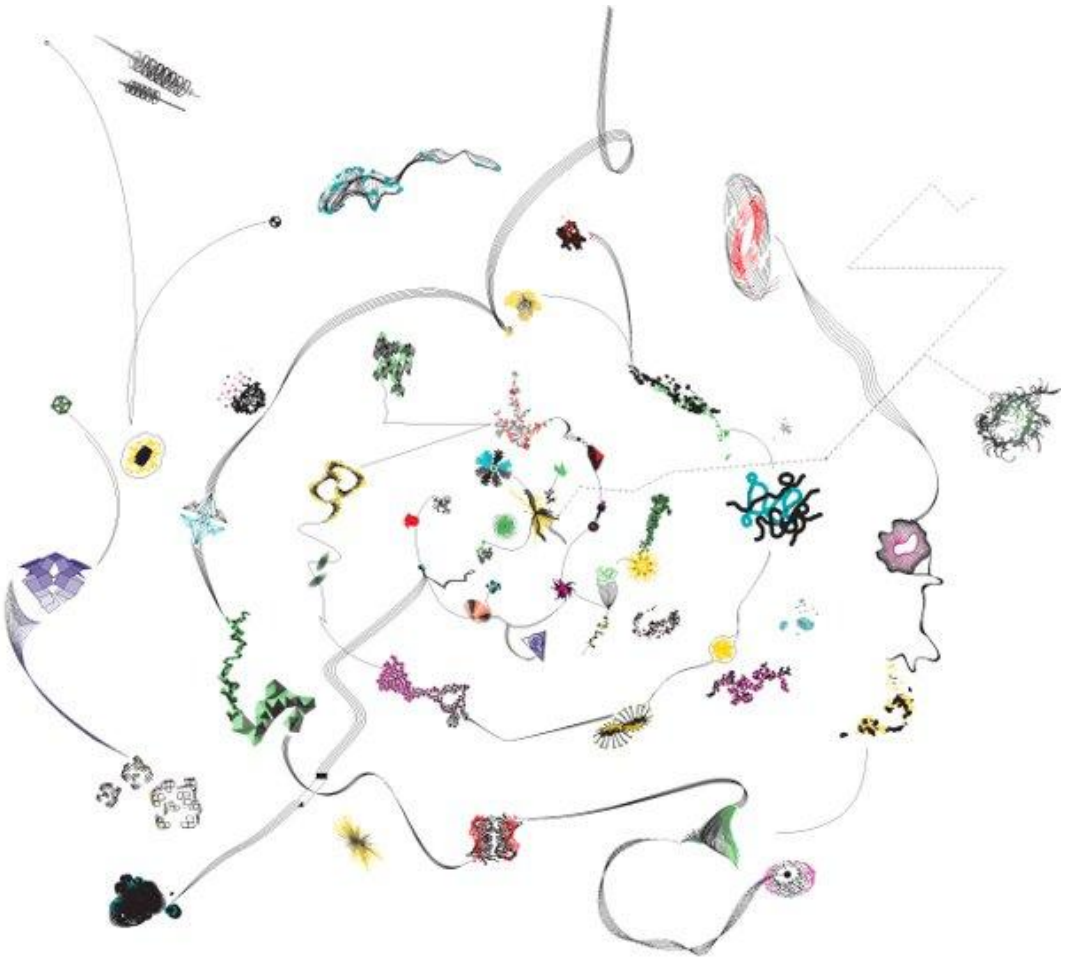

UNIVERSITY OF TWENTE

LEADING TO HIGH PERFORMANCE IN KNOWLEDGE-INTENSIVE SETTINGS

An essay based on reviewing the literature | Bekir Bilge

Leading to High Performance in Knowledge-Intensive Settings

An essay based on reviewing the literature

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Foreword

Finding an interesting subject to write a master's thesis on is not an easy task. While there are many subjects that can be used for writing a thesis, not all of them are interesting. It is therefore a pleasure for me to have been able to write on this subject, leadership in knowledge-intensive settings. While it was not a riveting experience, I do think that writing this thesis and reading the relevant literature has taught me a lot of things.

There are many people to thank. First would be my family, without whom I would not have been able to write this thesis. Of course there is my supervisor, Prof. dr. Wilderom, who helped me find this subject and helped me with valuable feedback. Dr. De Schryver is another person who was not only willing to help supervise, but also gave me valuable feedback which improved the thesis significantly. I also would like to thank Mrs. Röring, who has kept me motivated throughout the years and has helped me many times.

I thank you all for your help, support, and feedback.

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Bekir Bilge

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1. Introduction

In the current economic climate it is essential for organizations to be as competitive as possible. While this has always been important, the speed in which the economic climate changes has shifted the focus of organizations. While it were factors such as cost and efficiency that made organizations competitive in the past, now the focus lies more on innovativeness and creativity. The pace of change that organizations are confronted with today has resulted in a desire for more adaptive, flexible leadership.[1]

This innovative capability is most important in the research and development (R&D) department. R&D work is knowledge-intensive and therefore done in teams. It is becoming increasingly difficult for any one person to be an expert on all aspects of the work that needs to be done.[2]

The fact that more and more of organizational work done is knowledge-intensive makes it so that most of the work being done in organizations is shifting towards team-based work, which in turn makes it more important for organizations to know how to effectively manage these teams in order to get the best possible performance.

Leadership style has been traditionally emphasized as one of the most important individual influences on firm innovation.[3] Leaders play a significant role in shaping firms' potential to generate innovations by encouraging an appropriate environment and making decisions that promote the successful generation and implementation of knowledge.[4]

It seems therefore that leadership of R&D teams is of crucial importance to organizations. Not only for their R&D departments, but also for the rest of the organization. While leadership is not the only factor influencing team performance, it is one of the biggest.

Other factors, such as the team itself, are also of great influence on performance. A leader can however have an impact on most, if not all, of these factors. A leader can change what is in his power, influence other actors, and if all else fails; adapt in order to optimize team performance.

While R&D literature is extensive, this paper will also use other literature that pertains to the subject of knowledge workers. While these two terms are most definitely not interchangeable, knowledge workers do have many things in common with R&D team members. The inclusion of knowledge workers and knowledge-intensive teams will also make the results of this research more generally applicable. The increasing focus on knowledge workers and knowledge intensive teams shows that there is a trend toward such work, making it an important consideration for any leader who has to lead a unit of professionals, be they R&D specialists or knowledge workers.

The main research question for this thesis is therefore:

"How can a leader of a unit comprised of knowledge workers improve team performance?"

While this research question is a viable one, it is also too broad to be able to answer. Therefore the research question will be divided up into smaller sub-questions. This will happen by reading the

[1] Bass et al., 2003, pp. 207
[2] Pearce, 2004, pp. 47
[3] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 349
[4] Kanter, 1983; Van de Ven, 1993; in Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 351

literature and seeing what subject areas are the ones that have been focused on. These areas will then be examined in more detail, as they seem to be the ones that can improve team performance most. Existing literature showed that the subjects that were most discussed were the teams themselves, creativity, motivation and innovation, the environment, both internal and external, organizational support, communication, knowledge sharing, organizational learning, and transformational leadership. These subjects have been grouped together where possible, due to in some subjects overlapping or complementing each other. This made it possible to divide the main research question into the following sub-questions:

"In which ways can a leader affect his or her team so that team performance is improved?"

"How can a leader increase the creativity, motivation and innovativeness of team members?"

"How should a leader interact with the environment in order to increase team performance, and what part does culture play?"

"How should a leader deal with the issues of communication, knowledge sharing, and organizational learning, in order to increase team performance?"

These questions will be examined in the subsequent chapters. After which will follow a chapter in which different styles and forms of leadership will be examined, which will lead to a conclusion and an answer to the main research question. Implications and limitations will be discussed after these chapters.

This paper will start by first describing the methodology used. The thesis will make use of a literature review following a Grounded theory approach, as advocated by Wolfswinkel, Furtmeuller, and Wilderom (2013).[5] This methodology focuses on the documentation of the process and aims for the creation of a new theory by use of the existing ones.

Then this thesis will then look into examining transformational leadership in research and development (R&D) settings as a starting point. This combination was chosen because R&D teams are the prototype of a team unit comprised of knowledge workers. R&D team members are autonomous and as a team they are interdependent. Knowledge workers value autonomy above all else, and interdependence is a characteristic of all teams.[6]

The form of leadership which seems to be the most effective according to the existing literature is transformational leadership (TFL). This form of leadership is the one most associated with successful, innovative R&D teams. Therefore this thesis will start with examining TFL in R&D settings. It will show that while TFL is a form of leadership that is very suited for such circumstances, it is not a universal style which can be applied in all contexts. This chapter will show that other factors, such as culture and the teams themselves, influence team effectiveness and that in some cases, transformational leadership is not the ideal solution, and other forms may be as effective as, or even more effective than, a transformational style.

The first subject of these factors is that of teams. Teams are made up of individuals, and the tenure, diversity, leaders, skills and resources are only some of the many factors that can influence their

[5] Wolfswinkel, Furtmeuller, and Wilderom, 2013, pp. 47
[6] Janz, Colquitt, and Noe, 1997, pp. 879

performance. A team, or project group, is the preferred choice for R&D because such teams, which are often diverse in functional membership, can bring the right mix of scientists, engineers, and other specialists together in order to maximize performance.[7] There are many ways in which a leader can have an impact on these factors, all which influence team performance. This chapter will look into these ways and try to answer how a leader can have an effect on his or her team, so that team performance is increased.

Creativity, innovation and motivation are all very important in the performance of R&D teams in particular, and knowledge intensive teams in general. These subjects are interrelated, where motivation and creativity can lead to more innovativeness. The next chapter will therefore look into all these aspects and how a leader can increase them in order to improve team performance.

Both the internal and the external environment of an organization play a crucial role in team performance. Support from higher management, available resources, outside pressures, and more, all influence the performance of teams. A leader can help change the environment, act as a conduit, or help the team adapt to its environment. A crucial factor in team performance is that of support. Not only in the form of resources but also in the form of direct support from higher management. Both national as well as organizational culture are important in team performance. While some aspects, such as national culture, cannot be changed, others, such as organizational culture, can be significantly impacted. The culture of an organization plays a significant role in team performance and a leader should take care to use this when trying to increase team performance. This chapter will describe the ways a leader can adapt his style of leadership to national culture, and how he can influence organizational culture. Creating a climate for innovation will also be discussed in this chapter. The sixth chapter will therefore integrate these subjects and see how a leader should interact with culture and the environment in order to acquire the necessary information, resources, and support, so that team performance will be increased.

Communication in the team as well as communication with the outside have shown to be of influence to team performance. This chapter will attempt to chart the influences of communication on team performance and try to find ways to improve it. Communication is also essential in the sharing of knowledge, and organizational learning, both which are crucial for an organization to be successful and remain competitive. Therefore knowledge sharing and organizational learning will also be discussed in this chapter.

Chapter eight will look into other forms of leadership and substitutes for leadership. While TFL seems to be best suited for R&D teams in particular, and knowledge intensive teams in general, there is also contradictory empirical evidence, suggesting that TFL is not the universal best choice for team leadership in such situations. The focus of chapter eight will therefore be alternatives for transformational leadership, which in some cases can be more effective instead of TFL, or leadership styles that perhaps can add to TFL effectiveness by being used in certain situations in combination with TFL.

The chapter after that will conclude the findings of the study and give general guidelines to increasing the effectiveness of teams through leadership.

[7] Elkins and Keller, 2003, pp. 588

The final chapter will discuss the implications and limitations of the conclusion. Also, theoretical and practical implications will be discussed.

Change, Influence, Adapt

This thesis will look into three ways in which a leader can achieve a higher team performance. A leader can change the circumstances directly, change circumstances indirectly, or change himself.

The first is that of changing something which lies in the power of the leader to change himself. It might be the way team members are rewarded, or the composition of the team. If something lies within the power of a leader, and it influences team performance, and can be improved, then he should change that in a way that helps team performance.

There are however some factors which cannot be changed, but which a leader can influence. This can be the support of higher management or the organizational culture. These are situations in which a leader has no formal authority, but does have access to the persons that do. In these cases a leader should look into who he can influence and how he can do this in order to increase the performance of his team.

Lastly, there are factors that a leader cannot change nor influence. Examples of such things are national culture, or the age of the leader himself, compared to the average age of the team. If these factors influence team performance, and they cannot be changed or indirectly influenced, then a leader should adapt his or her style of leadership into one that is more suited to the situation at hand.

This thesis will look into these factors and see how a leader of either R&D specialists or knowledge workers, can improve team performance. By changing, influencing, or adapting to, circumstances.

2. Methodology

As research method this thesis will use a literature review. While the first research question was one of which form of leadership would be the best fit for highly educated personnel in technologically advanced organizations, it was decided to focus on TFL and R&D teams in order to keep the subject field manageable.

In order to be able to give a synthesis on leadership in R&D teams, and to encompass eventual additional aspects in order to increase the effectiveness of said teams, a literature review will be conducted.

Research of the previous millennium will not be considered in order to both keep the literature relevant and limit the number of results in searches. As a guideline, this paper will use the work of Wolfswinkel, Furtmueller, and Wilderom (2013),[8] which advocate using a grounded theory approach and documentation of each step in order to be able to explain the reasoning behind choices that were made. A separate logbook will be kept in for these purposes, and will be included in the appendix.

While care has been given to follow these guidelines as much as possible, some deviations have occurred. Articles that were given by the supervisor for this thesis have been added to the list of references, and relevant articles that were referenced in the original articles have also been added to the list of references.

After having read the articles they will be divided into multiple categories. Each of these categories will be used as a subject for a chapter. These subjects will then be divided into more subjects, if the existing body of literature is too large to be used in one chapter. If however the body of literature is deemed too little, then additional literature searches will be conducted. Or if subjects complement each other, then these subjects will be grouped together.

Sources that are referenced to will be used also, creating a snowball effect. Articles that are referenced to will be read also. However, the focus will be on the original subject, and other subjects that are broached in these articles will not be added to the thesis, in order to keep the amount of literature manageable.

For the purposes of this research, aside from R&D literature, the literature on knowledge intensive teams and knowledge workers will also be used. This is done in part because there is quite a bit of overlap between these two subjects, and also because it broadens the available literature.

This chapter will now operationalize the definitions used in this thesis in order to make clear what terms are used and what is meant by them.

[8] Wolfswinkel, Furtmueller, and Wilderom, 2013, pp. 53

Operationalization

For the purposes of this study some terms will be used, and in this paragraph they will be defined. It should however not be forgotten that multiple researchers will be using different definitions for the terms used, and this being a literature study, these definitions should therefore be seen more as a general guideline.

Leader

A person who has the formal authority to delegate tasks and has the power to reward or punish subordinates. The leader is also the one who is responsible for the results that are attained by subordinates.

Follower

A subordinate, a team member. The term follower is used because recent literature shows that an efficient leaders does more than just delegate, but also motivates and encourages subordinates by creating a vision, effectively making the subordinates followers.

Team/unit

A group of individuals with a common goal who work together in order to achieve said goal.

Knowledge worker

A knowledge worker is someone whose main tasks include working with knowledge, or in other words, a knowledge worker is a worker who thinks for a living.[9]

Knowledge intensive unit

For the purposes of this thesis a knowledge intensive unit is a team comprised of knowledge workers who are highly educated, are experts in their own domain, are intrinsically motivated, and have a high need for autonomy. Research and development teams are also knowledge intensive units.

Team performance

The results that the group of individuals have achieved. This can be seen as whether or not the team has achieved the tasks set for them, the deadlines that have been met.

Creativity

The act of coming up with a novel idea or product. Creativity is best encouraged in teams as this increases the diversity of inputs and can lead to more novelties.

Innovation

There are many definitions of innovation. For this thesis an innovation can be defined as a novel idea method, or product. The act of innovating includes everything from its initial conception as an idea to the final form in which it is a viable product.[10]

[9] Davenport, 2005; in Dekas et al., 2013, pp. 221

[10] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 349

3. Transformational Leadership in R&D Settings

Economic growth is becoming more and more dependent on innovative capability and has therefore become a critical factor for future economic growth and employment.[11] Innovative capability is best cultivated in research and development (R&D) teams.

This chapter will explore transformational leadership (TFL) in research and development settings. The focus will lie on TFL because it is generally accepted as the best form of leadership when it comes to leading educated professionals in a unit. The focus on R&D comes from the fact that research and development units are the archetype of such units. They are completely focused on innovations and are highly knowledge-intensive.

Leadership in R&D teams is therefore quite different from leadership in an operating department due to the differences in an R&D context. The R&D department is focused on innovations and therefore emphasizes creativity whereas the rest of the organization focuses more on operational results.

Leaders can play a significant role in shaping an organization's potential to generate innovations by making the correct decisions that promote successful generation and implementation of knowledge, and by encouraging an appropriate environment.[12] The work of an R&D project leader is both technically as well as politically complex.[13] While the technical complexity is unsurprising, the political part comes from the fact that an R&D leader has to garner support, gather resources and communicate both in the organization and outside the organization.

This chapter will first look into research and development departments and why these departments are different than other departments. Then it will look into why these departments work in teams, and into leadership in R&D settings in general. After that, it will focus on transformational leadership, the style of leadership most associated with successful R&D performance. It will go into more detail in the features of transformational leadership and TFL in literature, its benefits, and its drawbacks. The chapter will end with a conclusion in which it will show both the advantages and the drawbacks of TFL in R&D settings.

The Research and Development Department

Despite the fact that research and development departments are the pinnacle of creativity and innovation, and the fact that technology has been changing at dizzying pace, the process by which the actual technological innovations via research and development occur, has not undergone any changes.[14] R&D research has been an interpersonal team process with a project leader and a team consisting of specialists, engineers and scientists. The diverse views, expertise, knowledge and competencies that come together in the team increase the creativity of the team as a whole.

These teams usually operate autonomously, and the outcomes are true team outcomes. Because the work is worker-paced, their performance can be influenced by the leader and eventual substitutes

[11] Damanpour and Aravind, 2011, pp. 423
[12] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 357
[13] Hirst et al., 2004, pp. 312
[14] Elkins and Keller, 2003, pp. 588

for leadership.[15] This means that the role of a leader is essential in the composition of the team, and possibly is the most important factor in increasing team performance.

Research and development can roughly be divided into two sorts. Radical innovation project groups are the first. These project groups focus on new products and outcomes. These project groups are more focused on the research aspect in order to come up with new products and services. The second sort are development groups that are more concerned with modifications and incremental innovations. As is implied in the name, these project groups are more focused on development.

While these two groups are different indeed, they are both similar in most respects. The main difference is that research teams tend to operate in a more uncertain environment than development teams. Compared to other departments however, both research and development teams can be seen as similar enough to use the term R&D team and compare it to the rest of the organization.

There are many differences between research and development departments and other, more operational departments. The first of these is that outputs and performance measures are usually quite different from that of the rest of the organization. The success of R&D outcomes is usually measured years later and other activities (such as e.g. marketing efforts and actual manufacturing) have to be performed by other departments before said activity can be measured. Therefore, measuring the performance and evaluating R&D is usually done under uncertainty. [16] In fact, in some situations there is not even a single performance standard.[17] Examples of this are different stakeholders looking at different aspects of a project which makes it even harder to see whether a certain R&D project can be seen as successful.

Second, when choosing a leader, more attention is given to his/her technical skills than social skills.[18] When leading creative, innovative employees require leaders to have certain skills besides technical expertise. Skills in handling interpersonal problems among a cross-functional R&D project group is not something that R&D leaders have formally been trained in. While this will make sure that a leader knows what he or she is talking about, and therefore will have more legitimacy in the eyes of the team members, it usually also means that a leader will have problems in translating that legitimacy into a performance increase because of a lack of interpersonal skills.

Research and Development Teams

Research and development is focused on creativity and innovation, which is best simulated by providing team members with high levels of autonomy and high degrees of intellectual freedom.[19] This is because most researchers in R&D teams hold a PhD degree and can therefore be regarded as highly educated professionals and knowledge workers.[20] They also have high intrinsic motivation and are primarily motivated by their research tasks themselves.[21] Extrinsic rewards, such as financial

[15] Keller, 2006, pp. 202
[16] Elkins and Keller, 2003, pp. 588
[17] Hirst and Mann, 2004, pp. 149
[18] Narayanan, 2001; in Elkins and Keller, 2003, pp. 588
[19] Eisenbeiß and Boerner, 2010, pp. 365
[20] Eisenbeiß and Boerner, 2010, pp.365
[21] Deci, Connell, and Ryan, 1989, pp. 582

compensation, are not that effective for these individuals. [22] Therefore it is very important that R&D team members are not stifled in their autonomy and creativity.

The functioning of research and development teams is the combination of the role of the team leader on one hand, and the characteristics of its individual members on the other.[23] On the subject of individual characteristics, of the team members, at least two individual characteristics of the team members, namely self-efficacy and need for direction, also play a significant role in the success of research and development teams.[24]

While it can be said that R&D professionals have little need for direction, once team members actually need direction, it is crucial for a leader to respond to that need and provide direction. The other team characteristic, self-efficacy, the belief in oneself, should be inherently high among R&D professionals. If team members however have low self-efficacy, a leader should make sure that it increases by making sure that their self-esteem increases.

Research and development teams import scientific and technological information such as ideas, products, or processes into the team. The R&D project team then transforms this information into innovations or ideas, which are then exported to the other units or departments of the organization, who can then work on bringing the innovation to the market, or improve the organization itself.[25] The focus of the R&D team is however on the transformation of imported information into new innovations.

While the term research and development is widely used and known, there are however some differences between research projects and development projects. Research projects have a longer time frame than development projects and require the use of scientific and technological information that is often not found in the project team itself. Research projects generally also deal with more radical technological innovations than development teams, which mostly focus on incremental innovations.[26]

R&D team members are driven by their intellectual curiosity, and therefore have strong motivational processes, and enjoy developing their own future visions by setting long-term objectives and milestones. They therefore seem to have a high need for autonomy and a low need for leadership.[27]

Another characteristic of research and development teams is that there is a great amount of job autonomy and that the tasks in the team are dependent.[28] The teams themselves are often multi-faceted and multidisciplinary in their composition. This offers organizations a way to cope with pressures from the external environment by providing the means and abilities for flexibility, fast communications and fast execution of tasks.[29]

[22] Eisenbeiß and Boerner, 2010, pp. 365
[23] Stoker et al., 2001, pp. 1141
[24] Stoker et al., 2001, pp. 1147
[25] Elkins and Keller, 2003, pp. 588
[26] Keller, 2006, pp. 203
[27] Eisenbeiß and Boerner, 2010, pp. 364
[28] Stoker et al, 2001, pp. 1142
[29] Stoker et al., 2001, pp. 1141

Leadership in Research and Development

Because most research and development activities are performed in teams, leaders play an important part in the processes and performance of the team. Most leadership studies focus on the influences a leader has on the work outcomes of individual employees and teams. A leader is however not the only one that has an impact on team members and performance, since individual members can influence both other members individually and team processes as a whole.[30] In this sense, the influence of the formal leader is low.[31]

Maximizing the performance of research and development teams can be done with effective leadership, namely with the following aspects: The formulation of goals and visions, coordinating activities, motivating people, attaining knowledge exchange and performing related tasks.[32]

Since most of the work done in R&D teams is highly technical and complicated, the technical expertise of the individual is a very important criterion when looking for a leader. A problem arises however, when said individual actually has to start leading the team. Most of these highly technical individuals have little skill in handling interpersonal problems among team members, and are usually not formally trained in it.[33] In addition, R&D team members inherently have high intrinsic motivation, a high need for autonomy, and expert knowledge.[34] Therefore it seems that they have a low need for leadership.

It therefore seems that a leader should have both technical as well as interpersonal skills in order to lead an R&D team successfully. In fact, research shows that leaders who engage in team building, such as improving communication and sharing knowledge and ideas, increased innovative solutions to problems.[35] Another study showed that participative and consultative leadership styles enhanced teamwork by increasing job satisfaction, which in turn was a significant predictor of team performance.[36]

Leadership also influences organizational learning. While traditional leadership has been characterized as highly individualistic and a-systematic and not conducive to the learning of organizational teams, transformational leadership is focused on the active promotion of employee participation in collective decisions and activities. Therefore transformational leaders should be able to build good teams and provide them with direction, energy, and support for processes of change and organizational learning.[37] This will support the need of R&D teams for intellectual autonomy whilst offering as little guidance as possible, which in turn will enhance the creativity and innovativeness of the R&D team.[38]

The fact that research and development tasks have no given solution patterns or definitive outcome expectancies make them highly complex and uncertain in nature. Research and development teams

[30] Ishikawa, 2012b, pp. 265-266
[31] Day, Gronn, and Salas, 2004; in Ishikawa, 2012b, pp. 266
[32] Schneider et al., 2012, pp. 1258
[33] Mumford et al., 2002, pp. 741
[34] Eisenbeiß and Boerner, pp. 364
[35] Kim, Min, and Cha, 1999, pp. 153
[36] Stoker et al, 2001, pp. 1145
[37] Blackler and McDonald, 2000, pp. 848
[38] Eisenbeiß and Boerner, 2010 , pp. 364

therefore need a high degree of autonomy regarding decision making concerning procedures, resources and time schedules in order to develop and test creative ideas.[39]

It seems that transformational, or charismatic leaders can often create conditions in R&D teams that encourage exceptional effort and creativity, which in turn leads to enhanced group performance.[40] Research has also shown that a combination of charisma and consultative leadership can be very beneficial for team performance, where the one could stimulate innovativeness and the other set clear goals and give direction.[41] Transformational leaders also promote creative ideas within their organizations, reflecting the "championing role" of transformational leaders.[42]

A transformational leadership style therefore seems to be the best suited one for leading R&D teams. Transformational leadership has been shown to positively influence firm innovation, both directly and indirectly.[43] It further positively influences organizational learning, and through that again firm innovation.[44] Firm innovation and organizational learning both seem to influence performance.[45] This leads to the following:

Transformational leadership --> Organizational learning --> Innovation --> Performance

This shows that while TFL does not have a direct effect on (team) performance, the indirect effect it has is strong enough to influence it nonetheless, showing that a transformational style has a significant, albeit indirect, influence on team performance.

Features of Transformational Leadership

There are leaders who influence followers to broaden their horizons, elevate their goals, and give them the confidence to perform beyond the expectations specified in either implicit or explicit agreements.[46] These leaders can actually induce their followers into performing beyond expectations.[47] These are transformational leaders.

Transformational leaders motivate people to do their best, so that their followers perform better than expected by making them change their self-interest into a higher vision or purpose. Transformational leadership consists of the following components:[48]

- *Idealized influence*; charismatic role modeling behavior. Followers are trusted and respected, and followers wish to emulate the behavior of the leader.

- *Inspirational motivation*; providing meaning to the work that followers do. This is done by articulating an (organizational) vision that followers can identify with and will want to follow.

[39] Oldham and Cummings, 1996, pp. 626
[40] Ishikawa, 2012a, pp. 242
[41] Stoker et al., 2001, pp. 1147
[42] Howell and Higgins, 1991, pp. 260
[43] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 355
[44] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 355
[45] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 355
[46] Dvir et al., 2002, pp. 735
[47] Kearney, 2008, pp. 803
[48] Eisenbeiß and Boerner, 2010, pp. 365-366

- *Intellectual stimulation*; leaders challenge and encourage followers into doing approaching things differently, reframing problems, thinking out-of-the-box, etc.

- *Individualized consideration*; transformational leaders care very much about their followers and therefore are concerned with them that they take individual differences into account in their coaching and mentoring behavior.

- *Charisma* is seen as a fifth theoretical component by some researchers.[49] The differences between *charisma* and *idealized influence* are that the former has to do with reflecting follower's attributions and the latter with capturing leaders' behavior. In fact, it is seen as the primary component of transformational leadership, since it helps inspire followers to perform beyond normal expectations through a commitment to a vision provided by the leader, and a perception of competence that the leader exudes.[50]

These features are in contrast to the more traditional way of leading in which employees, not followers, were told what to do and expected to do so. The main way for motivating employees was with financial compensation. Transformational leadership however assumes that followers are already highly motivated and generally need someone to nudge them into the right direction than actually tell them what to do.

Transformational leadership has several features that are important for firm innovation. Transformational leaders have interactive vision, they pay maximum attention to effective communication and the sharing of values, they encourage an appropriate environment for innovative teams, they support collective processes of organizational learning, make sure there is reciprocal trust between members and leaders, that there are favorable attitudes toward proactivity and risk, and they perceive their role more as a coordinator than a commander or controller.[51] These features put together allow for a better understanding of the relationships between, collaborative, innovative transformational leadership and the factors that positively influence organizational innovation. Transformational leadership is linked to successful innovation more than transactional leadership is.[52]

A leader with a transformational leadership style also supports the internalization of the goals and values which underlie the collective cause. In this regard, the charisma and inspiration that a transformational leader exudes, helps in establishing an encompassing superordinate social identity based on the common vision. Because of this internalization, working toward organizational objectives helps followers with the concept of themselves, in enhancing their views on themselves as both an individual and as a professional.[53]

Transformational leadership also encourages organizational learning by promoting intellectual stimulation, inspirational motivation, and increasing the self-confidence among members of the organization and team. In fact, it is also said that transformational leadership is one of the most

[49] Bass et al., 2003, pp. 209
[50] Keller, 2006, pp. 203
[51] Scott and Bruce, 1994, pp. 600
[52] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 351
[53] Shamir, House, and Arthur, 1993, pp. 586-587

important means of developing learning organizations.[54] This shows that transformational leadership is more concerned with collective decisions, collective goals, and the generation of capabilities. This is in contrast to traditional leadership, which is focused more on a centralized structure, which is focused more on top-down decisions, standardized procedures, and the production of products and services.[55]

Team leaders have to balance on one hand helping team members with developing their own competencies and on the other hand achieving results within time and budget constraints.[56] Combining the two into one goal in order to achieve results while developing competencies is therefore essential for a transformational leader to be successful.

By achieving a shared vision and promoting a collective team identity, this collective team identification partially mediates the moderating effect of transformational leadership on the relationship of age, nationality, and educational diversity with the elaboration of task-relevant information.[57]

Past research has found that transformational leadership is associated with both the job attitude and the performance of followers.[58]

These characteristics make managing the R&D team quite different from that of regular teams. However, with the shift towards more and more knowledge-intensive work, research into the leadership of research and development teams is becoming more important.

Benefits of Transformational Leadership in R&D Settings

Transformational leadership is different from a traditional leadership styles because it focuses more on change and vision. It is therefore suited for fostering team creativity and innovation.[59] Transformational leaders can create personal and professional commitment from their followers towards high-level needs such as self-esteem and self-actualization through their own behavior, which in turn increases the (already naturally high) intrinsic motivation of the followers, or team members. This intellectual stimulation can also encourage different, often innovative ways of thinking and work processes that can lead to the generation of new knowledge and technology, which are essential for firm innovation.[60] Transformational leadership goes beyond the purely rational social exchange process of other forms of leadership style by establishing an emotional bond between a leader and his followers.

Transformational leaders serve as role models in being innovative and display different, creative behavior. Coupled with the i*dealized influence* that these leaders have, it is to be expected that this innovative, creative behavior is emulated by the leader's followers, leading to higher creativity and

[54] Snell, 2001, pp. 331
[55] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 357
[56] Stoker et al, 2001, pp. 1142
[57] Van Knippenberg, De Dreu, and Homan, 2004, pp. 1009
[58] Judge and Piccolo, 2004, pp. 760
[59] Eisenbeiß and Boerner, 2010, pp. 366
[60] Dougherty and Hardy, 1996, pp. 1996

innovativeness in the team. Transformational leadership has been found to be positively related to follower creativity.[61]

This holds for both the leaders of a research and development team as well as transformational leadership in top management. Research has shown that transformational leadership in top management has a direct positive relationship with organizational innovation, and that TFL also has a positive relationship with empowerment and organizational climate. In this relationship, empowerment has a negative relationship with organizational innovation, and organizational climate has a positive one.[62]

Intellectual stimulation should also promote R&D innovativeness by motivating followers into seeing things from a different perspective, from the viewpoint of others. This would stimulate followers into critically appraising the assumptions that they hold and sparking creative thought processes.

Also, transformational leaders motivate their followers to forego their self-interest for the good of the team by emphasizing collective interests. This increases the importance of the team in the perspectives of the followers and encourages team members into collaborating and supporting each other in order to increase creativity and innovativeness. The *inspirational motivation* that leaders have on their followers makes this all possible. Care must be given that this is controlled. *Intellectual stimulation* promotes the cohesiveness of the team. While team cohesiveness is good, too much of it can have negative effects. It is possible that opposing views and ideas are repressed. This has been shown to be a great cause of groupthink.[63]

A transformational leader can help a team set and reach ambitious goals by bolstering the confidence that a team has in its own capabilities. A team that believes in itself, its own capabilities in achieving its collective, ambitious goals will also believe in the vision shared by its leader. Studies have also shown that transformational leaders are able to realign the values and norms of their followers, that they can promote personal and organizational changes, and help their followers in exceeding their performance expectations.[64]

Transformational project leaders who can communicate an inspirational vision, provide intellectual stimulation and develop high quality relationships with team members are associated with project success.[65] Also, team followers tend to be more motivated and satisfied when a leader displays a transformational leadership style, and the leaders themselves tend to be more effective also.[66]

Kearney and Gebert (2009) state that transformational leaders can facilitate team performance by aligning the goals and values of team members and by fostering collective optimism, efficacy, and identification with the team and its objectives.[67] Leaders could also influence their followers by affecting the feelings of identification of their followers.[68]

[61] Shin and Zhou, 2003, pp. 710
[62] Jung, Chow, and Wu, 2003, pp. 539
[63] Leana, 1985, pp. 15
[64] Jung, Wu, and Chow, 2008, pp. 584
[65] Elkins and Keller, 2003, pp. 587
[66] Judge and Bono, 2000, pp. 761
[67] Kearney and Gebert, 2009, pp. 79
[68] Kark, Shamir, and Chen, 2003, pp. 253

It also seems that there is a significant correlation between transformational leadership and outcome variables including quality climate, job satisfaction, and overall satisfaction in both R&D and non-R&D settings. It was however stronger in R&D settings.[69]

Research from Kearney and Gebert (2009) also showed that transformational leadership had an effect on certain team member variables, which were all related to team diversity. Results confirmed that transformational leadership moderated the relationship of age, nationality and educational diversity with team performance. In fact, the positive relationship between both nationality and educational diversity with team performance was only significant when transformational leadership was high. However, age diversity was not significantly associated with team performance when transformational leadership was high. It was however negatively associated with team performance when transformational leadership was low.[70]

Transformational leadership also influenced project quality and budget/schedule in both research and development teams. The correlation was more prominent in research projects rather than development projects.[71] Transformational leadership therefore seems to be better suited for radical innovations, or coming up with new products and services. Other research has shown that transformational leadership was a stronger predictor of technical quality in research projects than in development projects.[72] This leads to the logical assumption that transformational leadership can be more effective in research projects, where charismatic leadership or intellectual stimulation encourages bold, unconventional, creative thinking that can lead to the generation of new knowledge.[73]

This seems to imply that transformational leadership has a more significant impact when uncertainty is higher. This uncertainty does seem to lead to higher performance from charismatic CEO's, who perform better under uncertainty compared to performance under conditions of certainty.[74]

In support of this finding, research has shown that while transformational leadership strongly predicts technical quality, schedule performance, and cost performance and that it is also a good predictor of profitability and speed to market, there were better options when there was more certainty.[75]

Drawbacks of Transformational Leadership in R&D Settings

There are different views concerning the role of leadership in promoting R&D innovation. Leadership research finds that transformational leadership can be used as a lever for facilitating leadership. This is made possible by the benefits that a good leader can give to the research and development team. Innovation research however, shows that high levels of team autonomy are beneficial for R&D team innovation.[76] In this view, a leader hinders the autonomy of team members and actually can hinder the R&D team. These two views, while both logically sound and empirically proven, contradict each

[69] Berson and Linton, 2005, pp. 58
[70] Kearney and Gebert, 2009, pp. 86
[71] Keller, 1992, pp. 498
[72] Keller, 2006, pp. 202
[73] Keller, 2006, pp. 203
[74] Waldman et al, 2001, pp. 19
[75] Keller, 2006, pp. 207
[76] Eisenbeiß and Boerner, 2010, pp. 364

other. These inconsistent results can however mean that there are certain aspects in transformational leadership theory that do not always work as well.

Eisenbeiß and Boerner (2010) try to combine both views by proposing that the amount of transformational leadership has an impact on the innovation of R&D teams.[77] They propose that transformational leadership needs certain levels of intensity to result in engendering R&D team innovation. More specifically, they argue that there is a U-shaped relationship between the two. Their research has shown that moderate levels of TFL have had a negative impact on the innovativeness of R&D teams. This view explains the views of both the leadership and the innovation literature, who claim that leadership improves, respectively stifles, innovation. More precisely, it seems that low amounts of TFL keep R&D teams highly innovative because of the intrinsic motivation to innovate among team members. High amounts of TFL seem to increase innovation by way of the encouraging of alternative views and encouraging team members.

TFL seems to endanger the autonomy of teams, which can seriously hinder team innovation.[78] Given the high need for autonomy of R&D teams, a leader's attempts at intellectual guidance and charismatic and visionary leadership may interfere with team members' need for intellectual freedom and autonomy in fulfilling their tasks. However, transformational leadership can also have a negative side effect as charismatic and visionary leadership behaviors can be seen by the R&D team as strong intellectual guidance and thereby threaten the autonomy of the individual team members.[79]

There are however also positive influences that TFL can have on R&D innovation. Leaders can act as a role model for creative behavior. They can do this by encouraging alternative thinking approaches and by boosting team potency. This can lead to an increase in the already high levels of work motivation and creativity, which in turn can produce high levels of research and development innovation. This positive influence is only possible if team leaders are seen as highly respected and are admired by the R&D team members, and if the vision for the future of the leader is able to create high levels of team identification and commitment.[80] If this positive influence is high enough, then it is possible for an R&D team to still benefit from the transformational leadership because its benefits will outweigh its drawbacks. This is however only possible when the level of transformational leadership has reached a certain minimum.

It also seems that while transformational leadership has an effect on team performance, the direct effect itself is not that strong, but that indirect effects increase the strength of the relationship between transformational leadership and team performance.[81]

Jung, Chow, and Wu (2003) found that transformational leadership significantly and positively relates to organizational innovation, as measured by R&D expenditures.[82] This was done in a Taiwanese context. In a Korean R&D setting it was found that intrinsic motivation mediated the relationship

[77] Eisenbeiß and Boerner, 2010, pp. 369
[78] Eisenbeiß and Boerner, 2010, pp. 366
[79] Eisenbeiß and Boerner, 2010, pp. 365
[80] Eisenbeiß and Boerner, 2010, pp. 366-367
[81] Kearney and Gebert, 2009, pp. 87
[82] Jung, Chow, and Wu, 2003, pp.536

between transformational leadership and the creativity of followers. The collectivistic norms of the team followers moderated the relationship between the two.[83]

Ishikawa (2012a) researched whether transformational leadership was equally effective in non-Western settings. He found that it was not so, and that the reason for it was probably that of the impact of the collectivistic culture in Japan. This disproved the universal applicability that was assumed about transformational leadership.[84] Gatekeeping leadership, a form of leadership more focused on interactions with the environment of the project team than those within the team, was deemed a better alternative than transformational leadership in a Japanese context.[85] This finding is supported by other research that shows that the relation between transformational leadership and job satisfaction is stronger in Western cultures than that of Eastern cultures.[86] The same relation holds true for transformational leadership and organizational learning.

A possible explanation for this discrepancy might be that transformational leadership serves to reinforce norms of group consensus that reinforce either the status quo or only small changes or innovations. This is because of the strong impact of idealized influence on followers. It might be possible that this impact is so strong that followers become unwilling to disagree with the opinions of their leader.[87] In a collectivistic culture, such as Japan, this effect might be even stronger. Other data however suggests that this may not be the case. [88] Yang et al. (2010) found that for research and development projects in the Taiwanese server industry, transformational leadership was positively related to both team communication and team collaboration, which in their turn were positively related to the performance levels of the project.[89] They therefore suggest that both team communication as well as team collaboration can serve as mediators between transformational leadership and project performance. They argue that TFL can improve team communication, which would lead to an increase in team performance.

The results suggest that the norm of maintaining consensus mediates the relationship between transformational leadership and team performance. Transformational leadership was related to the norm for maintaining consensus, which in it turn was negatively correlated with team performance.[90] There however was a positive impact on team performance through team efficacy.[91]

A different study by Ishikawa (2012b) showed that transformational leadership has a negative effect on shared leadership through the same norm for maintaining consensus. Again transformational leadership has a positive impact on maintaining consensus, which in turn negatively influences shared leadership.[92]

[83] Ishikawa, 2012a, pp. 244
[84] Ishikawa, 2012a, pp. 253
[85] Ishikawa, 2012a, pp. 247
[86] Pillai, Scandura, and Williams, 1999, pp. 776-777
[87] Ishikawa, 2012a, pp. 245
[88] Ishikawa, 2012b, pp. 269
[89] Yang et al., 2012, pp. 215-216
[90] Ishikawa, 2012a, pp. 252
[91] Ishikawa, 2008; in Ishikawa, 2012b, pp. 268
[92] Ishikawa, 2012b, pp. 277

Gumusluoglu and Ilsev (2009) researched R&D teams in Turkey, another collectivistic country, and found a positive relationship between transformational leadership and follower's creativity.[93] This may mean that it is not the collectivistic culture that hinders transformational leadership, but a different cultural characteristic. It may also mean that while creativity may be increased, overall the results were less positive than that of a different type of leadership.

High levels of transformational leadership might even have detrimental effects on team performance if the team has homogenous characteristics.[94] This suggests that a team should be diverse, and that if diversity cannot be achieved, it is better to assume a different style of leadership.

Ishikawa (2012a) also found a significant positive correlation between transformational leadership and consensus norms. He also found that transformational leadership was positively correlated to internal communication. There was however no correlation between transformational leadership and external communication.[95]

While it is not readily apparent, some other factors can also play a role in the effectiveness of transformational leadership. Kearney (2008) found that the age difference between a team leader and team members was a moderator of the relationship between transformational leadership and team performance. A positive relationship was found when the team leader was older than the other team members. There was however no significant relationship when the age of the leader was closer to the mean age of the team members.[96] This was most probably because of the lower legitimacy of a leader, who was considered too inexperienced to lead when his age was close to the mean age of the team as a whole. A higher age meant that team members were more easily inclined to accept the leader, implicitly assuming that with his higher age came more experience and therefore more legitimacy. Younger leaders were advised to use a more transactional style of leadership, focusing on rewards and incentives instead of charisma.

Keller (2006) found that *initiating structure* was an especially good predictor of speed to market, equal to the predictive power of transformational leadership.[97] It was proposed that when uncertainty was low, this was a better alternative than transformational leadership. This would especially hold for development projects, since these projects typically have more certainty than research projects.

Initiating structure emphasizes the leader's assignment of tasks and definition of roles for team members. It is therefore logical that it will be more effective in development projects, seeing as these focus more on incremental innovations, usually have the required knowledge in-house, and require the internal diffusion and coordination of this knowledge in the form of task assignments among team members.[98] Initiating structure, together with ability and intrinsic satisfaction as substitutes for leadership, have a more positive effect on research and development team projects over time. [99] This

[93] Gumusluoglu and Ilsev, 2009, pp. 469
[94] Kearney and Gebert, 2009, pp. 87
[95] Ishikawa, 2012a, pp. 251
[96] Kearney, 2008, pp. 809
[97] Keller, 2006, pp. 207
[98] Keller, 2006, pp. 203
[99] Keller, 2006, pp. 208

is of course because as time passes, uncertainty will diminish and the shift will be from research more towards development.

Chapter Conclusion

A common vision integrating and motivating organizational members is a prerequisite for firm innovation. A common goal is the first step towards greater performance, and creating a common vision is best done through a charismatic leader. Such a leader is often viewed as a transformational leader.

Transformational leadership has shown its potential in helping organization members in the creation and use of knowledge. Transformational leadership has been shown to improve collaboration and work among team members via a good internal environment. [100] It is also one of the most popular and most generally effective types of leadership.[101] Many studies have shown that this type of leadership is ideal for almost all types of R&D work.

It however is not generally, universally applicable. While transformational leadership has many benefits, it is obvious that there are aspects of this style which could be improved or left out. In some ways, transformational leadership has to be adjusted, and in other ways other types of leadership seem better. Developing a new type of leadership for the knowledge economy is therefore the next logical step.[102] Combinations have been suggested, such as that of Stoker et al. (2001), which proposed a combination of charisma and consultative leadership.[103] The idea behind it is that one can stimulate innovativeness while the other can set clear goals and give guidance or direction where necessary.

This study will therefore look into the aspects in which TFL is not sufficient in bringing out the best in an R&D team. There are occasions in which a leader can have an influence and can therefore actually change something. This can be the diversity of the R&D team, or the encouragement of knowledge sharing. These are aspects that a leader can and should control and, if necessary, change.

There are however aspects that a leader has limited, or completely no control in. A leader has no control over his own age, and might have trouble with legitimacy if he is deemed too young by his team members. The national culture might stand in the way of achieving diverse views, such as for example in Japan. Since a leader cannot change aspects beyond his control, he should find ways to adapt to these aspects.

Therefore a leader should focus on changing what he can in order to increase team performance, and adapt to the things beyond his control. This chapter has shown that while there is no universal best way for leading an R&D team, there are factors which can be changed or adapted to in order to generate an ideal type of leadership per situation.

One should also not forget that most of the research results showed that while TFL had a positive influence on team performance, this was mostly done through indirect means. This suggests that it is

[100] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 357
[101] Kearney and Gebert, 2009, pp. 77
[102] Johannessen and Skålsvik, 2013, pp 13
[103] Stoker et al., 2001, pp. 1147

perhaps more important to support these direct influences by means of perhaps a different leadership style, rather than focus on TFL and its indirect ways of increasing performance.

This study will therefore look into these situations, where transformational leadership is a good style of leadership, but where another style might be more effective. This study will also look to what aspects a transformational leader should pay attention to in order to avoid potential pitfalls, and in which situations a leader should change things that are in his control, and in which situations he should adapt to things that are beyond his control.

This will be done by going into more detail regarding certain subjects. In the next chapter the subject of teams will be looked into. The importance of teams is very great as this form of work can dramatically increase organizational performance by combining multiple perspectives, skills, and ideas into a whole that can be greater than the sum of its parts. The chapter will then look into how a leader can change, influence, and adapt to, team characteristics to improve team performance.

4. Teams

Increasing global competition, consolidation, and innovation create pressures for organizations that have an influence on the emergence of teams as basic building blocks of organizations and the way work is done in them. These pressures drive a need for diverse skills, expertise, and experience. They necessitate more rapid, flexible, and adaptive responses. Teams enable these characteristics.[104]

This chapter will try and answer the sub-question regarding teams:

"In which ways can a leader affect his or her team so that team performance is improved?"

This chapter will first explain why teams are important in research and development settings and how they can contribute to an increase in organizational performance. First it will explain the importance of teams, and how team-based work increases performance. For a team to be effective in both creativity and innovativeness, a certain amount of diversity is required. The next paragraph will therefore will look into the need for diversity in teams. Diversity leads to multiple perspectives and viewpoints, which lead to an increase in innovation. The chapter will then focus on conflicts among team members. Conflict is an important part of teamwork and can have positive effects if it is related to the task at hand and is not of a personal nature. Then this chapter will explain how creativity is enhanced in teams, after which it will shortly go into team learning. Learning will be explored in more detail in a later chapter. The chapter will then go into how a leader can have an effect a team and how this will increase performance. Finally it will conclude with aspects that a leader can change, influence, or adapt to, in order to increase team performance.

The Importance of Teams

In order to respond rapidly to market needs and increase profits, companies must shorten product development and reduce time-to-market for new products. Product development projects have therefore received substantial attention in the industry and literature because they have been recognized as helping organizations in achieving important business goals.[105]

Creativity and innovation are crucial for organizations to succeed,[106] and the research and development activities in organizations are prime examples of this. Research and development activities are organized as team work, because "teams can be hotbeds of creativity and innovation.'[107]

This is however not only true for only R&D teams. Knowledge work, work of which a large part is the sharing of intellectual capital, is becoming increasingly team-based.[108] Situations where teamwork is required, and where it is expected of employees to work together, share ideas, and be creative in team context, are becoming increasingly important in the modern workplace.[109] In fact, teamwork is becoming more and more widespread in organizational work.[110] This is because it has become very

[104] Kozlowski and Bell, 2003, pp. 4
[105] Yang et al., 2010, pp. 207-208
[106] Cho and Pucik, 2005, pp. 572.
[107] Pirola-Merlo and Mann, pp. 255
[108] Pearce, 2004, pp.47
[109] Kurtzberg and Amabile, 2001, pp. 292
[110] Anderson, De Dreu, and Nijstad, 2004, pp. 153

difficult for any one person to be an expert on all the aspects of a project, and this holds not only for the research and development department.[111]

Members of teams must learn to work together in such a way that the information and resources brought into the group by each individual member are fully utilized toward meeting collective objectives and meeting targets. Leaders have a key role to play in facilitating this process.[112]

Because of the fact that many organizations move from a traditional hierarchical structure to a more team-based one, team processes have an increasingly important influence on leader and organizational effectiveness.[113] It is therefore important to understand that a leader does not only influence a team and its members, but that individual members can have an impact on other members as well as team processes too.[114] Particularly in research and development teams, where activities are highly complex and ambiguous, the influence of a formal leader is limited.[115]

Expert teams can also help leaders become more effective by helping them in gaining new information in their boundary spanning role, by for example acting as part of their information networks.[116]

However, not all work can be team-based. There are certain criteria that must be met for this to be viable. West (2002) describes the following four conditions for successful team-based work:[117]

First, the task of the team must be a whole task, which is perceived as significant to the organization or the society as a whole. The task must make varied demands on team members and require them to use their skills and knowledge interdependently and allow for social contact between team members. Furthermore, the task must offer group members opportunities for skill development, learning, and task development. The team must be relatively autonomous in how it will achieve its task.

Second, during the early stages of the process, the team should be given time, without pressure, to generate ideas for achieving its task. This can also be done outside of the traditional workplace and the services of a skilled facilitator may help groups maximize their output in this phase. What's most important is a non-threatening environment without outside pressures so that the team can generate new ideas.

Third, in later stages, outside pressure, in the form of uncertainty and pressure, can make teams perform better, as long as the level of demand is not crippling. With the current level of competition, threat, pressure and uncertainty, in both public and private sectors, and the added globalization, there rarely is reason for increasing the level of demand. It is better to focus on improving the level of safety and the integration of skills of team members.

[111] Pearce, 2004, pp. 47
[112] Hogan and Kaiser, 2005,pp. 175
[113] Zaccaro, Rittman, and Marks, 2001, pp. 477
[114] Ishikawa, 2012b, pp. 265
[115] Day, Gronn, and Salas, 2004, pp. 876
[116] Zaccaro, Rittman, and Marks, 2001, pp. 477
[117] West, 2002b, pp. 379

Finally, and also most importantly, team members must, both individually and collectively, develop the skills necessary to work as a team, encourage group integration processes, to ensure that they perform as effectively as possible. This means that shared objectives are made clear and that team member commitment is constantly clarified and ensured. It is also important that there is a shared influence on decision making and that high levels of emphasis on quality is encouraged. Of course practical support in the form of time, funds and cooperation is essential. In short, it is very important to encourage team members to regularly reflect upon and adapt their objectives, strategies, and processes, effectively and continually improving their functioning as a group.

Steiner (1972) described a typology of tasks based on the relationship between member performance and group performance. He divided team tasks into disjunctive and additive tasks. A **disjunctive** task is one in which performance is determined by the performance of the best (most able) member. An **additive** task is one where group performance is the sum of all members' performances.[118] There is however the possibility of a middle way. It is possible to add every contribution of each individual member, but make it so that the group product is weighted in some way.[119] For this performance to be as high as possible, the composition of the team is important. Making sure that each team member is a unique expert in his or her field, is very important as redundancy has virtually no positive effects in team-based work, disregarding absences. It is therefore of the utmost importance that a team is as diverse as possible.

The Need for Diversity

Due to the fact that some demographic groups have grown faster than others,[120] increased mobility, stiffer competition, increased globalization, and laws aimed at furthering fairness in hiring practices, the composition of organizational teams has become increasingly diverse over the past years with regards to educational background and demographic characteristics such as age and nationality.[121] Where some reasons are external, others are internal. Organizations are increasingly adopting team based work compositions that incorporate functional and educational background differences, by for example using project teams. Other ways of increasing diversity are mergers, acquisitions, and joint ventures.[122] While this can in some ways be seen as a negative aspect, since outside pressures have imposed this on organizations, it does not necessarily have to be a bad thing.

It is however very difficult to predict the effects of diversity on group functioning. This is because diversity can depend on many factors, and the interplay between these factors. It can also be combined with the project the team has been tasked with, multiplying the potential outcomes yet again. This can however be sidestepped by the fact that social category memberships influence interaction as far as they shape the self-views of group members, and their appraisals of each other. Because of this, many dimensions of diversity are captured in a small set of specific concepts that can predict and explain the functioning of diverse teams. Members of any group, no matter their diversity, have the capacity to verify their self-views, and accordingly, fully capitalize on their diversity.[123]

[118] Steiner, 1972; in Pirola-Merlo and Mann, 2004, pp. 237
[119] Pirola-Merlo and Mann, 2004, pp. 238
[120] Fullerton and Toosi, 2001, pp. 21
[121] Jackson, Joshi, and Erhardt, 2003, pp. 813
[122] Van Knippenberg and Schipper, 2007, pp. 515-516
[123] Polzer, Milton, and Swan, 2002, pp. 320

Still, there are factors which can influence the appearance of positive effects of diversity and diminish the negative ones. The first of these is time. It seems that negative effects of demographic diversity diminish as time passes.[124] As for positive effects, it seems that outcome interdependence,[125] task interdependence,[126] collective team identification,[127] and when tasks are complex rather than routine[128] all have intermediating influences on positive diversity effects. Other mediating effects are the role of team learning,[129] and that of team reflexivity[130]on diversity. Another positive effect is that increased diversity in the form of age, nationality, and educational diversity, decreases potential pitfalls such as premature consensus, or groupthink.[131] Age, nationality and education have the added benefit of being variables that can be controlled, in contrast to other variables such as task interdependence and uncertainty.

Age, nationality, and educational diversity can all yield synergistic effects and improve team performance, under the right circumstances. Exposure to different views of individual team members can force other members to look at problems in a different perspective, and consider alternative solutions. In that way, it can help members to evaluate not only others', but their own ideas as well. Younger members can bring new ideas into a team, in the form of current theoretical knowledge and creativity, where older team members can use their experience, practical knowledge, and experience. These two combined should increase the performance of the team. As for national diversity, cultural and social differences can bring unique, conflicting, and sometimes complimentary perspectives to a team.[132] This elaboration of information is the primary process in which diversity brings positive effects to team performance.[133]

Surprisingly, or perhaps not so surprisingly, research indicates that individuals prefer to work with persons that are similar to themselves, not different.[134] This dissimilarity, or diversity, can lead to less interpersonal liking, and socially categorizing these dissimilar individuals as members of the out-group, who are treated less favorably than members of the in-group, similar individuals.[135] This can lead to low collective team identification, which can be detrimental to team performance.[136]

Another thing to watch out for is that with time, the positive effects of diversity can dissipate. It seems that the positive associations of diversity are weaker in teams with more longevity. It seems that after a period of time, team members either develop a shared understanding or learn to anticipate and deflect opposition to their ideas. The boundaries of social categories can however also become blurred because of this, making it so that individuals who were once considered out-group

[124] Harrison, Price, and Bell, 1998, pp. 103-104
[125] Schippers et al, 2003, pp. 797
[126] Jehn, Northcraft, and Neale, 1999, pp. 758
[127] Van der Vegt and Bunderson, 2005, pp.544
[128] Pelled, Eisenhardt, and Xin, 1999, pp. 12; Jehn, Northcraft, and Neale, 1999, pp. 747
[129] Van der Vegt and Bunderson, 2005, pp. 540
[130] Schippers et al., 2003, pp. 799
[131] Janis, 1982; in Kearney and Gebert, 2009, pp. 80
[132] Kearney and Gebert, 2009, pp. 80
[133] Van Knippenberg, De Dreu, and Homan, 2004, pp. 1011
[134] Byrne, 1971; in Kearney and Gebert, 2009, pp. 81
[135] Turner et al. 1987; in Kearney and Gebert, pp. 81
[136] Van Knippenberg et al., 2004, pp. 1017

members, become in-group members.[137] These potential negative effects can disrupt the elaboration of task-relevant information and impede team performance.[138]

There are also other positive effects of diversity, or more precisely, diversity makes sure some negative effects do not occur. Most of these negative effects stem from the fact that individuals tend to compare themselves to other, similar in-age or career-wise, individuals. Members of organizational teams will compare themselves to similar individuals and use them as yardsticks to measure their career-progress, and may become concerned about falling behind.[139] Comparing yourself with similar individuals is seen as a more meaningful standard than persons who a different with respect to job-related criteria.[140] The many potential negative side-effects that can arise from this tendency, make having a diverse team very important.

It seems that diverse teams will outperform homogenous teams because of the fact that they will utilize their greater range of task-relevant resources in order to create synergies that are unattainable to the homogenous team. It is therefore advisable for an organization to facilitate this elaboration of task-relevant information in diverse teams. This must all be done while making sure that negative effects do not undermine this process of exchanging, discussing, and integrating ideas and perspectives.[141]

Team Conflict

In every group there is conflict. As time passes, personalities, ideas and perspectives will clash with each other. In fact, managers and team members can take comfort in knowing that conflict is not only likely in teams, but that such conflict may even enhance performance.[142] In fact, Jehn, Northcraft, and Neale (1999),[143] as well as Pelled, Eisenhardt, and Xin (1999)[144] have identified intra-team conflict as an important mediator of diversity and team performance.

There is a distinction that can be made between cognitive conflict, which arises from differences in perspectives, and is task oriented, and affective conflict, which arises from disagreement because of personal disaffection.[145] While there are different terminologies that can be used, it is important to understand that one arises from the task itself, while the other is more personal. Another distinction is that of Marks, Mathieu, and Zaccaro (2001). They argue that there is a difference between team processes and emergent states. Team processes are the means whereby team members utilize team resources whereas emergent states are the cognitive, motivational, and affective states of the team.[146] They see the collective team identification as an emergent state and the elaboration of tasks as a team process. It is another way of making a distinction between the task itself, and the emotional, personal, subjective contexts that influence the task.

[137] Pelled, Eisenhardt, and Xin, 1999, pp. 22
[138] Van Knippenberg, De Dreu, and Homan, 2004, pp. 1013
[139] Pelled, Eisenhardt, and Xin, 1999, pp. 6
[140] Pelled, Eisenhardt, and Xin, 1999, pp. 2
[141] Kearney and Gebert, 2009, pp. 87
[142] Pelled, Eisenhardt, and Xin, 1999, pp. 24
[143] Jehn, Northcraft, and Neale, 1999, pp. 747
[144] Pelled, Eisenhardt, and Xin, 1999, pp. 2
[145] Amason and Sapienza, 1997, pp. 495
[146] Marks, Mathieu, and Zaccaro, 2001, pp. 357

While task conflicts may have potentially positive side effects, all types of conflict tend to have a personal, affective aspect too. It is therefore important that even during task, or beneficial types of, conflict, there is a possibility that these can spiral out of hand into more destructive interpersonal attacks and emotional outbursts. Care must therefore be given in making sure that this does not happen.[147] In fact, a leader should try and keep affective, or personal conflict to a minimum. Intra-team power conflicts between individuals or coalitions may impair team performance as anxiety will impair cognitive processing of complex information,[148] making individuals less receptive to different ideas and perspectives, all while taking energy devoted to task work away and directing it towards resolving these conflicts.[149] Leaders should make sure that such power conflicts do not occur. Research has shown that cliques and coalitions have been responsible for costly delays, and problems with integration, hindering team performance.[150] Emotional conflict, leading to jealous rivalry, stemming from similarity with respect to career-related attributes is another negative effect a leader should be wary of.[151] This can after all lead to affective, personal conflict and hinder team performance.

The challenge for a leader with regards to managing conflict is therefore to have a certain, unspecified amount of cognitive, task conflict while at the same time minimizing affective, personal conflict. This can be done by making sure that the team has mutual goals. Norms of mutuality are associated with greater feelings of trust, attachment, and lower feelings of disharmony and affective conflict.[152] In teams with high levels of mutuality, greater openness led to less affective conflict, even when a larger team size was associated with greater affective conflict.[153]

It is also very important for a leader to create an environment where team members can be critical of each other, in a constructive way. If a team is more concerned with reaching consensus than it is with achieving a good result, then new information will be disregarded in order to reach consensus, which is of course detrimental to team performance. In fact, even when new information was printed in bold, only critical groups used that new information, whereas consensus groups persisted in their preferences.[154]

The creating of such a critical group or team can seem a daunting task for a leader. Research has however shown that norms, such as being critical, were enforced if they facilitated team survival. Conversely, norms that did not contribute to team survival were weakened. Therefore, if team members regard lock-step consensus as detrimental to team survival, they will weaken its importance.[155] Such norms that reflect the needs of a team can develop through explicit statements of supervisors or leaders, critical events in the history of the team, and carry-over behavior from past situations.[156] In fact, critical group norms that developed during a prior task can improve the quality

[147] Kurtzberg and Amabile, 2001, pp. 292
[148] Amason and Sapienza, 1997, pp. 513
[149] Hirst and Mann, 2004, pp. 150
[150] Donnellon, 1986; in Hirst and Mann, 2004, pp. 150
[151] Pelled, Eisenhardt, and Xin, 1999, pp. 3
[152] Amason and Sapienza, 1997, pp. 502
[153] Amason and Sapienza, 1997, pp. 495
[154] Postmes, Spears, and Cihangir, 2001, pp. 927
[155] Feldman, 1984, pp. 48
[156] Feldman, 1984, pp. 52

of decisions, whereas consensus norms will not.[157] A good way for teams to develop critical norms that foster task conflict in order to improve team performance, is by making sure that the team collectively reflects upon its tasks such as its objectives, strategies, or processes and adapts them to the current or anticipated circumstances.[158]

Creativity in Teams

Because of the increase in the reliance of organizations on group-based structures, ad hoc project teams, and multidisciplinary design and development teams, the understanding of team-level innovation processes has become more even more important.[159] While there are many ways in which creativity can be encouraged and innovation enhanced, the strongest link between creativity and performance seems to be autonomy. Employees seem to produce more creative work when they perceive to have more personal control on how to accomplish tasks.[160] Allowing followers autonomy and flexibility in how to carry out their duties can create a sense of ownership and control over the performed work.[161] It also seems that individuals generate the most creative ideas when they work in an environment with high task autonomy.[162]

Another question that arises is that of the difference between individual and team creativity. One should not forget that the creative output of a collective may be more than only a function of the sum of the creativity of individuals. Group processes, such as group cohesion, may also have an added effect.[163] In fact, the interaction between team members may be in itself a major contributor to group creativity. Group creativity is enhanced through effective communication, while performance management, providing feedback, and effective conflict management can improve coordination, all resulting in improved group creativity.[164]

For an individual to be 'allowed' creative behavior, that individual must conform to group norms early in the membership in the group, while showing characteristics of competence. This will gain them credit with the group, which, once a certain threshold is reached, will allow them permission to deviate from group norms, in the form of innovative behavior.[165] This implies that even in a critical group, in which consensus is not encouraged, an individual will have to prove his competence first, before he or she is allowed to show creative behavior.

While a team should be critical in the sense that consensus should not be encouraged, it is also very important that a climate of psychological safety, conceptualized as a shared belief about the consequences of interpersonal risk-taking,[166] is encouraged. Team members should feel safe in expressing their views and ideas. In fact, for creativity and innovation implementation to emerge from group functioning, this is essential. Team members should have the integration abilities to work effectively in teams, and cooperatively develop a safe climate and the appropriate group processes,

[157] Postmes, Spears, and Cihangir, 2001, pp. 150
[158] West, 2000; in Hirst and Mann, 2004, pp. 150
[159] Anderson, De Dreu, and Nijstad, 2004, pp. 153
[160] Amabile et al., 1996, pp. 1179-1180
[161] Mumford et al., 2002, pp. 706
[162] Zhou, 1998, pp. 262
[163] Woodman, Sawyer, and Griffin, 1993, pp. 313
[164] Taggar, 2002, pp. 327
[165] Howell and Higgins, 1990, pp. 261
[166] Edmondson, 1999, pp. 375

such as encouraging participation, reflexivity, and supporting innovation. These conditions should produce high levels of innovation, but also well-being as a consequence of effective human interaction in challenging and supportive environments.[167]

While the climate of a team can account for variance in team creativity, after controlling for team creativity, the whole of a team will not necessarily outperform a team of individuals. Although influenced by team processes, it is still the individual creativity that compiles into the creativity of a team's outcomes or products.[168] Therefore, individually talented individuals still form the core of the creativity process.

The composition of a team is therefore of the utmost importance for its performance. Most teams are often multi-functional and multidisciplinary in their composition, and offer a way which allows organizations to cope with outside pressures by providing flexibility and the ability to communicate and execute quickly.[169] Talented personnel can be found through good selection methods and recruited through good leadership. Motivating the personnel is also very important, making sure that team members are willing to perform to the limits of their ability. Ceteris paribus, a motivated team will outperform a demoralized team.[170]

Learning in Teams

The need for learning in teams is becoming more and more critical as organizational change and complexity intensify.[171] It is therefore important that a leader makes sure that a team is capable of learning. High-learning teams can confront and work with and within design and other constraints to improve their situation, whereas low-learning teams are far more likely to get stuck and therefore unable to change their situation without outside intervention.[172] Team psychological safety also affects learning behavior, which in turn affects team performance.[173] This level of safety can best be achieved with effective team leader coaching and context support, in the form of access to information and resources. This appears to contribute to an environment in which team members can develop shared beliefs that enable team members to take proactive learning-oriented action, which in turn fosters effective performance.[174]

Edmondson (1999) also found that learning is an iterative experimental process where individuals learn through their actions, by trying things out, and observing feedback effects. Her research also suggests that learning is most effective when in groups, not individuals, as teams reflect upon and discuss ideas.[175]

Leadership in Teams

With the shift to team-based knowledge work has come the need to question more traditional models of leadership.[176] Team members have an increased need for more autonomy and the old

[167] West, 2002b, pp. 379-380
[168] Pirola-Merlo and Mann, 2004, pp. 256
[169] Stoker et al., 2001, pp. 1141
[170] Hogan and Kaiser, 2005, pp. 178
[171] Edmondson, 1999, pp. 380
[172] Edmondson, 1999, pp. 377
[173] Edmondson, 1999, pp. 376
[174] Edmondson, 1999, pp. 377
[175] Edmondson, 1999, pp. 353
[176] Pearce, 2004, pp. 47

style of leadership is ill suited for it. In the contemporary workplace, organizations must cope with varying degrees of uncertainty for reasons such as mergers and acquisitions, global competition, and changes in both the economy and the stock market. All this must be done with a focus on both quality and innovativeness.[177] The best way to lead these organizations out of uncertainty seems to be transformational leadership.[178]

In some ways the importance of leadership has only grown. Good leadership promotes effective team performance, which enhances the well-being of the team members, whereas bad leadership degrades the quality of life for everyone associated with the team.[179]

With team members becoming more and more critical and knowledgeable, their standards for leadership are evolving. Research has shown that for example the level of motivation in a team, or even an organization as a whole, is directly related to the performance of management.[180] Leadership is also important in the shaping of team norms, where it has been shown that they can play a critical role.[181] Even in self-managing teams, the importance of leadership is high for their effectiveness.[182] This unfortunately does not mean that the level of competence among leaders is high, or is perceived as high by their followers.[183] Employees in complex and dynamic organizations often seem to complain about a lack of leadership, or even the actual presence of managers.[184]

A leader should therefore make sure that he or she has legitimacy. In teams that have members with similar levels of education, skills, and qualification, such as R&D teams, team members will look for legitimate reasons as to why one among them has been appointed team leader.[185]

These reasons do not have to be explicit. Greater age or tenure may be an acceptable reason since both age and tenure can implicitly mean that that person is more experienced and has therefore more skills and knowledge. If the ages of the leader and the followers are similar, social comparisons may ensue, endangering the legitimacy of the leader.[186] Therefore the leadership of an individual who is similar to other team members with respect to job-related criteria, such as age, is more likely to be challenged, overtly or covertly, by team members and the team as a whole.[187]

Not surprisingly, transformational leadership is a form of leadership that is seen as a good style for managing knowledge work team. Most research on teams, diversity and creativity concludes that a transformational style is the ideal form of leadership for these cases. TFL has multiple benefits, such as a positive development on followers.[188] In some cases, TFL is essential when such as is in the case of a homogeneous group, wherein it was shown that (informational) diversity was positively related

[177] Cho and Pucik, 2005, pp. 572
[178] Lim and Ployhart, 2004, pp. 645
[179] Hogan and Kaiser, 2005, pp. 169
[180] Harter, Schmidt, and Hayes, 2002, pp. 276
[181] Taggar and Ellis, 2007, pp. 115
[182] Stoker et al., 2001, pp. 1147
[183] DeVries and Kaiser, 2003; in Hogan and Kaiser, 2005, pp. 175
[184] Wendt, Euwema, and Van Emmerik, pp. 368
[185] Kearney, 2008, pp. 804
[186] Kearney, 2008, pp. 804
[187] Kearney, 2008, pp. 809
[188] Dvir et al., 2002, pp. 741

to team creativity only when TFL was high.[189] TFL is also very promising as a means to realize team performance when there is a wider range of knowledge and perspectives.[190] Organizations with diverse teams should appoint team leaders who possess transformational qualities, or train team leaders into leading in a more transformational style, with a focus on team development.[191] This is even more important when teams are diverse regarding age, nationality, and education.[192] TFL can help turn demographic and informational differences between team members into asset rather than a liability. Therefore, TFL can be a key factor in fostering performance and preventing process losses in diverse teams.[193]

Shin and Zhou (2007) have shown that TFL moderates the relationship between educational specialization diversity and team creativity in such a way that this relationship is more positive when TFL is high rather than low.[194] Kearney and Gebert (2009) found that TFL fosters the elaboration and in-depth processing of the broader range of task relevant information that is available in diverse teams.[195] Transformational leadership seems to be a viable strategy in bringing to fruition the positive effect while at the same time preventing the negative ones of team diversity, therefore increasing team performance.[196] In short, TFL moderates the relationship of age, nationality and educational diversity with that of team performance. It does so positively when TFL levels are high, but negatively or non-significantly when TFL levels are low.[197]

Transformational leadership is however not universally applicable. In some situations, other styles of leadership can perform better, or enhance TFL. For instance, for self-managing teams both transformational, as well as a consultative leadership style, can lead to increased team performance.[198] If a team member has a high need for direction however, a more initiating structure, or a more directive approach can be considered.[199]

Other research has found that in diverse teams, participative leadership was positively related to team reflection, which in turn facilitated team innovation. The same research showed that in more homogeneous groups, a directive leadership style was positively related to team reflection, again improving team innovation.[200] In order to overcome complexity and ambiguity, members of such teams must influence each other and their leaders, in their own specialized areas. In such cases, shared leadership seems to be an ideal solution, in which each member is the leader of their specialty.[201] It is very important to have leadership input from multiple team members, and therefore

[189] Shin and Zhou, 2007, pp. 1717
[190] Harrison and Klein, 2007, pp. 1205
[191] Wendt, Euwema, and Van Emmerik, 2009, pp. 368
[192] Kearney and Gebert, 2009, pp. 87
[193] Kearney and Gebert, 2009, pp. 87
[194] Shin and Zhou, 2007, pp. 1717
[195] Kearney and Gebert, 2009, pp. 77
[196] Kearney and Gebert, 2009, pp. 78
[197] Kearney and Gebert, 2009, pp. 83
[198] Stoker et al., 2001, pp. 1147
[199] Stoker et al., 2001, pp. 1147
[200] Somech, 2006, pp. 153-154
[201] Ishikawa, 2012b, pp. 266

a form of shared leadership is a critical factor that can improve team performance from the viewpoint of both customers and end users of a team's work.[202]

In fact, this may be even more beneficial for a leader, since as teams become more experienced and achieve a certain, threshold of expertise, members can take over some of the leadership functions, making it possible for the formal leaders to focus on their boundary spanning activities.[203]

Chapter Conclusion

This chapter started with the intent to answer how a leader can have an effect on his or her team in order to improve team performance. In order for a leader to do this, there are aspects that he or she should pay attention to.

The first of these is that the existence of a formal leadership position glorifies inequality and the differences between the leader and the led, all while still creating identification and cohesiveness between the leader and his followers.[204] A leader must therefore take care to make sure that team members fully accept this unequal distribution of status and power, or risk decreasing the potentially positive impact he can have on the team. It is essential for a leader to be accepted by his or her followers in order to be able to make a positive impact.[205]

A leader should also make sure that team members are empowered. Added with the need for autonomy that is present in all knowledge work teams, it becomes clear that a team leader has to empower team members. To empower individual team members, team leaders should ensure that there are high levels of trust and respect between them and their team members. To empower the team as a whole a leader should delegate sufficient autonomy and responsibility to all members, involve the team in decision making, and encourage self-management.[206]

It also seems that for a leader to encourage creativity, feedback should be given in an informational style. Especially when it is negative feedback, an informational style is advised, so that the recipient does not feel personally slighted. Combined with a creativity enhancing work environment, managers should consider multiple aspects of organizational context, such as social and task dimensions. By simultaneously giving positive feedback in an informational style, and allowing for high autonomy, managers can facilitate follower creativity.[207] This in its turn should increase team performance.

For practical purposes, a leader can focus on the following aspects in order to improve team performance, and change, influence, and adapt in order to maximize it.

Change

All in all, a leader should focus first on the things he or she can change. The first of these is the composition of the team itself. This is one of the biggest factors in team performance and therefore of crucial importance. A leader should focus on making sure that the team is as diverse as possible, and focus on age, nationality, and educational diversity, since these variables can be influenced most easily.

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[202] Carson, Tesluk, and Marrone, 2007, pp. 1231
[203] Zaccaro, Rittman, and Marks, 2001, pp. 477
[204] Kabanoff, 1991, pp. 433-434
[205] Kearney, 2008, pp. 804
[206] Chen et al., 2007, pp. 343
[207] Zhou, 1998, pp. 274

A leader should also make sure that a team is critical in its evaluations. He should make sure that the team does not strive for consensus, but quality. All the while the focus should be on task conflicts. Any affective conflict should be resolved as quickly as possible.

Influence

If a leader cannot choose his or her own team, he or she can use his influence in changing the composition of the team via higher management, or by lobbying or trading team members with other team leaders. Care must be given to make sure to give the team members valid reasons, so that they do not feel personally insulted.
The same holds true for resources that are needed for a team and that a leader cannot seem to obtain by him- or herself. Lobbying or talking to higher management might make it possible to obtain these resources in a different manner.

Adapt

If a team leader seems to be too similar to the team members and his legitimacy seems to be questioned, it will be very hard for him or her to successfully maintain a transformational leadership style. In such cases, a leader should adapt to the situation at hand and change his style of leadership into one in which not based on his charisma, but in which his authority is most obvious. This can be done via for example a transactional style, which is a style that is more focused on the reward-contingent aspect, or a form of shared leadership, giving some formal authority to other team members, in order to remain in charge. Another aspect to which a leader can only adapt to is that of national culture. Individualistic countries have less need of directive and supportive behavior,[208] and a leader should take such things into account. This will however be discussed in more detail in chapter six.

In short, a leader should therefore make sure that his or her team consists of a diverse set of employees in order make sure that high levels of creativity and innovativeness are maintained. In order to maintain this high level of creativity, a leader should make sure that conflicts are not avoided, and that they are always task-related, and that team members have the necessary information and resources to both be creative and have the opportunity to learn, further increasing creativity. The leader should also make sure that his or her authority is recognized by the team members. If this is not the case, then a style of leadership that focuses more on formal authority than personal authority should be employed.

This chapter has shown the importance of teams, and how a leader can have an effect on team members in order to increase team performance. The next chapter will look into what makes these team members so important, namely their creativity, innovative capacity, and their motivation. If a leader can keep these three characteristics high, then success is almost guaranteed. An organization has to keep innovating, and teams consisting of highly creative and motivated members are the best way for an organization to remain innovative, and competitive.

[208] Wendt, Euwema, and Van Emmerik, 2009, pp. 368

5. Creativity, Motivation, Innovation

Market orientation and firm innovation are both widely recognized in being essential for the survival and growth of organizations.[209] In fact, Porter (1990) suggested that in the late twentieth century, most advanced economies had moved into an innovation-driven state, in which the main competition between organizations was on how to innovate both rapidly and profitably.[210] It is therefore essential that the factors influencing the successful development of innovations in organizations is understood.

Innovations are not only good for the financial performance of the organization itself, but also have benefits that transcend it. Emphasizing and investing in innovation not only facilitates performance and growth, but also contributes to economic development and improve people's lives in general.[211] The ultimate goal of firm innovation is the creation of new knowledge and applications, particularly the ones that are connected to organizational improvements, and many researchers have claimed a positive relationship between organizational learning and organizational performance.[212]

Because of the importance of innovations, and the underlying causes that are creativity and motivation, it is essential for a leader to make sure that these are kept at high levels. The purpose of this chapter therefore is to answer the sub-question of how a leader can increase the creativity, motivation, and innovativeness of team members. This chapter will therefore explore the possible ways in which a leader can increase the creativity and motivation of team members, thereby increasing innovativeness.

This chapter will take a look into innovation, and how creativity and motivation are key factors that both facilitate and increase innovativeness, which leads to innovation. Innovation is not achieved through a simple recipe, but is the outcome of many different factors, influences, and conditions, both directly and indirectly.[213] It is therefore essential that these are understood so that an organization can analyze itself and act accordingly in order to improve innovativeness and with it, organizational performance. First this chapter will look into creative behavior in individuals. In order to be innovative, creative individuals are fundamental. These individuals also have to be properly motivated in order to be creative, which the next paragraph will discuss, after which the link between creativity and innovation will be examined. The paragraph after that will be about the importance of teams in fostering creativity and how team interaction increases innovativeness. Afterwards the innovative climate will be discussed, which focuses on creating an environment in which creativity can flourish. Then this chapter will examine how a leader can have an effect on these factors in order to increase creativity and motivation, thereby increasing innovativeness. Finally, this chapter will end with a concluding paragraph, briefly summarizing the previous paragraphs and showing how and what a leader can change, influence, or adapt to.

[209] Bello, Lohtia, and Sangtani, 2004, pp. 59
[210] Porter, 1990; in Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 349
[211] Ahlstrom, 2010, pp. 20
[212] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 351
[213] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 350

Creative Behavior in Individuals

While the ability for an organization to be innovative is seen as a major factor in organizational performance, many organizations do not, or cannot, develop it.[214] Research has therefore been done into finding the factors needed for organizations to develop innovations, looking beyond the obvious semiautomatic stimulus-response and tacit experience accumulation.[215]

One of the first requirements of innovativeness are creative individuals. Creativity can be seen as the outcome of an individual's creative thinking skills and his or her expertise, based on both formal education and past experience.[216] Sufficient experience and familiarity with the subject area are also needed so that the individual can apply his or her creativity to said subject area.[217] Research has also found other determinants as sources of creativity, such as psychological empowerment.[218] Empowered individuals are more likely to exhibit creative behavior.[219] In fact, Gumusluoglu and Ilsev (2009) found that psychological empowerment had a significant effect on the creativity of followers.[220] This could be because R&D followers already tend to be intrinsically motivated, and therefore empowerment only strengthens this motivation. It is also possible that leaders demonstrate their trust in the capabilities of their followers, which could lead to higher levels of identification and commitment to the organization.[221] Followers' identification with the vision, mission, and culture of the organization have been linked to heightened levels of motivation towards performance improvement.[222]

Oldham and Cummings (1996) have identified personal attributes as well as characteristics of the organizational context that are relevant for creativity. Examples of these are job complexity, supportive supervision, and non-controlling supervision.[223] This suggests that members of an R&D team prefer a certain amount of freedom. Therefore it is not surprising that another very important determinant of creativity is autonomy. Sheldon (1995) calls personal autonomy a core characteristic of creative people.[224] Autonomy or freedom is an important determinant of organizational creativity because individuals produce more creative work when they perceive more personal control over how to accomplish given tasks.[225] Research has also shown that an organization supporting autonomy has the potential to increase innovative achievement.[226] Other research has found that individuals generate the most creative ideas when they work in a high task autonomy work environment.[227] Of course none of this will happen if followers do not know that creative behavior is expected of them. If leaders truly desire creativity, they should communicate this to their employees.[228]

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[214] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 349
[215] Zollo and Winter, 2002, pp. 341
[216] Amabile, 1998, pp. 87
[217] Shalley and Gilson, 2004, pp. 37
[218] Deci et al., 1989, pp. 588
[219] Jung, Chow, and Wu, 2003, pp. 538
[220] Gumusluoglu and Ilsev, 2009, pp. 469-470
[221] Avolio et al. 2004, pp. 963
[222] Shamir House, and Arthur, 1993, pp. 587
[223] Oldham and Cummings, 1996, pp. 625
[224] Sheldon, 1995, pp. 32
[225] Amabile et al., 1996, pp. 1179-1180
[226] Mumford and Gustafsen, 1988, pp. 38
[227] Zhou, 1998, pp. 272
[228] Shalley and Gilson, 2004, pp. 47

Motivation

Even when employees have the potential to be creative, they may not be inclined to do so. Leaders should therefore take that into account and make their followers motivated to be creative. A leader should therefore identify and assign the followers with the appropriate motivation to the jobs involving creativity in order to enhance the emergence of innovativeness.[229]

Members of R&D teams tend to have high intrinsic motivation. This refers to the motivational state in which employees are interested in a task for the task itself, and not the external outcomes or rewards that are related to the task.[230] Intrinsic motivation is a very important source of creativity, because an employee is then more likely to focus on the task, resulting in more exploration and experimentation, thereby exhibiting creative behavior.[231] Empirical studies have shown that intrinsically motivated employees exhibit more creative performance.[232] A number of studies have also found that intrinsic motivation leads to creativity because intrinsically motivated people prefer different approaches to problem-solving.[233] Shin and Zhou (2003) found that intrinsic motivation partially mediated the influence of transformational leadership on the creativity of followers. For employees high on conservation, or ones who prefer conformity, security and tradition to change, intrinsic motivation fully mediated this relationship.[234]

Motivation is very important in the performance of a task. In research and development settings, there usually already is a certain amount of intrinsic motivation that facilitates creativity. A leader can however add to that motivation by empowering his or her followers and granting them autonomy. This increased level of motivation is likely to enhance organizational innovation.[235] Empowered followers are also more likely to be intrinsically motivated, which in turn increases creativity.[236] This does not mean that there should be no supervision. To the contrary, supportive supervision has been shown to be an important determinant of intrinsic motivation and creativity at work.[237]

Creativity and Innovation

The word innovation can be used for many different things. Schumpeter (1983) made the distinction between the introduction of a 'new good … or of a new quality of good' and the introduction of 'a new method of production' for the production of goods.[238] Innovation scholars have therefore investigated product and process innovations as two primary forms of technological change that are central to economic growth and the competitiveness of an organization.[239] Technical and product innovations are more industry-specific, they are more standardized in that industry whereas process

[229] Tierney, Farmer, and Graen, 1999, pp. 616
[230] Deci and Ryan, 1985; in Gumusluoglu and Ilsev, 2009, pp. 463.
[231] Amabile et al., 1996, pp. 1158
[232] Tierney, Farmer, and Graen, 1999, pp. 596
[233] Zhou, 1998, pp. 265
[234] Shin and Zhou, 2003, pp. 710
[235] Mumford et al., 2002, pp. 736
[236] Jung and Sosik. 2002, pp. 327
[237] Oldham and Cummings, 1996, pp. 628
[238] Schumpeter, 1983; in Damanpour and Aravind, 2012, pp. 424
[239] Damanpour and Aravind, 2012, pp. 424

and administrative innovations are more specific to the organization, or more specifically, they are generally unique to the unit of adoption.[240]

While these terms are different, they are united in the sense that they are both forms of innovation. There is however a distinction between creativity and innovativeness. Creativity refers to the production of novel and useful ideas.[241] And team creativity can be regarded as the ideation component of team innovation.[242] Research and development team innovation encompasses both idea generation and idea implementation.[243] Where creativity is the idea generation part, the implementation of these ideas make it innovative. Creativity and innovation differ in the required degree of idea novelty and social interaction. Creativity is truly novel, whereas innovation can be based on already existing ideas that are adopted from previous experiences or other organizations.[244] Innovation can be defined as 'the intentional introduction and application within a role, group, or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, organization, or wider society.'[245]

R&D team innovation can be seen as a combination of on the one hand the quantity of developed and implemented ideas; and on the other hand their quality in terms of novelty, magnitude, radicalness, and effectiveness.[246]

With the increasing importance of innovation, Johannessen and Skålsvik (2013) see it as a business process in itself.[247] They claim this requires effective innovation capabilities in an organization. They then define these capabilities as the system of physical, social, and cultural resources that exist in an organization. These form the intellectual capital of organizations, which makes innovation as a business process possible. They see the intellectual capital of an organization as the dynamic element that transforms innovation capabilities into dynamic innovation capabilities, making innovation a business process sustainable over a longer period of time.

Since innovation is seen as a key component in being and staying competitive, (global) competition can therefore be divided into the two following streams:[248]
(1) The start-up of new businesses based on innovative ideas, products and services.
(2) The creation of innovation as a driving force in existing businesses.

This distinction shows clearly that organizations must focus on innovations in order to stay competitive. To achieve either of these requires a great deal of originality, and employees who can break established rules, norms, and behavior. Doing this will result in the emergence of creative fields, which can start as an irritant in established businesses, but which also have the potential to change the market.[249] This brings the surprising conclusion that adapting to change is not always an

[240] Damanpour and Gopalakrishnan, 2001, pp. 60
[241] Amabile, 1988, pp.1
[242] West and Farr, 1990; in Rank, Pace, and Frese, 2004, pp. 520
[243] West, 2002a, pp. 412
[244] Rank, Pace, and Frese, 2004, pp. 520
[245] West and Farr, 1990; in Eisenbeiß and Boerner, 2010, pp. 365
[246] West, 2002b, pp. 363
[247] Johannessen and Skålsvik, 2013, pp. 29
[248] Johannessen and Skålsvik, 2013, pp. 29
[249] Johannessen and Skålsvik, 2013, pp. 29

ideal strategy. In fact, individuals and organizations that can create their own future, instead of adapting to that of others, will be the competitive forces.[250]

The Benefits of Teams on Creativity

While understanding creativity among individual employees and creative processes is important, it is even more important for organizations to understand how to mobilize this creativity for the development and production of new, socially valued products and services.[251] If an organization cannot coordinate the creative behavior of individuals and their creative outputs and ideas into organizational outcomes, an organization will still not have benefited from this creativity and will be left without effective responses to challenges from the market.[252] It is therefore important that a team receives support and attention in order to develop innovative and new products, so that these products can be put on the market, and an organization can create wealth.[253]

Most R&D work is done in teams because multiple views and skills tend to bring forth a more creative output, resulting in innovations. By getting as many people as possible involved, organizations can increase the number of innovative ideas that are available for consideration.[254] This has led to research by practitioners and scholars to identify the factors that stimulate creative behavior in teams and organizations. For example, Amabile, (1998) has identified three factors as being important for creativity: individuals' intellectual capacity (creative thinking skills), expertise based on past experience, and a creativity conducive work environment.[255]

West (1990) identifies four team climate factors important for innovation:[256]
(1) V*ision*, referring to a shared commitment to clear objectives;
(2) *Participative safety*, a sense that team members can participate in decision making and can share ideas without fear of ridicule or ostracism;
(3) *Task orientation*, which refers to a shared concern of team members for achieving a good standard of performance; and
(4) *Support for innovation*, which refers to the expectation of—and support for—innovation in the team.

There is however a difference between individual creativity and team creativity. Taggar (2002) suggests that team creativity is not completely determined by individual creativity, but that interaction among team members makes team creativity emerge synergistically.[257]

Individual creativity can provide the raw material of new and useful ideas, and the interaction of that individual with other team members and team processes play an important role in the transformation of these raw ideas into group-level creativity.[258]

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[250] Johannessen and Skålsvik, 2013, pp. 29
[251] Mumford and Gustafsen, 1988, pp. 38
[252] Jung, Chow, and Wu, 2003, pp. 526
[253] Johannessen and Skålsvik, 2013, pp. 20
[254] Dess and Picken, 2000, pp. 31
[255] Amabile, 1998, pp. 78
[256] West, 1990; in Pirola-Merlo and Mann, 2004, pp. 237
[257] Taggar, 2002, pp. 326
[258] Taggar, 2002, pp. 326

Pirola-Merlo and Mann (2004) argue however that this is not the case.[259] They suggest that creativity emerges from a combination of individual lower-level elements (creativity). These elements combine into a group-level construct (group creativity).[260] They claim that it is the combination of the factors itself, and that the group level does not add something extra to the mix. They therefore claim that team creativity at a particular point in time is the same as an aggregated score of all the individuals' creativity.[261] The form of aggregation however is not constant, and it could be the result of an average function, or that of a weighted average.[262]

For the purposes of this paper however, the conclusion remains the same; a team is more creative than an individual, and improving their performance is crucial for organizational success.

The Innovative Climate

The characteristics of an organization can greatly affect the creativity of followers.[263] Therefore it is very important for an organization to create an environment wherein employees feel safe, supported and autonomous. Creative individuals need to feel that they are working in a supportive work environment.[264] The perception of an employee of an innovative climate encourages risk taking, and a challenge to use creative approaches at work.[265] The organizational climate is a very important factor for creativity.[266] It can be influenced by charismatic leadership and consideration.[267]

There are two questions that arise when organizational climate issues arise. The first is what aspects of the organizational environment can influence innovation, while the second one is what the role of leaders is in improving innovativeness through the organizational climate. To the first question, antecedents of innovation and creativity have been identified; vision, participative safety, climate for excellence, norms of support for innovation, operational autonomy/freedom, good project management, encouragement, organizational resources, recognition, time, challenge, and pressure.[268] The answer to the second question is that a leader can influence innovation by creating an innovative culture.[269] If a follower perceives a culture as innovative, he will be encouraged in taking risks, and will be challenged to use creative approaches at work.[270]

Such a culture can be created by building a sense of community which consists of a family feeling, of socializing, trust, caring, information flow, learning approach, individual recognition/rewards, and teamwork. A manager can create this type of culture by giving employees operational autonomy, providing personalized recognition, emphasizing group cohesiveness, and maintaining a continuity of

[259] Pirola-Merlo and Mann, 2004, pp. 239
[260] Kozlowski and Klein, 2000; in Pirola-Merlo and Mann, 2004, pp. 239
[261] Pirola-Merlo and Mann, 2004, pp. 255
[262] Pirola-Merlo and Mann, 2004, pp. 239
[263] Scott and Bruce, 1996, pp. 591
[264] Shalley and Gibson, 2004, pp. 47
[265] Gumusluoglu and Ilsev, 2009, pp. 464
[266] Scott and Bruce, 1996, pp. 584
[267] Koene, Vogelaar, and Soeters, 2002, pp. 211
[268] Amabile, 1998; in Elkins and Keller, 2003, pp. 595; West, 1990, pp. 8
[269] Ekvall and Ryhammar, 1999, pp. 308
[270] Gumusluoglu and Ilsev, 2009, pp. 464

slack resources.[271] These managerial practices have been associated with both high performance and perceptions of an innovative climate in other research.[272]

Another suggestion regarding the creation of an innovative climate is that it can be created by using both structure and behaviors, by giving followers multiple tasks, deadlines, both administrative and technical tasks, collaboration with colleagues, and a clarity of fit between work and organizational goals.[273] A meta-analysis done by Elkins and Keller (2003) found a significant positive relationship between innovation and the following organizational variables; specialization, functional differentiation, professionalism, managerial attitudes toward change, technical knowledge resources, administrative intensity, slack resources, and both internal and external communication.[274]

While autonomy and empowerment are essential for creativity and with it innovation, it does not mean that team members should be given free reign. A certain amount of order actually has a positive impact on the creative climate, whereas control has a negative correlation with said climate, but only a slight, non-significant one with creativity.[275] A possible explanation for this can be that control can have a harmonizing effect on the climate, which would support second-order creativity, or incremental innovations.[276] Some amount of control can therefore have a positive effect on innovation.[277] When it comes to radical innovations however, some controls have a negative impact on innovation. Centralization for example, has a negative relationship to innovation.[278] In fact, it may even be seen as an opposite construct to autonomy and empowerment,[279] cornerstones of an innovative environment. These mild bureaucracy aspects have a hindering effect on radical innovations, because radical innovation implies breaking the rules and thinking out of the box, something that all bureaucracy hinders.[280]

An innovative climate will be conducive in the creation of creative energy fields. Creative energy fields consist of creative individuals, who are driven by an inner motivation, curiosity, or even a fear of inadequacy.[281] They function best when they are systematically connected.[282] The purpose of such energy fields is that they can create something unique, even if it does not necessarily increase productivity and/or reduces costs.[283] It should however not be forgotten that creativity and the creation of creative energy fields are not an end in themselves, they are but the means to innovations, which result in wealth creation for the organization, which is the goal of not only the teams, but also the organization itself.[284]

[271] Judge, Fryxell, and Dooley, 1997; in Elkins and Keller, 2003, pp. 596
[272] Elkins and Keller, 2003, pp. 596
[273] Farris, 1988; in Elkins and Keller, 2003, pp. 596
[274] Elkins and Keller, 2003, pp. 596
[275] Evall and Ryhammar, 1999, pp. 309
[276] Ekvall, 1997, pp. 202
[277] Cardinal, 2001, pp. 30
[278] Elkins and Keller, 2003, pp. 596
[279] Damanpour, 1991, pp. 569
[280] Ekvall and Ryhammar, 1999, pp. 309
[281] Amabile, 1996; in in Johannessen and Skålsvik, 2013, pp. 20
[282] Hamel, 2007; in in Johannessen and Skålsvik, 2013, pp. 20
[283] Isaksen and Tidd, 2006, pp. 53; in Johannessen and Skålsvik, 2013, pp. 20
[284] Johannessen and Skålsvik, 2013, pp. 20

Leadership can affect creative behavior through the influence that leaders can wield on the perceptions of the team followers on the organizational climate. A leader can establish a work environment that encourages creativity,[285] and create an organizational climate that can serve as a guiding principle for work processes that are more creative,[286] creating an innovative climate. Charismatic leadership has been shown to have substantial effects on organizational climate.[287]

Leadership and Creativity

While leadership has an important influence on team performance, not all types of leadership are as effective in promoting team performance. Traditional leadership has been characterized as highly individualistic and a-systematic, and also as making the learning of organizational teams difficult. It is however not so with newer leadership styles, such as transformational leadership, which is focused on the active promotion of employees' participation in collective decisions and activities.[288] Research has shown that leaders in R&D settings can control organizational factors, thereby influencing innovation in project groups.[289]

Leadership can encourage creative behavior by influencing the perceptions of a climate supportive of innovation, establishing a creativity encouraging work environment.[290] In a broad way, leaders are a key source of influence on the culture of an organization.[291] This can serve as a guiding principle for more creative work processes.[292] There are several ways in which leaders can affect employee creativity and organizational innovation. They can define and shape the contexts in which followers interact to define goals, problems, and solutions.[293] Leaders can also articulate a vision which emphasized long-term business outcomes over short- term ones, through which leaders can direct the efforts of followers towards innovative work processes and outcomes.[294] Creating an organizational climate and culture that encourages creative efforts and facilitates learning can also significantly improve organizational creativity.[295] Finally, leaders can develop a system or culture in which creative performance is valued and rewarded. This will entice followers to acquire new skills and to experiment with different work approaches, reinforcing the desire of followers to engage in creative endeavors.[296]

Transformational leadership is the style which is mentioned most in the literature. In fact, it has been argued that a capability for transformational leadership is one of the most important means of developing learning organizations,[297] and in generating innovation.[298] The label 'transformational' comes from a set of adaptive leadership behaviors which are believed to be more effective than

[285] Amabile et al., 2004, pp. 26
[286] Scott and Bruce, 1996, pp. 600
[287] Koene et al., 2002, pp. 210
[288] Bass, 1991, pp. 23
[289] Damanpour, 1991, pp. 582; Farris, 1988; in Elkins and Keller, 2003, pp. 596
[290] Amabile et al., 1996, pp. 1180, Amabile et al., 2004, pp. 30
[291] Schein, 1992; in Jung, Chow, and Wu, 2003, pp. 527
[292] Scott and Bruce, 1994, pp. 600
[293] Redford, Mumford, and Teach, 1993, pp. 146
[294] Amabile, 1996; in Jung, Chow, and Wu, 2003, pp. 527
[295] Yukl, 2001; in Jung, Chow, and Wu, 2003, pp. 527
[296] Jung, 2001, pp. 192; Mumford and Gustafsen, 1998, pp. 28
[297] Snell, 2001, pp. 322
[298] Dess and Picken, 2000, pp. 31; Hult et al., 2000, pp. 113; Sethi, 2000, pp. 10

other leadership styles when it comes to enhancing organizational innovation.[299] TFL is focused more on the longer term and on vision-based motivational processes,[300] and has been shown to have a direct and positive relationship with organizational innovation.[301] Transformational leaders tend to have a vision which motivates followers, increasing their willingness to perform beyond expectations, challenging them in adopting innovative approaches to their work,[302] all the while stimulating their followers to think about old problems in new ways, encouraging them to challenge their own values, traditions, and beliefs.[303] Transformational leadership is characterized as being more concerned with collective decisions and goals, and the generation of capabilities, whereas traditional leadership focuses more on top-down decision, standardized procedures, and the production of both products and services.[304]

Transformational leaders can create a group environment wherein followers feel empowered to seek an innovative approach to perform their job in a creative manner, without the fear of being penalized.[305] Transformational leadership also has a significant positive relationship with innovative organizational climate.[306] By providing intellectual stimulation,[307] TFL encourages followers to think out-of-the-box, and to adopt generative and exploratory thinking processes,[308] which increases the creativity of followers and thereby organizational innovation. Several studies have shown that there is a positive relationship between TFL and follower creativity.[309]

Transformational leaders also stimulate a shared vision and raise the level of commitment.[310] They are able to build teams and provide them with direction, energy, and the support needed for processes of change and organizational learning.[311] More specifically, transformational leaders fuels organizational learning by promoting intellectual stimulation, inspirational motivation, and boost the self-confidence of members of the organization,[312] and has a positive impact on the empowerment of followers,[313] by building the self-confidence of followers and heightening personal development,[314] and by providing meaning and challenge to their work.[315] Therefore, transformational leaders who care for the needs and feelings of their followers, who facilitate the development of their skills, and show them how to achieve their goals, and also express confidence in them, are likely to enhance the interest of followers in their tasks.[316] TFL can enhance organizational innovation directly, but also

[299] Howell and Avolio, 1993; in Jung, Wu, and Chow, 2008, pp. 582
[300] Bass and Avolio, 1997; in Jung, Chow, and Wu, 2003, pp. 526
[301] Keller, 1992, pp. 498; Jung, Chow, and Wu, 2003, pp. 538
[302] Gumusluoglu and Ilsev, 2009, pp. 464
[303] Hater and Bass, 1988, pp. 697
[304] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 357
[305] Jung and Sosik, 2002, pp. 317
[306] Jung, Chow, and Wu, 2003, pp. 538-539
[307] Bass and Avolio, 1997; in Jung, Chow, and Wu, 2003, pp. 529
[308] Sosik, Avolio, and Kahai, 1997, pp. 98
[309] Sosik, Kahai, and Avolio, 1998, pp. 100; Howell and Avolio, 1993, pp. 898
[310] Hult et al., 2000, pp. 113
[311] Blackler and McDonald, 2000, pp. 849; McDonough, 2000, pp. 235
[312] Coad and Berry, 1998, pp. 165
[313] Dvir et al., 2002, pp, 741
[314] Conger, 1999; in Gumusluoglu and Ilsev, 2009, pp. 463
[315] Jung and Sosik, 2002, pp. 327; Jung, Chow, and Wu, 2003, pp. 539; Avolio et al, 2004, pp. 953
[316] Bass, 1991, pp. 30

indirectly by creating an organizational culture in which follower can freely discuss and try out new ideas and approaches.[317]

There are several reasons that support the expectation that TFL enhances employee creativity and innovation. First, transformational leaders go beyond contractual agreement exchanges for desired performance by actively engaging the personal value systems of followers.[318] Second, transformational leaders provide ideological explanations that link the identities of followers to that of the organization, increasing the intrinsic motivation of followers to perform their job.[319] Through the articulation of an important vision and mission for the organization, transformational leaders increase the understanding of their followers regarding the importance, and the values associated with desired outcomes, thereby increasing their willingness to transcend their self-interests for the sake of the collective organization.[320]

While transformational leaders can sometimes take a more directive approach, the participation of followers is often sought by highlighting the importance of cooperation in performing tasks, providing the opportunity to learn from shared experience, and delegating to followers the authority they need for effective performance.[321] Followers with a transformational leader have been shown to be more self-confident and more likely to take critical and independent approaches toward their work than followers whose leader is not a transformational one.[322] This is mostly done by transformational leaders by serving as role models. By showing high expectations and confidence in the capabilities of followers, followers also develop commitment to long-term goals, missions, and vision. Followers shift their focus from short-term to long-term.[323] A study by Geyer and Steyrer (1998) showed a stronger positive relationship between transformational leadership and long-term performance as compared to short-term performance.[324] A major goal of transformational leaders is also the development of the self-management and self-development skills of their followers by allowing them to make and implement action without direct supervision, or intervention.[325]

Chapter Conclusion

It is clear from the literature that the best style of R&D team leadership is a transformational style. It does however not mean that it is the best style of leadership in every situation. In some cultures a transformational style can have a reinforcing effect on norms of consensus, which could lead to less creative ideas because team members are then unwilling to challenge the status quo, leading to possible innovations to not be shared with the team. While most team members will be intrinsically motivated and will be inherently creative, a leader should still make sure that team members are encouraged to be creative and are constantly motivated. It is also very important for a leader to make sure that an innovative climate exists, so that team members feel safe and will therefore not be afraid to express their own opinions, further lowering the norms for maintaining consensus.

[317] Jung, Chow, and Wu, 2003, pp. 538
[318] Shamir, House, and Arthur, 1993, pp. 584
[319] Jung, Chow, and Wu, 2003, pp. 528
[320] House, Spangler, and Woycke, 1991, pp. 391
[321] Bass, 1985; in Jung, Chow, and Wu, 2003, pp. 530
[322] Dvir et al., 2002, pp. 741
[323] Jung, Chow, and Wu, 2003, pp. 529
[324] Geyer and Steyrer, 1998, pp. 18
[325] Avolio and Gibson, 1988; in Conger and Kanungo, 1988; In Jung, Chow, and Wu, 2003, pp. 530

Change

If the culture of an organization and a team resembles that of a Japanese context, with a collectivistic culture and high power distance, then the first thing a leader should do is make clear that maintaining consensus is not important, and should be discouraged. Only then will followers be willing to come with new, creative, and innovative ideas. A transformational leadership style can still be viable, but care must be given that followers will feel free, and even encouraged, to voice their opinions, even when it goes against the group as a whole. A leader should also make sure that an innovative climate exists. If this is not the case, he or she should create one, even if it only applies to the team and not the organization as a whole.

Influence

A leader should try and influence his or her followers into developing their skills and creativity by intellectually stimulating them. A leader will have no real ways to influence the motivation or creativity of his or her followers, except by encouraging them. If a leader finds that for example the norms for maintaining consensus remain, despite his or her best efforts, then a leader could speak to higher management in order to lower this norm.

Adapt

If a leader finds himself in a culture wherein consensus is appreciated, and is not able to change it, he or she should adapt to a different style of leadership. Ishikawa (2012a) proposes gatekeeping leadership as an alternative in such a situation.[326] A gatekeeper is more focused on communication, both internally and externally. While a gatekeeper does not have to be the same person as the team leader, but it is better for team performance. Kim, Min, and Cha (1999) found that the role of a gatekeeper was one of the most important roles for a leader, in a Korean R&D setting.[327] This suggests that a gatekeeping leadership style can be very effective in collectivistic cultures.[328] Gatekeeping leadership will be explained in greater detail in another chapter, and for now it can be seen as a role in which a leader focuses on the information flow to and from the team, making sure that information that is detrimental to team performance is filtered out, while information that will increase team performance, is added to, the information flow of a team.

This chapter has shown why team-based work is important and in which ways a leader can have an effect on the performance of a team, so that it will perform better. A team is the responsibility of the leader and there should be no problems with authority or differing goals. The next chapter however will look into the environment, culture, and organizational support. These are, contrary to teams, external factors that can have a significant impact on team performance, and therefore are harder to control, while still being essential to team performance.

To answer the question that was asked in the beginning of this chapter, a leader should first make sure that diversity is appreciated, and consensus has no real value. This includes ideas, viewpoints, knowledge and much more. When team members realize this, they will not be afraid to voice their own opinions, which will lead to more creativity. A leader should also make sure that an innovative climate exists in which creativity is encouraged and team members feel safe in expressing opinions that are contrary to the consensus. All the while a leader should also take care to make sure that

[326] Ishikawa, 2012a, pp. 250-251
[327] Kim, Min, and Cha, 1999, pp. 160
[328] Ishikawa, 2012a, pp. 247

team members keep learning and improving their skills, so that their own creativity increases, which will increase team creativity, and innovativeness.

National culture seems to play an important role in the effectiveness of TFL, but there are conflicting results on that subject. Gumusluoglu and Ilsev (2009) found a positive relationship between TFL and creative behavior, possibly because of the high rank of the Turkish people on power-distance.[329] Ishikawa (2012a) however found that TFL had an adverse effect on team performance through the reinforcement of norms for maintaining consensus, and a direct negative influence on R&D team performance, in a Japanese setting.[330] It is therefore important for a leader to see in what kind of culture he has to operate in. Besides culture, a leader should also take notice of the environment he or she works in. A very important part of the work of a leader is communicating with the environment in order to procure the necessary information and resources. This communication with the environment is also very important in garnering support. The next chapter will therefore look into these subjects in order to see how a leader should interact to increase team performance.

[329] Hofstede, 1980; in Gumusluoglu and Ilsev, 2009, pp. 470; Gumusluoglu and Ilsev, 2009, pp. 470
[330] Ishikawa, 2012a, pp. 253-254

6. The Environment, Culture, Organizational Support

This chapter will look into the externalities that a research and development team has to interact with, both with the outside as well as in the organization itself. A team has to interact with its environment in order to do its job. The environment also pressures organizations to constantly innovate their products and services,[331] or risk falling behind. A leader has to concern him- or herself with non-technical factors also, such as (higher) management, organization, and culture, in order to ensure project success.[332] In fact, people issues seem to be absolutely critical for project success.[333]

The focus in this chapter will therefore be the aspects in the environment that a leader has to pay attention to. It tries to answer how a leader should interact with the environment, and also examines the role of culture and the importance of organizational support for team performance.

This chapter will attempt to look into how these interactions with the environment should take place and who should do the interacting, as a leader can delegate communication with the outside to a team member. It will first start with the environment itself, both the external environment as well as the internal environment. This paragraph will look into how a leader should interact with the environment and how he or she should react to changes in it. After that, the importance of culture will be examined. Culture plays an important role in any organization, as it has an influence on all aspects of organizational work. The paragraph will look into culture in layers, starting with the top layer, global culture, then go to national culture, and finally settle on organizational culture. In the next paragraph, the subject of organizational support will be discussed. Support from higher management is essential for team performance and it is therefore very important for a team leader to gather the support and resources necessary for the team to perform as good as possible. Finally this chapter will conclude with recommendations for a leader in how to adapt, influence, and change in order to maximize his or her team's and own performance.

The Environment

A team leader has the task of internally leading his or her team and its members, and making sure that they all perform as well as possible. In addition to these internal roles, a leader can also be effective in external roles such as boundary spanning or entrepreneuring/championing.[334] Inside the organization there are the other divisions such as marketing, manufacturing, and operations, and also higher management. All of these external constituencies are needed in order to achieve successful innovations.[335] Outside of the organization, a leader has to deal with customers, suppliers, government agencies, etc. in order to make sure that he does all that he can to ensure success.[336] In order to reach these constituencies, a leader should exert upward and outward influences across these boundaries in order to make sure that his team can perform as well as possible.[337] Exerting upward influence at higher levels of the organization seems to play a part in increasing the success of

[331] Andriopoulos and Lowe, 2000, pp. 734; Perry-Smith, 2006, pp. 85; Puranam, Singh, and Zollo, 2006, pp. 263; Tierney, Farmer, and Graen, 1999, pp. 591
[332] Sauer, 1993; in Yang et al., 2010, pp. 208
[333] Lewis, 1993; in Yang et al., 2010, pp. 208
[334] Howell and Higgins, 1990, pp. 318
[335] Elkins and Keller, 2003, pp. 595
[336] Elkins and Keller, 2003, pp. 595
[337] Howell and Higgins, 1990, pp. 260; Shim and Lee, 2001, pp. 410

a project.[338] Project leaders who exert effective upward influence tend to be more achievement and self-monitoring oriented.[339]

Research and development teams are dependent on the environment for resources, information, and support.[340] Research has shown for example that leaders can contribute to project performance by keeping team members updated with the area of science or technology that they are specialized in,[341] showing that contact with the environment is essential for team performance. Organizational characteristics, or the internal environment, have been shown to have a large effect on the creativity of followers.[342]

Boundary spanning includes both the politically orientated communication that increases the resources available to the R&D team, as well as networking information, which increases the amount and variety of the available information.[343] Keller (2001) found that external communication was a significant predictor of managers' ratings of technical quality, budget, and schedule performance, and concluded that teams and their individual members have to engage in a range of boundary spanning activities in order to succeed.[344] Boundary spanning is very important in order to gain wide organizational support and lessen the chance of cancellation.[345] In fact, team performance seems to be related to the fit between the level of boundary-spanning activity and the dependence of the project on outside resources.[346] Not only must leaders promote innovative activity in the organization itself, they also have to ensure the market success of these innovations.[347]

However, boundary spanning seems to be most effective when performed by the project leader, and not the team.[348] In fact, project success depends heavily on the capacity of a leader to utilize informal networks in order to acquire resources that are often hidden by organizational bureaucracies.[349] A project leader should be good at managing relationships across organizational functions and boundaries in order to break through organizational inertia and bureaucracy.[350]

The opposite also holds true, with leaders who are newcomers being particularly vulnerable to bureaucratic decisions since they lack political savvy and credibility, and network connections. That is, unless they have a mentor to show them the way. New leaders with mentors seem to be better able to overcome organizational barriers, because mentors can help leaders by providing role models and insight into the acquiring of hidden resources.[351] In fact, discovering how to manage and influence social relationships both inside and outside the organization seems to be one of the most important things a (new) leader has to learn.[352] Leaders who boundary span do not only influence the

[338] Waldman and Atwater, 1994, pp. 242
[339] Shim and Lee, 2001, pp. 408
[340] Ancona and Caldwell, 1992, pp. 636
[341] Allen et al., 1988, pp. 307
[342] Scott and Bruce, 1994, pp. 600; Amabile et al., 1996, pp. 1178
[343] Brown and Eisenhardt, 1995, pp. 358
[344] Keller, 2001, pp. 552
[345] Markham, Green, and Basu, 1991, pp. 234
[346] Ancona and Caldwell, 1988; in Elkins and Keller, 2003, pp. 595
[347] Gumusluoglu and Ilsev, 2009, pp. 470
[348] Hirst and Mann, 2004, pp. 147
[349] Dougherty and Hardy, 1996, pp. 1146
[350] Green, 2005; in Yang et al., 2010, pp. 208
[351] Dougherty and Hardy, 1996, pp. 1147
[352] Hirst et al., 2004, pp. 323

performance of their projects, but also that of their own career. Research has shown that boundary-spanning project leaders not only enhanced the success of their projects, but that they were promoted to higher management positions at a much higher rate than leaders who did not boundary span.[353] In fact, promotion to a more senior level can require extended socialization, and the development of new skills and networks, such as influencing skills in order to gain resources for the team from the higher-ups.[354]

This suggests an acquisition of a set of new skills to understand the environment, to build networks to use this information, and to apply this knowledge. Therefore a leader should have a sophisticated understanding of the organization, or the political side of the organization, and how these skills should be utilized in order to influence and gain resources.[355]

The environment can also be used as a motivational tool. Uncertainty in the environment can be emphasized in order to motivate team members and to promote change. Jung, Wu, and Chow (2008) have found a positive moderating effect for environmental uncertainty and competition, and motivation.[356] In fact, some leaders often emphasize crisis in order to bring about change, since team members who perceive a high level of uncertainty and competition in the environment, tend to be more receptive of change.[357] An uncertain and competitive environment can also bring about vulnerability in the legitimacy of a leader, especially when he or she is of similar age and there is a low power distance. Such an environment is characterized by individual rather than team-based reward systems, as well as a fragile market position for the organization as a whole. These factors can foster intra-team comparisons and competition, making it easier to challenge the legitimacy of a leader.[358]

Quite the opposite can also hold true, when a leader executes the task of boundary spanning and in that regard acts as a mediator between the team and the environment, acting as a buffer against performance inhibiting levels of stress caused by environmental uncertainty and pressures.[359]

Even if there is no uncertainty in the environment, and nothing can be gained from it, there are still aspects of it that are of consequence for the team and its leader. For example, if a country has low birth rates and an aging workforce, then a leader should be concerned with intergenerational knowledge transfer, and the effects of age diversity.[360]

Pressures from the environment can come from both the top and the bottom. Top-down pressures can be the result of a more competitive and global environment which forces organizations to find better ways to compete.[361] These pressures will force organizations into reducing costs and improving efficiency. This leads to an increase in the need for more flexibility in the workforce, a

[353] Katz and Tushman, 1981, pp. 27
[354] Hirst et al., 2004, pp. 323
[355] Hirst et al., 2004, pp. 323
[356] Jung, Wu, and Chow, 2008, pp. 591
[357] Jung, Wu, and Chow, 2008, pp. 591
[358] Kearney, 2008, pp. 805
[359] Bass and Riggio, 2006; in Kearney and Gebert, 2009, pp. 80
[360] Kearney and Gebert, 2009, pp. 80
[361] Ford, Heaton, and Brown, 2001, pp. 39

reduced organizational response time, and full utilization of organizational knowledge,[362] forcing a team leader to adapt in order to meet these needs.

While bottom-down pressures can come from environmental changes that reflect on individual team members. Examples are that employees want more from work than only a paycheck, they also want to make a meaningful impact.[363] This is increasingly achieved through team-based knowledge work,[364] in some ways forcing a leader to change work conditions to better accommodate these preferences.

Culture

While culture can rightly been seen as part of the environment, it can also be seen as the thing that actually shapes it. As with the environment, culture can be seen on multiple levels. There are the global culture, the regional culture, the national culture, and the organizational culture. Because the global culture can be seen as similar for roughly the whole world, it will not be discussed in depth as it is the same for all organizations, and there are therefore no real differences that can influence team performance. The national culture is a very important part because it can influence all the underlying parts, while being almost wholly uninfluenced by them. The differences between for example Eastern and Western cultures already show that differences between them make different types of leadership viable. However, even among these regional cultures there are differences, such as the level of power distance between for example Turkey and Japan. These differences do not only influence the form of leadership that will be effective, but the entire way of doing business, and life in general. For example, the Chinese tend to see avoidance of conflict as functional and appropriate, as it values harmony, while for example Americans see it as evasive and counterproductive, as it implies cowardice.[365]

Global culture

While global culture is the same for all countries, and there are therefore no real differences, changes in global culture affect almost all organizations. With the shift toward knowledge-based work, changes in global culture has changed the way employees view organizations and their work, forcing leaders to adapt to these changes in order to remain competitive and increase team performance. In the knowledge economy, where the environment is rapidly changing and roles are less and less defined, organizations start to rely on its employees to fill in the gaps that occur between the behaviors that are expected of them from the organization, and the ones that are needed of them by the environment in order to stay competitive.[366]

The lessening of job security, and the fact that no position is seen as secure and promotion is not guaranteed, makes organization-specific skills seen as less important for an employee.[367] This can make it harder for a leader to convince a follower to learn organization-specific skills. It is even harder in cultures where such skills and knowledge is emphasized, such as in Japan.[368]

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[362] Pearce, 2004, pp. 47
[363] Pfeffer and Vega, 1999, pp. 43
[364] Mohrman, Choen, and Mohrman, 1995; in Pearce, 2004, pp. 47
[365] Fahr, Zhong, and Organ, 2004, pp. 248
[366] Dekas et al., 2013, pp. 220
[367] Bensan and Debroux, 2003, pp. 69-70
[368] Ishikawa, 2012b, pp. 270

Another change that influences global culture is that of the traditional workday, or more precisely, the changes that occurred to it. In contrast to the traditional workday, employees no longer punch in, do work that is assigned to them, of perform predictable tasks. With the coming of knowledge based work, employees are no longer hired to simply accept the tasks that they are given.[369] In fact, some aspects of work that were seen as good for performance, are now seen as detrimental.[370] Idle talk is one such aspect. Where in the past it was seen as an employee wasting his time, now it is seen as an employee exchanging ideas with colleague's, which may lead to a creative solution.

In fact, knowledge workers think spontaneously, solve challenges and problems as they emerge, and engage actively in crafting their jobs to align with their own preferences for working, and into what they think is best to do their job effectively.[371]

National culture

Culture can condition the belief of employees on what behaviors can contribute to organizational effectiveness. It also shapes the criteria for organizational effectiveness. If national culture expects organizations to support government promoted social causes, then the organizational culture will too. If employees are expected to participate in social welfare activities, then doing so will help an organization fulfill its obligations, contributing to organizational effectiveness.[372]

The national culture influences that of the organization. The organizational culture is usually a reflection of the national culture, or a mix of the national culture of the parent organization's national culture and that of the subsidiary. Organizational culture can however be influenced and changed by a leader and senior management, whereas national culture cannot.

The national culture of a country can have far-reaching consequences. For example, Ishikawa (2012b) states that in a Japanese, collectivistic, culture, the norm for maintaining consensus can be very high, with employees contributing to, and being influenced by, it.[373] This is also a consequence of the efforts of low-status members trying to win the favor of high-status members by endorsing the opinions and accepting the influence of high-status members.[374] A norm of consensus is however not conducive for innovative ideas and behaviors in teams,[375] being detrimental to the performance of a research and development team, because a norm of consensus makes it harder to voice differing opinions.[376] In fact, under such a norm employees are less likely to take leadership when there is a need and making decisions based on their judgment will be difficult as the judgments of superiors will weigh more heavily.[377] It is possible that transformational leadership can lead to such norms, or at least reinforce them. Idealized influence can have such an effect because it promotes the follower's identification with their leader.[378]

[369] Dekas et al., 2013, pp. 222
[370] Dekas et al., 231-232
[371] Wrzesniewski and Dutton, 2001, pp. 185
[372] Fahr, Zhong, and Organ, 2004, pp. 250
[373] Ishikawa, 2012b, pp. 267
[374] Schaubroeck, Lam, and Cha, 2007, pp. 1022
[375] Amabile, 1996; in Ishikawa, 2012b, pp. 267
[376] Postmes, Spears, and Cihangir, 2001, pp. 927
[377] Ishikawa, 2012b, pp. 270
[378] Ishikawa, 2012b, pp. 270

This can also happen by way of a form of leader adoration, which is more prevalent in Eastern cultures, where power-distance is high. Personal identification, a dimension of charismatic leadership, can influence the desire of followers to please and imitate leaders.[379] Because of this, followers tend to not criticize their leaders, nor allow others to do so. This can lead to followers not giving good suggestions because they are in awe of their leaders, and being accepted leads to inhibiting criticism.[380]

A high power distance culture, such as for example Taiwan,[381] can have followers showing a preference for having top managers take more control of work processes and lead by example.[382] Followers in a high power distance culture feel uncomfortable when leaders delegate, and therefore have a preference for paternalistic leaders, with considerable dependence on their superiors.[383]

Because of this, followers in a high power distance culture may feel confused when they are left alone to figure out how to accomplish their tasks. Empowering these followers may lead to negative consequences if they are not accompanied by guidance and some measure of structure. [384] This makes it very important for leaders to find a balance between empowering followers while at the same time providing guidance, by for example defining goals and an agenda.[385] This can even lead to a negative link between empowerment and organizational innovation.[386]

Organizational culture

Organizational climate and culture can be seen as a collective social construction, over which leaders have substantial control and influence.[387] While national culture still influences organizational culture, leaders still have substantial power to change organizational culture, as long as there are not too many discrepancies between organizational and national culture.

Leaders can play an important role in establishing an innovative organizational culture by facilitating and encouraging creativity. The role of creativity and innovation in determining organizational performance is well known.[388]

As leaders have direct control over both the incentives and the rewards associated with outcomes, they can directly encourage or discourage followers to change aspects of their jobs. They should however take care not to interfere too much so that followers still retain the freedom necessary to do their jobs effectively.[389] After all, if followers are discouraged from identifying new and better work processes, it will be detrimental to team, and organizational, performance.[390] Team autonomy

[379] Conger, 1989; in Ishikawa, 2012b, pp. 270
[380] Yukl, 2002; in Ishikawa, 2012b, pp. 270
[381] Hofstede, 1997; in Jung, Chow, and Wu, 2003, pp. 539
[382] Chow, Shields, and Wu, 1999, pp. 455
[383] Jung, Wu, and Chow, 2008, pp. 591
[384] Jung, Chow, and Wu, 2003, pp. 539
[385] Jung, Chow, and Wu, 2003, pp. 539
[386] Jung, Chow, and Wu, 2003, pp. 539
[387] Mumford et al., 2002, pp. 732
[388] Jung, Chow, and Wu, 2003, pp. 531
[389] Wrzesniewski and Dutton, 2001, pp. 195
[390] Dekas et al., 2013, pp. 232

should be guaranteed, because as soon as team structure is compromised and autonomy is endangered, innovativeness will suffer.[391]

Organizational Support

While a research and development team can be the pinnacle of creativity and innovation and perform far above expectation, it cannot do this without organizational support. Support from higher management is needed, both politically and resource-wise. A positive relationship has been found between slack resources and innovation,[392] furthering the need for organizational support. Continuous innovation is the most critical product of a knowledge organization.[393] A leader should therefore be a champion for his project, take risks and be innovative, which will tend to be seen as more transformational.[394]

The style in which higher management leads has been identified as one of the most, if not the most, important factors that affect organizational innovation.[395] The dominant coalition in an organization, particularly top managers, are the most powerful actors in an organization, and organizational outcomes are viewed as reflections of their values and cognitive bases.[396] Although leaders can promote creative thoughts and encourage innovation by interactions with followers, higher management may influence innovation in different ways.[397] For example, top managers can reinforce the importance of organizational innovation by recognizing and rewarding creativity while making sure that mistakes are not punished, making sure that employees are more likely to pursue new ideas and innovations.[398] This makes it essential for a leader to ensure support from higher management.

Gathering support is however more difficult than it initially seems. For instance, Shim and Lee (2001) found that successful influence attempt, especially those in complex and vital decisions, were distinguished by vigorous efforts to exert influence, coupled with a moderate level of assertiveness. They further warn against ingratiation and exchange tactics as these can be seen as manipulative, unless they appear sincere.[399]

A leader should make sure that followers perceive a supportive climate, one in which creativity and innovation is encouraged.[400] This will lead to an organizational climate in which it serves as guidance toward more creative work processes.[401] Organizational innovation depends on whether the organization has a climate that supports innovation.[402] Researchers have suggested that top managers are the main architects of the climate of an organization because they communicate which

[391] Puranam, Singh, and Zollo, 2006, pp. 275
[392] Damanpour, 1991, pp. 569
[393] Nonaka, 1991, pp. 99
[394] Howell and Higgins, 1990, pp. 333; Howell and Higgins, 1991, pp. 250
[395] Jung, Chow, and Wu, 2003, pp. 525
[396] Hambrick and Mason, 1984, pp. 193
[397] Jung, Wu, and Chow, 2008, pp. 584
[398] Jung, Wu, and Chow, 2008, pp. 591
[399] Shim and Lee, 2001, pp. 408
[400] Amabile et al., 1996, pp. 1178; Amabile et al., 2004, pp. 30
[401] Scott and Bruce, 1996, pp. 600
[402] Mumford and Gustafsen, 1998, pp. 37

strategies to implement and how these goals are relevant to the personal values and desires of the employees.[403]

Leaders can increase the commitment and support by lobbying higher management into visibly supporting the project, and by linking the project with key business objectives.[404] This can also be achieved by identifying external threats, such as product releases by competitors, increasing the importance of the project to the organization.[405] It is also important that this support is formalized as evidence in order to legitimize the support.[406]

A climate of support and innovation further enhances the positive relationship between the intellectual stimulation that a leader can provide and team performance. If such a climate is absent however, then this relationship becomes insignificant.[407]

Chapter Conclusion

Transformational leadership seems to have a positive relationship with organizational innovation, empowerment, and support for innovation, suggesting that it can, both directly and indirectly, create an organizational culture where followers can freely discuss and try out new ideas and approaches.[408] Another form of indirect means is including or excluding people from strategic conversations, where some opinions will not be heard and others reinforced.[409] Transformational leaders perform better in environments that are described as innovative by followers.[410]

While most findings suggest the use of transformational leadership in dealing with external factors, there are some caveats to consider. The first of these is to understand that certain team contexts may be better for transformational leadership than others. This is important in looking at approaches to leadership in different settings.[411] The effect of TFL on teams also seems to depend on cultural context, where TFL may have a negative effect on team-level shared leadership in a collectivistic context.[412]

Transformational leadership seems to be better suited to a collectivistic culture than an individualistic one. The effects of TFL are stronger among collectivists than individualists,[413] and TFL is more likely to emerge in a collectivistic culture than a Western individualistic one.[414] Collectivistic teams also seem to have a stronger team potency and therefore higher performance when followers perceive the leader as transformational, suggesting that leaders may want to promote the development of collectivism at the team level,[415] even if the national culture is more individualistic. This somehow does not seem to hold for Japanese organizations however. In fact, Ishikawa (2012a)

[403] Jung, Wu, and Chow, 2008, pp. 591
[404] Mohrman et al., in Hirst and Mann, 2004, pp. 156
[405] Hirst and Mann, 2004, pp. 156
[406] Hirst and Mann, 2004, pp. 156
[407] Howell and Avolio, 1993, pp. 899
[408] Jung, Chow, and Wu, 2003, pp. 539-539
[409] Wrzesniewski and Dutton, 2001, pp. 195
[410] Howell and Avolio, 1998, pp. 900
[411] Schaubroeck, Lam, and Cha, 2007, pp. 1027
[412] Ishikawa, 2012b, pp. 269
[413] Jung and Yammarino, 2001, pp. 17
[414] Bass, 1995; in Gumusluoglu and Ilsev, 2009, pp. 463
[415] Schaubroeck, Lam, and Cha, 2007, pp. 1027

suggests that TFL has a negative effect not only on Japanese, but also on other collectivistic countries.[416]

Gatekeeping leadership seems to be a good alternative to TFL in such situations. A gatekeeping leader is a leader who acts as a buffer between the team and the environment, focusing on the communication aspects. Gatekeepers can best be seen as the communication hubs where team members can gather the necessary information in order to be able to do their jobs effectively. Ishikawa (2012a) further suggests gatekeeping leadership in collectivistic settings, finding that R&D team performance was negatively affected by TFL, even though TFL had a positive effect on consensus norms.[417] He also found that gatekeeping leadership improved communication among team members and thereby tempered the consensus norms, which in turn inhibits the occurrence of shared leadership.[418] When leaders openly encouraged the expression and exchange of ideas, even if they ran contrary to group norms, followers became more comfortable engaging in such acts, resulting in creative new ideas and therefore improved performance.[419] He therefore proposes that while TFL may be particularly effective in reinforcing the maintaining of consensus norms, gatekeeping leadership may help reduce it, in a Japanese culture.[420]

This may also however be a by-product of Japanese culture and have little generalizability to other collectivistic cultures. Japanese R&D employees are often recruited as raw college graduates and are expected to work at a single organization until retirement. Company-specific knowledge and skills are emphasized and in-house training is seen as important. This leads to intellectual inbreeding and innovativeness will be lessened.[421] This may also lead to consensus norms, and may in fact be a mediating variable affecting transformational leadership.

Another factor that influences the effects of transformational leadership is power distance. Schaubroeck, Lam, and Cha (2007) found that transformational leadership had a stronger impact on team potency in higher power distance teams.

Uncertainty is another factor that influences the success of transformational leadership. Waldman et al. (2001) found that charismatic CEO leaders had higher financial performance under conditions of uncertainty, but not under conditions of certainty.[422] This may also help explain why transformational leadership does not always improve performance.

Change

Even if a national culture is individualistic, it is advisable to change team culture to a more collectivistic type, in order to increase the benefits of transformational leadership. Care must be given that followers keep empowered, and make sure that they retain autonomy of how they perform their tasks.[423] This should not be that hard to do, as TFL promotes team cohesiveness.[424] A

[416] Ishikawa, 2012a, pp. 254
[417] Ishikawa, 2012a, pp. 254
[418] Ishikawa, 2012b, pp. 270
[419] Ishikawa, 2012a, pp. 254
[420] Ishikawa, 2012b, pp. 267
[421] Ishikawa, 2012a, pp. 243
[422] Waldman et al., 2001, pp. 18
[423] Wrzesniewski and Dutton, 2001, pp. 197
[424] Jung and Sosik, 2001, pp. 327

leader should help followers with personal crises because it helps the organization meet follower needs and is therefore essential in building a cohesive workforce.[425]

In general, cohesiveness can positively impact team performance, as long as it is not too strong, in which case it will negatively affect team performance because of groupthink.[426] It is therefore advised that transformational leaders encourage conformity by building up cohesiveness and the norm for maintaining consensus,[427] while at the same time making sure that diverse views and opinions can be expressed without qualms.

Influence

While a leader should use his or her influence in gathering support and resources, the way this should be done is not always clear, and changes with each situation. Some influence styles are more suited for particular influence attempt at a particular time for a particular target person, but determining the appropriate influence style is no simple matter of "common sense".[428] It seems that above all else sincerity is most important, and a leader should therefore try and be as sincere as possible. Reminding higher-ups of competitive products and the fact that the current project is essential because of it, making sure that support is formalized and expressed, and gathering slack resources are other recommendations when it comes to influencing the environment.

Adapt

There are aspects that a leader will not be able to change or influence. National culture is one of these things, and a leader should adapt his or her leadership style to improve performance. But other factors, such as a one-job-until-retirement, also play a role. Gatekeeping leadership seems to be a leadership style that is well suited for Japanese organizations, and performance-based compensation systems have also been applied to limited hierarchies in research and development.[429] While a leader should adapt to these styles, it is still recommended to be as transformational as possible, as transformational leaders have higher effectiveness and more motivated and satisfied subordinates,[430] who also see their leader as more effective.[431]

This shows that while transformational leadership can have enormous benefits, it is not the answer to a question of a one-size-fits all theory of leadership.[432] Other forms of leadership should be used when the need arises, while making sure that the style of TFL is returned to as soon as it is beneficial.

The answer to the question that this chapter tries to answer is that a leader should be the one that communicates with the environment. This makes the leader an easy point to focus questions on for team members, and gives the leader more authority since he or she is the one with the necessary information and resources. In this regard, a leader can also act as a buffer to protect team members from outside pressures. For culture, a leader should take note of changes in global culture and act accordingly. This is not a high priority though, as changes in global culture tend to happen slowly. For national culture a leader should make sure that he or she understands the culture he or she operates

[425] Fahr, Zhong, and Organ, 2004, pp. 248
[426] Leana, 1985, pp. 15
[427] Ishikawa, 2012b, pp. 270
[428] Shim and Lee, 2001, pp. 410
[429] Benson and Debroux, 2003, pp. 67
[430] Judge and Bono, 2000, pp. 761
[431] Jung and Yammarino, 2001, pp. 17
[432] Ishikawa, 2012a, pp. 254

in, and adapts accordingly, since national culture cannot be changed by one person alone. For organizational culture however, a leader should be able to change it in such a way that values and norms that enhance team performance, are valued by the organization and its members. This will however be a slow process and a leader should be aware of this and adapt to the existing situation first, before attempting to change or influence the organizational culture. Finally, when it comes to organizational support, a leader must make sure that organizational support is not only obtained and retained, but also that this support is explicitly shown to the environment, both internal and external. This not only leads to an organizational climate that is supportive of innovations, but also directly influences team performance.

This chapter focused on the environment that a leader operates in, and described the potential pitfalls and opportunities that this environment offers. The next chapter will look into other external factors that play an important part of team performance, namely communication, knowledge sharing, and organizational learning. Whereas this chapter looked into how to interact with the environment, the next chapter will look into how a leader can improve communication, so that knowledge is acquired and shared, so that all members of an organization, and therefore the organization itself, learns. The capacity to learn is essential in the current global knowledge economy, and a leader should make sure that both he or she, his or her team, and organization has that capacity.

7. Communication, Knowledge Sharing, Organizational Learning

With the current economic trend of focusing on innovativeness and knowledge, it has become increasingly important for organizations to make sure that it has the knowledge it requires, the capacity to acquire more knowledge, i.e. learn, and to be able to effectively distribute it. In other words, an organization is dependent on knowledge, and should therefore make sure that it can learn by communicating this knowledge from one individual to the rest of the organization, so that said knowledge becomes part of the organization. Besides these points, Sauer (1993) suggested that non-technical factors such as management, organization, and culture were associated with project success.[433]

Communication is therefore very important when it comes to teams and their performance. It is also essential for learning as it facilitates knowledge sharing, an essential part of organizational learning. This chapter will therefore try to answer how a leader should deal with issues of communication, knowledge sharing, and organizational learning, in order to increase team performance.

This chapter will look into how an organization can improve itself, and its performance. The most important part of any group-based work, be it in teams or in organizations as a whole, is communication. Without good communication, good performance is impossible. Therefore this chapter will start with communication, and explain why and how it contributes to team performance, and how a leader can improve this. Then it will focus in on TFL and communication, since a large body of literature exists on this subject. Then it will look into another form of leadership and communication, namely that of gatekeeping leadership. Gatekeeping leadership is perfectly suited for good communication because a gatekeeping leader focuses on communication, and making sure that the information flows contribute to team performance, and filters out flows that are a hindrance. It is also very conducive for other forms of leadership to flourish. An example of this is shared or distributed leadership. In such an example, gatekeeping leadership can focus on the communicative aspects, and the other aspects of leadership can be divided among the team members. After the gatekeeping paragraph, this the chapter will move on to the subject of knowledge sharing and organizational learning. It will show how organizations are able to learn, and show that knowledge sharing is essential for this. There is always the danger of an employee leaving, and taking with him knowledge that only he or she possesses. It is therefore essential for organizations to make sure that knowledge is dispersed into the whole organization, making on the one hand sure that knowledge does not disappear, while on the other hand making sure that other employees learn. The next subject will be that of leadership and knowledge sharing. After showing the importance of knowledge sharing, this paragraph will look into the ways a leader can influence the sharing of knowledge, so that organizational learning can occur and improve, improving among others team performance, so that an organization can stay innovative and competitive. The conclusion will summarize these findings and show how a leader can change, influence, or adapt to, these factors.

[433] Sauer, 1993; in Yang et al., 2010, pp. 208

Communication

Communication is seen as a very important driver of innovation and project performance.[434] Communication can be divided into internal and external communication. Internal communication is useful for acquiring information on manufacturing processes or customer needs, whereas external communication promotes the acquisition of technological information.[435] Both have been shown by prior studies to predict R&D team performance.[436] Lewis, (1993) claimed that people issues were critical to project success.[437]

Open team communication forms the basis of effective teamwork, because it allows for the exchange of information, ideas, and different perspectives.[438] Especially when the tasks of a team require creativity, innovation and high-quality decision-making, this diversity of perspectives enhances team performance. Group solutions are better than solutions that are generated by the best individual in the team.[439] In fact, Taggar (2002) found that team creativity was not completely determined by individual creativity, but that group creativity was the product of individual creativity and a synergy that resulted from team interaction.[440] Individual creativity can be the essence of new and useful ideas, but the process that enhances that idea is that of team interaction and processes, which are the result of team communication.

Information is one of the most important resources for the achievement of team goals.[441] These goals should be communicated by the leader to the team. A leader should ask for goal achievement and the acquisition of information.[442]

In essence, communication can be seen as an effective mechanism to translate, share, and integrate new information into commercial product or processes.[443] Internal communication has also been shown to positively mediate the relationship between leadership and team performance.[444] Both team communication and team collaboration have been found to be positively related to project performance, showing that success can be achieved through both team communication as well as team collaboration.[445]

Both collaboration and communication form the building block of effective teamwork, since they provide the means for a team to exchange information, ideas, and different perspectives amongst

[434] Hirst and Mann, 2004, pp. 157
[435] Ishikawa, 2012b, pp. 269
[436] Ancona and Caldwell, 1992, pp. 656
[437] Lewis, 1993; in Yang et al., pp. 208
[438] Hoegl and Gemuenden, 2001, pp. 437
[439] Michaelsen, Watson, and Black, 1989, pp. 836
[440] Taggar, 2002, pp. 326
[441] Ishikawa, 2012a, pp. 246
[442] Ishikawa, 2012a, pp. 246
[443] Hirst and Mann, 2004, pp. 147
[444] Ishikawa, 2012a, pp. 252
[445] Yang et al., 2010, pp. 214

themselves.[446] Research has shown that team communication was the most consistent predictor of efficiency and effectiveness in a study of software development teams.[447]

For R&D teams to work together, effective, open, and timely communication is of the utmost importance. Where team members can acquire technological information through documents, they are also required to communicate with specialist outside of the organization.[448] Contact with professionals outside the organization may also facilitate innovative strategies.[449] Not only does contact with outside professionals increase innovativeness, but team-customer interaction has been shown to also increase innovativeness and creativity.[450] Communication also helps with the acquisition of resources and the understanding of complex information,[451] and will increase the likelihood of parties exchanging information, expressing their concerns, and openly discussing outcomes of alternatives.[452]

Communication also leads to participation. Research has shown that participative communication is the strongest predictor of innovation effectiveness and patents produced.[453] Participation leads to a more complete understanding of problems and possible pitfalls, to the cross fertilization of ideas, and in that sense leads to innovation.[454] Because of the diversity of the perspectives, uncertainty about one's own position occurs, which leads to creativity and the seeking of information in order to understand the differing perspectives, and because of this team members understand opposing ideas and information, and arte able to see the limitations in their own views, incorporate the perspectives of others into their own views, and produce higher quality decision.[455]

Communication is also needed in order reflect on past pitfalls and problems. Studies have shown that reflecting on potential causes can lead to higher innovativeness, and reflecting is best done in teams, since individuals tend to discount anomalous findings. Reflection also helps in reframing an individual's viewpoints and assumptions, leading to more diverse approaches.[456]

Communicating objectives clearly and giving high quality feedback have both been consistently identified as significant predictors of performance. [457] R&D teams therefore require frequent task communication in order to provide a comprehensive and complete understanding of their complex activities.[458] Task communication is likely to ensure orderliness and structure, and facilitates the efficient use of resources and enhances operational effectiveness. [459]

Whereas communication is important in every aspect of an organization, they are even more important in a research and development setting because of the focus on creative and abstract

[446] Hoegl and Gemuenden, 2001, pp. 437
[447] Hoegl and Gemuenden, 2001, pp. 437
[448] Ishikawa, 2012a, pp. 246
[449] Perry-Smith and Shalley, 2003, pp. 103
[450] Zirger and Maidique, 1990, pp. 880
[451] Bouty, 2000, pp. 50
[452] Hirst and Mann, 2004, pp. 156
[453] Kivimäki et al., 2000, pp. 38, 39
[454] Mumford and Gustafson, 1988, pp. 38
[455] Tjosvold, 1985, pp. 34
[456] Hirst and Mann, 2004, pp. 150
[457] Hirst and Mann, 2004, pp. 150
[458] Hirst and Mann, 2004, pp. 150
[459] Hirst and Mann, 2004, pp. 155

interchanges that occur in such environments.[460] Studies have found that variations in communication alter R&D team performance and knowledge creation significantly.[461]

This also holds true for non-technological information. R&D teams also require information on customer needs, manufacturing processes, and legislation. Therefore internal communication with the rest of the organization, is also useful.[462] The exchange, discussion, and integration of ideas, knowledge, and insight can have positive effects on team performance.[463]

A leader should first make sure that every team member participates in communication. A leader should therefore make sure that communication is not only easy, but that it is also safe. Communication safety has been shown to significantly increase project performance,[464] and is therefore a crucial part of success.

Transformational Leadership and Communication

Transformational leadership and communication should be related to each other. TFL clarifies the goals of followers,[465] while promoting goal commitment from them.[466] TFL has also been found to positively influence the relations between a leader and his followers.[467] A follower will try to attain the goals that a leader has set for him. Therefore, followers of a transformational leader should search for information that will be required to achieve their goals. It is therefore no surprising that Madzar (2001) found that TFL had a positive relationship with the information inquiry behavior of followers.[468]

A positive relationship between TFL and performance has been found by Nemanich and Keller (2007).[469] Transformational leadership also has a positive relationship with both team communication as well as team collaboration, which can be seen as mediators between transformational leadership and project performance.[470]

A transformational leader can both reinforce the norms for communication and the norm for maintaining consensus.[471] TFL helps ensure that diversity in a team does not lead to harmful effects, such as low collective team identification, which can impede the utilization of resources and perspectives.[472]

While norms for communication are a good way to increase team performance, a leader should however always make sure that the norm for maintaining consensus is not reinforced, especially not in a Japanese setting, where TFL strengthens this norm, making it harder for followers to express

[460] Ishikawa, 2012a, pp. 242
[461] Kivimaki and Lansisalmi, 2000, pp. 40; Hirst and Mann, 2004, pp. 156
[462] Ishikawa, 2012a, pp. 246
[463] Van Knippenberg, De Dreu, and Homan, pp. 1010
[464] Hirst and Mann, 2004, pp. 154
[465] Nemanich and Keller, 2007, pp. 50
[466] Piccolo and Colquitt, 2006, pp. 334
[467] Hui et al., 2005, pp. 429
[468] Madzar, 2001, pp. 230
[469] Nemanich and Keller, 2007, pp. 63
[470] Yang et al., 2010, pp. 207
[471] Ishikawa, 2012a, pp. 252
[472] Kearney and Gebert, 2009, pp. 86

their own opinions.[473] One possible way to do this is by changing the diversity of norms. Taggar and Ellis (2007) found that the expectations of a leader can have a significant impact on the creation of norms.[474] As these norms diversify, the norm for maintaining consensus decreases.

In short, higher levels of transformational leadership seem to be related to higher levels of project performance.[475] Therefore a transformational style of leadership can be used to increase and encourage communication in order to increase team performance.

Gatekeeping Leadership and Communication

While a transformational style of leadership can be a very good style for increasing communication, there are other forms that can be more effective. Gatekeeping leadership is a form of leadership in which the leader becomes a buffer between the team and the environment by filtering out information that is detrimental to team performance while making sure that beneficial information is readily available. In this sense, a leader becomes a form of buffer against performance reducing levels of stress, which can be caused by external pressures and uncertainty.[476] In this way a leader supports the team with the things that they have difficulties with. Zaccaro, Rittman, and Marks (2001) claim that the main task of a leader is fulfilling the functions that are not handled properly with regards to the needs of the team.[477] Green (2005) pointed out that a leader should be good at managing relationships across organizational functions and boundaries in order to break through organization inertia and bureaucracy.[478]

A gatekeeper actively performs both internal as well as external communication because they understand that communication is critical for the effectiveness of R&D team performance. Because of this, leader expectations can have a significant impact on the learning behaviors of followers through goal setting and feedback, which can provide learning opportunities.[479]

Several early studies have shown that gatekeepers can influence both the communication patterns and the richness of other team members, by for example encouraging the external communication of other team members.[480] Gatekeepers also facilitate the communication between team members and encourage them to actively exchange information and opinions.[481] Research has shown that gatekeepers influenced the style of communication of other team members in Japanese research and development settings.[482]

Because of this, team members who are being led by someone who uses a gatekeeping leadership style, communicate more positively with both internal and/or external individuals. Frequent communication increases the sharing of information, which leads to more knowledge, which leads to an increase in performance.[483] Gatekeeping leaders tend to encourage their followers into

[473] Ishikawa, 2012a, pp. 254
[474] Taggar and Ellis, 2007, pp. 115
[475] Yang et al., 2010, pp. 216
[476] Bass and RIggio, 2006; in Kearney and Gebert, 2008, pp. 80
[477] Zaccaro, Rittman, and Marks, 2001, pp. 451
[478] Green, 2005; in Yang et al., pp. 208
[479] Bezuijen et al., 2009, pp. 1260
[480] Tushman and Katz, pp. 1079
[481] Hirst et al., 2004, pp. 319
[482] Harada, 2003, pp. 1749
[483] Ishikawa, 2012a, pp. 248

communicating more frequently, to the point of disagreements, when it can increase team performance.[484]

Gatekeepers tend to bring more types of information to the team, which leads to the sharing of more diverse information in the team. This leads to more diverse opinions, values, and views. This lessens the norm for maintaining consensus, which is critical for successful R&D. Gatekeeping leaders understand this, and therefore try and promote diversity while reducing the norms for maintaining consensus.[485] Research has shown that gatekeeping leadership enhanced internal communication among team members while at the same time reducing a norm for group consensus, which could lead to limiting open discussions and disagreements, of which both are essential for successful research and development.[486] The performance of R&D teams with gatekeepers has been better than that of teams without a gatekeeper.[487]

While gatekeeping can be done by all members of a team, it is best left to the official leader. Tushman and Katz (1980) found that gatekeepers who were not leaders had a negative association between external communication and performance, where leader gatekeepers had a positive one.[488] These results suggest that gatekeeping has a positive influence on both the internal and external communication of team members.[489]

Knowledge Sharing and Organizational Learning

Research and development teams have a great need for knowledge and information. Not only R&D teams, but other departments and industries have become increasingly more dependent on knowledge, leading to more and more knowledge workers. The ability of an organization to facilitate the sharing and usage of knowledge has been increasingly seen as critical for organizational effectiveness.[490] Organizational innovation depends on the presence of capabilities by which firms can synthesize and acquire knowledge resources as well as generate new applications from said resources.[491]

A knowledge worker can be seen as an employee whose main capital or product is knowledge, or a worker who "thinks for a living."[492] Knowledge work is characterized by non-routine problem-solving, which requires convergent, divergent as well as creative thinking.[493] It can also be seen as anyone tasked with continual innovation and creativity.[494] A knowledge worker usually has more flexible job boundaries, is empowered, is expected to innovate and change his roles in order to accomplish tasks

[484] Hirst and Mann, 2004, pp. 156
[485] Ishikawa, 2012b, pp. 271
[486] Ishikawa, 2012a, pp. 252
[487] Tushman and Katz, 1980, pp. 1083
[488] Tushman and Katz, 1980, pp. 1080
[489] Ishikawa, 2012a, pp. 248
[490] Liu and DeFrank, 2013, pp. 1151
[491] Calantone, Cavusgil, and Zhao, 2002, pp. 522; Celuch, Kasouf, and Peruvemba, 2002, pp. 552
[492] Davenport, 2005; in Dekas et al., pp. 221
[493] Reinhardt et al., 2011, pp. 1
[494] Dekas et al., 2013, pp. 221

effectively, and works in a relatively flat organizational hierarchy.[495] The amount of knowledge workers is increasing.[496]

Knowledge work is different from traditional work. Discipline and self-control are inherent parts of the job rather than discretionary elements, and informal conversations are how work gets done, innovations are made, and information is shared. All key elements of doing knowledge work effectively.[497]

Contrary from traditional work in which the work done is relatively predictable, knowledge work is not. Where a manufacturing organization focuses on production efficiency, a knowledge organization focuses on maximizing innovation.[498]

Knowledge exchange among employees greatly increases organizational effectiveness.[499] In knowledge intensive industries, firm effectiveness is dependent on how well knowledge is shared between individuals, teams, units, and departments.[500] There is also the possibility of spillover. This can happen when creative followers have new ideas that are transferable to other employees in the organization, which can use these ideas for themselves, which can lead to an increase in innovativeness at the organizational level.[501] An individual's learning can positively predict group level processes and performance.[502]

Knowledge can be tacit or explicit,[503] can refer to object, states, or capabilities. It can also reside in both humans and documentation. Because of this diversity, different approaches and systems have to be employed in organizations to effectively use this knowledge.[504]

For any knowledge to become a part of an organization, it has to be shared so that each member of an organization has access to it. This is how any information becomes part of organizational knowledge, and can be seen as a form of organizational learning. Organizational learning can be seen as a collective capability based on both experiential and cognitive processes, which involve knowledge acquisition, sharing, and utilization.[505] Both internal and external learning have been shown to have a positive relationship with organizational performance.[506] This also holds for different levels of learning. Learning at all organizational levels has a positive relationship with business performance.[507]

Literature on organizational learned has found a positive link between organizational learning and firm innovation, both directly as well as indirectly.[508] Organizational learning is essential for

[495] Dekas et al., 2013, pp. 221-222
[496] Haag et al., 2006; in Dekas et al., 2013, pp. 2013; Davenport, 2005; in Dekas et al., 2013, pp. 222
[497] Burt, 2000, pp. 389
[498] Nonaka, 1991, pp. 96
[499] Carmeli, Atwater, and Levi, 2010, pp. 257
[500] Alavi and Leidner, 2001, pp. 112
[501] Shalley and Gibson, 2004, pp. 43
[502] Hirst et al., 2004, pp. 321
[503] Nonaka, 1991, pp. 98
[504] Alavi and Leidner, 2001, pp. 131
[505] Zollo and Winter, 2002, pp. 339; Aragon-Córrea, Morales, and Cordón-Pozo, 2007, pp. 350
[506] Schroeder, Bates, and Junttila, 2002, pp. 114
[507] Bontis, Crossan, and Hulland, 2002, pp. 27
[508] Calantone, Cavusgil, and Zhao, 2002, pp. 516; Aragon-Córrea, Morales, and Cordón-Pozo, 2007, pp. 351

creativity, it inspires new knowledge and ideas,[509] and increases the ability to both understand and apply this knowledge.[510]

Learning ability, information-processing capabilities, and technology capabilities are interrelated, which indicates that improvements in technology are difficult to sustain without a learning orientation as well as the ability to manage information in an organization.[511] The speed with which an organization is able to learn has a strong relationship with international diversity and mode of market entry, especially in organizations that undertook formal knowledge integration,[512] which can lead to a higher performance.[513]

Team members that improve their own abilities and who acquire knowledge regarding their fields of expertise, are motivated to be more effective in their fields and contribute to the achievement of the team's goals. They also tend to mutually influence each other.[514]

Oborn (2013) distinguishes knowledge transfer into knowledge exploration and exploitation. Exploration underpins the knowledge generation process, or doing research, where exploitation underpins service improvement and implementation activities, or implementation.[515] Therefore there has to be a constant balance between creating and using knowledge.[516]

Knowledge sharing can be facilitated through various knowledge driven human resource practices.[517] Collins and Smith (2006) found that commitment-based human resource practices such as training programs, reward systems, and incentive policies, produce higher levels of knowledge exchange.[518] The presence of human resource practices has been shown to maintain higher levels of intention to share knowledge, even when self-interest was also high.[519]

Leadership and Knowledge Sharing

Traditional leadership is seen as highly individualistic and a-systematic, making organizational learning in teams difficult. Transformational leadership however is focused on the active promotion of employee participation in collective decisions and activities.[520] Transformational leaders are able to build teams and provide them with direction, energy, and the support they need for change processes and organizational learning.[521]

Transformational leadership can fuel organizational learning by promoting intellectual stimulation, inspirational motivation, and self-confidence among organization members.[522] A capability for transformational leadership has even been described as one of the most important means of

[509] Dishman and Pearson, 2003, pp. 620
[510] Aragon-Córrea, Morales, and Cordón-Pozo, 2007, pp. 351
[511] Zahay and Handfield, 2004, pp. 637
[512] Zahra, Ireland, and Hitt, 2000, pp. 944
[513] Aragon-Córrea, Morales, and Cordón-Pozo, 2007, pp.352
[514] Ishikawa, 2012b, pp. 271
[515] Oborn, 2013, pp. 3
[516] Oborn, 2013, pp. 3
[517] Bartol and Srivastava, 2002, pp. 73; Liu and DeFrank, 2013, pp. 1161
[518] Collins and Smith, 2006, pp. 554
[519] Liu and DeFrank, 2013, pp. 1160
[520] Bass, 1991, pp. 23
[521] Blackler and McDonald, 2000, pp. 849; McDonough, 2000, pp. 232
[522] Coad and Berry, pp. 166

developing learning organizations.[523] Research has shown that while TFL has a weaker influence on firm innovation than organizational learning has, it does have a significant influence on organizational learning itself, indirectly influencing organizational innovativeness.[524]

Organizational learning not only affects both performance and innovation directly, but it also influences performance through innovation.[525] Because of the immense importance of organizational learning, and therefore of knowledge sharing, a leader should do all that is possible to increase knowledge sharing, and therefore organizational learning.

First of all, a learning orientation exhibited by the leader encourage and facilitates the acquisition of new knowledge about tasks and situations.[526] A leader should also engage his or her followers motivationally in order to realize an inspiring vision, so that followers are encouraged to share their task-relevant information. Team members are likely to contribute this information because this collective vision will take precedence over their own individual goals, even if the sharing of this information can incite dissent of criticism.[527] This collective vision will also motivate and inspire followers, increasing collective enthusiasm, optimism, and efficacy.[528]

Leaders should also stimulate their followers intellectually to make use of diverse knowledge bases and perspectives.[529] Intellectual stimulation itself can promote effective performance, since the knowledge-worker context depends on significant, and voluntary, intellectual contributions of all followers.[530]

A leader should also make sure that self-interest does not get in the way of knowledge sharing. Research has shown that self-interest has a negative relationship with the intention to share knowledge.[531] When knowledge possession is part of an individual's professional profile, he will be reluctant to share that knowledge with others.[532] A follower might also fear loss of authority and can therefore be reluctant to share his knowledge.[533] Carlile (2002) found that individuals who have high investments in a specific area of expertise are reluctant to engage in knowledge sharing.[534]

Leadership can enhance, or detract the willingness to share knowledge.[535] To negate this, transformational leadership has been advised as TFL itself has been shown to have a positive relationship with the intention to share knowledge.[536] This is due to the fact that transformational leadership is beneficial to effective social interaction, and that a TFL climate might arouse the

[523] Snell, 2001, pp. 337
[524] Aragon-Córrea, Morales, and Cordón-Pozo, 2007, pp.356
[525] Aragon-Córrea, Morales, and Cordón-Pozo, 2007, pp.357
[526] Hirst et al., 2004, pp. 256
[527] Kearney and Gebert, 2009, pp. 80
[528] Shin and Zhou, 2007, pp. 1717
[529] Bass and Riggio, 2006; in Kearney and Gebert, pp. 80
[530] Pearce, 2004, pp. 53
[531] Liu and DeFrank, 2013, pp. 1158
[532] Coakes et al., 2008, pp. 12
[533] Carmeli, Atwater, and Levi, 2010, pp. 259
[534] Carlile, 2002, pp. 455
[535] Carmeli, Atwater, and Levi, 2010, pp. 257
[536] Liu and DeFrank, 2013, pp. 1158

affiliation motive among group members, which can ultimately increase the intention to share knowledge.[537]

Human resource practices such as team-based job design and knowledge-sharing incentives, as well as financial reward incentives, can reduce and therefore neutralize the role of self-interest, potentially negating the consequences of self-interest.[538]

Transformational leadership has been linked to a follower's motivation to perform beyond expectations and can have a positive influence on knowledge management in this regard.[539]

Chapter Conclusion

Transformational leadership seems a good fit for an effective style of leadership with regards to both communication and information sharing. A leader should make sure that organizational learning is a high-priority objective, even when no benefits seem apparent at short notice. Research has demonstrated that learning is a process whose benefits unfold over time.[540] In certain contexts however, a different style can be more effective, such as a gatekeeping style in a Japanese context. A leader should make sure to have good relationships with his followers, as this increases the willingness of followers to share knowledge with other team members. Especially in R&D settings, where followers are highly competent and independent,[541] such relationships are important. A leader should be encouraged to build his or her network by using for example in-house research forums and networking events, as these can increase the potential pool of knowledge sharing resources that a leader can have access to.[542]

Continuous innovation is possible by the ability of followers to put together disparate information and to create new connections and ideas. This form of complex and demanding work requires that followers are healthy and strong, both mentally and physically, in order to make these connections.[543] It is therefore not surprising that knowledge workers have a higher risk for burnout compared to other types of workers.[544] A leader should therefore make sure to watch for signs of stress and sickness, and take steps to avoid that this does not impair team performance.

Change

A leader should make sure that communication is made as easy as possible for team members, and that needed knowledge and information is easily obtainable. If this is not the case, he or she should make sure that such requests are fulfilled by him- or herself, in which he or she effectively fulfills a gatekeeping role. He or she should make sure that team members are not working in the organization for too long, as tenure in the organization has a negative correlation with employee knowledge sharing.[545] He or she further should encourage different perspectives and opinions, even when this can lead to task conflict.

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[537] Liu and DeFrank, 2013, pp. 1152
[538] Liu and DeFrank, 2013, pp. 1161
[539] Bryant, 2003, pp. 36
[540] Vandewalle et al, 1999, pp. 256
[541] Carmeli, Atwater, and Levi, 2010, pp. 270
[542] Hirst and Mann, 2003, pp.156
[543] Fritz, Lam, and Spreitzer, 2011, pp. 28
[544] Albertsen et al., 2010, pp. 82
[545] Carmeli, Atwater, and Levi, 2010, pp. 266

Influence

As this chapter has shown, human resource practices can play an important role when it comes to knowledge sharing. A leader should therefore use his or her influence in shaping these practices in such a way that knowledge sharing is encouraged and rewarded.

Adapt

If a transformational style is not effective, because of for instance national culture, then a leader should adapt to the style best suited for that culture. If communication is not easy and knowledge is hard to acquire, he should make sure that he or she expends the necessary effort in order to make sure that his team will have the necessary information to perform effectively.

This chapter showed the importance of good communication and how it is essential for organizations, and teams, to be able and willing, to share knowledge in order to increase organizational learning. Organizational learning is essential for an organization in order to stay innovative and competitive. Therefore these subjects should not be neglected when looking into team, and therefore indirectly organizational, performance.

In order to answer the question in the beginning of the chapter, a leader should facilitate communication at all times. Open team communication increases team performance, and communication with the outside makes acquiring knowledge and resources easier. For a communicative leadership style, a leader should look into adopting a gatekeeping leadership style, if a transformational style seems to be ineffective, as a gatekeeping leadership style is exceptionally effective when it comes to communication. A leader should also encourage knowledge sharing as much as possible, as this has many benefits, such as lowering norms of consensus, information diversity, redundancy in case someone leaves the organization, and more knowledge that is possessed by team members. A leader should also try to make sure that knowledge is made explicit as much as possible, and distributed, so that other organizational and team members can acquire this knowledge, and internalize it. This will all facilitate organizational learning.

The next chapter will look into leadership in general. Whereas till now the focus was on transformational leadership, it will explore other styles of leadership, and substitutes that can be as effective, or in some instances even more effective, than transformational leadership.

8. Styles of, and Substitutes for, Leadership

Where this thesis focuses mostly on transformational leadership, the preceding chapters have shown that although TFL is a good style of leadership in an R&D context, there are situations where other styles are better suited. This chapter will attempt to broadly look into other forms of leadership, and forms of substitute that can replace leadership.

The chapter will begin with a broad explanation of leadership, and make broad distinctions between different styles. It will become apparent that a leader should engage in different roles, depending on the task at hand, and that there is therefore no general, best style of leadership. The chapter will then look into leadership learning, and show what areas a leader should focus on in order to lead more effectively. It will then look into distinctive leadership styles while giving a brief description of the most commonly used ones. This will show that each style has distinctive advantages and disadvantages, showing again the importance of using multiple styles of leadership on a situational base. The chapter will then conclude with how and when a leader should change leadership styles, and which pitfalls and opportunities he or she should be aware of.

A leader has traditionally been seen as a person who has a formal leadership position and who, by the authority of the position itself, leads an organization towards goals that have been set.[546]

Leadership can be roughly divided into classical, vertical, or hierarchical leadership on one hand, and a more modern, horizontal style on the other. Where classical leadership focuses on authority and rewards, modern forms focus on motivation and empowerment.

This distinction can also be seen as different management mindsets, a strategic one and an operational one.[547] The first is when a leader focuses more on customer needs and organizational results, in effect focusing more on the long-term. The other is when the focus lies more on traditional aspects such as meeting deadlines and budget goals.

Yet another form of distinction between leadership styles is that of a centralized versus a decentralized style. Centralized leaders plan and direct cooperation in order to achieve a particular goal.[548] All power lies with the leader, and is therefore centralized. The other end of the spectrum is that of distributed leadership where there is no clear leader.

The style of leadership has traditionally been seen as one of the most important influences on firm innovation.[549] This is because leaders can directly introduce new ideas into an organization, set specific goals and also encourage initiatives for followers.[550] Leadership has been shown to have a strong, significant relationship with organizational learning, indirectly affecting innovation, which in its turn positively and significantly influences performance.[551]

Where traditional forms of leadership focuses on motivating and rewarding employees, it is insufficient where knowledge workers are involved. Research and development teams are made up of such workers, who are already intrinsically motivated and for whom financial rewards hold no

[546] Johannessen and Skålsvik, 2013, pp. 14
[547] Shenhar, 2004, pp. 570
[548] Schneider et al., 2012, pp. 1259
[549] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 350
[550] Harborne and Johne, 2003, pp. 126; McDonough, 2000, pp. 221
[551] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 350

great sway. This is not to say that these styles have become obsolete. Far from it, in some cases they remain essential in achieving better performance. Traditional leadership styles reinforce formal organizational structures, design communication channels, and control the flow of information,[552] all essential components of team performance.

One of the first conclusions that can be drawn when researching R&D leadership, is that an R&D project leader must engage in multiple roles, including external ones such as boundary spanning with outside actors such as manufacturing and operations, as well as outside of the organization, with for example customers.[553]

Although many teams operate in less hierarchical organizations, and are granted more autonomy and control, leadership is still important, since even self-managing teams are seldom offered full decision-making authority, and key decisions are still in the hands of the formal leaders.[554]

Leading professional employees might therefore require more than traditional leadership behaviors, especially in R&D settings where the focus lies more on quality rather than quantity.[555] Team leadership studies have shown the importance of role based leadership for R&D performance.[556] Organizations are therefore increasingly viewing leadership as a source of competitive advantage.[557]

The style that a leader uses is broadly based on his or her assumption about his or her role in an organization.[558] Even if most managers do not recognize themselves or their leadership styles as contributors to project success,[559] their influence does have a significant effect on project performance. Their own perceptions about their roles in their organizations strongly influence their capability to promote that style of leadership in the organization.[560]

A good leader needs both freedom and autonomy in order to successfully manage his or her projects. He or she requires the freedom to choose his team members, the autonomy to make decisions about technical problems, the authority to set goals, budgets, and schedules, and has to be able to determine, assign, and negotiate roles and responsibilities.[561] An organization must recognize that an authoritarian form of control of knowledge workers can work adversely by stifling the innovation and creativity that is expected of them.[562]

Leadership Learning

Organizations tend to invest considerable resources into the development of formal education and training programs,[563] showing the importance of good leadership. Strangely enough there has been relatively little research on leadership learning, especially since learning is a process which develops

[552] Schneider et al., 2012, pp. 1259
[553] Elkins and Keller, 2003, pp. 601
[554] Morgeson, 2005, pp. 505
[555] Keller, 1992, pp. 490
[556] Hirst and Mann, 2004, pp. 148
[557] Hirst et al., 2004, pp. 312
[558] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 357
[559] Turner and Muller, 2005, pp. 57
[560] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 357
[561] Barczak and Wilemon, 1992, pp. 66
[562] Pearce, 2004, pp. 55
[563] Hirst et al., 2004, pp.

over time.[564] Leadership learning is very important because it will increase a leader's understanding of the team and the organizational environment, and will help a leader in managing highly skilled professionals so that they cooperate and coordinate their work in order to increase project performance.[565] Leadership training should be given not only to the leaders alone, but also to team members.[566]

There are five learning areas that a leader should focus on. These are managing people, encouraging teamwork, understanding the organization, managing external relations, and learning technical knowledge.[567]

The age of a leader seems to have an effect on what a leader learns. Younger leaders learn new knowledge because they are constantly challenged and can use this knowledge and their experiences to develop their own leadership style. More experienced, and older, leaders are less likely to encounter new situations or knowledge, but can further refine and fine-tune their own styles thanks to their own experience.[568] It is also important for older leaders to mentor younger leaders, and to show them insight into how to acquire hidden resources.[569]

New leaders will be engaged in the generative learning of leadership schemas and will be using knowledge learned from work experiences to build their own leadership mental models, where more experienced leaders will accommodate new experiences and information into their own, already developed leadership schemas, allowing them to process and respond quickly to novel stimuli.[570] Older leaders will tend to refine their own leadership styles more than significantly alter it.[571]

Besides leadership styles, experienced leaders also learn more complex organizational and strategic knowledge, whereas new leaders learn the fundamentals of leadership and building their team leadership schemas.[572]

Even if leaders themselves report not being able to learn because of workplace pressures and lack of time, research has shown that leaders do indeed learn, even if it seems to the leaders themselves that they do not, because of experiential learning.[573]

Learning however takes time,[574] and therefore immediate results should not be expected. Hirst et al. (2004) found there was a lag between learning leadership skills and translating these skills into leadership behavior.[575]

The aim of leadership training should be long-term skill development. There should therefore be a focus on experiential learning in order to encourage sustained behavioral and practice changes. This

[564] Atwater et al., 1999, pp. 1559
[565] Hirst et al., 2004, pp. 313
[566] Ishikawa, 2012b, pp. 278
[567] Hirst et al., 2004, pp. 315
[568] Hirst et al., 2004, pp. 315
[569] Dougherty and Hardy, 1996, pp. 1147
[570] Senge, 1990; in Hirst et al., 2004, pp. 315
[571] Hirst et al., 2004, pp. 315
[572] Hirst et al., 2004, pp. 323
[573] Hirst et al., 2004, pp. 324
[574] Hirst et al., 2004, pp. 322
[575] Hirst et al., 2004, pp. 312

can be done by introducing formal mentoring programs and job rotation. These activities have been found to be powerful stimulants of experiential learning.[576]

Leadership Styles

There are many forms of leadership and some are more suited to some tasks than others. For innovation in an R&D context for example, a number of leadership roles are essential.[577] These include idea generating, entrepreneuring/championing, project leading, gatekeeping, and sponsoring/coaching.[578]

Idea generation entails developing and testing new ideas and problem solving. It focuses on the innovation aspects of R&D development.

The entrepreneuring/championing focuses on obtaining resources and garnering support from higher management. It can be seen as a leader whose project is how own company, and how he garners both resources and support in order to ensure the success of his project. Entrepreneurship orientation has empirically been proven to be a driver of innovation.[579]

Project leading is composed of motivating team members, organizing the project itself and coordinating team members. It focuses more on the organizational aspects of leading and is therefore and essential part of team performance.

Gatekeeping involves activities inside and outside of the team, and is mostly related to information gathering and making sure that this information is easily available, relevant, and up-to-date. It also focuses on making sure that team members are not distracted by externalities and can focus on their work.

Sponsoring/coaching is concerned with providing guidance and the development of team member abilities and skills. The development of followers is very important for leaders and development programs that focus on this aspect should be encouraged.[580] This role can best be associated with that of a transformational leader.

Directive leadership

Directive leaders drive structured and ordered performance of project work by communicating instructions, and setting priorities, deadlines, and standards.[581] They are in essence, the traditional leader with formal authority personified.

Transactional leadership

Transactional leadership is seen as a prerequisite for of transformational leadership.[582] It emphasizes the exchange relationship between a leader and his or her followers, making it in some ways seen as a precursor to TFL.[583] This is in part because scientific literature has focused mostly on the contingent

[576] Campion et al., 1994, pp. 1536; McCauley et al., 1994, pp. 556; Hirst et al., 2004, pp. 324
[577] Farris, 1988; in Elkins and Keller, 2003, pp. 593
[578] Fusfield, 1981; in Elkins and Keller, 2003, pp. 593
[579] Salavou and Lioukas, 2003, pp. 103
[580] Ishikawa, 2012b, pp. 278
[581] Hirst and Mann, 2004, pp. 149
[582] Eisenbeiß and Boerner, 2010, pp. 365
[583] Eisenbeiß and Boerner, 2010, pp. 365

reward part of this leadership style.[584] Even if contingent rewards can be nearly as effective, and in some cases even more effective, than other forms of leadership, such as TFL,[585] there are also other aspects of transactional leadership that can have a positive effect on team performance.

Transactional leaders motivate followers by using contingent rewards, corrective actions (passive management by exception), and rule enforcement (active management by exception).[586] While it can be seen as a traditional form of leadership and can therefore seem old-fashioned, it is nonetheless a necessary component of effective management,[587] and should not be dismissed. Active management by exception includes the corrective actions of a leader in case violations or mistakes are to be expected whereas passive management by expectation means interfering only when problems have arisen.[588]

Transformational leadership

Unsurprisingly, transformational leadership has been linked to innovation, and its importance for improving financial performance, firm innovation, and organizational learning.[589] TFL can be effective in all situations, and research has found that TFL to be effective in many different types of organizations.[590] There are however contextual variables that may increase the effectiveness of transformational behaviors,[591] and some studies have found that TFL can have adverse effects, such as encouraging a norm for maintaining consensus, which can be detrimental for project performance.[592] If such a norm is discouraged however, TFL can still be very effective, even in a non-Western setting.[593]

TFL is not only effective in many different types of organizations, but also seems to be effective across different levels of leadership.[594] TFL includes a strategic vision about the advantages of change and adaptation,[595] significant interest in a communicative culture,[596] and an acceptance of mistakes.[597] TFL also was found to suppress the impact of obstacles on team climate.[598]

Transformational leadership includes special attention to the development of followers in an organization. In this sense, human resources are the most important assets for these leaders.[599] A very important part of TFL is the need for transformational leaders to find and maintain a balance

[584] Wilderom and Hoogeboom, 2014, pp. 3
[585] Judge and Piccolo, 2004, pp. 765
[586] Bass, 1985; in Elkins and Keller, 2003, pp. 597
[587] Loew, Kroek, and Sivasubramaniam, 1996, pp. 411
[588] Eisenbeiß and Boerner, 2010, pp. 365
[589] Howell and Avolio 1993 pp. 891 Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 350, 356
[590] Bass, 1997; in Elkins and Keller, 2003, pp. 597
[591] Bass, 1985; in Elkins and Keller, 2003, pp. 597; Elkins and Keller, 2003, pp. 598
[592] Ishikawa, 2012b, pp. 279
[593] Ishikawa, 2012b, pp. 278
[594] Lowe, Kroek, and Sivasubramaniam, 1996, pp. 411
[595] Dess and Picken, 2000, pp. 19
[596] Hult et al., 2000, pp. 116
[597] Snell, 2001, pp. 331
[598] Pirola-Merlo et al., 2002, pp. 576
[599] Aragón-Correa, García-Morales, and Cordón-Pozo, 2007, pp. 357

between on the one hand letting followers feel empowered, and on the other hand providing structure and control by defining goals and agenda.[600]

Transformational leaders encourage their followers in viewing problems from new perspectives (intellectual stimulation), provide support and encouragement (individualized consideration), communicate a vision (inspirational motivation), and engender emotion and identification (charisma).[601] Research also suggests that increases in TFL may improve team communication and team collaboration.[602]

Shared leadership

Traditionally, the notion of leadership is that one person is in charge and the rest simply does as they are told. Distributed leadership however assumes that all members of a team have sufficient skills and capabilities to fulfill a leadership role and therefore empowers all members to collectively make decisions. Shared leadership occurs when all team members are fully engaged in the leadership of the team and are also not hesitant to influence and guide their fellow team members in order to maximize team performance.[603] Shared leadership has been shown to be nearly as effective as, and in some cases even more effective than transformational leadership.[604]

Trust and cooperation between team members is increased by the fact that each team member reciprocally performs leadership tasks. This increases autonomy and intrinsic motivation. It also enhances information sharing, thereby influencing team performance.[605]

According to Pearce (2004), shared leadership is particularly related to interdependence, creativity, and complexity.[606] Shared leadership however does not mean that there is no need for vertical leadership. The vertical leader still is responsible for the team's design, and it is a critical role if shared leadership is to be successful. The second one is that of the management of the team's boundaries.[607] Even for self-managing teams, such as one that employs shared leadership, a more centralized form of leadership is important for team effectiveness.[608]

Gatekeeping leadership

A good form of leadership for a team in which responsibilities are shared, is gatekeeping leadership.[609] Gatekeeping can be defined as an individual's ability to effectively engage in both internal and external communication frequently.[610] Gatekeeping leadership has been shown to positively influence R&D performance.[611]

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[600] Mumford et al., 2002, pp. 741
[601] Stoker et al., 2001, pp. 1147; Bass, 1985; in Elkins and Keller, 2003, pp. 597
[602] Yang et al., 2010, pp. 214
[603] Pearce, 2004, pp. 48
[604] Kearney, 2008, pp. 809
[605] Ishikawa, 2012b, pp. 271
[606] Pearce, 2004, pp. 48
[607] Pearce, 2004, pp. 50
[608] Stoker et al., 2001, pp. 1147
[609] Ishikawa, 2012b, pp. 278
[610] Ishikawa, 2012b, pp. 268
[611] Hirst and Mann, 2004, pp. 152

Gatekeeping leadership stimulates both the internal and external communication of team members, which encourages them to display leadership.[612] Gatekeepers can also conduct intra-team communication by acquiring technical, external information and transmitting to other team members. They can also promote cooperation within their departments through internal communication.[613] Shared leadership also tends to weaken the norm for maintaining consensus.[614]

A gatekeeper does not have to be the formal leader, but if he or she is, then performance will be better.[615]This is in line with boundary spanning, in which it is recommended that the formal leader conducts these tasks as it will be more effective for the team.

Whereas studies show that shared leadership is particularly effective in a collectivistic (Japanese and Korean),[616] the same research also suggests that shared leadership can be effective in ambiguous and complex activities, such as research and development, regardless of cultural context.[617]

Boundary spanning

Boundary spanning involves the management of external relationships including the coordination of tasks, the negotiation for resources and goals with stakeholders, and the scanning for information and ideas.[618]

Ancona and Caldwell (1992) conducted a longitudinal study and fond that boundary spanning, which involves political activities such as negotiating and lobbying for resources, was a significant predictor of performance ratings for leaders.[619] Leaders can have a powerful and pervasive effect on team norms, stimulating or stifling team communication.[620]

Dougherty and Hardy (1996) found that project success relies on a leader's capacity to use informal networks to acquire resources that are often hidden by organizational bureaucracies,[621] showing the importance of external communication.

Facilitative leadership

Facilitative leadership can be described as leaders who promote respects and positive relationships between team members, make sure constructive task conflict occurs, and make it possible for members to be able to openly express their ideas and opinions.[622] Facilitative leadership measures whether a leader encourages an atmosphere that is conducive for teamwork that ensures that team interactions are equitable and safe. He also encourages participation, the sharing of ideas, and makes open discussion of different perspectives possible.[623]

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[612] Ishikawa, 2012a, pp. 247; Ishikawa, 2012b, pp. 277
[613] Ishikawa, 2012b, pp. 268
[614] Postmes, Spears, and Cihangir, 2001, pp. 919, Ishikawa, 2012a, pp. 251
[615] Ishikawa, 2012a, pp. 247
[616] Kim, Min, and Cha, 1999, pp. 162; Ishikawa, 2012a, pp. 247
[617] Ishikawa, 2012b, pp. 278-279
[618] Hirst and Mann, 2004, pp. 149
[619] Ancona and Caldwell, 1992, pp. 661
[620] Edmondson, 1999, pp. 377
[621] Dougherty and Hardy, 1996, pp. 1147
[622] Hirst et al., 2004, pp. 312
[623] Hirst and Mann, 2004, pp. 149

Facilitative leadership behavior has been found to be a significant predictor of team climate, while suppressing the impact of obstacles on team climate.[624] Such leaders also tend to coach members and help them resolve problems, which reflects on the team as being reflective and open to new ideas.[625] It also enhances team communication, driving effective performance.[626]

New leaders learn more than more experienced leaders, and this learning is even stronger with facilitative leadership.[627] That new leaders learn more is because they have to focus on the basic leadership skills, whereas older, more experienced leaders spend more time fine-tuning their skills and navigating the political arena, since they already possess the basic leadership knowledge and skills.

Innovative leadership

Innovation leaders are the leaders in organizations who can ignite enthusiasm and generate creativity. They focus on creating new markets and future, without having to adapt to situations that are created by others.[628]

Innovation leaders focus on new products and services that are both unique and temporally outside the competitive zone, because they are difficult to imitate, making these products temporary competition-free zones.[629] Organizations need innovation leaders in order to be taken into areas where competitors do not drain its resources.[630]

A leader that acts as an innovator envisions new approaches and project opportunities by questioning assumptions and challenging the status quo.[631] An innovation leader can both adapt to changes in the outside world as well as create their own and their organization's future.[632] The innovation leader predicts the future by creating it.[633]

Distributed leadership

Distributed leadership is the opposite of centralized leadership. Distributive leadership describes a situation wherein leadership and authority is distributed among team members wherein the expert on a certain field also has the authority when it comes to aspects that are related to that field.[634] Authority is given to a member by virtue of their expertise, ideas, or interests, where individuals act as leaders in some situations and followers in others. [635] In this way, authority becomes a fluid, situational power which changes hands depending on the situation.

Chapter Conclusion

Only the large amount of leadership styles may suggest that there is no universally best style. Indeed, it seems that a leader should adapt his style of leadership to a wide variety of situations. Müller and

[624] Pirola-Merlo et al., 2002, pp. 576
[625] Edmondson, 1999, pp. 377
[626] Hirst and Mann, 2004, pp. 148
[627] Hirst et al., 2004, pp. 321
[628] Ackoff and Emery, 2007, Kim and Mauborgne, 2005; in Johannessen and Skålsvik, 2013, pp. 14
[629] Johannessen and Skålsvik, 2013, pp. 14
[630] Kim and Mauborgne, 2005; in Johannessen and Skålsvik, 2013, pp. 14
[631] Hirst and Mann, 2004, pp. 149
[632] Johannessen and Skålsvik, 2013, pp. 30
[633] Ackoff, 1981; Ackoff and Rovina, 2003; in Johannessen and Skålsvik, 2013, pp. 29
[634] Schneider et al., 2012, pp. 1259
[635] Schneider et al., 2012, pp. 1260, 1261

Turner (2007) concluded that different leadership styles were appropriate for different types of projects,[636] whereas other authors suggest that different leadership styles are appropriate at different phases of a project life cycle.[637] Keller (1992) found that for example, TFL, was positively related to project quality and budget/schedule performance.[638] This relationship was stronger for research project than for development projects. Moreover, transactional leadership was more important in development project than research projects,[639] suggesting that the best style of leadership changes based not only on the type of project, but may even change as the project progresses. Higgs and Dulewicz (2004) found similar results and found a preference for TFL on complex change projects and a preference for a transactional leadership style on simple projects.[640]

Change

A leader should try to change the situation in which he or she finds him- or herself to suit the role he or she is most comfortable with in order to perform as effectively as possible. If a leader is comfortable in any role he or she should try and adapt to a transformational style, while being wary of its pitfalls, such as a heightened norm for maintaining consensus.

Influence

If a certain style of leadership is expected, but a leader thinks it is not the ideal one, he or she can and should try to find support into changing the expected style of leadership to increase performance.

Adapt

Sometimes a leader is forced to change his style of leadership in order to increase team performance. A good example of this is his or her own age compared to that of the team average. If he or she is deemed young and inexperienced, it is usually better to use a more traditional style, such as for example transactional leadership.

If one style of leadership has to be chosen in order to maximize team performance, the transformational style would seem best in most cases. A leadership style however is not a static thing, and can, and should, change, according to circumstances. This chapter has shown that while some leadership styles are better suited overall for leading R&D teams than others, there are other styles that excel in certain areas. It is therefore advisable for a leader to change the way he or she leads according to circumstances and the actors he is interacting with.

The next chapter will be the concluding chapter and will summarize the main findings of this thesis. It will show what a leader should pay attention to, and how he or she should pay attention to it. It will also show how a combination of leadership styles increase the effectiveness of the leader, much in the same way diversity increases team performance. Then it will look into the limitations that are present in the thesis, as well as both theoretical as well as practical implications.

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[636] Müller and Turner, 2007, pp. 31
[637] Frame, 1987; in Yang et al., 2010, pp. 209; Turner, 1999; in Yang et al., 2010, pp. 209
[638] Keller, 1992, pp. 498
[639] Elkins and Keller, 2003, pp. 598
[640] Higgs and Dulewicz, 2004; in Yang et al., 2010, pp. 209

9. Conclusion, Limitations, Implications

This final chapter will briefly summarize the preceding chapters and answer the main research question. Then it will look into the limitations in this thesis, and will then go into both the theoretical and practical implications that can be drawn from the acquired results.

Conclusion

This thesis looked into how a leader can improve the performance of a unit comprised of knowledge workers. While the initial answer, namely being a transformational leader, was a satisfactory answer at first glance, further examination showed that there were multiple areas in which other styles of leadership could be more effective. A thorough literature search showed that these areas could be divided into a focus on the teams itself, the inner drive of the individual team members, interaction with the environment, and information sharing/learning. This leads to sub-questions that were explored in their own respective chapters. This chapter will first answer these sub-questions succinctly, after which it will go into more detail in answering the main research question, which is:

"How can a leader of a unit comprised of knowledge workers improve team performance?"

"In which ways can a leader affect his or her team so that team performance is improved?"
With regards to the teams, leading them to high performance seems to be based mostly on making sure that the team itself is diverse, that task conflicts are encouraged, team members increase their competences, and that norms of consensus are kept low.

"How can a leader increase the creativity, motivation and innovativeness of team members?"
In order for the teams to be innovative, and perform well, team members have to be creative, and motivated enough to be creative. Again, diversity should be appreciated, and consensus should not be. A leader should further make sure that an innovative climate exists and make sure that team members keep learning and improving their skills.

"How should a leader interact with the environment in order to increase team performance, and what part does culture play?"
When it comes to the environment, a leader should make sure that he or she is the one that interacts with it. There are many advantages to this, and it will improve team performance. Culture is something which is not easily changed on an organizational level, and the higher levels are almost impossible to change. Therefore a leader should adapt to the culture and see if small changes to the organizational culture are possible. On interaction with the environment, a leader should make sure that support from higher management is acquired, retained, and is explicitly shown.

"How should a leader deal with the issues of communication, knowledge sharing, and organizational learning, in order to increase team performance?"
A leader should understand that communication is crucial for organizational, and team performance. A leader should therefore facilitate good communication at all times. For communication purposes, a gatekeeping leadership style, in which a leader seems to be far more effective than a

transformational style, is preferred. When it comes to knowledge sharing, a leader should make sure that knowledge sharing is appreciated, and if needed, rewarded. Knowledge sharing also has many benefits which can lead to an increase in team performance.

Zaccaro, Rittman, and Marks (2001) argued that the main job of a team leader was fulfilling those functions that were not being adequately in regard to the respective needs of the team.[641] No matter what leadership style is exhibited, a leader's main task is making sure that problems do not arise, and that if they do, that they are handled in an adequate and timely fashion, so that team performance will not be negatively affected.

There are five learning areas that can be said to cover the basic building blocks of effective leadership.[642] These are managing people, encouraging teamwork, understanding the organization, managing external relations, and learning technical knowledge. These are areas that a leader should pay attention to, no matter what style of leadership he or she is employing.

Managing followers and making sure that they work together is very important for team performance. Team communication and collaboration has been found to be associated with a critical determinant of team performance,[643] and leadership style has a positive correlation with team interaction, which includes team collaboration and communication.[644] Team interaction may also act as a mediator between style of leadership and overall project performance.[645]

A leader has to understand the organization in order to make sure that he or she can get the necessary support and resources that the team needs in order to work effectively. This also means gatekeeping and boundary spanning in order to ensure project success.

The results of this review show that no one style of leadership is best. Leadership style can, and should, change depending on the needs of the team and the project. Even so, leadership styles can be combined to strengthen the overall positive impact of leadership, such as combining shared leadership and gatekeeping leadership. This would make the decision-making authority lie with the group as a whole, while the formal leader's main task would be the communication with the environment. A combination that might work exceptionally well is that of transactional (TAL) and transformational leadership (TFL). This is what is called the augmentation effect.[646] Here a TAL style can be used to handle the more traditional aspects, such as clarifying reward expectations and monitoring task execution of followers, while a TFL style can be used to motivate followers to work for a collective vision and to go beyond their self-interest.[647] In fact, these proposed combinations and substitutes show that there are many possibilities that can still be explored in order to find the best way to increase team performance.

In short however, there is no uniform best style of leadership when it comes to improving the performance of a unit that is comprised of knowledge workers. The best style of leadership is one where a leader will change his or her style according to the given circumstances and change

[641] Zaccaro, Rittman, and Marks, 2001, pp. 476
[642] Hirst and Mann, 2004, pp. 147-148
[643] Kotlarsky and Oshri, 2005, pp. 45; Yang et al., 2010, pp. 210
[644] Yang et al., 2010, pp. 210
[645] Yang et al., 2010, pp. 211
[646] Wilderom and Hoogeboom, 2014, pp. 31
[647] Wilderom and Hoogeboom, 2014, pp. 3

conditions to best suit his or her needs, influence his or her surroundings where he or she cannot change something by himself, and if all else fails, he or she should adapt to the situation, so that team performance does not suffer, but is improved instead. This thesis has shown what a leader can do in order to increase team performance. While this is by no means an exhaustive list, it does show that an effective leader cannot be easily defined, and that instead of looking at the style of leadership that is employed, it is better to look at the ways he or she handles different situations, and how these situations are resolved.

It is probably impossible to attribute a certain leadership style to a good leader, since a good leader is one that will change, influence, or adapt to the situation at hand in order to increase team performance. There are however aspects that a leader should pay attention to in order to increase team performance, which have been described in this thesis.

"How can a leader of a unit comprised of knowledge workers improve team performance?"
As for answering the main research question, a leader can improve team performance by making sure that his or her team has diverse team members, who are motivated and creative. A leader can increase both the motivation and creativity of team members, leading to higher innovativeness. A leader also has to adapt to the existing culture, and make sure that he or she is the focus point when it comes to interactions with the environment. Furthermore, a leader should make sure that higher management is explicitly supportive, and keeps being that way. Finally, a leader should make sure that knowledge sharing is encouraged and communication is facilitated, so that organizational learning occurs, further increasing innovativeness and thereby team performance.

Limitations

As with all research, this one has its limitations. The main limitation of this thesis is that a clear distinction was not used between research and development teams and teams comprised of knowledge workers. The reasoning behind this is that they are both paid to think, and are intrinsically motivated. While this is true, R&D specialists tend to be more educated and have more expert and specialist knowledge. While this has no major implications for this thesis, care must be given when trying to generalize to R&D teams, since part of this research is also on knowledge workers. Another caveat when using this paper is that some of the results are contradictory. Where Ishikawa (2012a, 2012b) claims that TFL does not work in a Japanese context because of its high collectivistic and high power-distance culture, Gumusluoglu and Ilsev (2009) claim the opposite, claiming that TFL works well in a Turkish context, because of its high collectivistic and high power-distance culture. This suggests that even in cultures that are similar, some discrepancies will change what is effective and what is not. Therefore this thesis should be seen more as a guideline, and not as a set of rules.

Theoretical implications

This paper has shown that while there already exists a large body of literature on leadership in general, and transformational leadership in particular, additional research is needed. Contradictory results and other styles of leadership that have emerged in the past years show that there are still improvements that can be made, and that economical, societal, and demographic changes, force leaders to change their styles of leadership in order to keep being effective leaders.

For future research, the work of Wilderom and Hoogeboom (2014) seems promising. Their video-based research has the possibility to open up a trove of data from which a lot can be learned. The downside of this form of research is of course the invasive feeling that a camera will bring with itself, although the authors surprisingly found this to have little effect on data collection. Perhaps this form of research will lead to insights that were not thought of before.

While the methodology that this thesis followed has the intention of leading up to a new theory, this thesis calls for not the creation of a new theory, but rather an examination of possible combinations of existing theories, which can lead to increases in team performances.

Practical implications

While this paper has tried to find the best way for a leader to increase team performance, it is clear that there is no uniform best style of leadership that can be adopted. A transformational style seems best suited, but it is even better if a leader can adapt to a different style where the need arises. A leader should therefore be aware of the circumstances that can have an impact on the effectiveness of his or her leadership, and adapt to those circumstances. It should also not be forgotten that some styles can complement and strengthen each other, giving leaders more reasons to use multiple leadership styles which are suited for the current circumstances.

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Appendix: Logbook

This appendix has been written as the thesis was written. In the later stages the author had abandoned the logbook and therefore those parts have been written afterwards. However, the most important parts, where the relevant search terms, used criteria, and used search engines are described, have been written as the searches were conducted. Therefore this logbook is not divided into exact dates, but is more focused on describing processes, and divides these processes in order to document progress.

The purpose of this logbook is to document the process of writing the thesis and to explain the reasoning behind choices made whilst writing the thesis.

First Meeting and the Initial Idea

This thesis will try to look into the need for leadership in teams of technically highly educated personnel. Examples of such teams are for instance Research and Development teams and other teams in the private sector with technically highly educated personnel.

Initial Methodology

This thesis will conduct a rigorous literature study on this subject. As a guideline it will use the work of Wolfswinkel et al. (2013), which advocate using a grounded theory approach and good documentation on each step as to show reasoning for the choices made.

The first task will be to define the subject of the paper itself. The first step for this will be to define the criteria for inclusion or exclusion on the subject. After that the fields of research that will be included will be identified. After that the appropriate sources will be determined and afterwards the specific search terms will be decided on. The entire process will be iterative and therefore revisions will be necessary.

The first step of defining will be the criteria for inclusion or exclusion in the paper. At the start of the entire paper there is no real idea of the true scope of the available literature on this subject. Therefore the initial inclusion factor will be broad. Of course all literature will have to be scientifically sound and therefore mostly based on scientific journals.

Furthermore the main focus will be that a paper has to be available online to aid in the ease of searching for the author. Exemptions may occur if said paper turns out to be an essential article on which a large part of the thesis is based on.

In order to keep the initial search results relatively new, publications of the previous millennium are excluded. The reasoning behind this is that technology changes fast and that older technological environments will be different than the current ones. If however it turns out that the body of literature found is too narrow, or too broad, then these factors will be adjusted and if the need arises, other factors will be included.

As for the fields of research, at first glance *Human Resource Management* seems a good start. *Innovation Management* seems another good field of study. Other fields of study include: *Engineering, "Business, Management and Accounting", Organizational Behavior,* and *Psychology, Social Sciences.*

Determining the appropriate sources will be relatively simple. This thesis will focus mostly on work that is published in scientific journals. Searching for these journals will be done through scholarly search engines.

As a start, the search terms will be: *Leadership, HRM, Human resource management, innovation, Research & Development, Research and Development, R&D*. Others will most definitely emerge.

Some search engines that will be used for the first search:

- Scopus www.scopus.com
- ACM Guide www.acm.org
- ACM Digital Library http://dl.acm.org
- IEEE Electronic Library http://ieeexplore.ieee.org
- Google Scholar http://scholar.google.com

The next step will be to search all identified sources with all identified search terms. These will be written down in a spreadsheet in order to make a more comprehensive file. The first search engine looks for a master journal list. Therefore it will not be used to search for articles. If more articles are needed after a first search, then perhaps that search engine will be added to the list of search engines.

Searching on the search engine Scopus with the term *Leadership* alone leads to 90.661 documents. This number is deemed too high to even contemplate to look into. Even when limiting search results into date of publication (2000 - now), and the subject areas: Social Sciences, Business, Management and Accounting, Engineering, Psychology and Multidisciplinary, and limiting the search to articles and reviews, the amount of articles is too high (29.408). Since this first search has far too many results, it seems necessary to add more search terms into the search in an attempt to lessen the number of results. This can perhaps also be accomplished by lessening the years of publication or the subject areas. That course however seems unwise.

Searching within the results with the word *HRM* further limits the documents results to 482. This again seems to be very high and therefore the next search term, *Human Resource Management* is used. This one, as predicted lessens the available literature to 427, still a very high number. The search term *innovation* lessens the amount to 193 results. *Research & Development* limits it further to 176, *Research and Development* changes nothing and the term *R&D* lessens the amount of results to 81. This amount seems to be a reasonable amount to go through. However, when one remembers that there are more search engines to go through, it seems prudent to limit searches in some other way. Limiting the search results to 2005 and newer seems a good (arbitrary) choice to further limit the search results. This however does not change much, with the results still showing 73 articles.

Assuming that other search engines will generate a similar amount of results, it is decided that new search terms will be found, lest the number of articles after the search is too high. The main focus on choosing these new search terms will be making sure that they are used to further define "teams of

technically highly educated personnel." Their needs, and more specifically, their need for leadership will be addressed later.

A first search in Scopus has 0 results for this search term. Therefore it is decided that shorter terms will be used. The term "Highly educated personnel" gives exactly 200 results. Searching for the term "Team" lowers it to 18 results. Excluding conference papers (by including reviews and articles in the filter) and only choosing papers that are published in 2005 or later, gives a total of 8 articles. Finally, only papers with English as the language are chosen, which lowers the results to 5. Having only 5 search results, it is decided that no further limitations will have to be made to the search results. Because of this low number, earlier works from as early as the year 2000 are included into the search. While this only increases the number of results to 6, the reasoning is that there are more terms that need to be included. For example, adding the word "Technical" to the search lowers the amount of results to only 2. One of the results dating from the year 2000. In fact, when the term "Leadership" is added, there are no results for the search.

Therefore another try is made with a search in Scopus. "Personnel" gives almost half a million results. "Educated" lowers the results to 2,254, while education still gives 140,048 results. The search term "Educat*" is therefore used and returns 149,895 results. Including the word "Team" lowers it to 15,730 document results. Searching in these results for the word "Leadership" returns 2,389 results. Then some limitations are made. The language English (2,338 results), Articles (1696) and reviews (419). Subject areas Social Sciences (438), Business, Management and Accounting (207), Engineering (194), Psychology (193). These limit the number of results to 730. Having this many results makes it possible to increase the year of publication to 2010 and later. This still gives 268 document results. If the search term "Educat*" is changed into "Educated" however, lowers the results to 2. If date of publication does not matter, the number of results becomes 9.

While these results are insightful, it is deemed necessary to compare them with the results of another search engine.

ACM.org is the second search engine on which these searches will be conducted. *Personnel* gives 3950 results. *Personnel* and *Educated* give 206 results. Adding the word *Leadership* lowers the results to 126. *Technical* lowers the results to 113. After making an account to use the advanced search function and adding all these search terms, the results are 100 documents. If looked at papers published since 2010, then the results are 39. However most of these results show to be complete volumes of the publications of the ACM (ACM Inroads, Communications of the ACM). These turn out to be the entire volume of the journal and are therefore disregarded. This lowers the amount to 16 results, which are hand counted by the author.

While these initial results seem very low and somehow do not seem to be that well-tailored for the purposes of this research, it seems as good a place as any to start with. Therefore these search results will be downloaded, together with those of other search engines.

IEEE Electronic Library gives 45 results. Google scholar however has 336.000 results. About 16000 since 2010. The following search term generated 1020 results, which was still too high: *highly technological educated personnel in teams "need for leadership"*.

"need for leadership" in teams "highly technical", generates 20 results, most of them books and others not available.

The initial search has generated about 70 articles. Most of these will probably be unsatisfactory. However, they will also give links, citations and insights into other articles, which will lead to more articles.

As it is assumed that most of these articles will not be relevant and are seen as mostly a stepping stone, not every article will be recorded in a spreadsheet. If however an article is relevant, then that article will be recorded in said spreadsheet.

These results and the fact that the amounts of results can change drastically with only one search engine, and the fact that there are more search engines that will have to be used, suggests that the method that is used for the literature search is not optimal.

It is therefore decided that an additional meeting with the thesis supervisor, Prof. dr. Wilderom is needed. Since she is also the co-author on the paper whose recommended methodology is used, it seems a good way of acquiring additional information regarding these search methods.

Some questions for Prof. dr. Wilderom regarding methodology:
- How many search results should one get from a search engine?
- Should every search term be entered individually, or is it more practical to add the search terms until a certain minimum is reached?
- What if an article is not available to the student online?
- When does one know when to start reading in-depth and to start looking though citations?

Second Meeting and After

After a conversation with Prof. dr. Wilderom the subject itself was made more clear and some limits were set and/or altered in order to make the search more effective.

The term technically highly educated personnel was dropped in favor of Knowledge Intensive Organization, which in turn was changed into R&D team. For clarity's sake it was decided that the focus of the initial search would be on leading R&D teams. The term Leadership had to be in the title and the article should be about R&D teams. As for publication dates, the year 2000 would be the lowest published year and care would be given to the impact factor of the journals in which the articles themselves were published, to make sure that they are of sufficient quality. It was also deemed sufficient by Prof. dr. Wilderom that the search engine Web of Knowledge was the only one used.

With these search criteria, the number of results was 25, a satisfactory number. There are also 3 articles which were found whilst searching with Prof. dr. Wilderom. While these are probably duplicates, they are nevertheless mentioned for clarity's sake. Also, as a first search, only articles with a high (i.e. higher than 1) impact factor will be included. This is done in order to make sure that the thesis itself will be of acceptable quality. A quick look into the articles, weeding out the conferences and the unavailable articles, lowers the total amount to 16 articles. While starting on the aforementioned Excel spreadsheet, it became clear that one of the articles was in fact a short book review, and was therefore deleted off the preliminary list. Searching more thoroughly, trying different sources for articles and looking through suggestions, the initial list of articles consists of 21

articles. 5 of the articles that were found through searching and a few suggestions, had a journal impact score less than 1, although all were above .7. This may be a small problem and it will be put into consideration while reading through and referencing the articles. Still it is believed that it is no major problem at this moment.

For now these articles are put into a spreadsheet, with impact factors, cited references and number of times cited. They will be read in order to give the author an understanding of the field and more information on noted authors and keywords.

After a short look into the articles it becomes clear that the field itself is large and that the form of leadership mostly associated with (R&D) teams is that of transformational leadership. Therefore care is given to finding a good paper to start with. An interesting paper is that of Eisenbeiß and Boerner (2010). Eisenbeiß and Boerner try to find an inverted U relationship between transformational leadership and R&D team innovation. The fact that the article also divides transformational leadership into 4 pieces, gives a good starting point for this master thesis.

The original Excel file is saved as Sources Master Original and from here on out additional sources will be added or removed into the Excel file in order to keep a relevant list of references.

Pirola-Merlo and Mann (2004) was found in the references of Eissenbeiß and Boerner. It serves as a good reason to switch from highly technological to teams since the quote explains why multidisciplinary teams are used in organizations.

Elkins & Keller (2003) seems to be the first of the "core" articles. It is in fact a literature review of leadership in R&D teams. It shows that while transformational leadership is a good start, that there are other aspects to include in the thesis.

Third Meeting

After a meeting with my supervisor, (29-10-2013), it was decided to change the structure of the paper. It will be more clear, and a central question has been posed:

"What, beyond Transformational leadership, is needed in leading R&D teams towards higher effectiveness?"

It will be focused on a few subjects which have been decided on during the meeting and a decision has been made to integrate propositions, both literary and speculative ones. Literature searches will have to be done again, but this structure will most probably prove to be better.

For the TFL chapter no additional research will be done. It is assumed that the literature obtained will be enough to describe TFL and guide the paper into the next chapters. For the Leader-Member-Exchange (LMX) chapter search words will be LMX, R&D, leadership, ceteris paribus.

Fourth Meeting

There was a fourth meeting on 30-11-2013. This further helped in refining the goal of the thesis. Decided to change the focus from TFL to leadership in general and its effect on team performance. It seems to be more logical to look at leadership, its influence on teams and other influences that a leader can have that can indirectly influence team performance. Culture, communication, dealing with the environment etc. are all aspects that can influence team performance but can in turn be influenced by leadership.

Also added articles by Johannessen and Skålsvik, and Dekas et al. to the list of literature. These were suggested by Prof. dr. Wilderom and they have given additional insight into the subject matter.

The article of Damanpour and Aravind was found when searching for a Damanpour article that was referenced in Aragon-Correa about firm innovation being essential for organizations. The newer article from 2012 and the 2.8 impact factor, coupled with the title of managerial innovation and the abstract that mentions R&D seems a good article.

These articles are the ones that make my initial thesis possible. The rest are articles or books that were referenced in these first 25. If they are referenced in these articles, then the article that was referenced is found, and will be read in order to see if the reference is valid, what page is being referred to, and if any additional information can be gleamed from the article. Since there are however a total of almost 200 sources, these papers are not read in-depth. Also, in order to keep the number of subjects that are discussed manageable, no additional subjects that are found in these articles will be added to the initial list of subjects.

Division into Chapters

Reading through the initial articles and the ones that were referenced makes it possible to divide the thesis into multiple subjects. The initial subjects are teams, environment, creativity, motivation, support, innovation, leadership styles, culture, knowledge sharing, communication, and team climate for innovation. Some of these chapters can be put in the same chapters however, since they complement each other. Sub-questions have been made for most of these chapters as they help answer the main research question. Therefore the following division of chapters arises:

The first chapter will be about transformational leadership in R&D settings. The aim of this chapter will be to describe TFL in R&D settings and show that there are additional things a leader has to pay attention to.

The second subject will be teams. After discussing R&D teams, it is thought to be a good follow-up in which teams can be investigated in more detail. This chapter will try to show what a leader has to pay attention to in order to increase team performance.

The next chapter will be about creativity, innovation, and motivation. The thought behind the grouping of this chapter is that these three are interrelated. An individual has to be both creative and motivated, and these two can reinforce each other. Out of this combination can come innovations, because these two can lead to a higher team innovativeness.

The following chapter groups together the environment, culture, and organizational support. This combination is about external forces and how a leader should interact with them.

Afterwards the subjects that are grouped together will be communication, knowledge sharing, and organizational learning. This chapter can be seen as one about information sharing, and is primarily focused on how a leader can make sure that both his team members and the organization as a whole can learn, and therefore become more skilled. This is done through knowledge sharing, which can be only achieved through good communication. The fact that communication also aids in sharing ideas and perspectives only adds to the importance of this chapter.

Finally the last chapter will focus on other styles of leadership. While some other styles are briefly mentioned, this chapter will attempt to describe these styles while also grouping them, and showing that while there are differences, the styles themselves are not mutually exclusive. Some combinations are possible, and some of these combinations can even increase a leader's effectiveness, such as for example the augmentation effect between TFL and TAL.

Changes to the Research Question

While the initial research question was about how a certain style (TFL) can influence a certain team (and R&D team), the focus of the thesis has shifted to a leader in general, and knowledge intensive teams in general. There are multiple reasons for this.

The first reason is that research shows that TFL is not always the best form of leadership. As this thesis tries to find out how a leader can improve team performance, it is obvious that TFL is not always the best solution for it. It is however generally a good point of reference, hence the reason that an entire chapter is devoted to describing it and its combination with R&D teams.

The second reason is that a focus on R&D teams seems unnecessary. With the technological advancements in recent years, most work that is done is knowledge intensive and usually done in teams. The fact that innovativeness is seen as crucial for organizational survival is further proof that more and more organizations have started working in the way that R&D teams have been working for decades. Therefore it should not come as a surprise that what was solely the domain of R&D teams has now become general and is being used by more than only in R&D departments. While there are still differences between knowledge intensive teams and research and development teams, these differences have become smaller and probably will keep becoming smaller.

The thesis will end with the conclusion that there is no best way of leadership, but that it changes according to the situation at hand.

Feedback

After multiple rounds of feedback the thesis has started becoming more and more a whole instead of a list of subjects. This logbook has been added to and edited in order to be added as an appendix to the thesis.