one setting which may be needed for any number of valid reasons.
5. When discussing a team member's tasks, resist the urge to solve the member's problems for them. Rather, take a facilitative role by discussing the problem and the options and allow the members be wholly responsible for their tasks. The team leader should only interfere when it is absolutely necessary.

In looking at IT software development projects, many times the biggest challenge does not involve issues of technology; rather it involves managing the human factor. Utilizing these suggested tips will help the project leader to ensure that the members are committed to the project, fully involved in the process, responsible for their own work, and know that they are supported by the team leader.

CONCLUSION

Based on the examination of the challenges presented by innovative, cross-functional teams and how they are addressed through TL and CLT, it is clear that choosing the more effective leadership style can be based on multiple factors. Both TL and CLT can be effective leadership styles in organizations. The results of applying both theories indicate that when looking at this type of IT team structure as its own entity, responsible primarily for the creation of innovative ideas or solutions, and separate from other external factors, either leadership theory would most likely produce the desired outcome. However, when applied to other types of team structures, expected outputs, or under conditions of multi-functional organizations with varying types of teams, transformational leadership is the more appropriate leadership style. The implication of these findings is that CLT, as a leadership theory that was born from complexity science, has not been fully developed enough to be effectively practiced across most organizations. However, CLT's lacking as a practical leadership style also means that there is plenty of room for further development and future research.

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