Measuring transformational leadership style and its effectiveness on virtual work-teams in Mexico

Medición del liderazgo transformacional y su efectividad en equipos de trabajo virtuales de México

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Resumen:
Objetivo: examinar los factores del liderazgo transformacional para promover la efectividad de los equipos de trabajo virtual, con el fin de generar conocimientos teóricos acerca de la gestión de entornos virtuales en México. Método: Diseño y desarrollo de un cuestionario para evaluar determinantes del liderazgo transformacional y de su efectividad en equipos de trabajo virtuales. *Resultados*: el instrumento resultante está sustentado en evidencias encontradas mediante un estudio de revisión de la literatura y puede proporcionar información a acerca de las dificultades de tiempo y la distancia en estos equipos y su efectividad en organizaciones globales. *Limitaciones*: el cuestionario no utiliza indicadores estadísticos de la productividad o calidad de la organización. *Originalidad*: no existen instrumentos que evalúen estos factores en México. *Conclusiones*: este estudio contribuye a las ciencias administrativas mediante el desarrollo de un instrumento para aproximar la capacidad de liderazgo y su efectividad en equipos virtuales como nuevos parámetros y estrategias que pueden ser utilizados por aquellos interesados en entornos de negocios.
Palabras clave: equipos de trabajo virtuales, estilo de liderazgo, efectividad de los equipos, grupos de interés, México

Abstract
Objective: To examine transformational leadership factors that promote effectiveness in virtual work-team performance, generating empirical basis theoretical knowledge in management of virtual environments in Mexico. *Method*: Design and development of a questionnaire to assess determinants of transformational leadership and its effectiveness in virtual work-team performance. *Results*: this instrument is supported by evidences according to several perspectives founded at the conducted literature review. *Limitations*: this questionnaire do not use statistical productivity nor quality indicators in organizations. *Originality*: there is no instrument that address these factors in Mexico. *Conclusions*: this study will contribute to administrative sciences by developing an instrument to assess leadership capability and its effectiveness on virtual work team as new key parameters and strategies to be used by those business environment stakeholders.
Keywords: virtual work teams, leadership style, team effectiveness, stakeholders, Mexico.

1. Introduction

The development of global markets and technological advancements have accelerated the presence of culturally diverse and globally dispersed virtual teams, in multinational organizations (Connaughton & Shuffler, 2007;

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Gibson, Huang, Kirkman & Shapiro, 2014). Due to these technological advances, organizational leaders face the challenge of directing their work-teams under these circumstances.

The present paper intends to assess transformational leadership potential factors to promote effectiveness in virtual work-team performance. These leaders are now leaving behind their traditional management model to acquire a new distance-management style. It is a challenge for organizations to find effective leaders when physical team presence is dispersed. Therefore, the teams have to be empowered to fill in any gaps (Hill & Bartol, 2015; Hoch & Kozlowski, 2014). This article is aiming to deep insights of the leadership style that today's leader should embrace to achieve the organizations goals.

Virtual teams have grown in use as organizations have employed increasingly sophisticated technology to solve two key problems: (1) how to assemble an optimal array of human resources to solve problems that cross traditional organizational design clusters, and (2) how to assemble teams that can address location specific needs. In the first instance, organizations find that while they may have the human capabilities to address problems or take on tasks, these people are not co-located in one place, one building, or even in one organizational unit; they are found across the globe in a variety of organizational as well as physical locations (Kirkman, Gibson & Kim, 2012).

Previous researches (Hoch & Kozlowski, 2014; O'Leary & Mortensen, 2010) explored advantages and disadvantages of VWT versus traditional teams. The adoption of virtual business practices is increasing in organizations nowadays for two main reasons (Purvanova, 2014): Research findings demonstrated that VWT could produce significant savings for organizations, due to a reduction in travel expenses, meeting times, duplication costs, and other logistical expenditures (Cairns, 2013; Purvanova, 2014).

VWT will help to make organizations more adaptable regarding to growing globalization and market competition, changing organizational structures, and high expectations from customers and users (Kanar & Bell 2013; Purvanova, 2014). Another important aspect to remark is that VWT's are characterized by persons whom could communicate between them, in real time or in different time zones.

1.1. Literature review

A review of the literature was conducted aiming for potentials factors of transformational leadership to promote effectiveness in VWT´s performance in global organizations. It examines determinants of transformational leadership in VWT´s. Paper review process was conducted to approached phenomenon's study method in transformational leadership and VWT's, to comprehend and establish their importance in global organizations.

1.2. Contemporary approach to leadership

VWT leaders are benefited from transformational leadership style because they can develop a cooperative ambience for the teams and, as a result, will improve cohesion towards the task (Kahai, Jestire & Huang 2013). VWT's working under highly transformational leaders will produce original and clear solutions, supportive remarks, and questions about solutions, achieving higher levels of perceived performance, extra effort, and leadership satisfaction (Mukherjee, Lahiri, Mukherjee & Billing, 2012).

To Li, Tan & Teo (2012), the four crucial aspects that comprise transformational leadership in organizations, as shown in Figure 1.

Figure 1
Four aspects of transformational
leadership in organizations

Source: Own elaboration based in Li *et. al*. (2012)

1.3. Aspects of transformational Leadership:

a. *Idealized influence or charisma*. Charisma generates the pride, faith, and respect that leaders work to encourage their followers to have in them, their leaders, and their organizations, engaging in charismatic actions that earn respect and cultivate pride (García-Morales, Jiménez-Barrionuevo & Gutiérrez-Gutiérrez, 2012). Examples include discussing important values and beliefs, communicating a sense of purpose, and encouraging a focus on collective interests (Grant, 2012).

b. *Inspirational motivation*. It provides inspiration by motivating their followers, largely through communicating their expectations (García-Morales *et al*., 2012). Inspirational motivation includes articulating a compelling vision of the future (Grant, 2012). "This inspiration emphasizes to employees the importance of organizational values and outcomes" (Moynihan, Pandey & Wright, 2012: p. 143-164).

c. *Intellectual stimulation*. It promotes employees' intelligence, knowledge, and learning towards innovation (García Morales et. al., 2012). Intellectual stimulation involves challenging followers to question their assumptions and to think differently (Grant, 2012). "By challenging old assumptions about issues and practices within the business or organization, transformational leaders help followers to achieve their mission" (Moynihan *et. al*., 2012: 143-164).

d. *Individualized consideration*. Its focus is on changing followers' motives toward a consideration of the moral and ethical implications of their actions and goals (López-Dominguez *et al*., 2013). It involves personalizing interactions with followers (Grant, 2012), which provides relevant mentoring, coaching, and understanding (Grant, 2012; López-Dominguez, Enache, Sallan & Simo, 2013).

According to Grant (2012: 458-476), "…using these four concepts of transformational leadership enables leaders to motivate employees to look beyond their own self-interests and contribute to a broader vision". Therefore, transformational leadership will develop engagement, commitment, and selfless team members and staff, including employees who exceed expectations (Bass, 1985). These leaders transform their followers to transcend their self-interest by altering their ideals, interests, and values, motivating employees or followers to exceed performance expectations (Nijstad, Berger-Selman & De Dreu, 2014).

Transformational leaders are accurate at increasing their followers' interests, gaining their commitment toward goals and mission of the group, or organization by motivating staff and team members to go beyond self-interests for the common benefit (Bogler, Caspi & Roccas, 2013; López-Dominguez et. al., 2013). The concepts of transformational leadership can lead to successful VWT leaders, improving their effectiveness and efficiency in turbulent and disconnected virtual environments, using motivation and inspiration to empower followers (Bogler et al., 2013; Li *et al.*, 2012), which can then increase the abilities of VWT members by augmenting their self-confidence.

Organizational leaders can overcome VWT challenges. Transformational leadership is an adequate mean to understand the complexities of the relationships between leaders and their followers, important when analyzing the strategies of successful VWT leaders (Li *et al.*, 2012). When VWT leaders expand and uplift the interests of their staff, encourage mindfulness and acceptance of the organizational or team mission, and encourage the focus to be on the good of the whole, transformational leadership takes place (Bass, 1990).

1.4. Virtual work-team (VWT) leadership

Once the important role of transformational leadership is established, seems pertinent to focus it towards the VWT. Due to the fast growth of these teams and its reflection on their fast rise in the actual global business world, an urgency to find the adequate leadership a VWT require surged. Thus, current research in VWT's leadership is largely retrospective and only focusing on what has happened to them, rather than being able to recommend how they could be improved (Avolio, Sosik, Kahai & Baker, 2014). Although students in management courses are being taught about leadership, interactions, communication, and decision-making, seems that there is a minimal amount of classroom time spent on the study of VWT's, compared to in-situ teams (Gilson, Maynard & Bergiel, 2013).

Therefore, VWT research do not focus enough on improving their performance, but only on gaining insights into how virtual reality is influencing the work-team. The fast increasing will to shift into virtual modalities and functions has changed the context of leadership and organizational structures, and, in consequence, the way leadership is exercised (Government Business Council, 2015). According to Minton-Eversole (2012), the Society of Human Resource Management conducted a survey in 379 human resources professionals, revealing that nearly half of the polled member firms use VWTs in their organizations.

Also, 66% of multinational organizations' leaders confirmed they were using VWT's, and 80% of surveyed company leaders firmly believed this number would increase continuously. VWT's can now develop many collaboration skills, implement document sharing and co-creation systems plus the usage of meeting and project management tools, and social networking (Gilson *et al.*, 2015).

Researchers agreed there is more challenge into leading VWT's than traditional in-situ teams (Hoch & Kozlowski, 2014). It is not surprising that Gilson et al. (2015) have identified leadership as one of the most pressing themes in research on VWT's, considering leadership as an opportunity for future research. However, some gaps do still exist for an adequate understanding of leadership in the effectiveness of a VWT.

The nature of managing teamwork has been transformed significantly due to changes in organizations and the nature of their work (El-Sofany, Alwadani & Alwadani, 2014). An increasing number of organizations are being geographically distributed throughout the world, and their leaders are realizing the importance of collaborative work among them. "Building a high-performance team starts with making all team members aware of each other's cultural norms" (Barnwell, Nedrick, Rudolph, Sesay & Wellen, 2014: p. 1-8). Developing an awareness of those cultural norms may require substantial research by the project leader. "Leaders must account for and consider language, time, culture, and location at all times" (White, 2014: 111-117).

In a technology-enriched society, VWT leadership is an organizational reality, exemplified by individuals using digital systems to achieve strategic goals and compete in an increasingly globalized world (Gilstrap & Hendershot, 2015). Technological tools and digital communication are constantly evolving, continuously challenging VWT leaders in consequence, laying down their reliance upon these technologies (Gilstrap & Hendershot, 2015).

In relation to the above mentioned, VWT leaders must learn to develop a balance between both strategic and technological information, adding additional challenges to their leadership tasks (Gilstrap & Hendershot, 2015). Thus, a lack of knowledge about transformational leadership practices among distributed VWT is commonly present. A virtual environment makes adequate transformational leadership practices necessary to permeate their existing leadership skills (Ruggieri, Boca & Garro, 2013).

Organizations that operate internationally through VWT's are subject to additional complexities and challenges (Mockaitis, Rose & Zettinig, 2012). Leading VWT's is complex since their members often have different cultural backgrounds while telecommuting at the interface of technology, and founding themselves in various time zones (Zander, Mockaitis & Butler, 2012). Allen & Seaman (2015: 44) defined telecommuting as "a work practice that involves members of an organization substituting a portion of their typical work hours to work away from a central workplace using technology to interact".

Therefore, VWT leaders can influence followers to use systematic procedures in analyzing complex problems by encouraging the use of suitable procedures intended for generating solutions, also encouraging discussion on a broad range of options, and preventing from overlooking the cost and benefits proper of each option (Yukl, George & Jones, 2010).

In that sense, transformational leadership within this new context could be now known as VWT leadership. Being a social influence process mediated by advanced information technologies focused to produce changes in attitudes, feelings, thinking, behavior, or performance of individuals, groups, and organizations (Avolio *et al.*, 2001).

Nevertheless, even with the increasing numbers of VWT's in organizations around the world, some organizational leaders do not entirely understand the impacts of advanced technology through transformational leadership (Ziek & Smulowitz, 2014). Successful VWTs need flowing communication, coordination, and cooperation for an optimal performance toward successful results. Thus, leadership and teamwork cannot exist without each other (Sohmen, 2013).

Working in a VWT brings various challenges that may not be present in in-situ teams. VWT's are more likely to face communication and coordination challenges that could result in work suspensions due to time delays (Brahm & Kunze, 2012). They are also more vulnerable to atmospheric challenges, such as a lack of team cohesion or trust (Brahm & Kunze, 2012). It is widely recognized that a VWT leadership differ from the conventional way of perceiving and explaining leadership performed in traditional teams where leadership is grounded on in-situ team's interactions. A VWT leader may be able to lead it without ever physically meet their followers (Trivedi & Desai, 2012).

1.5. New tendencies of the VWT leadership

Research have provided the following factors that could help developing an adequate leadership for VWT leaders. A transformational leadership that could recognize and understand the differences between VWT and in-situ teams. That will help organizations to find all those new opportunities and challenges proper of a growing virtual ambience. Thus, an adequate VWT leadership also will develop all new required skills for these new generation of work-teams. And more important, how to apply existing transformational leadership theories into this new organizational context.

Being a VWT leader not only implies to direct followers in their different organizational functional departments. In VWT's, goals are more difficult to achieve, due to the time zone hour differences between members of the team. In addition, difficulties grow when local communication infrastructure fail, or when an incompatibility between hardware and software occurs. Also, when local organizational goals demand immediate action from leaders and team-members. Figure 2 shows what the new tendencies of VWT leadership provide for the accomplishment of team´s global goals.

Figure 2
New tendencies of VWT leadership
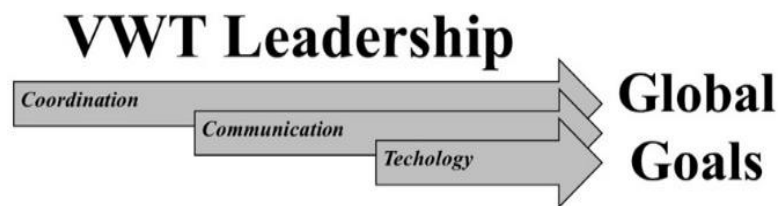
Source: Own elaboration

Authors considered the fact where there is a need to seek for global goals within team collaborators' objectives, in each region. In other words, VWT leadership must manage a team where members mainly communicate and coordinate with themselves through electronic systems. VWT leaders are non-limited managers who inspire followers, through distance, to develop the most of their capabilities, as shown in Figure 2. These transformational leaders must focus in the context interface.

Therefore, VWT leadership is rapidly replacing traditional leadership, due to technological advances that support new means of communication within organizational members. Successful VWT leaders develop an interaction across time, space, and cultural barriers. They develop improvements in small and big enterprises in different places, where supervision and interaction are impossible. These leaders must develop new abilities and skills to create and support high-performance VWT's, no matter where their location is throughout the world. A VWT leader must be an inspiration. Instead of supervising and control his team members, he must coach and advise them.

According to the above mentioned, VWT are a necessity nowadays for organizations. They are spreading, even regionally, when business goals require hard to find local special talent. Traditionally, technical expert employees, or experienced managers, were urgently needed to lead operations in a foreign country. Consequently, they were relocated along with the expansion branch of the company.

Nevertheless, the roles and needs of global operations in this new digital era are transforming that traditional paradigm. Leaders and managers are facing the necessity of a fundamental organizational transformation, because of recent changes in global economy. Therefore, they must develop their transformational leadership style in virtual management that will take advantages of available technologies, minimizing the forced face to face in-situ meetings. A VWT leadership.

This necessity to adopt and expand a VWT leadership, as well with long distance communication abilities, confront the conventional ways of business. VWT's are now criticizing those ways, hence emerging the need to create new business ways under this context. This demands to establish a regular training in managers and team-members. A training to develop trust and function delegation in a constant inclusive communication, between each team-member. Authors affirm to have hope in organizations understanding and confronting these challenges, so they can successfully take their operations globally in this digital era.

These VWTs are appearing more frequently, so organizations must envision how to guarantee their success. VWT leaders must manage them to distance and, in consequence, face their unique problems and challenges. That is necessary for any organization aiming for growth and expansion. Organizations now are in no need for offices in foreign countries, or even in different cities, to enforce leadership and goal-achievement in VWT's. Leaders must build technical and human support systems capable to preserve cooperation within these teams.

This support is also necessary in developing tools that will promote team-work and collaboration among its members. VWT leadership is a fundamental task that will demonstrate the leader´s efficiency. Nevertheless, it is complex to lead a group of persons located in different countries, different time zones, and different languages.

2. Methodology

2.1 Research setting

The present research is quantitative and correlational, focused on evaluating all involved factors in the relationship between transformational leadership in the scope of virtual work team's objectives in DELPHI Mexico organization. The quantitative research design broke down hard data from results obtained by measuring instruments, correlating variables of each scale of questionnaires to obtain specific information. For this purpose, an inclusion criterion was established, in order to allow a convenience sample based on the research objective, ensuring that each participant would be:

- Professional.
- Permanent member of a virtual work-team.
- Voluntary participation in responding the questionnaire.
- A minimum of one-year experience in virtual work-teams.

The above criteria are justified in the following way: a) professionally direct collaboration in virtual work-teams, b) member of a virtual work-team is a decisive requirement to differentiate from one occasionally involved, c) voluntary participation is important for the interest and availability shown by the participant, who can influence, positively, in avoiding bias on findings, and d) experience is important in order to obtain recent and consistent information from the interviewee.

2.2 Procedure

Two validated instruments for leadership and effectiveness in virtual work teams were used to collect all necessary information. First, through MLQ (multifactorial leadership Questionnaire) scale, version 5x-short, owned by Mind Garden company. It measures transformational leadership style. This instrument was developed by Bass and Avolio (Bass, 1985; Bass & Avolio, 2000), and it provide in-depth measures from transformational leadership style used in work teams in organizations. According to the *Cronbach's Alpha* Reliability Index (1955), this questionnaire reaches a value of 0.78, being highly reliable.

It consists of a scale composed by 45 questions that measure the perceptions of the members of the work teams towards their leaders. This instrument was translated into Spanish to adapt the questions to the virtual context in Mexico, with prior authorization of Mind Garden Inc. (1999). Its versatility of interpretation in quantitative form is due to its Likert (1977) scale structure, consisting in a set of multiple-choice responses presented in form of affirmations or judgments.

In second place, to measure effectiveness in virtual work teams, a questionnaire designed by Lurey & Raisinghani (2001) called *Empirical study of effectiveness in virtual work teams* was used. They found that the effectiveness is positively related to the performance of the team and the satisfaction of its members. This instrument allows to measure the effectiveness in virtual work teams. Also, it uses a Likert (1977) scale for its interpretation. The questionnaire reaches a Cronbach's Alpha Reliability Index (1955) of 0.89. Both instruments were administered through the platform Survey Monkey R to the participants of DELPHI company; this platform provided download options and statistical analysis, facilitating the processing of results.

2.3 Description of the instrument to measure leadership styles.

The MLQ scale is an instrument composed of 45 questions that measure multiple variables. The questionnaire is structured with a hierarchical model of four scales and twelve sub-scales. The model consists of three high-order variables: transformational, transactional and avoidance (Laissez-faire) leadership. The first two are correlated with each other, while the latter is an independent variable. Within the first-order variable, called transformational leadership, are those of second order: idealized influence on attributes and behaviors, motivational inspiration, intellectual stimulation and individual consideration. In the first-order variable called transactional leadership are those of the second order: administration by active exception and contingent reward. Finally, the passive leadership variable directly contributes to administration by passive exception and passive leadership. The above can be summarized in Figure 3.

Figure 3
Diagram of components and
hierarchy of the MLQ questionnaire
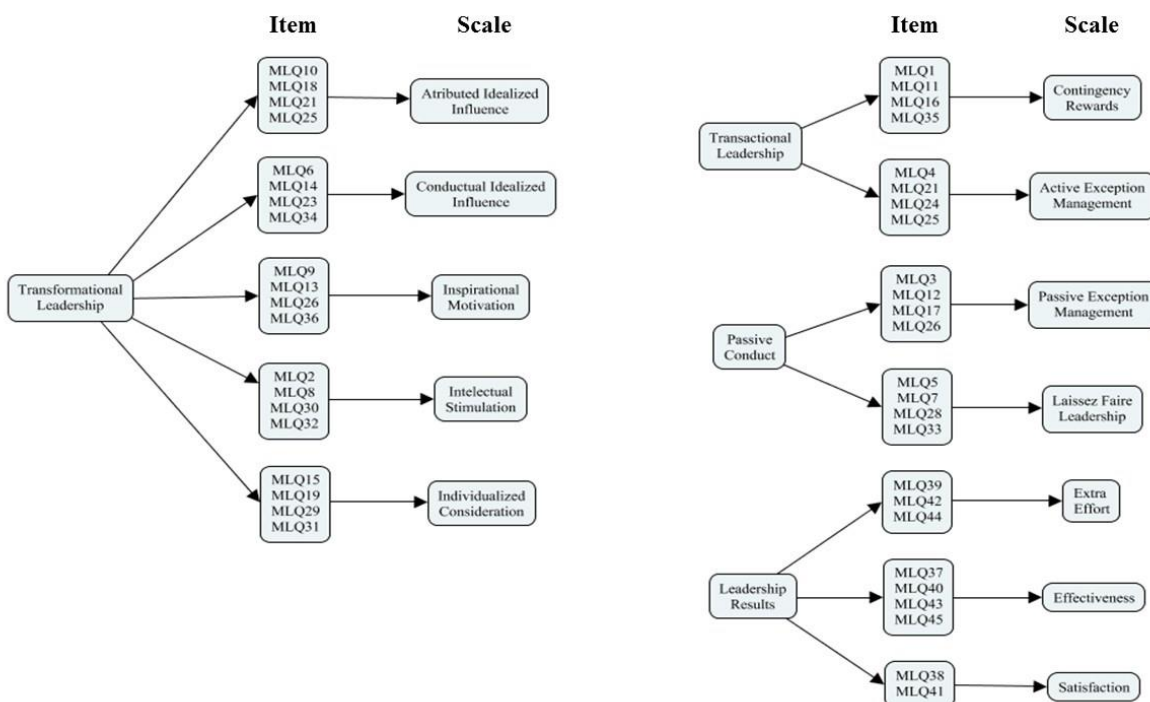
Source: Mind Garden Inc. (2004)

The above exposed hierarchical model is based in the original conceptual model. The variables proposed are measured by the perceptions of attitudes and behaviors exhibited by the leader, and their effects (behaviors and attitudes) in the followers. The attitude is possible to understand as "a predisposition learned to respond in a favorable or unfavorable way with respect to an object or its symbols" (Hernández, 1994).

Moreover, attitudes are related to the behavior that a subject maintains in relation to the object it refers to, so the attitude is not a behavior, but an indicator of it. In the case of MLQ, it evaluates attitudes and behaviors related to the styles of leadership described in the theory. To achieve this objective, the authors built the instrument based on a scale of type Likert, which consists of "a set of items that are presented in the form of statements or judgments in front of which is asked the reaction of the people to whom they are administrator (Hernández, 1994).

In this research work, the variables that are handled are presented in two groups: variables of the leadership styles and variables of the effectiveness of the virtual work teams:

a) Transformational leadership. Leadership style that seeks to change the status quo as it articulates, with followers, the problems in the current system and a convincing vision of what could be a new organization. Transformational leaders therefore seek to transform or change the basic values, beliefs and attitudes of the followers so that they are willing to perform beyond the minimum levels established by the organization.

b) Transactional leadership. Leadership style that seeks to maintain stability, rather than promoting change in an organization, through regular economic and social exchanges with which specific goals are achieved for both leaders and supporters. The transactional leader establishes specific contractual agreements with the supporters, that is, offers them benefits that meet their needs and expectations in exchange for meeting certain objectives or performing certain tasks.

c) Leadership Laissez Faire conceptual definition is described as the most extreme form of passive or non-directive direction. Evade responsibilities, avoid making decisions. Indifferent leadership usually has a negative correlation with the address styles by active exception. It is undecided, not committed, inhibited when needed, is reluctant to take responsibility.

d) Result Variables. Satisfaction. The leader's actions cause gratification in the working Group. The followers feel very good about the decisions of the leader. There is a healthy organizational climate for an effective development of the activities. Extra effort. The actions of the leader provoke greater participation of the followers in terms of the thrust in their daily work. Followers are encouraged to participate actively as soon as the leader needs their collaboration.

e) Effectiveness. The leader's actions cause the goals and goals in the followers to be achieved. Together, the work teams participate harmoniously to achieve the planned.

Table 1
Operationalization of leadership variables

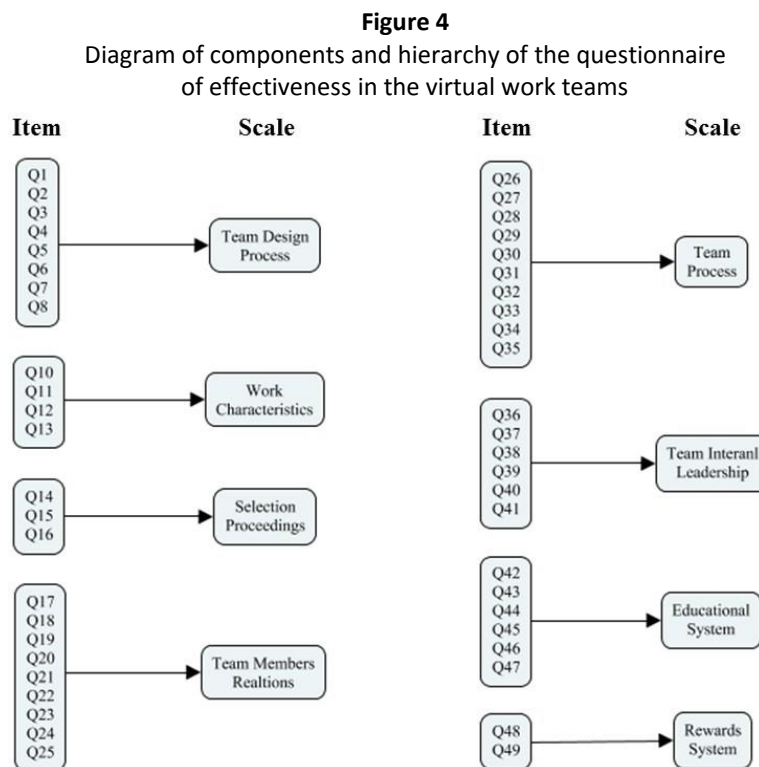| Variable	Dimension	Definition	Items
Transformational Leadership	Idealization of Influence (attribute)	It is the ability of a leader to influence followers by providing a sense of vision and mission, inspiring pride, respect, pursuit of achievement, and trust. The personal attributes of the leader's charisma are distinguished, which make them respected.	10,18,21,25
	Idealization of Influence (behavior)	Influence the behavior of the followers towards achieving goals and objectives. You get the respect and confidence of your followers. It establishes high levels of moral and ethical conduct.	6,14,23,34
	Motivational Inspiration	It refers to the ability to motivate your followers for superior performance. Such leaders tend to be skillful in articulating a vision of the future that followers are able to accept and strive for.	9,13,26,36
	Intellectual Stimulation	It stimulates the efforts of its followers to be innovative and creative, assuming questions, rethinking problems. Creativity is stimulated.	2,8,30,32
	Individual Consideration	He cares about his followers, treats them as individuals, knows them thoroughly, and listens to his ideas and concerns.	15,19,29,31
Transactional Leadership	Administration by exception active	It controls and seeks that there are no deviations that deviate from the rules and the rules, takes corrective measures. Supervises the performance of the followers.	4,22,24,27
	Contingent Award	The leader rewards followers for achieving the required performance levels. The award is proportional to the effort and level of performance.	1,11,16,35
Laissez faire Leadership	Administration by Passive exception	It characterizes leaders who only get involved when deviations or irregularities occur. It does not intervene unless it is necessary.	3,12,17,20
	Indifferent leadership	Abdicates responsibility, avoids making decisions. Undecided, does not engage, is inhibited when needed.	5,7,28,33
Result Variables	Satisfaction	The leader's actions cause gratification in the working Group. The followers feel very good about the decisions of the leader. There is a healthy organizational climate for the good development of the activities.	38,41
	Extra effort	The actions of the leader provoke greater participation of the followers in terms of thrust in their daily work.	39,42,44
	Effectivity	The leader's actions cause the goals and goals in the followers to be achieved. Together, the work teams participate harmoniously for the achievement of the programmed.	37,40,43,45

Source: Mind Garden (2004).

In this way, the person answering the MLQ is asked to outsource his reaction to an item by choosing one of the five points of the following scale. Each option has been assigned a numeric value, so that the subject, when choosing an option, gets a score from that statement. Each variable has a direct score, which means that the

higher the score, the greater the presence of the behaviors and attitudes that characterize it. Finally, the total score is obtained by adding all the scores obtained in relation to the assertions of the instrument, based on the higher order variables. On average, it takes about 15 minutes to complete the questionnaire filling.

2.4. Description of the instrument to measure the effectiveness in the Virtual Work Teams

The purpose of this questionnaire is to gather information from the virtual team, to which the interviewee belongs. It is important to note that the primary objective is to know how each member of the teams feels and thinks about the development and growth of the team within the company. By knowing these aspects in detail, you can address any area that requires attention and improvement. In a specific way, there are three objectives when applying this questionnaire. First, to know the methods that were used to integrate the team, second, to identify the systems that the company established to support it and, third, to determine how these factors have contributed to the achievement of the goals and objectives. The instrument scales are shown below, in Figure 4:

Figure 4
Diagram of components and hierarchy of the questionnaire
of effectiveness in the virtual work teams

Source: Lurey and Raisinghani, 2001

Effectiveness variables in the virtual work teams (Lurey & Raisinghani, 2001):

a) Equipment design process. It is described as the stage in which the work team is designed to meet the objectives set by the organization. Define the parameters and roles on which the computer will be managed to work in the assigned project.

b) Work characteristics. These are the peculiarities that describe the project, in which the work team will be performing. It presents the opportunity to develop knowledge and skills that reattribute recognition, satisfaction and challenges at work.

c) Selection procedures. These are the steps that apply in the process of selecting and integrating the members of the Task Force. This integration is carried out based on the requirements of the project to be realized and the capacities with which the team members must count.

d) Relationships between team members. Interpersonal relationships between team members is where the goals and objectives of the team are discussed. The creation of effective communication and conflict resolution is encouraged. Members develop trust among themselves and are consulted if they need support.

e) Team process. It is made up of meetings in which business matters are addressed. These meetings are held in person or online, and decision-making is managed.

f) Team's internal leadership. Leaders offer new ideas or approaches. They are friendly and oversee establishing clear and achievable goals. They provide the necessary support to achieve the goals.

g) Education system. The organization must have a robust training system designed to achieve the most optimal performance of the employees in their tasks. It uses the most effective methods of learning in the virtual work environment.

h) Reward System. All members are rewarded when the team reaches their goals. Rewards or incentives can be awarded individually or in a group.

Table 2
Operationalization of effectivity
factors in virtual work teams

Factors	Items
Team design process	1,2,3,4,5,6,7,8
Characteristics of the work	10,11,12,13
Selection procedures	14,15,16
Relationships between team members	17,18,19,20,21,22,23,24,25
Team process	26,27,28,29,30,31,32,33,34,35
Internal leadership team	36,37,38,39,40,41
Education system	42,43,44,45,46,47
Rewards system	48,49

Source: Lurey and Raisinghani, 2001.

3. Results

The new tendencies of VWT leadership are supported by evidence according to several perspectives founded at the conducted literature review. Perspectives such as multi-cultural characteristics, confidence development, ethical affairs, technology management, theoretical and conceptual model. The present study was focused to understand the role of transformational leadership to promote effectiveness in VWT´s, and through it, the effective performance in global organizations. A key instrument was constructed for assessing potential factors of effectiveness in VWT´s, in which attitudes and behaviors related to the styles of leadership and the effectiveness of the VWT's could be measured (See figure 3 & 4).

The dimensional structure of the developed questionnaire is the driving force behind the effectiveness performance of organizations. This study has contributed to applied research in administrative sciences to obtain more effective future intervention to be applied on VWT's and theoretical knowledge of empirical basis, in the management of virtual environments in Mexico. For this purpose, the instruments above mentioned were selected, based on the scope of the research; for Leadership styles, the MLQ short version was used in its entirety, with all scales, because all its dimensions were needed in order to accomplish the required assessment of the behaviors and attitudes in virtual environment. Data analyses have confirmed the validity of the multifactor

leadership questionnaire (MLQ) in the virtual asynchronous communication setting with three second-order factors model composed of transformational, active management-by-exception and passive leadership.

It reflects followers' perceptions of the leader's behavior. Whether the context is face-to-face or virtual, the evaluation of the leader needs to be measured as perceived by the followers.

In other hand, the second questionnaire was selected in order to measure effectiveness, due to the recent trend towards corporate restructuring, which can, in part, be attributed to an increase in corporate layoffs, mergers and acquisitions, competition, and globalization, virtual teams have become critical for companies to survive. The instrument examines the design techniques that were used to form VWT's, the internal dynamics that existed within them, and the organizational resources that were used to support them, the results that emerged were intended to help organizations achieve their business objectives in the most efficient and cost-effective manner.

The scales that were used in this second instrument, were focused to assess the second order factor's model such as: a) Team design process, b) Characteristics of the work, c) Selection procedures, d) Relationships between team members, e) Team process, f) Internal leadership team, g) Education system, and h) Rewards system. The remaining scales of the instrument, such as leadership, technology, level of satisfaction and personal information were not included, due to the MLQ has measured these dimensions and, in addition, were consulted to the instrument's author to ensure the instrument keep its psychometric properties.

3.1. Strengths and limitations

The findings strength is to determine those potential factors of transformational leadership that effectively promote virtual work team. The method and instrument of effectiveness factors operationalization in virtual work teams that were used to integrate the team were founded to identify the systems that the company established to support it, and how these factors have contributed to the achievement of the goals and objectives within the organizations.

4. Conclusions

The central purpose of this study was to generate theoretical knowledge of empirical basis, in the management of virtual environments in Mexico. Limited literature of leadership in virtual teams in our country, requires greater knowledge of how to manage this business environment. Results will contribute to administrative sciences, by emerging new parameters and strategies that can be used by those interested in entering this business environment. Although, difficulty arise in business contexts, because it requires collaboration, cooperation, coordination and commitment from members of these teams, commonly geographically dispersed. Implication for the use of this instrument in global organizational settings are discussing the need to obtain evidence of validity in Mexican virtual work-teams.

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