



### **Doctoral School of Regional and Business Administration Sciences**

Krisztina Kupa

# Team development and leadership in virtual teams

Doctoral dissertation

Supervisor: László Imre Komlósi

Győr, 2022



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Győr 10<sup>th</sup> March 2022 Széchenyi István University

### **Author's Declaration**

No portion of the work included or referred to in this dissertation has been submitted in support of an application for another degree or qualification of this or other university or other institution of learning.

Furthermore, the dissertation contains no material previously written and/or published by another person, except where an appropriate acknowledgment is made in the form of bibliographical references.

#### Abstract

Abstract of the dissertation submitted by **Krisztina Kupa** for the degree of Doctor of Philosophy under the title: **Team development and leadership in virtual teams** Month and year of submission for preliminary defence: **October 2021** Month and year of submission for final defence: **March 2022** 

Teams are integral parts of our everyday lives – we see teamwork in workplaces, at home or even when we go shopping. Virtual teams on the other hand are a new concept: here the team members work together closely, however far away from each other at the same time using different IT tools to communicate and collaborate. There are several advantages of virtual teams: better access to talent, diversity, independence, however there are some challenges both the leaders and team members face, such as technical issues, lack of trust and interpersonal communication.

The dissertation focuses on virtual teams from two perspectives. The first is the perspective of the leaders: what are the key challenges and opportunities leaders would face, how these can be tackled to set up and later develop successfully functioning virtual teams. This first pillar consists of three papers. It first gives a thorough theoretical overview on the literature of virtual teams, how they are different from traditional teams, and shows the focal points for leaders in these set-ups as well. The second paper that is discussed within this first pillar draws up a toolkit for the leaders of virtual teams that could be utilized in different stages of team development (storming, forming, norming, performing and adjourning), analysing the roles and functions of the leaders and, at the same time, providing a practical guide on tools and techniques that are available to tackle the issues that can arise in each stage. Lastly, the dissertation introduces a case study of a semi-virtual team, which was conducted in 2020 and shows the issues of conflict resolution and team development and at the same time brings the aspect of team maturity to the table.

The second pillar of the dissertation consists of two papers, and it focuses on the development of virtual teams from the individuals' perspective by extending the theory of self-directed learning (SDL) beyond the extant research in nursing education and applying it to a sample of adult population working in virtual teams in Hungary. The aim of introducing the aspect of learning and development and individual learning is to provide an additional tool for the leaders to select the team members, who fit to virtual teams, and moreover support the leaders in assigning individual learning goals, define the level of

involvement that is required in the individuals' learning as well. The first paper in this pillar is a research design, that shows how the research was planned to be executed: it provides a summary on the available literature and draws up the planned data collection and analysis methods. The second paper is the execution of this research design, which resulted in a new streamlined model scale (SDLR9), that could be fit for virtual teams and be utilized after further validation for the above purposes. The dissertation provides a concluding part which emphasises the novelty of the research, evaluates the results and throws light on possible future research.

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I am extremely grateful to my supervisor, professor László Imre Komlósi, who supported me throughout my journey not only as a formal supervisor, but as a mentor, who gave me room to be creative, guided me and helped me in my publications. I would also thank professor Zoltán Baracskai, whose insights and the discussions next to a cup of coffee always brought back my motivation.

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I am highly appreciative of the support of my family, friends, and colleagues, who were patient and encouraging in both the best and the hardest times and made it possible for me to submit this dissertation on time.

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### Key to Abbreviations

- CFA Confirmatory Factor Analysis
- EFA Exploratory Factor Analysis
- PCA Principal Component Analysis
- POAP Plan on a Page
- $SDL-Self\text{-}Directed \ Learning$
- SDLR Self-Directed Learning Readiness
- SDLRS Self-Directed Learning Readiness Scale
- SDLRS-9 9-item Self-Directed Learning Readiness Scale
- SDLRSNE Self-Directed Learning Readiness Scale in Nursing Education

### **Chapter I – Introduction**

Teams are integral parts of our everyday lives – we see teamwork in workplaces, at home or even when we go shopping. A few decades ago, executing the daily activities of a team required the physical presence of the team members, they exchanged ideas in person and consisted of mostly local members. If we go back even further, everything was done on pen and paper, calculations, bookkeeping, even the first codes were written with typewriters. However, with the spread of different communication and IT technologies the physical presence became unnecessary in several cases – people can do workshops via Teams, ask questions via email, phone, or use other collaboration tools that enable them to resolve an issue while sitting in different offices or even continents. Thus, the shift to more and more virtual operations of teams is a natural phenomenon that follows the different developments in the IT and communication technologies.

Globalisation also opened the global talent market for everyone, information is available everywhere, which also supported the spread of virtual operations. With the spread of multinational companies more and more roles became global: the CFO of a company could be responsible for the operations of a Chinese, a Hungarian and an Australian entity at the same time, while sitting in an office in Germany. Another example could be the spread of shared service centres, which can serve a global scope from a single or multiple locations, where the members are sometimes sitting in the same office, however they must continuously collaborate with people who sit in the local business or in the company's headquarters.

What makes virtual teams especially interesting right now is the current global situation: with the spread of the COVID-19, millions of office workers were forced to do their daily jobs from their home for a significant period, some of them are still operating from their home offices after 1,5 years since the pandemic started. Companies had to adapt to the new circumstances and jobs that people thought could not be performed online or virtually now are executed this way. Companies are closing or downsizing their offices, implement different flexible working schemes and learnt that what previously was thought to be impossible is quite easy to execute. Thus, the pandemic had this one advantage: forced companies out of their comfort zones and opened the world for virtual teams.

When discussing the concept of virtual operations and virtual teams, it is crucial to focus on how the team is formed and how the leader ensures that the team is on the right track without physical presence. Establishing trust in a virtual environment is hard, however is a crucial factor in the success of any team operations or type of cooperation. Furthermore, without physical presence, even the selection process is much harder, a lot less information can be shared during the interviews as well. Thus, the leader is in a tricky situation on how to lead the team from the forming stage to performing, i.e., focusing on how the team follows a development path should be a key priority. Another key area is how individuals can contribute better – as in virtual setups people have less opportunities for ad-hoc informal meetings, or even just learning by listening to other's conversation. Thus, the independency and individuality of each team member also plays a key role in this team setup.

### 1. Journey to the Research Problems

The starting point of this research was a personal experience in working at a multinational company's shared service centre and seeing several teams operating semi-virtually, where the team members were dispersed to 3-4 hubs and had to work together to achieve the goals of a Transformation Programme. There were several issues in the operation and leadership of the team, conflicts kept arising and not being resolved and after two years of operating this way, there was a workshop that aimed at resolving these issues. This workshop and its outcome brought two important aspects to my attention: how important the leader's role is in virtual teams and how the different stages of Tuckman's team development (1965) could influence the type of intervention that could work from the leader's side. This led to the preparation of the case study presented in Chapter IV, however at that stage the virtual team as a concept was not eminent in the research.

After this case study has been published and presented, I decided to dig deeper into the available literature and found the concept of virtual teams and prepared a literature review on virtual teams from a leadership perspective that is logically presented in Chapter II. The gaps I analysed are twofold: first, the existing literature does not provide practical tools and techniques for the leaders that could be used to tackle issues in virtual teams, secondly, the team development from both a knowledge and evolutionary perspective is not widely discussed in the literature. This led to the preparation of a paper on a practical toolkit for leaders that analyses the roles, functions, tools, and techniques of leaders that could help them in different stages of the team development, that is shown in Chapter III.

The next step was looking at the individual level – how can they contribute to the success and development of the team and whether there are suitable tools or measures that can support the leaders. Thus, the concept of Self-Directed Learning (SDL) came up during the literature review, which is a concept on how independently and individually people can organize and manage their learning. Though first this seemed like an outlier from the original concept, after digging deeper I realized how this could heavily support the leaders on the long run. If SDL Readiness (SDLR) can be measured successfully, this could be a great tool for the leaders in several stages of the team development: first, during the selection process and the forming phase, where the team members are selected and have their induction to the team. Second, the storming and norming phase is also heavy with learning, which is hard to manage and coordinate purely virtually, so higher level of independency is required from the members. Thus, a research design was drawn up to figure out how SDLR Scales (SDLRS) previously applied in the field of nursing education could be transitioned to virtual teams. This research design is presented in Chapter V. After this design has been finalised, the data collection started with Fisher et al.'s (2001) original 40-item SDLRS questionnaire, that has been analysed through 146 responses and a new, streamlined 9-item questionnaire has been drawn up that could serve the above purpose for virtual teams – this is presented in Chapter VI.

### 2. Required knowledge

### 2.1 Virtual Teams

The concept of treating teams that operate virtually separately is quite new, the literature started to look at virtual teams around the early 2000's. As Berry (2011) and Bell and Kozlowski (2002) noted, virtual teams are unique in their ability to work together while located in different offices, countries or continents using communication and IT tools for cooperation and accomplishing their tasks without the need for meeting face-to-face. Thus, besides the geographical dispersity, the other important aspect of virtual teams is their technology-mediated nature (Hovde, 2014). From the perspective of the goals or tasks, virtual teams do not necessarily differ from those of the traditional teams (Bell and Kozlowski, 2002).

The benefits of virtual teams include flexible working, which can even make 24/7 working possible by utilizing the time-zone differences, lower rental costs as they require less if any office space and increased job satisfaction of the employees. Virtual teams are usually diverse due to the almost unlimited access to the global talent pool, which gives the advantage to companies to employ experts from areas where the required knowledge is not present in their home location. (Kupa, 2020a)

On the other hand, the above benefits can easily turn to challenges – diversity must be managed, language /accent barriers shall be handled and of course, the hardest thing for virtual teams is establishing trust. When trust is being built, there is a significant portion of interpersonal communication, signs, notions that could influence trust and in a virtual setting grabbing a coffee or having a spontaneous conversation while refilling our water is not possible. Bell and Kozlowski (2002) suggest that all benefits that are listed in the academic literature assume that virtual teams are well managed, thus highlighting the pivotal role of leadership in the success of virtual teamwork. (Kupa, 2020a)

### 2.2 Tuckman's 5 stages of Team Development

Tuckman's (1965) five stages of team development theory is based on a collection of 50 articles on small groups, which Tuckman organized, integrated, and analysed to identify development sequences that could fit the findings of most of the studies. Based on this exercise, Tuckman managed to come up with the following four stages of team development, which he deemed to be present in most of the cases:

- 1. Orientation, testing and dependence forming
- 2. Conflict and polarisation around interpersonal issues storming
- 3. Ingroup feeling and group cohesion norming
- 4. Functional role-relatedness performing.

In 1977 the model was updated after further 22 studies have been added to the analysis, which besides supporting the original four stages, suggested a fifth stage: adjourning. This reaches beyond the perspective of operational teams, however, is usually applicable for projects, which have a pre-defined end date: closure. (Tuckman and Jensen, 1977)

5. Completion of tasks, dissolution - adjourning

The case study of Kupa and Komlósi (2020) clearly showed that the evolution of a team from stage to stage is not a natural process, it highly depends on the leader of the team. Being stuck in storming for such a long time was clearly a leadership-related issue that was not tackled properly. When it comes to Tuckman's model it shall also be noted that the stages are assumed to be rather linear, while in real life they have a more cyclical and reiterative nature. In case of functioning teams, the adjourning stage is not significant, if we are looking at the model from a linear perspective, however from a cyclical perspective this is not the case. There is always something changing in teams, and they may have to close previous projects or eliminate old processes, they must collect their lessons learnt and proceed with performing. Furthermore, it is also possible that teams "fall back" stages. When there is a huge restructuring, new goals are defined, new portfolio is established teams could even fall from performing to forming. However, it is more common to shift to storming, since improperly handled conflicts, complex issues, new expectations are common in every organisation.

Another aspect that should be mentioned is the individual vs. team view. The model assumed that these teams are functioning with the same members throughout their whole lifecycle, however usually this is not the case, members come and go, especially in bigger organisations. These new members are joining at different stages, however new joiners should also go through these phases the team went through, otherwise how could they really fit to the team?

### 2.3 Self-Directed Learning Readiness

The concept of Self-Directed Learning became an instrument in higher education, emphasizing the importance of life-long learning, as SDL enables the individual learners to own their learning path by identifying and setting their goals, evaluating their own performance, assessing their training needs as well. Thus, in the core of SDL lies the individual's independency to take the initiative, which is an important aspect in virtual teams as well. (Knowles, 1975)

Though SDL focuses on individuality and independency, this does not mean isolation: the individuals can be still engaged in group-learning settings, however it should be based on their own choices and assessments on what contributes to their learning needs. Thus, SDL enables cooperation, utilises team effort and anyone, the individuals can deem as a learning resource. (Greg, 1993; Garrison, 1997)

As Abdullah et al. (2008) noted, SDL can be used for enhancing private, educational, and professional knowledge and the institutional, geographic, or situational differences do not directly affect its applicability, which also highlights the importance of SDL in virtual team settings. With globalisation, the developments in technology, the availability of online and virtual learning tools, the learners have a lot more to choose from, which are also available when a team member of a virtual team faces situation where there is a need to learn something. (Kupa, 2021)

To understand how well individuals can apply SDL in their private or professional lives, several measurements have been implemented, first was the Self-Directed Learning Readiness Scale (SDLRS) by Guglielmino (1997), which later had been validated by other academic studies. This was the basis of Fisher et al.'s (2001) and Fisher and King's (2010)

Self-Directed Learning Readiness Scale for Nursing Education, which served as the basis for this research as well. Scoring individuals from the perspective of SDL can be a great tool for learners and leaders as well: when it comes to virtual teams and the different stages of team development, having such scoring enables the leader to adapt learning strategies, define his/her involvement in the individual's learning and development activities, etc. Thus, even if SDLRS scales provide information on individuals, they can be great tools for the leaders of virtual teams from a team development perspective.

### 3. Structure and logic of the dissertation

As highlighted previously, this dissertation focuses on virtual teams from two perspectives; thus, the dissertation is divided to two main pillars. The first is the perspective of the leader: what are the key challenges and opportunities the leader would face, how these can be tackled to set up and later develop a successfully functioning virtual team. The second pillar focuses on the individual from a developmental perspective – how the individual's ability to learn independently can influence their fitness to virtual teams and how such measurements can support leaders further in either performance management or the selection process.

This first paper, presented in Chapter II, gives a thorough theoretical overview on the literature of virtual teams, how they are different from traditional teams, and shows the focal points for leaders in these set-ups as well.

Chapter III outlines the second paper, which draws up a toolkit for the leaders of virtual teams that could be utilized in different stages of team development (storming, forming, norming, performing and adjourning), analysing the roles and functions of the leaders and at the same time providing a practical guide on tools and techniques that are available to tackle the issues that can arise in each stage.

The third paper that is discussed within the first pillar in Chapter IV introduces a case study of a semi-virtual team, which was conducted in 2020 and shows the issues of issue resolution and team development and at the same time bringing the aspect of team maturity to the table. This paper is a great example of what type of issues a virtual team can face when the leaders choose the tools and techniques to resolve conflicts incorrectly.

The second pillar of this dissertation focuses on the development of virtual teams from the individuals' perspective by extending the theory of self-directed learning (SDL) beyond the extant research in nursing education and applying it to a sample of adult population working in virtual teams in Hungary. The aim of introducing the aspect of learning and development and individual learning is to provide an additional tool for the leaders to select the team members, who fit to virtual teams, and moreover support the leaders in assigning individual learning goals, define the level of involvement that is required in the individuals learning as well.

The first paper of the second pillar in Chapter V is a research design, that shows how the research in this pillar was planned to be executed: provides a summary on the available literature and draws up the planned data collection and analysis methods. The second paper of the second pillar in Chapter VI is the execution of this research design, which resulted in a new streamlined model scale (SDLR9), that could be fit for virtual teams and be utilized after further validation for the above purposes.

A list of references is not included after the individual research papers, but the lists are consolidated and listed under "References" at the end of this dissertation. Furthermore, after each research paper presented in Chapter II-VI a "Paper Evaluation" section has been added that discusses the contribution and importance of the particular paper to this dissertation.

### 3.1 Research questions

This dissertation analysis several research questions, that can be divided to two main categories: questions focusing on the leader and questions focusing on the individual, which are discussed in the following structure.

### **Research questions discussed in Pillar I**

**Q1.** What is the difference between the leader's role in virtual teams compared to the "traditional teams"?

**Q2.** What are the practical tools and techniques available for the leaders of virtual teams in different stages of team development and how they differ from the ones applicable in "traditional teams"?

### **Research question discussed in Pillar II**

Q3. Why is independency and individuality important in virtual teams?

**Q4.** Is the SDLRS a suitable tool to support the leaders in choosing the right team members and facilitate their involvement in their learning paths?

### 3.2 List of included papers

The dissertation follows a two-pillar structure as noted above. The first pillar looks at virtual teams and their developmental aspects from the perspective of the leader and the team, while the second pillar deals with the individual's perspective with a focus on learning and eventually introducing an SDLR-9 scale.

### PILLAR I – LEADERSHIP AND TEAM PERSPECTIVE

### Chapter II: Challenges and Benefits of Virtual Teams: A Leadership Perspective

Conference paper, Published: September 2020.

Kupa, K. (2020a): Challenges and Benefits of Virtual Teams: A Leadership Perspective, Paper presented at the 58th International Scientific Conference on Economic and Social Development, Budapest, pp. 193–202.

The author of this dissertation contributed 100% of the work for this research paper.

### <u>Chapter III:</u> Leader Functions, Roles, and Challenges in Different Stages of Team Development – Toolkit for Virtual Teams

Research paper for Economics and Sociology, accepted, in press.

Kupa, K., Barkóczi, B. and Komlósi, L. I. (2021): Leader Functions, Roles, and Challenges in Different Stages of Team Development – Toolkit for Virtual Teams, Economics and Sociology (in press)

The author of this dissertation contributed 80% of the work for this research paper.

# <u>Chapter IV:</u> Team Dynamics and Issue Resolution in Multicultural Project Teams: a case study of a global organisational transformation project

Conference paper, Published: April 2020.

Kupa, K. and Komlósi, L. I. (2020): Team Dynamics and Issue Resolution in Multicultural Project Teams: A Case Study of a Global Organisational Transformation Project. Paper presented at the 52nd International Scientific Conference on Economic and Social Development, Porto, pp. 170-178

### The author of this dissertation contributed 95% of the work for this research paper.

### **PILLAR II – INDIVIDUAL PERSPECTIVE**

### **Chapter V:** Self-Directed Learning Readiness in Virtual Teams

Published paper for Tér-Gazdaság-Ember Journal, December 2020.

Kupa, K. (2020b). Self-Directed Learning Readiness in Virtual Teams, Tér – Gazdaság-Ember, 8(4) pp. 77-89.

The author of this dissertation contributed 100% of the work for this research paper.

### <u>Chapter VI:</u> Development of the SLDR9 Measurement Tool and Evidence for a Second Order Latent Construct of Self-Directed Learning Readiness in Virtual Teams in Hungary

Working paper published by the SzEEDSM Doctoral School, currently under review for Statisztikai Szemle (Statistical Review).

Kupa, K., Szerdahelyi, M.J. and Komlósi, L. I. (2021): Development of the SLDR9 Measurement Tool and Evidence for a Second Order Latent Construct of Self-Directed Learning Readiness in Virtual Teams in Hungary, submitted and to be published in Statistical Review

The author of this dissertation contributed 75% of the work for this research paper.

### Chapter II – Challenges and Benefits of Virtual Teams: A Leadership Perspective

Conference paper, Published: September 2020.

Kupa, K. (2020): Challenges and Benefits of Virtual Teams: A Leadership Perspective, Paper presented at the 58th International Scientific Conference on Economic and Social Development, Budapest, pp. 193–202.

### Abstract

Organisations employ members with different disciplinary and cultural backgrounds who, at the same time, represent diversity in age, gender, ethnicity, and a wide range of other factors as well. These teams usually operate fully or partially virtually, using communication and IT tools to collaborate, share ideas and altogether perform their daily activities while being geographically dispersed all around the globe – complexity bringing increased virtuality to the team set-up.

Virtual teams have several benefits, such as availability, diversity, better access to resources and flexibility, however the virtual working environment imposes several challenges on the team members. Thus, a virtual team set-up requires various sets of skills, competences, and tools from both the leaders' and the team members' perspectives.

The paper explains the concept of virtual teams, the benefits and challenges that arise in this specific form of team set-ups. The paper also explores the leadership aspects that affect the operation of these teams and suggests how leadership should focus on team and individual levels and what the implications of technology-mediated leadership are.

Keywords: Virtual Teams, technology-mediated leadership, complexity in team set-up

### 1. Introduction

The digital transformation changed not only our everyday lives, but the nature of work and how organisations operate. The information and communication technologies transform the ways of working in many ways, starting from new organisational structures, utilisation of the global talent pool or fundamentally reshaping how team members work together on the same thing they did completely differently before. The first instance was enabling individuals to work together even if they are geographically dispersed, however the new information and communication technologies, such as enterprise social media (e.g. Yammer, Slack) or collaborative editing platforms (e.g. Microsoft Teams, Google Drive) joined the basic messaging and video conferencing tools to enable teams to come together, scale up in larger networks of teams and even creating self-managing teams. (Larson and DeChurch, 2020)

Virtual teams emerged as part of this phenomenon, providing benefits to both the organisations and the employees as well (Maruping and Agrawal, 2004). Virtual teams have several benefits that attract employers in applying these team set ups: working virtually is flexible, makes 24/7 working possible, reduces the overhead and rental costs at the company and at the same time remote working could also increase the job satisfaction of the employees. Being globally open due to limitless communication opportunities between different parts of the world, virtual teams are diverse, organisations can access subject matter experts in all areas, even if the knowledge they require is not present in their home location.

Besides the benefits, there are several challenges in teams that mostly rely on virtual collaboration. Benefits can easily turn to challenges, if the team is not managed properly: if diversity is not managed well, if there is no trust within the team, conflicts and issues may arise. Bell and Kozlowski (2002) suggest that all benefits that are listed in the academic literature assume that virtual teams are well managed, thus highlighting the pivotal role of leadership in the success of virtual teamwork. Leading virtual teams is more challenging than conventional, face to face teams, since the lack of social interactions and interpersonal communications, it is harder to build trust, keep the members motivated and develop them both individually and as a team.

The paper focuses on the most important attributes of virtual teams and how leaders are affected by this new way of collaboration. The paper reviews the literature available and draws conclusions based on the academic research and studies published in this topic. The structure of the paper is as follows. Section 2 with its subsections highlight the importance of virtuality and the benefits and challenges these teams face during their operation. Section 3 explains how leaders are affected by the virtual nature of their teams – what focal points they must focus on at a team level and at the level of the individual and what technology brings to their everyday lives. Section 4 concludes the claims and the research results.

### 2. Virtual Teams

### 2.1 Definition

According to Cohen and Bailey (1997) a team is a set of individuals sharing the responsibility of the outcomes of their interdependent tasks, who are seen – both by themselves and others – as a complete social entity in one or more bigger social system, such

as a department or a corporation. Ricketts and Ricketts (2010) define team as a group of people, which was set up to work together on a common goal, while contributing via performing different tasks using their individual skills and providing support to each other and meshing their functions.

The virtual team concept started to receive academic recognition in the early 1990's, with primary focus on describing virtual teams and highlighting their benefits as seen at Byrne at al. (1993) and Dess et al. (1995). However, as noted by Bell and Kozlowski (2002), the initial literature did not focus on the challenges and leadership implications of these teams.

Virtual teams have the unique ability to work together while located across offices, countries or fully globally using communication and IT tools to cooperate and accomplish a tax or project without the need for meeting face to face (Berry, 2011; Bell and Kozlowski, 2002).

As noted by Lipnack and Stamps (2000), virtual teams are usually small and task-focused groups of individuals, who mostly work in technology-mediated ways toward a common goal. This aspect of technology-mediation can also be found at Hovde (2014), who notes that a virtual team – to some extent – always uses technology, especially communication technology to interact within the team.

The goals, tasks or the mission of the team does not necessarily differ in a virtual team compared to a conventional, face to face team, the basic difference is that – as Bell and Kozlowski (2002, pp. 25) stated – "members of virtual teams are not physically proximal". At the same time this does not mean that the members of the virtual teams prefer this virtual cooperation, that may not be their first choice, however due to this geographically disperse nature of their location, they must expect and accept this way of communication.

#### 2.2 Virtual nature

Another important aspect of virtual teams is that their virtualness, i.e. the degree to which the team is virtual, is a complex and multidimensional construct. Even when two teams use the same technologies in doing their work, one team meets regularly face to face, while the other mostly uses the email, chat software and other telecommunication technologies. Thus, the latter is more virtual than the other. (Berry, 2011)

To illustrate that nowadays almost all the teams can be considered virtual to some extent, Mittleman and Briggs (1998) categorised the virtual interactions as follows on the time and place attributes of different scenarios:

### **Table 1: Virtual interactions**

	Т	ìme	Place	
	Same	Different	Same	Different
E-mail across the office instead of face-to-face communications	Х		х	
Instant messaging	Х			Х
Dedicated chat room on a network		X	X	
E-mail exchange in a multi-office setting		X		Х

### (Source: Mittleman and Briggs, 1998)

All the four scenarios shown in Table 1. use certain tools (e.g. email, instant messaging, chatroom) to collaborate, however these tools are used for different purposes. Yet, the teams using these tools can be considered virtual in these activities, even if the face-to-face component in the daily operations are also significant. This is the essence of virtual operations – it is not a black or white concept, it is a range, where almost any team, who uses any type of technology could fit in. However, using technology does not immediately mean that a team is virtual. When it comes to the virtual team concept, the general requirement is the geographical dispersity to a certain extent and reliance on computer-mediated communication. (Berry, 2011)

### 2.3 Benefits

Over the past two decades there has been a significant growth in the use of virtual teams, which is expected to continue in the future. The 2016 survey of over 1300 business respondents from 80 countries found that 85% deemed virtual teamwork essential to their job and almost half of these respondents reported that over 50% of the members in their virtual teams were from other cultures (RW3 CultureWizard, 2016). According to Dulebohn and Hoch (2017) this growth was influenced by globalisation, the need for rapid development and innovation, the better access to and quality of networking and collaboration technologies and the fact that special expertise is distributed all around the globe. The following sections show the benefits the virtual teams can bring to organisations, including flexibility, cost efficient operations, better utilisation of time and space and the ability to create teams that can maximise the expertise of the geographically dispersed talent pool.

### 2.3.1 Flexibility

Flexibility is one of the biggest advantages of virtual teams, which has many aspects to it as well. From the organisation's perspective, they can better utilise the time and space available to them, meaning they can be productive 24/7 due to time and location differences through electronic communications, simply as they can work on various tasks at various times. (Berry, 2011) As an example, if a person located in Budapest requires an 8-hour work from another colleague to perform the task given, if this other colleague is also sitting in Budapest, she can only start working one workday later. Should this colleague sit in San Francisco, the data would be ready the next day without time in waiting – similarly as if they would have been working in different shifts.

From the team members' perspective, flexibility could mean better work-life balance, especially if they can also utilise remote working, which could potentially increase their job satisfaction (Liao, 2017).

### 2.3.2 Access to global talent pool

Besides the timing differences, virtual teams can resolve knowledge gaps that otherwise would be hard to fill. In many cases the advanced information and communication technology enables the organisations to bring experts from all over the world together in a virtual team, which could be more cost-effective and may not be even resolved in conventional face to face teams. (Maruping and Agrawal, 2004)

Global talent means more diverse teams, which can arise from both their cultural, educational, or simply different backgrounds. The studies in this field are contradictory whether diversity can be considered as a positive or negative attribute when it comes to effectiveness; the information processing theory (Simon, 1978) or the resource-based view (Barney, 1991) suggest that there is a positive correlation, while the similarity-attraction theory (Tajfel, 1974) or the social identity theory (Kirkman et al. 2004) found negative effects towards productivity. Although, these theories contradict in outcome, both suggest that diversity – if managed properly – could significantly contribute to effectiveness. Managing and leading diverse teams effectively is the key factor in its success. As Taras et al. (2019) notes, diversity of perspective and the resources brought in by the members can increase creativity and enhance problem solving.

### 2.3.3 Cost efficiency

Another aspect of virtual teams is that this set-up can save costs for the companies. Since virtual teams use information and communication technologies, there is no need to travel to meet in person or relocate colleagues who are living in different countries (Lipnack and Stamps, 2000). Companies frequently use videoconferencing tools, organise townhalls, all-

hands meetings, where they meet frequently, however it is also common to organise quarterly face to face meetings in one of the central locations of the company.

Due to the remote working possibilities that are frequently utilised in virtual teams, companies could also reduce their operational costs by not building or renting physical offices or only renting smaller spaces (e.g. an office with only 60% of the required seats). This reduces rental and overhead costs and could save money in travel-related expense reimbursements. (Choi and Cho, 2019)

### 2.3.4 Better and more diverse knowledge sharing

According to Cohen and Gibson (2003) most interactions, commitments and the outcomes in virtual teams are easier to document, review and store as these are archived automatically and electronically, which makes sharing and accessing the knowledge also more efficient. Harnessing the knowledge and talent 24/7 from anywhere in the world is another great attribute to virtual teams.

Virtual teams have proven to have the necessary tools to perform tasks and utilise the diversity of their nature in different complexities. In case of less complex tasks, virtual teams using asynchronous communication media (e.g. email) could effectively manage their information and collaboration requirements. In case of complex and challenging tasks, virtual teams use synchronous and tightly linked media to facilitate collaboration, information richness and group decision making. (Bell and Kozlowski, 2002)

### 2.4 Challenges

The initial literature focused mostly on the benefits of the virtual teams, however there are several challenges that shall be overcome in this type of collaboration. The recent survey of RW3 CultureWizard (2016) showed that 41% of the respondents, who work in virtual teams (85% of the respondents) have never met in person and only 22% of the respondents received any kind of training on how to increase effectiveness and productivity in a virtual team.

The lack of personal connections, the issue of different cultures and languages – which on one hand can be used as a benefit for the organisation –, the technological issues can both hinder the effectiveness of virtual teamwork and pose challenges to the team members.

### 2.4.1 Language

One of the biggest barriers can be due to different language skills, since many virtual teams operate cross-country, using one single common language (such as English). The different proficiency levels can create status differences between the team members and

could also lead to misunderstandings, misinterpretations, and conflicts (Neeley, 2012). Reinares-Lara et al. (2016) also highlights that members of virtual teams, who are less proficient in this working language usually are less engaged in group discussions and exclude themselves from communication. Presbitero (2020) also found empirical support that skill of the common foreign language is positively and significantly associated with the individual performance of the virtual team member.

### 2.4.2 Lack of social presence

Virtual communication is highly reliant on the verbal communication; however, a significant portion of our communication is non-verbal. Loosing, or at least limiting the possibilities for non-verbal expressions causes misunderstandings, especially in written communication such as chatrooms or emails. (Daim et al., 2012; Hollingshead et al., 1993)

The other issue with the lack of social presence is the issue of engagement without faceto-face meetings, no team buildings, no real human contact with the colleagues – which can be as simple as a short coffee break in a common room of the office or a quick chat before the meeting starts. These simple interactions create trust, which takes crucial part in creating an engaged team, where members feel their social needs satisfied, however virtual teams many times lack this opportunity due to their geographically disperse nature (Walther,1995). Thus, virtual teams in many cases increase uncertainty as team members encounter first as strangers, which is not easy to transform in a virtual setting, leading to anxiety, negative feelings, and mistrust. (Glikson and Erez, 2019; Cohen and Gibson, 2003)

### 2.4.3 Technology used

Another hindering factor is one of the biggest advantages as well, which is the use of different communication technology, such as teleconferencing software. Substituting face to face communication with an online or electronic tool can distort the messages and make the misunderstandings and conflicts more frequent than in face-to-face communication. Similarly, technology requires certain infrastructural elements (i.e. continuous access to electricity, high-speed internet, etc.), which are not always available for everyone within the team.

It is also important to find the best suitable tool to be used in each situation. The "this could have been an email" era shows that in many cases a simple asynchronous form of communication results in better distribution of information and use of time, than organising a meeting for the same task and vice versa. Not choosing the correct tool could negatively

affect the resource allocation and reduce the effectiveness of information sharing. (Bell and Kozlowski, 2002)

Kock and DeLuca (2007) investigated four US and four New Zealand groups and found that using technology increased the cognitive effort from group members to communicate their ideas to the team – at the same time having a positive impact of information sharing.

### 2.4.4 Culture

Being connected via virtual tools in a global setting, cultural considerations become inevitable in a team. When team members come from different cultures (which can be due to their nationality, religion, education, etc.), the differences in communication norms and rules for politeness, directness and knowledge exchange shall be considered. For example, in several Asian countries nodding during a meeting could simply mean showing respect to the speaker and is not the sign of acknowledgement or understanding.

A study conducted by Leung and Tjosvold (1998) and Olekans (1998) about essays published on conflict management in Asia Pacific countries show that Australians tend to be direct, blunt as they care about honesty and transparency, while Thais avoid open criticism as that is considered rude and would not enter conflict as that is destructive to the harmony of their relationships. (Brew and Cairns, 2004)

#### 3. Leadership of Virtual Teams

Leadership is a crucial element in realizing the benefits of virtual teams and at the same time can help the team overcome the challenges and exploit the underlying opportunities. The key characteristics of virtual teams from a leadership standpoint draw attention to two primary functions: performance management and team development. Monitoring team and individual performance is restricted in the lack of face-to-face interactions and at the same time – even in case of using videoconferencing or other tools – the typical mentoring, coaching and developmental functions are difficult to perform. (Bell and Kozlowski, 2002)

Besides these two functions, there are several other attributes in virtual teams that a leader shall focus, both on a team or an individual level in a virtual team setting. Section 3.1 and 3.2 summarise the findings of Liao (2017) on multidimensional leadership, while Section 3.3. focuses on the leadership implications of technology.

### 3.1 Leadership at the team level

At the team level, Liao (2017) and Bell and Kozlowski (2002) suggested that there are several factors that are especially crucial in virtual teams. One of these key areas is collaboration, where the leader shall act as a trainer and guide to the members and is

responsible for providing the necessary resources required. This includes not only process shaping and development or resource allocation but building relationships within the team to ensure true collaboration. (Kirkman et al, 2004)

Another important aspect as noted by Mathieu et al (2000) and Liao (2017) is the role of shared mental models, where the role of the leader is to contribute to the development of these behavioural rules and guides (such as shared knowledge about how the team interacts or about the technology in use) via facilitating knowledge sharing and enhancing the interactions within the team members.

Since the face-to-face interaction is limited in virtual teams, the leaders shall be open to a more collaborative shared leadership scheme as well, which can serve as a supplementary technique in a virtual setting. Shared leadership represents the process, where the team members influence each other, share responsibilities, and make decisions collaboratively. This makes the task allocation more efficient, the team more productive and due to shared responsibilities and tasks, the team members may become more engaged even in a virtual setting. (Hoch and Kozlowski, 2014)

Closely related to collaboration is trust – which increase team engagement and could reduce the psychological distance in virtual teams, acting as a glue sticking the fragmented team together. Several authors in the academic literature (Jarvenpaa and Leidner, 1999; Maznevski, and Chudoba, 2000; Suchan and Hayzak, 2001) suggest a relatively contradictory approach to resolve the issues of mistrust: launching virtual teams with face-to-face kick-offs, noting that the in-person meetings are irreplaceable for trust building. In virtual teams – or especially in the era of travel bans and reduced travel agreements – this is not always possible, however as noted previously this is a common practice at companies to organise at least quarterly meetings or workshops, where globally dispersed teams could meet.

The emergence of conflicts within a virtual team is frequent – amongst others due to cultural differences, language barriers and the lack of social interaction, resolving these issues can be challenging for a leader. Since the issue resolution (should that be relationship-focused or task-focused) requires more from the leader of a virtual or partially virtual team than the leader of a conventional team and thus, they should pay particular attention to bridging members who are geographically dispersed and should focus on building strong relationships within the team as well. (Cheshin et al., 2013)

### 3.2 Leadership at the individual level

Besides the team level, individuality and managing tasks and relationships on an individual level is also a focus area. The leader-member exchange (LMX) theory is widely used to focus on leader interactions with the individual team members and the quality of their relationships (Dulebohn et al., 2012).

According to Liden and Maslyn (1998), the leader's interaction with the individual team members is based on four dimensions:

- Affect
- Loyalty
- Contribution
- Professional respect

Affect means the mutual affection that a leader and a member have for each other, which is mainly influenced by non-task related aspects, such as chatting about some personal matters, customizing information in emails.

Loyalty means the public support from each other, which can solidify the relationship between the parties. It can be strengthened in situations, where the leader defends his follower (i.e. does not put blame on her, instead comes to her defence and helps explaining the situation).

When it comes to contribution, the direction and quality of task efforts the leader shows towards the team member are a crucial factor. Simple techniques, such as private chats about the needs and questions of the follower, providing constructive feedback or setting personalised work goals could strengthen their relationship and would make the performance of the individual more effective.

In the case of professional respect, the role of trust is also a crucial factor as leaders must be confident in the team members' abilities, skills, and knowledge, while the members shall also acknowledge the leader's abilities. As noted in case of contribution, personalised goals, providing guidance towards completing their tasks can help utilising their individual strengths and knowledge.

### 3.3 Leadership implications of technology

Technology always affected leadership, the new ways of collaboration – such as the introduction of telephony services or emails to everyday work in the past century, which now seems the most everyday phenomenon – imposed challenges on leaders and team members to figure out how to exploit the opportunities of the new kind of communication

media. Team members must overcome complexities of these technologies and new processes, which must be understood, accountabilities and protocols must be set up and non-compliance sanctions shall be communicated as well. (Berry, 2011)

With the shift to virtual work and virtual teams, the leaders need to focus on how to compensate for the challenges their followers face due to remote communication, diversity, etc. At the same time leaders can shape the technology practices to help their followers cope with these challenges via shared leadership, team formation technologies and relationship building within the team. This also means shaping the ways they send and receive information and provide feedback or gather data while relying on information and communication technology. (Larson and DeChurch, 2020)

Technology can bring new ways of team formations, and digital technologies can shape the leadership structures and the interactions during team formation may influence who will emerge as a leader in the team. The leaders can also use the team formation technologies to manage boundaries, determine the team members, define phases of the teamwork, and reevaluate the membership periodically. According to Cohen and Gibson (2003) the formation activities shall include establishing easy communication, technology training so the technology to be used can be understood and explicit norms and expectations are set-up.

Team formation now does not only mean creating teams from human resources only – there can be synthetic team members, whose roles and responsibilities shall be defined together with the limits of technology, where the human team members need to take back the control. (Larson and DeChurch, 2020)

Technology – as an integral part of virtual teams – provides new opportunities for leaders in redefining how performance is managed or tracked. There are several platforms (as simple as timesheets) that can help as the administrative tool for tracking the actual time spent on projects, and there are several technologies, which can track the progress real time. The leaders must know how to combine these technologies with more in person strategies – i.e. one-on-one conversations, personal check-ins, or regular reporting. Studies found that in case of less complex tasks, there is no significant difference between the performance of face-to-face teams and virtual teams, the challenge comes with the more complex tasks. However, this could be also overcome with the right choice of communication media, i.e. choosing synchronous communication for resolving complex issues. (Bell and Kozlowski, 2002)

#### 4. Conclusion

"Virtual teams are here, and they are here to stay." - Bell and Kozlowski, 2002, p.45

The nature of work is changing, the activities of organisations have become more global, and technology based. Technology enabled faster change, created more complex and dynamic jobs, which were followed by organisational changes, implementation of new, more flexible, and adaptive structures and ways of working. (Berry, 2011)

Virtual teams offer several benefits to organisations and became increasingly common at organisations. Virtual teams impose challenges on both the organisations, leaders, and team members as well, however those organisations that are not willing or not able to apply virtual team settings lose a significant competitive advantage in the rapidly changing global economic and social environment (Berry, 2011). Since the effectiveness of virtual teams depends on the resolution of these challenges i.e. conflict resolution, skill development, insufficient communication, the role of a leader is crucial in the success of virtual teamwork. Leaders shall acknowledge these difficulties and establish a social presence in the virtual interactions and find new ways of building trust, respect, and loyalty – the tools are there via information and communication technologies.

This paper provided a literature review on the benefits and challenges with virtual teams, with a special focus on the leadership aspects of these teams. The academic literature presented varies from the early academic research to the current, in some cases in press articles, thus providing a summary of all current views and research present in this research area. In the academic literature there is still a gap on how team building, and development shall be done, what toolkits are available for the leaders as even the current research focused on more of the theoretical side of leadership with a special emphasis on the aspects of virtual teams.

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### Paper evaluation for Chapter II

This research paper focused on establishing the theoretical background for virtual teams and the leadership implications and provided the literature gap and focus for the dissertation outline. Thus, this paper provided value to both research questions presented in Section 3.2 of the Introduction of this dissertation. As discussed in this paper, there are several challenges and benefits for virtual teams that leaders could face or utilize – the success mostly depends on the leaders. The directions set forth by this paper for the structure of the dissertation are as follows:

1. As indicated by Bell and Kozlowski (2002) and Berry (2011), the biggest challenges are team development and team building.

2. Team building, and development have two main aspects, that are overarched by a third: the roles of the individual and the leader, which are mostly influenced by the team dynamics of the given team.

Thus, the following two research papers will focus on the leaders' aspect and role in developing, building teams and handling conflicts. Afterwards, the two remaining research papers will introduce individuality in team development, and more specifically, learning.

The next research paper, which is a theoretical synthetisation based on the available literature and the professional experiences of its authors as coaches and leaders – currently in press for Economics and Sociology – was prepared with the intention of analysing the differences between the leader's role and functions in the four main stages of team development. This next research paper will provide an even deeper analysis of Tuckman's (1965) five stages and provides an aggregated view on how leadership styles and roles could fit to each of these stages.

Furthermore, it also provides an overview and summary on different tools and techniques that could be used in traditional and virtual teams and how the leaders of the latter could utilise them to effectively resolve the issues the teams could face in the given stages.

### Chapter III – Leader Functions, Roles, and Challenges in Different Stages of Team Development Toolkit for Virtual Teams

Research paper in press for Economics and Sociology:

Kupa, K., Barkóczi, B. and Komlósi, L. I. (2021): Leader Functions, Roles, and Challenges in Different Stages of Team Development – Toolkit for Virtual Teams, Economics and Sociology (2021, in press)

> "Tough Times Don't Last, Tough Teams Do." (Inspirational Quotes Journal Notebook)

### Abstract

The study focuses on the challenges leaders face in virtual teams. Based on empirical qualitative research, we conclude that the different stages of team development require a good understanding of a leader's functions and roles, and the adoption of a wide range of well-selected tools. The paper outlines how these factors work at their best in traditional teams and in virtual teams, what the biggest challenges in virtual teams are and how they can be overcome. We base our analysis on the five-stage development of operational teams: forming, storming, norming, performing and adjourning. Our proposal considers the increasing volume of virtual operations in organizations and summarizes the findings of our qualitative research in a toolkit, which could serve as a guide for leaders in selecting the best tools and techniques for overcoming the challenges in each stage of team development.

**Key words**: team development, virtual teams, project management, tool kit for leaders, qualitative research

JEL classification: M10, M14, M16, D83

### Introduction

With the hit of the COVID-19 pandemic, several companies have been forced to shift to virtual operations. Tasks previously thought unsuitable for remote work are now performed from the homes of team members. Employers have uncovered the opportunities of virtual operations while realizing that the increasing trend of virtual teams may well continue in the coming years, reforming traditional ways of working. Another advantage of virtual teams is
their new perspective on performance: while performance is sometimes equalled to the number of working hours spent in the office in case of a traditional team, in virtual teams – due to the lack of physical interactions – the focus can be solely on the quality of the delivered results.

Virtual teams are like traditional teams in several aspects since they go through the same stages of development (Tuckman's forming, storming, norming, performing and, where applicable, adjourning). However, the way the team members interact and how problems can be solved are different. Thus, when confronted with the challenges of virtual teams, the emphasis for leaders should be on how instead of what. There are several aspects of developmental stages that should be considered, namely the functions a leader should fulfil in each stage, what the most suitable role to tackle the challenges would be, and what tools and techniques leaders could use in each stage to help them in fulfilling the functions required.

Two of the authors of this study are practicing leadership and management consultants – their experience in coaching sessions, workshops and organizational problem solving has been distilled into the toolkit presented in this study. Thus, the focus of the study lies in summarizing the experience of over 15 years turned into a practical guide for leaders.

Section 1 of the study provides a theoretical overview of the literature on virtual teams, a summary on leadership aspects and Tuckman's (1965) five stages of team development. After the literature review, the hypotheses are established (Section 2) and the five stages are analysed in detail from several perspectives: the functions of a leader, the role of a leader, the practical aspects of leadership and the challenges in virtual teams (Section 3). In Section 4, the findings of the analysis are summarized in a table format to create a toolkit for leaders of virtual teams, identifying the toolkit's limitations and providing an overview of the Tuckman's model. Section 5 concludes with the outcomes of the research.

#### 1. Literature Review

#### 1.1 Virtual Teams

Cohen and Bailey (1997, p.241) define the team as "a collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems (for example, business unit or corporation) and who manage their relationships across organizational boundaries". The team members work together by utilizing their various skills and competences, providing support to each other, and altogether focusing on the best way to reach the goal of the team or project they are working on. Teams generally have four attributes: shared mindset, independently functioning members with a shared purpose, joint responsibility for the outcomes and collective relationship management (Berry, 2011).

Virtual teams do not differ from traditional teams in these four attributes, however there are two additional qualities that characterize them: the members are geographically dispersed and rely heavily on IT and communication technologies in their everyday work. This means that virtual teams are largely like traditional teams, but the adoption of virtual tools and technology is made inevitable by the fact that not all (if any) members are in the same office and face-to-face interactions are not necessary or possible (Bell and Kozlowski, 2002).

Companies opt for setting up virtual teams for several reasons: flexibility, cost-saving, better utilization of time (i.e., time-zone differences) and better access to the global talent pool. The current pandemic situation has also affected the companies' team-setting strategy. According to Gartner (2020) 88 per cent of the surveyed global organizations encouraged their employees to work from home in 2020. A mini-survey in Hungary also showed that around 73 per cent of the participants were asked by their employers to work from home for a certain period (Bakonyi and Kiss-Dobronyi, 2020). The resulting teams were unique – they were transformed from traditional face-to-face or semi-virtual teams to fully virtual ones within a few days which posed significant challenges to leaders and team members alike. Besides this, virtual teams also must overcome other challenges, such as the lack of personal connection (that is essential to establishing trust), technological issues, cultural and language differences (even if the team members speak a common language).

The leader's role is crucial to overcome these challenges, utilize the benefits, which can be tricky without face-to-face interactions. Leaders should acknowledge the difficulties, establish a social presence in the virtual interactions, and find new ways of building trust, respect and loyalty using the tools available via information and communication technologies. At the same time, leaders face another challenge: during the stages of team development the team requires different contributions from a leader.

#### 1.2 Functions and Roles of a Leader

A remarkable tendency began to unfold in the field of management and business administration after WWII: the focus was shifting from operationalization to leadershipcentred culture in organizations, laying emphasis on organizational dynamics and management-employee communication. This led to a widening public discussion about the delineation of managerial and leadership functions, different qualities, skills, and attitudes addressed for each of the two concepts. The ideas of leading economists and business advisors, such as, for example, those of John P. Kotter's (Kotter, 1990a) and Peter F. Drucker's (Drucker, 1998) set the new trend the essence of which was formulated in similar ways and in a similar vein. "Management controls people by pushing them in the right direction; leadership motivates them by satisfying basic human needs" (Kotter, 1990a, p.107). Peter F. Drucker formulated his approach by claiming that leadership was based on building and facilitating relations among human beings and helping fellow workers find a sense of community and dignity in modern societies. (Drucker, 1998)

Both John P. Kotter and Peter F. Drucker were instrumental in taking the issue of differentiating between managers and leaders, - or rather manager and leader functions, skills, and qualities -, seriously. Kotter (1990a, 1990b) advocates the need for creating a transparent culture of leadership. According to him, leadership within a complex organization achieves its function through the following three sub-processes:

(i) establishing direction through developing a vision and ensuring the change that helps in achieving the goals,

(ii) aligning people through communicating this direction to cooperate and commit to achieving the goals and

(iii) motivating and inspiring people so they move in the right direction even in hard times, mostly using the emotional intelligence of the leader.

Leaders could act in several roles, such as: strategists, communicators, mentors, coaches, instructors, innovators, facilitators, networkers, etc. Whether the given situation requires a more managerial-skill-based role or a more leadership-competency-driven role, should be decided by the leader. The role the leader should choose to act on depends on the situation, complexity of the problem and the individual needs of the team members.

From a functional perspective, there are managerial and leadership tasks a leader can perform: management-focused functions which focus on administration, execution, and performance management, while leadership-focused functions which are about vision, nonroutine decision making, influence and persuasion. Accepting the fact that it is no use making any sort of an attempt to create an exhaustive list of the functions of a leader, it is still possible to summarize the main decisive functions. Setting a priority from among the "available" functions is a matter of individual choice. The following table (Table 1) provides examples of the most important functions for a leader:

Planning	Coordinating	Guiding	Providing	Mediating	Monitoring
Selecting	Administering	Supporting	Facilitating	Evaluating	Controlling
Organizing	Implementing	Correcting	Feedbacking	Assessing	Handling
					connicts
Staffing	Executing	Corroborating	Improving	Reporting	Discussing
Directing	Steering	Encouraging	Mitigating	Budgeting	Sanctioning

**Table 1. Leader's functions** 

Source: own compilation

From a skillset perspective, leaders could reduce ambiguity and uncertainty by adding clarity and direction to common goals. Thus, they can make work meaningful by using their cognitive intelligence and problem-solving skills (Sashkin and Sashkin, 2003). They could also utilize their emotional intelligence and social skills, as a good executive leader, who is passionate motivator and networker, with a vision and a concept of changes and processes (Bennis, 1989). Bennis (1989) also notes that skills and competences are not enough, the attitude is what makes someone a good leader.

There is another important role in the modern leader's life (especially in virtual teams): managing technology together with the human workforce by achieving harmony and balance between people and technology use in the workplace (Hughes et al., 2019). Leaders should make sure to focus on supporting the changes in the working styles, unifying the offline and online communications, focusing on the employee experience and the well-being of their workers (Deloitte, 2014).

The above introduced roles, skills and functions could help the leaders to face the challenges of different stages of team development.

#### **1.3 Team Development**

In 1965 Bruce W. Tuckman studied small groups under Irwin Altman, who, after collecting 50 articles on group development, asked Tuckman to see if he could make anything out of it. After thoroughly organizing, integrating, and analysing the articles, Tuckman looked for development sequences that would fit the findings of most of the studies and defined four stages of team development (Tuckman, 1965):

- 1. Orientation, testing and dependence forming
- 2. Conflict and polarization around interpersonal issues storming

- 3. Ingroup feeling and group cohesion norming
- 4. Functional role-relatedness performing.

In 1977, Tuckman and Jansen proposed an update to the model, after analysing 22 studies that supported the "Tuckman hypothesis" of four stages, however, suggested a fifth stage to the model which would go beyond the perspective of a functioning group: closure. Thus, to the list above the following fifth stage should be added:

#### 5. Completion of tasks, dissolution - adjourning

Tuckman's model has received several critiques since its development, however, its overall validity as a starting point when analysing the evolution of a team has not been contested. It shall be noted that these stages are not black and white – they can overlap and there is no clear demarcation line between stages. Furthermore, this model is linear, however teams – reacting to external or internal circumstances – change and the behavior of the members, their tasks, etc. change with them as well. This could result in a team's "stepping back" from performing to norming, or to even storming stages, which should be properly handled by the leader.

#### 2. Hypotheses

Before starting the analysis phase, where more details will be provided on the roles and functions of a leader, our hypotheses shall be established. The first hypothesis revolves around the similarities between virtual teams and traditional teams, and it focuses on the "what" perspective. It states that irrespective of the team setup, the role and functions of the leader are not decisively different.

### Hypothesis 1: The role and functions of a leader during the process of team development is not decisively different between traditional and virtual teams.

The second hypothesis focuses more on the differences between virtual teams in their ways of working, tackling the "how" question. It asserts that the team setup greatly influences which tools could be successfully utilised in the given developmental stage.

# Hypothesis 2: The tools to be used by the leader to successfully tackle the challenges during the process of team development are decisively different between traditional and virtual teams.

#### 3. Analysis

The different stages of the team development mean different challenges, roles, and functions for a leader. The following sections evaluate these in the first four stages: forming, storming, norming and performing in a similar structure.

The first subsection focuses on a general understanding of the stages from a leadership perspective and the functions a leader should perform. The second subsection explains the role the leader should choose at the given stages, while the third subsection provides practical examples of tools the leader could utilize in the given stages. The last subsection gives an overview on how virtual teams differ from traditional teams in these aspects and what techniques could be utilized to better suit the needs of the virtual setups.

#### 3.1 Forming

#### 3.1.1 Functions of a leader

Forming is the earliest stage of team development: everything is new and team members are not sure about their roles, responsibilities or even the goal of the team. Formation literally begins with forming a team – selecting members based on their different skills, abilities, and competences. The aim of the leader should be to select members as diverse as possible to ensure that team members will be able to generate unique ideas, solve different challenges and overall have the unique skill set that is required to reach the goal of the team. The leader should also focus on eliminating the risks from this diversity, since too many differences could lead to all types of conflicts and issues. (Burke et al, 2017; Super, 2020)

After team members have been selected and introduced to each other, the leader should focus on social interactions, bonding and familiarizing the members with their individual roles within the team. The leader should ensure that the members have the resources available to perform their tasks and make sure that the members can perform – and intervene – when necessary. Forming closes with providing feedback to individuals about their performance, ensuring them about the learning nature of this stage, both in a positive atmosphere and in a climate of mutual respect. (Kozlowski et al, 2009)

#### 3.1.2 The Role of a Leader

In the Forming stage the new members' core concern is with 'in or out'. They are preoccupied *with acceptance, approval, commitment to the group, definitions of accepted behaviour, and the search for orientation, structure, and meaning* (Yalom and Leszcz, 2005, p. 349). The responsibilities are not yet clear, so the leader must be more direct, sometimes on the autocratic side, giving the members guidance and direction due to the lack of established trust and certainty in the given environment. The role should fit the attributes of a mentor, a more experienced individual who is supporting the integration of the team members and planting the seeds of team norms (accepted behaviours) and future cohesion through knowledge sharing and by walking the talk. The leader's psychological skills are

decisive in acquainting the team members with the target objectives of the team and with each other.

#### 3.1.3 Practical Aspects of Leadership

Forming starts with selection - and the leader should make sure that the individuals have the required skills and expertise for the group. The attitude of a candidate also has a significant impact on team dynamics and cohesion. Thus, the initial determination of preferred attitudes helps leaders in the selection process. When a completely new team is established, leaders could utilize the existing relationships between possible internal candidates - i.e., making sure that at least a certain percentage of the new team members know each other or have worked together. For external candidates, the applied referral policies within companies are also a way to success: if someone within the company, who is familiar with the values, culture and some of the tasks performed, refers a candidate to the leader, that candidate will be four times more likely to be hired than candidates recommended from other channels (ERIN, 2020).

The basis for a cohesive team is to establish trust. The leader's role in this stage is to primarily act in a way that enhances trust and ensures a safe space for the team members by minimizing uncertainty. Building internal trust is crucial to be able to fight against external challenges instead of energy consuming internal affairs.

In an optimal world the team members start with sharing their intentions to know each other better and find connection between the team's and their own purposes. The leader can provide a safe space for the team to learn more about each other's preferences, intentions by activities on the team meeting, e.g., an icebreaker, or by issuing a 'who is who' booklet including personal stories, facts, previous experiences, and the reason why they accepted the invitation to the team. During these sessions the focus is best on common values, stories, and strengths that enables the team members to connect in a positive way. This is crucial since these introductions would also bring light to the differences between the team members – the leader always leads by example, therefore, if the leader is not making sure that these differences or comparisons are not associated with a common positive conclusion, it could easily make the storming phase longer or even make it happen prematurely.

To help the team members find structure and meaning the understanding of the purpose of the team, the values, the mission, and the acceptable behaviours should follow the personal introductions. The leader should share these with the team at the very beginning. The leader should also talk about psychological factors - honesty, confidentiality, safety and accepted behaviour. If the leader ignores a reaction at a team meeting, or a comment on a seemingly negative action of one of the team members, this also has a norm-building impact. The team will understand that it is an accepted - though dysfunctional - behavior. After sharing the basic dos and don'ts, the leader should discuss, specify, and finalize the team rules and boundaries with the members. Based on these discussions, the team could even develop a team charter or contract that provides purpose and context for the teamwork. A great technique in these sessions is to create opportunities for the team members to share their intentions with the team, how they are planning to contribute and with what, which would fit the norms and behaviours that are laid down in the charter. Teams, where everyone can express their intentions and opinions during the initial meeting, perform better later since the intentions are clearly set and even in case of crisis, the collaboration is stronger.

Last, but not least, the leader should also continuously monitor the performance of the individuals at this stage - they are still learning, the team cohesion is being built, there aren't a lot of interactions between the team members. Regular one-on-one conversations with the team members could significantly improve their understanding, could reveal any possible misunderstandings, and give an opportunity for the individual to ask questions freely from the leader. The feedback provided during the Forming stage is mostly about the individual ensuring that he/she understands the goals, behaviours, the specific tasks he/she was entrusted with and provides room for further clarification.

#### 3.1.4 Virtual Teams vs. Traditional Teams

Here we can attest a crucial difference between traditional versus virtual teams. In the former context, leaders can build trust by the face-to-face, personal encounters and by creating positive impressions in the team members. On the other hand, in virtual contexts, impressions and assumptions are restricted to formally organized events, documents, etc. We assume that this stage presents a major challenge to the team leader of a virtual team since the focus is on building trust, which requires a lot of interpersonal and non-verbal elements. Leaders could, however, utilize all practical tools and techniques just as in traditional teams. Nevertheless, the challenge lies in how they can do it from a distance.

When virtual teams are forming, time spent on team building is worth of any effort. The leader faces the challenge of somehow substituting the traditionally non-formal events of getting-to-know each other, such as coffee breaks, joint lunches, etc. Since these informal happenings usually occur in blank times during the day, the leader should make sure to usefully keep the team members busy, ensure that daily team online meetings are organized

at least in the first few weeks of the operations and introduce open hours and one-on-one sessions as well. Video conferences are crucial at this stage, to establish at least some face-to-face contact. The leader should make sure that during these meetings everyone can talk and say at least a few words to feel included and valued.

Thumbometer or other sociometric check-ins are great tools to connect with each-other, share emotions and provide feedback to the leader about the mood of the team members. Anti-tasking of anonymous cases (i.e., brainstorming on what the current challenges are, how certain tasks could be sabotaged or done in a wrong way, what could go wrong, etc.) has equally positive impact in the digital space on the face-to-face collaboration and solution-mindset.

#### 3.2 Storming

#### 3.2.1 Functions of a Leader

The storming stage is infused by individuality and conflict since members focus on mastering the tasks and responsibilities that they defined in the forming stage. However, in their execution, they may clash with other team members. In this phase the leader should ensure an open environment where team members could ask questions and seek help, thus creating a problem-solving culture within the team (Burke et al. 2017).

The leader should also focus on sensemaking, i.e., ensuring that the team members are getting familiar with the responsibilities of others, understand what is happening within the team and ensure all ideas are welcome and team members can freely express their opinion. The leader should evaluate these ideas, identify the most promising ones, and establish an action plan to execute them (Super, 2020). The leader should also encourage team members to help each other, thus promote team cohesion and collaboration since social development is crucial in this stage. By the end of the storming stage, team members should be able to identify their development areas and the leader should ensure that resources (e.g., trainings, assistance) will be available for individuals to improve their skills (Kozlowski et al. 2009).

#### 3.2.2 The Role of a Leader

In the Storming stage, the team members are likely to be confronted with diverse, if not divergent views and attitudes, with conflicts and competition the result of which ought to be the formation of a clearer hierarchy. The core concern is the issue of 'top or bottom'. *Each member attempts to establish his or her preferred amount of initiative and power* (Yalom and Leszcz, 2005, p. 349). The role of the leader should fit the characteristics of an instructor. This stage revolves around disagreements, insufficient information sharing, tension and

sometimes struggle in the leader's role. The team leader needs to have directive skills to handle spontaneous group developments, spurs of group dynamics and exercise direct interventions.

#### 3.2.3 Practical Aspects of Leadership

At this stage of team development the leader should ensure that there is an open culture for discussing issues, emphasizing that the existence of conflicts is necessary and that everyone's opinion will be discussed. The leader should make members feel safe enough to articulate different opinions and look for solutions with the help of the leaders' instruction. Weekly team meetings could easily tackle task-related conflicts, however the more personal and deeper the conflict gets, the leader should focus on personalized problem-solving techniques.

Workshops are great tools to resolve complex issues or deep conflicts. Generally, workshops are held with the participation of the entire team with a defined goal of improving processes, making collaboration sustainable or tackling any given problem that is deemed necessary by the leader. During these workshops there are several tools that the leader can use: asking the team about the primary values they find important, reviewing the current processes under the umbrella of these values, discussing root causes and possible points of intervention/improvements. Shifting the attention from the personal issues to the processes, understanding each other's tasks, interests, and responsibilities, playing situation games (i.e., stepping into the shoes of one another), help developing empathy towards the other team members which could lead to successful conflict resolution. A great way to improve the situation and turn conflicts into meaningful cooperation is closing workshops by reaching collective agreement about the ways of going forward and articulating the "I provide… and I ask for…" sentences of each attendant based on the learnings.

Several issues and problems arise from simply not understanding each other's role, responsibilities, why team members keep asking for certain information, etc. This is where the focus from the individual shifts to the team: in the Forming stage people get comfortable with their own tasks wearing blinders, however, as time goes by, they keep bumping into each other not understanding where the others come from. This leads to the Storming phase, where the conflict could be resolved by lifting these blinders and generating a cohesion within the team. Workshops are great tools for this as well, as promoting collaboration, having regular meetings where everyone shares what they were doing that week (not as a

report, but as a way of sharing information and understand the processes better) and encouraging team members to work together, help each other out, etc.

Besides the conflicts that require resolution, there are ones that lead to new ideas, improved processes, which the leader should also take into consideration. Weekly brainstorming sessions, or even the weekly team meetings could have a dedicated slot for ideas and the leader should act as a decision-maker on which one to follow through. The leader would be responsible for making sure action plans are developed for these ideas, selling the ideas internally and externally and arranging the required resources. Smaller project teams could be created to execute these plans, that would enhance the team cohesion, promote the helping each other out attitude within the team as well. The leader should also ensure that both soft skill and hard skill trainings and assistance are available for the team members and provide continuous feedback on both the individual and the team performance. As mentioned before, the view is shifted from the individual to the team perspective, thus the feedback should not only focus on the individual's task performance, but on how the team members collaborate with each other as well.

#### 3.2.4 Virtual Teams vs. Traditional Teams

In virtual contexts, there is a narrow scope of free discussion and restricted space for exchange of ideas and brainstorming. We assume that this stage presents a major challenge to the team leader in the case of a virtual project team, since working remotely and via mostly online tools can be frustrating by the nature of the setting itself. The line breaks, there are noises in the background, audio is lagging the visual sometimes, the language barriers are even more significant in this environment. Although it increases the workload, meeting minutes, emails or summaries after important discussions could help avoiding these misunderstandings.

Organising workshops online can be tricky, considering this is where creativity, positivity and an overall great experience should be ensured. When the sound is lagging, it is hard to concentrate, there is a limited room for discussion or immediate feedback as that leads to distortion in the online space. However, there are great tools in the currently available conferencing applications, such as break-out rooms, whiteboard, raising hands, subtitles (in English mostly), that could be utilised to overcome these challenges. In the case of virtual workshops, the importance of breaking out to smaller teams – which can be managed in a way that everyone feels involved – is even more significant than in traditional teams. Another challenge in the Storming phase is managing emotions in a virtual setting. Conflict is rarely unemotional, and the leader should be empathetic and find ways to give a more personal touch to conflict resolution. After workshops and more important meetings, the leader should be available for open hours and discussions and should focus on keeping up the positive vibe within the team as well.

#### 3.3 Norming

#### 3.3.1 Functions of a Leader

In this stage, the focus of the team should be on improving teamwork since they are already comfortable in their own tasks and understand the dependencies with the other team members. This stage is all about cohesion. Communication is accurate, conflicts have been resolved, the mutual trust has been established, and an open and positive environment has ensued. The leader in this stage should start focusing on individual improvement plans to reach task mastery and on teamwork. This can be reached via promoting tasks that require innovation, since these could only be performed via strong collaboration between members and due learning (Burke et al. 2017; Edmondson, 2012).

The biggest challenge in this case is "going over the top" with the team cohesion – members could be working so well together that the established routine could hinder the acceptance of new ideas. To avoid this closed nature of collaboration, the leader should emphasize the open nature of interactions, ask challenging questions, request creative solutions, and encourage team members to come up with alternative ideas and interpretations (Mumford et al, 2011). Furthermore, the leader should focus on providing feedback on a team level, with emphasis on team coordination, strategy, and goal revisions (Kozlowski et al. 2009).

#### 3.3.2 The Role of a Leader

In the Norming stage the interpersonal relations are characterized by cohesion, solidarity, and community building. The core concern of the group is primarily with 'near or far'. '*The members primary anxieties have to do with not being liked, not being close enough to others, or being too close to others*' (Yalom and Leszcz, 2005, p. 355). Here trust gets established and standards get set. The role of the leader should fit the characteristics of a coach whose expertise secures a balanced operation. "*An effective manager-as-coach asks questions instead of providing answers, supports employees instead of judging them, and facilitates their development instead of dictating what has to be done*" (Ibarra and Scoular, 2019). The coach-style leader believes that the team can establish the norms and team spirit for

sustainable cohesion. It creates a safe and thought-provoking space where the team can unlock potentials and maximize performance.

#### 3.3.3 Practical Aspects of Leadership

The Norming stage is all about normalizing, reviewing, and strengthening the understanding of the team members. The big conflicts are behind the team and the leader should focus on improving teamwork and the operation of the team itself. This could start with reviewing the initial team charter that was established. It can be adjusted where necessary based on the experiences from the previous developmental stages. Another important aspect is re-evaluating the accepted (and sometimes not even formalized) norms. When team norms are all about positivity, loving and appreciating everything and everyone, where would the healthy conflict fit? Could teams with this solely collaborative or even more conflict-avoiding approach be successful? Is this a real norm or is this only a result of suppressing all expression of negative emotions and contributions to seem like a well-oiled machine? Is it normal that everyone agrees on everything or what happens is that some team members just feel that their opinions do not matter and they are not worth representing? Similar challenging and evaluative questions should be asked by the leader for each norm, accepted behavior within the team in smaller workshops or discussions.

The trust at this stage has already been established. The members do not require a lot of intervention, even more so, sometimes feel like they should be left alone to do their jobs. Since this hinders innovation and continuous improvement, the leader can support the members' growth with new tasks that are slightly out of their comfort zone, supporting them in generating new ideas, new ways of working, since being too comfortable could lead to performance insufficiencies. Proper communication, regular team evaluation sessions to discuss challenges, new projects and directions for the team are great tools of the leader that keep the team going in an innovative and proactive direction. In the norming stage the leader could start involving team members in strategic discussions and goal revisions as they now have the required understanding to do so. Furthermore, the leader should also aim at providing advanced, more personalized trainings for the team members to reach mastery in their tasks. A great tool for this is coaching, which is tailored to the needs of the individuals.

Articulation of the team's "we-sentence" in this phase strengthens unity and the feeling of being in the same boat. Focus on the more personal and informal side of team building also supports the spread of the "We are the HOW behind the WOW" spirit. This could be via daily short coffee-breaks, weekly luncheons, or any other informal gathering.

#### 3.3.4 Virtual Teams vs. Traditional Teams

In the Norming phase the leader's task is to make sure the team functions properly, the lessons of the previous stages are learnt and well adapted, and the team members reach their and the team's full potential. There are no big conflicts, the operation is smoother, there is only a limited need for intervention, i.e., this stage poses a minor challenge in virtual team set-ups. This challenge is mostly due to the routinization aspect, team members work more independently, the leader is less involved in the day-to-day operations as they have less chance to work together. Calendars are filled, everyone is busy and in a virtual setting there is a very limited chance to connect in busy periods. The leader should make sure to keep focusing on the team development, add regular informal meetings and catchups with the members to make them feel included. Without these catchups, it could happen that due to the geographical diversity of the team members, two members from the same team do not even talk to each other for months, which would hinder the "we-feeling". A good technique could be for home office practitioners from the same office to practice "get out of the house" exercise – where the day starts with dialling into a conference call via mobile phone and the team members spending their first 10-15 minutes on fresh air, grabbing a coffee, or just simply walking together to work. When they arrive home or to their office, they hang up and officially start their day.

#### 3.4 Performing

#### 3.4.1 Functions of a Leader

This is the stage where everything goes smoothly, the team functions at a very high level and can overcome challenges. Continuous improvement and innovation become the norm; the trust level is at its highest. In a strict sense, there is no need for an autocratic leader here, the leader's function is transforming or dissolving to shared leadership among different team members (Kozlowski et al, 2009). At the same time the team should not lose focus of the goals of the team and the tasks that arise – both routine and unique ones. The team members should also continue to work hard, engage in learning and development, since in this shared leadership phase that would enable them to continue performing (Super, 2020).

This means that the team can self-manage, and the leader's focus should shift from internal to external – such as positioning the team better with the leadership, respond to changes within the organization, etc. The team members should provide updates to the formal leader; however, he would be mostly monitoring their activities and give feedback from a developmental aspect (Burke et al., 2017).

#### 3.4.2 The Role of a Leader

The Performing stage is supposed to have reached a successful accomplishment of the goals of the project. At this stage everything is expected to go smoothly in the operations of an effective team. This is, however, not always the case. The leader's role should fit the attributes of a facilitator whose managerial and psychological skills together secure a seamless operation. The team leader should give encouragement and feedback, should exercise control, and carry out evaluative acts to sustain balanced operations.

#### 3.4.3 Practical Aspects of Leadership

This phase ensures that the resources are used to cope with external challenges as there is no conflict internally while the team is performing high. The leader should leave internal affairs to the team members, who through shared leadership manage the day-to-day operations and the leader should focus on representing the team to different stakeholders. This does not mean, however, that the leader would be completely disengaged from the operation of the team – he/she should keep monitoring the performance.

The number of catchups and regular meeting is decreasing in this stage and there is a shift in their purpose. As mentioned already, the leader should monitor the performance, but from a different angle: the agenda of these meetings should cover communicating external expectations and strategic directions, imposing new challenges on the teams, and ensuring that the big picture, the goals of the team are not forgotten. The leader should also provide feedback to the team members on the team's performance, development areas that match the strategic directions of the organization or future projects, etc. Of course, significant issues, conflicts and challenges shall be discussed with the leader as well and he/she should step in, where necessary, but this is not the leader's focus at this stage. Periodic review of the tasks and processes for innovation and opportunities by the entire team, or the rotation of the tasks between team members are also great tools to support the growth of the team, it's its members and helps maintaining motivation on the long-term.

#### 3.4.4 Virtual Teams vs. Traditional Teams

In a high-performing team there is not a lot to do for the leader but monitoring the performance of the team and stepping in, when necessary. In virtual teams these pose very minor challenges, if any to the leaders since the more challenging day-to-day operation are now managed through a shared leadership.

#### 3.5 Adjourning

In our analysis the last stage - the Adjourning stage – did not figure as relevant, it did not lend itself to scrutiny. This stage envisages an opportunity for self-reflections and evaluations and opens an emotional perspective. Therefore, we assume that this stage presents no significant challenge to the team leader in the case of a virtual project team.

Of course, lessons learnt are important in every team, however, since the focus of this analysis is on functioning teams, the closure of the team is not often present in their operations.

#### 4. Discussion

The aim of this paper was to collect information on leaders' roles and tools available that could be utilized in different stages of team development and provide an outlook on how leaders of virtual teams could utilize these to overcome the challenges virtuality imposes on them. The toolkit below summarizes these aspects and could be used as a guidance for leaders in virtual – and, of course, traditional teams alike (Table 2):

Stage	Leader's role	The function of the leader	Tools/techniques	Virtual team challenges
Forming	Mentor	<ul> <li>Selecting the right team members</li> <li>Building team cohesion and trust</li> <li>Sharing team purpose, goals</li> <li>Monitoring individual performance, provide feedback</li> </ul>	<ul> <li>Referral, utilising external relationships</li> <li>Building trust and safety through: Icebreaker, expression of intentions, dos and don'ts, team charter, including acceptable behaviours, basic norms</li> <li>1:1 conversation</li> <li>Daily catchups, open hours, thumbometer, anti-tasks</li> </ul>	<ul> <li>Building trust in an environment, where non-verbal clues and informal gatherings are limited.</li> <li>The same tools could be applied, but with emphasis on formalizing team meetings, small, facilitated group activities to know each other better</li> </ul>
Storming	Instructor	<ul> <li>Creating a problem-solving culture</li> <li>Sense-making</li> <li>Promoting team cohesion</li> <li>Creating action plans to execute ideas</li> <li>Providing trainings and assistance for development</li> </ul>	<ul> <li>Weekly team meetings for task-related conflicts</li> <li>Workshops to tackle more complex problems</li> <li>Defining core values and reviewing processes</li> <li>Creating agreements over expectations: "I provideI ask for" approach</li> <li>Weekly info sharing sessions</li> <li>Setting up smaller project teams</li> <li>360 feedback</li> </ul>	<ul> <li>Increased frustration due to technical issues <ul> <li>add meeting notes, emails, and follow-up.</li> </ul> </li> <li>Use breaking rooms in online tools, make sure that the number of participants allow everyone to feel included.</li> <li>create safe space to talk about emotions</li> </ul>

### Table 2. Toolkit for leaders of virtual teams if different stages of team development

Stage	Leader's role	The function of the leader	Tools/techniques	Virtual team challenges
Norming	Coach	<ul> <li>Improving teamwork</li> <li>Focusing on reaching mastery at individual level</li> <li>Promoting tasks that require innovation</li> <li>Emphasising open nature of interactions</li> <li>Providing feedback on a team level</li> <li>Focusing on coordination, strategy, goal revision</li> </ul>	<ul> <li>Review team charter</li> <li>Evaluate existing norms</li> <li>Coaching to reach mastery</li> <li>Small workshops and discussions</li> <li>Involve team members in strategy, goal revision</li> <li>Articulate the "we-sentence"</li> <li>"Get out of the house" exercise</li> </ul>	<ul> <li>Increased risk of fragmentation – due to working from different location with busy calendars the members can hardly connect, which makes the "we-feeling" less significant.</li> <li>The leader should ensure to regularly engage team members to work together, have catch-ups to make them feel involved.</li> </ul>
Performing	Facilitator	<ul> <li>Stepping back from active leadership</li> <li>Making sure goals and tasks are not forgotten</li> <li>Positioning the team better with external stakeholders</li> <li>Monitoring activities and performance</li> <li>Providing feedback</li> <li>Keep the flow and motivation</li> <li>Support the team's and the members' growth</li> </ul>	<ul> <li>Shift in the focus and regularity of team meetings to communicate strategic directions, new projects</li> <li>Focus development areas on strategic dimensions of the organisation</li> <li>Support members' growth by new challenges</li> <li>Provide on the job learning opportunities by rotation of the tasks</li> </ul>	- No significant challenges since the day-to- day management is within the shared leadership and the leader is focused more on external relations.

Source: Own evaluation

It is clearly visible from the toolkit that there are several tools and techniques that are present or could be present in each stage: one-on-one discussions could be effective in all stages, promoting informal team building is crucial in the whole lifecycle of the team, etc. Furthermore, it shall also be noted that some tools could work for one team and fail for another as team dynamics, cultural aspects and many other factors could influence their success. It is the task of the leader to choose the most suitable option from this toolkit based on the individual characteristics of the team and apply it accordingly.

On the other hand, it shall be noted that some of the tools could fail, if not applied in the correct stage of team development. The case study published by Kupa and Komlósi (2020) about a semi-virtual team stuck in a storming phase for several years shows the limitations of team charters for example. The team charter works very well in the forming and the norming stage, however in case of deeper conflicts it is not the best choice just to prepare a contract, the situation requires the leader to step in, provide instructions on how to handle conflicts and to rebuild trust within the team.

The toolkit was built based on tools and techniques applied in practice in traditional teams, however developed to serve the leaders of virtual teams. At the start of our analysis there were two hypotheses we considered:

H1. The role and function of a leader during the process of team development is not decisively different between traditional and virtual teams.

# H2. The tools to be used by the leader to successfully tackle the challenges during the process of team development are decisively different between traditional and virtual teams.

Our analysis showed that the role of the leader is similar in both the traditional and virtual teams, which confirmed our first hypothesis. We also assumed that the tools and techniques the leaders could use to successfully tackle challenges attributable to different team setups were decisively different. Our analysis showed, however, that the tools do not necessarily differ, the same tools could be applied in virtual teams as in traditional teams, although through a different technique (i.e., implementation) with a shift of focus or enhancement. Thus, our second hypothesis could not be confirmed.

#### 5. Conclusions

The long-term effect of the peak due to COVID-19 is not yet visible, however, the growing tendency of virtual teams is to be expected to continue after the pandemic is over. Several companies have just realized that tasks could indeed be performed virtually, while

globalization, better access to infrastructure and new technologies will enable this growth further.

Leaders face several challenges, when it comes to virtual teams, where the bigger challenge relates to establishing trust in the forming stages of the team. There are several tools and techniques that are available for the leaders, which work both in virtual and traditional team. Our study showed that there are no significant differences in either the roles and functions of the leader or the tools to be used, however, the techniques that help implement these tools are different in virtual teams.

The toolkit presented in this study serves as a guide or a "cheat sheet" for leaders: it summarizes the when, the what and the how. The toolkit as a sort of inventory has never been presented in a similar way before. The basis of the toolkit was an over 40 years of aggregated experience of leadership and organizational professionals. It provides a more practical rather than theoretical summary of the tools and techniques to be used.

We would note, however, that the toolkit cannot serve every problem, it has several limitations. Leaders should look at it as an inventory at their disposal to solve problems based on the unique needs of their team's situation. Further research should be conducted on how this toolkit could be adapted, how well it performs in different countries and industries, and it should be viewed from the perspective of the team members as well.

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#### Paper Evaluation for Chapter III

This paper focuses on the leader's role in virtual teams and how the leader can help the team in overcoming the challenges of virtual team setups and at the same time utilise the benefits better. The analysis provided in this research paper brought together the experience of a practicing organisational coach, an academic researcher in the field of leadership and me, someone with over 10 years' experience in teams and virtual teams as well with the existing literature in the form of a theoretical synthetisation. This resulted in an exhaustive summary on tools and techniques that can be used effectively in the different stages of team development for both traditional and virtual teams.

During the preparation of the toolkit and summarizing the findings of the analysis, which discuss research questions Q1. and Q2. of this dissertation, it has become clear that although we thought that there is a clear difference in the tools and techniques that can work in virtual and traditional teams, the key is in the increased frequency on how the traditionally working methods could be transitioned to the virtual space. Thus, from a leader's perspective this paper closed the analysis of virtual teams with a quite clear message: virtual teams are not that different from traditional teams as we thought they would be. Although the set-ups are different, the goals, dynamics and stages of development do not necessarily differ. Virtualness brings more challenges than traditional face-to-face cooperation, but these can be overcome by smart choices from the leader and of course, willingness from the team members as well.

The next research paper chronologically was written earlier than this research paper or the one before, prepared for a conference in Porto, Portugal and gave the overall idea of virtual teams as the focus of this dissertation. The problems and situations presented in the form of a case study were occurring in an international project team, that conducted several aspects of its operations virtually or semi-virtually. Thus, first the function of the following paper was thought provoking and idea generating through the case study of a team, stuck in a conflict-ridden environment for a significant amount of time during its operations. It shows the answers of the leaders to the situation and discusses the effectiveness of the technique that was introduced for conflict resolution.

Secondly, it clearly highlights how badly an incorrectly chosen tool can affect the team's performance (i.e. using a team charter in a storming phase) and shows the limitations and the importance of the toolkit presented in this chapter as well.

## Chapter IV – Team Dynamics and Issue Resolution in Multicultural Project Teams: a case study of a global organisational transformation project

Conference paper, Published: April 2020.

Kupa, K. and Komlósi, L. I. (2020): *Team Dynamics and Issue Resolution in Multicultural Project Teams: A Case Study of a Global Organisational Transformation Project.* Paper presented at the 52<sup>nd</sup> International Scientific Conference on Economic and Social Development, Porto, pp. 170-178

#### Abstract

Leading or even just participating in a project can reveal various issues regarding teamwork, communication, and leadership styles, especially if the program has a global scope and the team members are located all over the world. In this cumbersome situation, team members often become frustrated and less effective in their daily work. Consequently, the project manager or team leader must act and make the necessary measures to steer the team back to the right course.

Our case study of a multinational company's global organisational transformational project attempted at finding a resolution of a set of issues of high complexity. The project team consisted of more than 20 experts, who were working on different pillars of the project, the largest teams being in Budapest and in London (HQ). During the first 1.5 years of its operations, several issues surfaced pertaining to the project that concerned predominantly team dynamics, communication styles and project management approaches. As a constructive answer to these challenges, there were two workshops held for the project team to discuss and reveal the problems the team members were facing, trying to identify the root causes and find solutions to them.

The outcome of these workshops was a consensually elaborated and agreed Team Charter, which aimed at identifying the right behaviours and ways of working together with issue resolution techniques to be adopted for use. The Team Charter was presented, discussed, and welcomed by the project team.

Our paper focuses on the focal points which were revealed to be persisting and recurring issues in such team set-ups only to show how the project under scrutiny of the case study aimed at resolving them. It also discusses what further steps and tasks are anticipated and what the limitations of these techniques are. Keywords: Issue Resolution, Leadership, Multicultural Project Team, Team Charter, Team Dynamics

#### Introduction

Complex international projects require thorough planning, however, when it comes to execution and project management, many projects struggle. The importance of both managerial tasks and having a leader within the project is crucial since complex projects require a diverse team set-up. The team members are diverse in their race, age, ethnicity, religion, citizenship, location and of course in skills, experiences, personality traits and attitudes.

The case study presented in this paper introduces a multinational company's global organisational transformational project attempted at finding a resolution of a set of issues of high complexity. During the first 1.5 years of its operations, several issues surfaced pertaining to the project that concerned predominantly team dynamics, communication styles and project management/leadership approaches. Our paper focuses on the focal points which were revealed to be persisting and recurring issues in such team set-ups only to show how the project under scrutiny of the case study aimed at resolving them. It also discusses what further steps and tasks are anticipated and what the limitations of these techniques are.

The paper is structured as follows: Section 2 provides a short literature review of the project and team related academic literature, which will be the basis of the evaluation of the case study presented in Section 3. Section 4 discusses the case study and evaluates the issues and provides a root-cause analysis. Section 5 concludes our claims and findings

#### 1. Literature review

#### 1.1 Project and project team

Project is a social construct (Morris, 2011; Lundin and Midler, 1998), a singular problem extracted from an environment of various processes and events. The separation of the project from this messy, chaotic context is what creates social involvement and different project activities.

According to Sense (2007), the definitions of projects in the academic literature revolve around two characteristics: separation and temporality. Separation, as seen in (Lundin and Midler 1998), differentiates the project from its environment, as a project is a unique, non-routine activity compared to the ongoing operations, with a specific expiry date. The project is a separate process with a finite time to complete. Turner (1993, p.5) also states that a

project is "an endeavour in which human, material and financial resources are organized in a novel way, to undertake a unique scope of work, of given specification, within constraints of cost and time, so as to achieve beneficial change defined by quantitative and qualitative objectives."

To execute the tasks that contribute to the goal of the project a team shall be set up. Cohen and Bailey (1997, p.241) define the team as "a collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems (for example, business unit or corporation) and who manage their relationships across organisational boundaries". From a project perspective Ricketts and Ricketts (2010) defines team as a group of people set up to work together on a common project performing different tasks using their different skills, supporting each other, and meshing their functions.

#### 1.2 Leadership and management

One of the most important roles within a team is the role of the team leader which - from a functional perspective - can be divided to managerial and leadership tasks. When it comes to managerial tasks, the manager's role is related to performance and achievements and how to administer the resources of the organisation to achieve these goals (Drucker, 1998). Thus, when it comes to project management, the task of a project manager is mainly about administration, execution, and performance management.

On the other hand, leadership is not that technical as management, and is used in situations with non-routine decision-making, where the standard procedures cannot be applied. In essence it is a practice and not a science (Gräser, 2013). According to Kotter (1990) leadership within a complex organisation – and since a project can be considered as a temporary organisation it applies to project leadership as well – achieves its function through the following three sub-processes:

- Establishing direction through developing a vision and ensuring the change that helps in achieving that
- Aligning people through communicating this direction to cooperate and commit to achieving the goals
- Motivating and inspiring people so they move in the right direction even in hard times, mostly using the emotional intelligence of the leader.

#### **1.3 Team dynamics**

During their operations teams and projects go through five stages of development (Tuckman, 1965; Tuckman and Jensen, 1977): forming, storming, norming, performing and adjourning. These stages produce different behaviours, feelings, and challenges, i.e. the interpersonal relationships that develop in teams while performing a common activity change as the project progresses. These interpersonal relationships are what the academics, such as Forsyth (2006) call team dynamics and which can be seen in Tuckman's group development theory as well.

In the Forming stage the responsibilities are not yet clear, so the leader must be more autocratic, giving the members guidance and direction due to the lack of certainty they feel.

The second stage is Storming, which is the stage of conflict and competition to have a clearer hierarchy, focusing on the testing and proving mentality. It revolves around disagreements, insufficient information sharing, tension and sometimes struggle in the leadership role.

In the Norming stage the interpersonal relations are characterised by cohesion, solidarity, and community building - i.e. trust is established, standards are set.

The Performing stage is not always reached by all teams or project, as in this stage the team successfully achieves the goals, everything goes smoothly, and it is overall an effective team.

The last stage – which was only later added to by Drucker – is Adjourning, where the team dissolves, since the goals have been achieved. This is the time for self-reflections and evaluations, and from an emotional perspective brings certain sadness and anxiety for the members. In many cases this last stage is not always applicable (in business-as-usual teams, which usually change in case of restructuring), however for project teams, as temporary set-ups this stage always happens.

#### 2. Background to a Global Organisational Transformational Program

#### 2.1 Description of the program

#### 2.1.1 The original set-up

The transformation program ("Program") of a multinational company ("Company") started at the end of 2017 with the aim of reorganising the operations of its tax department ("Department"). The Program was focusing on realising significant benefits based on operational effectiveness, technology automation and labour arbitrage, with around 2 million GBP savings assumed to be delivered for its 2020 financial year ("F20").

To achieve this benefit goal, the Company started setting up a project team ("Team") in 2017, which at the beginning focused on planning, analysing the current situation in 2018 and 2019, however the Team evolved and grew as time passed and at the beginning of F20 was divided into four pillars, with a pillar lead coordinating each one:

- People and Change focusing on the HR and recruitment related tasks, transition plans and knowledge transfers and change communications
- Process focusing on lean reviews, activity trackers and setting up new, more efficient processes
- Risk and Controls focusing on implementing efficient care and risk assessment controls and risk management within the Department
- Technology focusing on developing technology for the Department that could through automation, artificial intelligence, and other tools – ensure the benefits for the Program.

From a location perspective, the Team was also divided: the leadership ("Leadership") was in the UK, while most of the Team was in Hungary, with a few local members in the bigger SSC locations worldwide. The Program was managed by a dedicated project manager and led by a program director.

#### 2.1.2 The new set-up

After the first 5 months of F20, a new project manager was appointed and the whole Team was reorganised and the pillars became workstreams, each of them having a workstream lead directly reporting to the Leadership. They divided the Technology pillars to two workstreams: Direct and Indirect Tax workstreams, while they merged the Process and Risk and Controls pillars to a single workstream called Governance.

Setting up the new workstreams required hiring or contracting new workstream leads with project management experience, putting extra high-grade roles in place. The new project manager also implemented further changes in the Team's ways of working:

- only the workstream leads were in direct contact with the Leadership and the work was distributed through them
- 2. the number and types of meetings the other team members were invited to was reduced, daily scrum meetings were introduced per workstream
- 3. new reporting (plans on a page, A3's) were implemented to be updated weekly

#### 2.2 Issue mapping and resolution

#### 2.2.1 Issue resolution workshop

During this meeting the overall *Finance Mission* of the Company was discussed, with an emphasis on how the Program and the Team can contribute to these targets and to identify the gaps and issues in the team dynamics. There were 22 participants in person and 5 dialled in via Zoom, both the Hungarian, the UK and the regional team members were present. The following questions were discussed:

#### a) What excites you about the Company?

The answers focused on the Company's free and open culture, where the people are unique and diverse, and at the same time everyone is approachable and can feel included. The team members found the Company's brands and products exciting, welcomed the continuous innovation and the flexibility and global opportunities that come with working there.

#### b) How does working here make you feel?

The answers on this question were overall positive, highlighting that anyone can be proud, lucky, and thankful to work in such a reputed workplace with a clear purpose of making something meaningful every day. At the same time, there were some concerns that sometimes it can feel uncertain, the changes come fast and there are always some unexpected surprises around the corner.

#### c) What does best-performing mean?

The participants highlighted that best-performing means being better than the peers, a team that succeeds and celebrates its achievements, provides high quality work, recognises the contributions, and takes pride in its actions. The best-performing team is efficient and effective by optimizing on the abilities of its members.

#### *d)* What does most trusted and respected mean?

When it comes to being trusted and respected it means acting with integrity, being motivated, and empowered to do the assigned job. Trusted and respected also creates a family-like environment, where members can share concerns, listen to each other, give, and receive feedback.

#### e) How will the Program deliver best performing, most trusted and respected?

From the Program's perspective the participants agreed on having clear goals, while keeping in mind the best interest of the business and the stakeholders. It includes continuous risk assessment and mitigation, thinking before acting and being honest about the progress the Team makes or the problems they face. Another important feature was the use of an agile and framework approach, rather than functioning completely pre-planned or agile.

#### f) What does it feel like being part of our team?

The answers to this question were quite diverse: according to positive views it is exciting that the Program delivers something challenging, which makes the members massively committed and invested, with a good atmosphere and community in the Hungarian team. Other views highlighted the hardships of being involved in the Program referring to the continuous changes, restructuring, the Program perceived as an emotional rollercoaster, a stressful place to work.–Some answers were ambivalent: members highlighted that both respect and disrespect are present in their daily work, they are exposed and receive both positive and negative feedbacks.

g) What do we do well?

The expertise within the team is great, team members are creative, helpful, hard-working, and supportive. Members are embracing the change and can adapt to their internal and external environment flexibly.

#### *h)* What could we do better?

There were several ideas and focus points discussed in this question. The issue of the team dynamics was raised where the Team agenda and the Team goals should be followed. It was deemed desirable that members should be more connected, the directions and responsibilities should be clearer, and the prioritisation and resource allocation should be improved as well. Many felt that not the same standards were applicable for everyone, mostly due to the location-split. It was felt that there is room for improved communication as to how members share information and how they use the A3's and other reports already available with instant feedback.-Less meetings with more focused agendas and well-defined structures were desired.

#### *i)* How would our stakeholders describe us?

As a resilient and supportive Team that works well together, however the stakeholders expect answers that the Team cannot provide in many cases —not only the requirements but also the "whys" should be communicated by the stakeholders.

#### *j)* How could we make a bigger difference?

The Team was able to show that they are one team where everyone is included, the members are fit to share information on a timely manner and delegate the right people to the right tasks. This also results in providing great career opportunities for the members of the Team. More emphasis should be on communication and feedback, both internally and externally.

The answers to the above questions reflect several issues that the Team was facing, which required further analysis.

#### 2.3 The Team Charter

Based on the answers to these questions, the Team decided to set up a Team Charter ("Charter"), that could serve as a code of conduct for the future team dynamics as it became clear that something must change. There were issues with communication, information sharing, and the standards applied, which had to be addressed. The Charter consisted of the following sections:

- 1. a *Mission statement* for the Team, which emphasised the importance of trust in delivering the goals of the Program within the team.
- 2. the *Commitments* towards achieving this mission, such as embracing change, sharing information, truly collaborating with each other.
- 3. the *Behaviours* the Team would embrace, such as trust and transparency, the importance of communication and listening.
- 4. the *Focus areas* for the Team, including creating a positive environment, holding each other to the same standards, improving prioritisation and structuring the resources and information significantly.

#### 2.3.1 Acceptance of the Charter within the Team

The Charter was presented to the Team members (with the same participants as the issue resolution workshop), who got a chance to discuss and reflect on the Commitments, Behaviours and Focus areas.

The overall reaction was positive, they welcomed having such a guidance at hand, as the things listed in the Charter are the essence of an amazing team. Some participants however raised the issue of the applicability of these guidelines under pressure and found it challenging to remember these commitments all the time. It was also visible that the many members kept silent about their concerns since the Leadership was present at the workshop – this was raised after the workshop by several colleagues during private discussions.

The members also made several personal commitments towards the goals of the Team Charter, mostly promising cooperative behaviour, structured information sharing and focus on the overall wellbeing of each other.

There were three main areas that the Team thought would be the most challenging to improve or start applying the Charter's requirements:

- <u>Communication</u>: Utilising the team meetings, daily scrums better, making information available (such as A3's, Steering Committee slides and feedback) for all team members. The challenge here is that in many cases the Leadership wants to have as few people as possible involved in confidential discussions or possessing such info, however at the same time realising that almost all team members require such information as that affects their daily work. It was also noted that the members shall also be proactive in asking for information, if they feel something is missing at the same time this is only applicable for the "I know I don't know something" cases.
- <u>Decision making</u>: The process shall be simplified, if possible, as in many cases there are too many stakeholders involved, who keep changing their positions and the Team tries to incorporate these into the plans even after the decisions have been made. It was noted that in some cases the Team can stick to decisions, however in other cases agility is required thus a framework type planning shall be implemented. It was also important to highlight that the "not putting our finger into everything" approach shall be considered as the members are sometimes overloaded with tasks, they don't really have anything to do with.
- <u>Monitoring the commitments:</u> Besides the above, the biggest concern was about the way the Charter will be applied and the Commitments defined will be monitored and "enforced". It is nice to have a Charter, but how will the Team make sure that the Behaviours are followed, and how they will correct the errors, mistakes, and noncompliant situations?

#### 3. Discussion

The case study presented about the Program reveals several aspects of leadership, communications, motivation, management, and other areas of business sciences. However, in this paper focuses only on the leadership and team development issues, including the team dynamics.

#### 3.1 Issues identified

As a first step, the root causes of the issues present in the Team shall be analysed based on the answers provided and the discussions held during the issue resolution workshop. The issues could be categorised as follows:

#### - Different standards applied

It was imminent from the responses in the workshop that one of the main issues were the different standards applied for the team in the UK and the teams located either in Hungary or in the regional centres. This was not due to any favouring of anyone, but due to language barriers and cultural differences. The importance of face-to-face and efficient communication came to light. The lack of trust became an issue as during the workshop it became clear that the project manager thought that trust must be earned first and not credited from the beginnings.

#### - Inefficient information sharing

It was also clear that there was no structured way of information-sharing within the Team. The reports (A3's and POAP's) were not shared between the workstreams and the Leadership also missed communicating the feedback from Steering Committee and other stakeholders. This caused several issues within the Team, such as not being able to react on time to changes, working with inefficient information and inefficient allocation of resources.

- Focus on problems and mistakes

Since the pressure on the team members was always at a high level, not being recognised for the hard work they had done caused issues in the Team's moral stance and its overall motivation. This highly committed Team became very negative when only the negative feedback (e.g. what was missing, blaming, etc.) was shared with the members. This resulted in the Program being also perceived negatively by the stakeholders and other teams, as the successes and positive things were not celebrated and highlighted enough.

#### - Lack of cooperation

During the workshop it also became evident that there are serious issues in the cooperation and the one-team-mindset. Due to the high workload many focus on their own agenda, prefer working individually – which can be also derived from the lack of successful cooperation in the past and conflicts due to communication styles within the Team. The dividedness between the UK and Hungary also hinders cooperation, however it shall be noted that only a few of the team members raised this issue to the Leadership and other team members.

#### - Inefficient resource allocation

As the Team was restructured and the program progressed, the tasks to perform became also more complex and higher in number, on the other hand due to increasing the Leadership and not having enough colleagues to execute these tasks, the workload on several team members required working significant overtime. Since the overloaded members could not perform to the best of their knowledge, they became unmotivated, frustrated, made mistakes and of course, received negative feedback from the Leadership, putting several members to the edge of burnout by the middle of F20. It was also raised that especially for the lower grade colleagues there were no clear career paths, their positions would be eliminated at the end of F20 without having any visibility on their opportunities in either the continuity of the Program or within the Department itself.

#### 3.2 Team dynamics and the Team Charter

When considering the five stages of team development, the team dynamics, namely the interpersonal relationships, interactions shall be analysed. Based on the answers provided during the workshops it is visible that there is a lot of tension, miscommunication, and uncertainty within the team. There are unclear roles and responsibilities, which was slightly improved by introducing the new set-up. What is also evident that the attitude of the team members is positive and proactive despite the tension and conflicts that continuously arise within the team.

Based on the above using Tuckman's (1965) analogy, the Team is still at the stage of Storming, which is not usual for project teams that had been operating for more than 2.5 years. One of the reasons for being stuck at this stage is the complex nature of the task at hand, which requires a lot of stakeholders, different needs and different skill sets and of course, colleagues working from different locations.

The above team dynamics can be also due to the continuous changes in the team structure and the fluctuation of some of the colleagues and welcoming new joiners as well, however the latter is usually a natural phenomenon in all types of teams. Being stuck at the Storming phase for a long time can be another reason for not being able to move on to the next phase – as the uroboros, the snail swallowing its own tail – since there is a natural need for stepping into a Norming phase with more stability, and when that does not happen it causes further turbulence and tension within the team. Of course, nothing is black and white, the teams go through these stages all the time, sometimes starting over from the first stage and sometimes struggling to move to the next stage desired. The issue at hand is that the Team is responsible for performing tasks that have significant influence on the life of over 200 employees, and if the Team cannot deliver the transformation effectively, that has turbulent effect on the overall motivation, wellbeing of the people in the Department. To deliver, the Norming, but mostly the Performing stage should have been reached, and this was recognised by the Leadership, who decided to use the Charter as a tool to get closer to this goal.

Based on the overall feedback from the members, the Team charter was welcomed by the Team, which was aimed at providing norms, a way to reach the Norming phase, a guidance that would help the Team evolve. In that sense the Team has now a clearly communicated mission, behaviours that are expected and areas that require focus and improvement, which is crucial to step to the Norming phase.

On the other hand, the Charter is not more than a piece of paper, a nice visual aid, which might have been useful at the beginning of the Program. On the other hand, by itself at this stage its usefulness is questionable. The Team functioned in certain ways for a significant amount of time and changing it requires a lot more than just a single Charter – this requires true leadership and guidance. Thus, the biggest challenge resides at the Leadership level of the Program: what can they do and change to make this Program perform and become the one amazing team, a high-performing team that is expected of them.

#### 4. Conclusion: Rationale and Further Tasks

The case study presented a transformational program, a complex project aimed at reforming and reorganising the operations of a tax function at the Company. Throughout the almost 2,5 years of its operations, the Team changed its structure several times, tried different reporting techniques, involved new people in its operations, however struggled to develop to a high-performing team that can deliver according to the expectations.

This paper did not analyse the issues arising from the planning phase of the Project, only focused on the issues arising in relation to team dynamics and the leadership within the Program. It is visible that the Leadership was trying to work on changing the mindset within the team by introducing various measures during the years, however something was missing. And that was due to the Leadership forgetting they must lead and not only manage.

The Program was over-managed and at the same-time under-led. People had to report everything and at the same time the information was shared only in a military need-to-know basis: the information sharing was extremely hierarchical, which in such a project was not meeting the needs of the members. On the other hand, a true leader was not present, could not provide a clear mission, vision, and ways to execute these changes. There was no real motivation due to the task-focus in the Team rather than a people-focus. Of course, the attitude and the intent of the Leadership is not challenged here as it was visible from the workshops that they tried their best, however they did not have the right tools to do so.

Having the issue resolution workshops was one of the tools that the Leadership used, which – if used properly – could have provided important information. The obstacles of the effectiveness of the workshops were limited due to their set-up (face-to face with everyone present) not everyone had the chance or was brave enough to speak their minds. Another issue was proposing such an impersonal solution (Team Charter) to a very personal issue of team dynamics, which could not be more than a tick in a box, but from a leadership perspective that was not enough.

Our future research regarding this case study will focus on this very issue: what tools and techniques are available for the Leadership to help the Team evolve to the next stage of the team development in such a complex project as the Program presented in this paper.

#### Paper Evaluation for Chapter IV

This research paper was originally prepared to focus on how the leaders of a multifunctional project team managed issue resolution within the team, however this paper brought in two important practical aspects to the dissertation:

- **Operations of a virtual team** though it is not named in this paper this way, the team setup presented is of a virtual or semi-virtual team. The team members (though in the UK and Hungary hubs had the chance to work from the same office) were mostly geographically dispersed, used mostly information technology and communication tools to cooperate.
- Differences in tools and techniques in different stages of team development though this research paper discusses Tuckman's (1965) five stages of team development under the section of team dynamics (as chronologically it was published before the two research papers in Chapter II and III), it also shows the practical need to analyse in which stage the team currently is to be able to successfully tackle challenges, as different stages require different tools and techniques to be used.

Thus, this research paper further validates the results of Chapter III and the discussions on research questions Q1 and Q2 of this dissertation.

The next research paper, that was published in the Tér – Gazdaság – Ember journal's special English edition shifts the focus from the leader to the individual, and abilities to function in virtual teams. Virtual teams – due to people not being always around, having a secluded work environment – require members who are more independent and can also function individually.

The concept of Self-Directed Learning is also introduced in this paper, as that is the focus of the second pillar of this dissertation: how the individuals' ability to manage their learning could be used as an important aspect in selecting the right team members for the teams and later also define performance goals and the involvement of the leader in the individual's learning path. This paper is a research design and focuses on how the research, data collection and analysis were to be performed at the end of 2020.

#### Chapter V – Self-Directed Learning Readiness in Virtual Teams

Published paper for Tér-Gazdaság-Ember Journal

**Kupa, K. (2020b).** Self-Directed Learning Readiness in Virtual Teams, Tér – Gazdaság-Ember, 8(4) pp. 77-89.

#### Abstract

This study presents a research design, which provides a summary on the literature of virtual teams and Self-Directed Learning (SDL) and explains data collection and analytical approach of research focusing on how Self-Directed Learning Readiness Scales (SDLRS) can be applied in virtual teams. The planned research focuses on whether the SDLRS results in virtual teams will be like results in nursing education, where these scales were mostly tested. Furthermore, it will also test the assumption that members of virtual teams will score higher than participants from previous studies. The chosen SDLRS questionnaire was developed initially in 2001 and has since been tested and verified as part of the planned research. This paper gives an overview on the space, timing and methodological specifications regarding the data collection and covers the confirmatory factor analysis and descriptive statistics that will be used to analyse the data.

**Keywords:** learning, Self-Directed Learning, virtual teams JEL classification: D83, M14, M16, M53

#### Introduction

Globalisation and the rapid innovation over the past decades significantly changed the way teams work, perform tasks, and develop their skills and knowledge. Technology slowly started to take over workplaces, starting from phones and emails to instant messaging solutions, videoconferencing, and online collaboration tools. Nowadays almost every team is virtual in its operations, since they use emails, software or other information and communication technology tools to perform their daily tasks. The deciding factor whether teams are virtual is whether they work from various locations and if they almost solely rely on technologies during their collaborations.

Previous summaries on virtual teams (Lipnack–Stamps, 2000; Bell–Kozlowsi, 2002; Berry, 2011) provided general theoretical background and more current studies (Hoch–Kozlowski, 2014; Dulebohn–Hoch, 2017; Larson–DeChurch, 2020) analysed the leadership
aspects of virtual teams, highlighting team development as one of the crucial areas in virtual teams. The study prepared by the author of this article (Kupa, 2020) provided a critical literature review of virtual teams and their leadership aspects and identified that there is a gap in virtual teams' literature regarding learning strategies, which led to further research in the academic literature in learning and individuality.

Virtual teams have their own benefits and challenges, which are also relevant when it comes to developing a team or individuals, improving skills, gathering knowledge, or sharing existing information within team. Virtual teams heavily rely on online learning and platforms but have challenges regarding learning techniques that are more interpersonal and are based on trust such as mentoring or coaching. Virtual nature also brings forward several issues regarding classroom settings, such as time-differences, language barriers and the proactivity and self-directedness of the learners has become evident in virtual teams as well.

When someone works from home, moreover, starts working in a new team or organisation from another location without the opportunity to meet face-to-face, their learning strategy becomes the key to their success. Whether these individuals possess the necessary skills, personality traits and motivation to be the owner of their own learning path – i.e., they are ready to self-direct their learning – can be measured through Self-Directed Learning (SDL) readiness scales, such as the ones developed by Guglielmino (1997) or Fisher et al. (2001). The common feature of these scales is that they consist of several statements that must be evaluated on a Likert-scale, where the highest score means higher readiness for individuality in the learning path.

This paper summarises the methodology that is required to test, whether the scale of Self-Directed Learning Readiness (SDLR) as defined by Fisher et al. (2001) measured in nursing education is suitable to measure SDLR in virtual teams. This test has been done through circulating the questionnaire of Fisher et al to workers in virtual teams in Hungary and the data collected will be analysed using confirmatory factor analysis. After this analysis the hypothesis that the SDLR score of virtual teams is higher than in traditional school settings will be tested with descriptive statistics.

Section 2 of this paper provides an excerpt on the critical literature review performed on virtual teams and SDL literature. Section 3 gives an overview of the research method, approach, data collection and analysis to be executed. Section 4 gives a conclusion.

#### 1. Critical Literature Review

#### 1.1 Virtual Teams

The concept of virtual teams originates from the 1990s, where their benefits and description were in the focus of several studies (Byrne et al., 1993; Dess et al., 1995). Virtual teams have the same basic concept as traditional teams: they are a set of individuals sharing the responsibility to perform tasks as a complete social entity.

Team members must work together using their different skills and providing support to other members to reach their common goal (Ricketts–Ricketts, 2010). Virtual teams differ from traditional teams in that they can work together using IT and communication technologies while the team members are in different locations and face-to-face meetings are not necessary in executing their tasks (Bell–Kozlowski, 2002). The goals and tasks of virtual teams do not necessarily differ from traditional teams; the basic difference is technology and physical non-proximity of the team members. The technology-mediated nature of virtual teams is present in several studies, noting that without technology teams cannot have a virtual nature (Lipnack–Stamps, 2000).

The virtual nature itself is a complex and multidimensional construct (Kupa, 2020), even if two teams use the same tools and technologies, the extent to which these are used is the deciding factor in qualifying as virtual teams. Every team that uses technology to a certain extent has a virtual nature in their operations; however a team, which uses email, but their daily operations are conducted face-to-face in the same office is not a virtual team, only a team conducting certain activities virtually. This means, that using technology does not automatically mean that a team is virtual – the geographical dispersion of members and the technology mediated nature both need to be present to qualifying as a virtual team (Berry, 2011).

The past two decades have brought significant growth in the use of virtual teams, which has been influenced by globalisation, rapid innovation, and better access to infrastructure, such as internet, technology, and basic needs as well. The quality of networking and collaboration technologies has improved, and the talent pool has become globally accessible (Dulebohn–Hoch, 2017). The benefits arising with virtual teams are, amongst others, flexibility, cost efficiency, better utilisation of time and space, and maximising expertise of the globally dispersed talent pool. At the same time these benefits pose several challenges to teams, such as overcoming a lack of personal connections, different cultural backgrounds, language barriers and technological issues (Kupa, 2020).

The role of the leader is to help overcome these challenges and exploit the underlying benefits and opportunities. The focus of leaders in virtual teams is performance management and team development; however due to lack of face-to-face interactions the latter – focusing on mentoring, coaching, and learning functions – is difficult to perform (Bell– Kozlowski, 2002). Learning and knowledge development as part of team development is often hindered even when using various tools for communication due to distance and lack of face-to-face contact (Bosch-Sijtsema–Haapamäki, 2014). Zakaria et al. (2004) noted that learning is often facilitated by not only verbal or written communication, but by transmitting information via non-verbal clues such as voice modulations, metaphors, and storytelling, which are not always present in a virtual team's learning activities. Learning and development individually in virtual teams requires higher standards of independency than in traditional face-to face teams, which makes Self-Directed Learning more significant in virtual teams.

#### 1.2 Self-Directed Learning

#### 1.2.1. The SDL Theory

Self-Directed Learning became an instrument of fostering life-long learning in higher education, but the theory is significant in virtual teams as well. SDL enables individuals to identify and assess their training and learning needs, set objectives, act proactively in setting up their learning strategy, and evaluate their performance and learning outcomes. Thus, SDL is a process where individuals take the initiative to determine their learning needs, formulate their goals, identify resources, and define learning strategies (Knowles, 1975).

Though SDL focuses on the individuals' independency in their learning journey, Greg (1993) and Garrison (1997) both argued that SDL should also enable cooperation and utilise the team, peers or anyone who can be considered a learning resource. SDL can be used for enhancing both private and professional knowledge irrespective of institutional, geographical, or situational differences (Abdullah et al., 2008), which also confirms its importance in virtual team settings. With the rapid improvement in diverse technology, online and virtual learning tools are readily available for learners. These are frequently used in virtual teams as well.

The traits individuals should have to be ready for SDL learning strategies are categorised by Fisher et al. (2001) into three main domains: self-management, self-control, and desire for learning. Self-management refers to the ability of the learners to identify their needs, set their goals, and allocate their energy and time to learning. Self-control refers to the independency of the SDL learners, meaning that the learner is an independent individual, capable of analysing, planning, implementing, and assessing his/her learning activities independently. Desire for learning refers to the strong motivation of learners to acquire knowledge (Fisher et al., 2001).

#### 1.2.2. SDL Measurements

There are several instruments that have been developed to measure SDL, such as the Self-Directed Learning Readiness Scale (SDLRS) (Guglielmino, 1997), which is one of the first instruments to measure self-direction in learning and has been validated in several academic studies. One of these is the Self-Directed Learning Readiness Scale for Nursing Education (SDLRSNE) (Fisher et al., 2001), which is an adaptation of Guglielmino's SDLRS for the nursing education sector, and it has been validated in several academic studies.

Similar instruments are the Self-Directed Learning Instrument (SDLI) (Cheng et al., 2010) and the Self-Rating Scale of Self-Directed Learning (SRSSDL) (Williamson, 2007). These instruments have also been translated into various languages and adapted for different scenarios, authenticating the scientific interest for this type of measurement.

#### 2. Methodology

# 2.1. Research Strategy and Hypotheses

The purpose of the research is to provide a thorough literature review in virtual teams and SDLE studies and to conduct a confirmatory factor analysis of the SDLRSNE in virtual teams. The aim of this study is to – through statistical analysis – confirm that the same subscales are applicable in virtual teams, such as in nursing education, or if such confirmation is not possible explain the differences in the scaling. The study will also compare results in virtual teams to those in previous studies.

The SDLRSNE has been chosen to be the instrument tested as it has been validated several times and the wording of the 40 statements is simplistic enough to be understandable for those who speak English as their second language. Even though the SDLRSNE was specifically tested in nursing education, the statements have no specific references to nursing activities, thus were deemed fit to be tested in other sectors as well.

The following two hypotheses are to be tested through the research:

- 1. SDLRSNE as an instrument to test self-directed learning readiness is suitable to be applied in virtual teams with the same subscales.
- The SDLR scores in virtual teams are higher compared to nursing education and other studies.

The plan of action in achieving the purpose of this research is as follows:

- Performing a critical literature review of the virtual team in SDL literature and the results of previous studies.
- Conducting a survey as per the Self-Directed Learning Readiness Scale in Nursing Education questionnaire of Fisher et al. (2001).

The research approach is sequential: explanatory research will be conducted to explain the relationship between the variables in the SDLRSNE in virtual teams, while descriptive statistics will be used to compare the scores achieved by the members of virtual teams with other studies' results. Both qualitative and quantitative methods will be used to evaluate the results of the survey (Saunders et al., 2019).

#### 2.2. Data Collection

The critical literature review has already been performed and an excerpt of the findings has been provided in the research design. During this exercise several books, book chapters, journal papers and dissertations have been reviewed and selected.

The quantitative data collection has also been executed through a questionnaire, with demographic data also being collected for further analysis. The questionnaire was a modified Self-Directed Learning Readiness Scale, which was initially developed by Guglielmino (1977) and since then used with certain modifications in nursing education to measure self-directed learning readiness of students (Fisher et al., 2001). Several studies (Fisher et al., 2001; Collins, 2004; Fisher–King, 2010; Senyuva–Kaya, 2014) have confirmed the validity of Fisher's modified SDLRS and the need for its wider application outside of educational institutions has also been raised.

The SDLRS as per Fisher et al. (2001) also known as SDLRSNE consists of 40 items, categorised into three subscales as follows:

#### Self-Management:

- I manage my time well
- I am self-disciplined
- I am organized
- I set strict time frames
- I have good management skills
- I am methodical
- I am systematic in my learning
- I set specific times for my study
- I solve problems using a plan

- I prioritize my work
- I can be trusted to pursue my own learning
- I prefer to plan my own learning
- I am confident in my ability to search out information

# **Desire for Learning:**

- I want to learn new information
- I enjoy learning new information
- I have a need to learn
- I enjoy a challenge
- I enjoy studying
- I critically evaluate new ideas
- I like to gather the facts before I make a decision
- I like to evaluate what I do
- I am open to new ideas
- I learn from my mistakes
- I need to know why
- When presented with a problem I cannot resolve, I will ask for assistance

# Self-Control:

- I prefer to set my own goals
- I like to make decisions for myself
- I am responsible for my own decisions/actions
- I am in control of my life
- I have high personal standards
- I prefer to set my own learning goals
- I evaluate my own performance
- I am logical
- I am responsible
- I have high personal expectations
- I am able to focus on a problem
- I am aware of my own limitations
- I can find out information for myself
- I have high beliefs in my abilities

• I prefer to set my own criteria on which to evaluate my performance

The questions and their suitability to be tested in the planned manner have been peerreviewed. Based on this exercise with the involvement of a focus group of PhD students at Széchenyi István University of Győr, the questionnaire consisted of the same 40 items and subscales with the intention of measuring self-directed learning readiness in virtual teams.

The data collection from the questionnaire started the end of September 2020 and continued until the end of October. Participants were asked to evaluate the items through a five-point Likert scale to the degree that individual items reflect their own characteristics. Score 1 indicated "strongly disagree", while score 5 indicated "strongly agree". The data was collected anonymously and voluntarily.

### 2.3. Research Attributes

# 2.3.1. Time and Space

The questionnaire is aimed at analysing the SDLRS score and fit for virtual teams currently in Hungary. This means that only those participants shall be included in the data analysis who have been working from home in Hungary or working from out-of-office locations in the current home-office-heavy work environment.

The place of data collection was Hungary, with emphasis on individuals working for companies operating in Hungary. The aim of this study is to evaluate the SDLRS in virtual teams, thus the participants have been informed to only fill out the questionnaire if they are part of either organisational or project teams.

# 2.3.2. Language

The SDLRSNE questionnaire has been prepared and validated in English, and there is no official and validated Hungarian translation available. Thus, the questionnaire was circulated as per the original wording of Fisher et al. 2001.

To avoid misunderstandings a peer-review has been performed by a focus group to ensure that the English wording is clear and to identify any issues that require clarification. The peer-review did not find any issues and approved the application of the original wording.

#### 2.4. Data Analysis

#### 2.4.1. Factor Analysis

Factor analysis is used to analyse when there is a complex phenomenon that cannot be measured via a single question. Factor analysis combines a series of questions about the same phenomenon into a single measure, i.e., factor. These factors are the observed measures of the latent phenomenon (Fricker et al., 2012).

Through factor analysis, those independent variables could be identified that comprise common underlying dimensions which help identifying the variables that are correlated with each other but are relatively independent from other data sets. Factor analysis has two types: exploratory and confirmatory. The exploratory factor analysis focuses on exploring data to find an acceptable set of factors and its goal is to discover likely factors that account for around 50% of the common variation in the observed items. Confirmatory factor analysis begins with a theory of how factors are constructed and whether this structure fits the observed data (Fricker et al., 2012).

This research will use a confirmatory factor analysis, as variables in the SDLRS instruments are chosen specifically to illustrate the underlying process indicated. In this case it will be tested whether the factor structure of self-management, desire for learning and self-control are also present in virtual teams (Hu–Bentler, 1999). Confirmatory factor analysis has been used by Fisher and King (2010) and other researchers (Collins, 2004; Chakkaravarthy et al., 2020), who have confirmed the factor structure's applicability with only minor modifications (i.e., in the case of Fisher and King's 2010 confirmation three statements had to be removed to fit the model).

#### 2.4.2. Reliability Testing and Descriptive Statistics

As outlined by Saunders et al. (2019) for a questionnaire to be valid, it should not only be reliable but also consistent and internally valid. According to Mitchell (1996) there are three common approaches to test the actual reliability: test re-test, internal consistency, and alternative forms. This study will calculate the internal consistency using Cronbach's alpha. The Cronbach alpha measures the consistency of responses to a subset of questions that are combined as a scale to measure a concept.

The Cronbach alpha can measure between 0 and 1. Values of or above 0.7 indicate internal consistency. The alpha coefficient has also been chosen to measure consistency in previous SDLRS studies (Fisher et al. 2001; Collins, 2004; Fisher–King, 2010; Senyuva–Kaya, 2014; Soliman–Al-shaikh, 2015, Chakkaravarthy et al., 2020) where both the total scales and the sub-scales reported a Cronbach alpha above 0.8.

Besides factor analysis, descriptive statistics will be used to compare the actual result of the SDLRS data collection with existing studies to validate the second hypothesis of the research. The descriptive statistics will also be used to draw conclusions and identify further research directions.

#### 3. Conclusions

This paper summarized the research design of a future publication to be submitted about Self-Directed Learning attributes in virtual teams and provided a short introduction to the existing literature on virtual teams and Self-Directed Learning and its measurements. Virtual teams differ from traditional teams in their set-up, operations, dynamics, and how leaders can effectively lead these teams. Geographical differences make learning more challenging, while the proactivity and independency of the team members is a key component in their learning. Self-Directed Learning, i.e., the responsibility learners accept in their own learning and the existence of the abilities, attitudes and personality traits can be measured through the Self-Directed Learning Readiness Scales, which have been used mainly in nursing education.

The literature review on virtual teams and Self-Directed Learning and its measurements has already been performed and the SDLRSNE, as an appropriate measurement, has been chosen to be tested in the population of virtual teams in Hungary. An action plan to execute the research was provided with methodological overview on the steps to be performed to achieve the research goal. The research goal has been set up in line with the literature gap identified in previous research papers, which mostly focused on team dynamics, benefits, and challenges in virtual teams, however articles on individual learning paths and learning itself are not widely present in the current academic literature.

After the short literature review, the chosen SDLRS model was summarised in this paper. The model has been peer-reviewed, the specific demographics and attributes of the participants to be used in this research have also been identified and the data collection plan has been also set-up and executed. The collected data will be evaluated through confirmatory factor analysis and descriptive statistics to test the fit of the SDLRSNE model in virtual teams and analyse the readiness of virtual team members for Self-Directed Learning in early 2021. The confirmatory factor analysis will be used to test the fit of the SDLRSNE factor structure to virtual teams, i.e., whether the Self-Management, Self-Control and Desire for Learning are also fitting factors in the case of virtual teams. The research also focuses on comparing the SDLRS scores of members of virtual teams and the scores from previous research with the intent of proving that working in virtual teams requires higher scores.

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#### Paper Evaluation for Chapter V

This paper introduces the second pillar of this research and lays the groundwork for research questions Q3 and Q4 of this dissertation: how important individuality and

independence are in virtual teams and how the individuals can contribute to the success of team development and learning in virtual teams. There are several factors that influence how individuals develop new skills, learn new information – some people require a very structured and guided approach, others can put together a learning strategy themselves and require minimal intervention from their leaders.

When it comes to virtual teams, what is clearly visible that when people are geographically distant from each other, they use virtual tools to collaborate, i.e., personal meetings, workshops or trainings are not available for the team members. Thus, in many cases the success of their development relies on how independent they can be in their learning path.

This paper introduced the element of Self-Directed Learning, which solely measures this individuality and independency of the learners, and the aim of the paper was to set up a research design, how SDL and SDLRS can be implemented for virtual teams. Previously, SDRLS was introduced for nursing education or other educational platforms, the studies that validated the scale of Fisher et al. (2001) and Fisher and King (2010) were also from these industries. On the other hand, the applicability of such measures should be validated in other areas and industries, as these could be utilised as efficient tools for leaders during the selection of team members and in defining their involvement in the individual's learning path.

Since this is a research design, only the methodology, data collection and the applied questionnaire has been defined in this paper. The results of the data collection, the analysis of the data and the model that has been drawn up is introduced in the following paper, which has been submitted to the Journal of International Studies, went through the double-blind review process, however, was later rejected as the topic was deemed to be unfit to the journal. Thus, it has been published as a working paper by the SzEEDSM Doctoral Program at the University of Győr.

# Chapter VI – Development of the SLDR9 Measurement Tool and Evidence for a Second Order Latent Construct of Self-Directed Learning Readiness in Virtual Teams in Hungary

Working paper published at Szeedsm.eu, currently under review for Statisztikai Szemle

Kupa, K., Szerdahelyi, M. J. and Komlósi, L. I. (2021): Development of the SLDR9 Measurement Tool and Evidence for a Second Order Latent Construct of Self-Directed Learning Readiness in Virtual Teams in Hungary, Working paper,

#### Abstract

In this paper we approach the development of virtual teams from the individuals' perspective by extending the theory of self-directed learning (SDL) beyond the extant research in nursing education and applying it to a sample of adult population working in virtual teams in Hungary. After finding the necessary theoretical steps to connect SDL with virtual teams, we conducted a study with the intent to validate existing instruments or, if this is not possible, to develop a new SDL instrument for virtual teams. Our results confirm the viability of the SDL theories in the context of teams working remotely much of the time. While we could not confirm confidently the validity of the known SDLR instruments developed for nursing education on our sample of working adults in virtual teams, we have found support for the conventional three factor self-directed learning readiness (SDLR) construct with a reduced item number. In the current paper we advance a new measurement tool called the SDLR9 which, while mirroring the three original factors known in the extant literature, also points to a higher order latent SDLR variable.

Keywords: individual learning, self-directed learning readiness, team development, virtual teams, SLDR9

JEL classification: D83, M14, M16, M53

#### 1. Introduction

Virtual teams – especially after the onset of the pandemic – became integral parts of several organisations. Tasks and processes that companies believed could not be performed remotely were proved to be suitable to be executed away from the office, even from our own homes. However, there have been theories and academic articles about virtual teams for

several decades now. As Bell and Kozlowski wrote in their famous article: "Virtual teams are here, and they are here to stay" (Bell and Kozlowski, 2002, p. 45).

When it comes to virtual teams, there are several aspects how team development and learning can be analysed. Such aspects can be organisational, leadership, team, individual and many more. At the individual level it should be analysed how the individual attributes and personality traits can contribute to the success of their learning, which of these influence directly the process of team development. In this paper, we are analysing how the concept of self-directed learning (SDL) and the model by Fisher et al. (2001) of SDL readiness scales (SDLSR) could be applied or adapted to virtual teams. The goal of this research is to test the results of a data collection performed in Hungary on a sample of 200 adults working in virtual teams and either confirm the applicability of the original 40-item SDLRS scale of Fisher et al. (2001) or develop our own SDLRS model through confirmatory and exploratory factor analysis and internal consistency measures.

In this article we summarize the theoretical background of virtual teams, SDL and SDLRS (Section 2-3), provide an overview about the methods of the data collection and the statistical analysis (Section 4) and present and discuss the empirical findings of our data analysis and proposed SDLRS model (Section 5-6) and provide our conclusion in (Section 7).

#### 2. Virtual Teams

When discussing virtual teams, first the definition of teams in the traditional sense should be introduced. Cohen and Bailey (1997) defined team as a set of individuals, who are seen as a complete social entity (e.g., department, corporation) and are jointly responsible for the outcomes of the tasks they independently perform to reach a common goal. The members are working together, they use their different skills and provide support to each other, sometimes meshing their functions to reach the goal of the team. According to Berry (2011) teams generally have four attributes, which are common amongst all teams:

- The team has a shared membership mindset, and usually has a definable and limited membership
- The team members function independently with a shared purpose which is either constructed by the team or was given for them
- The team members are jointly responsible for the outcomes
- The team members manage their relationships across and between organisational boundaries collectively

Virtual teams have the same basic concept as traditional teams: they are a set of individuals sharing the responsibility to perform tasks as a complete social entity. However, there are two additional attributes of virtual teams, that should be added to the characteristics of traditional teams (Berry, 2011):

- The team members may be geographically dispersed
- The team members mostly rely on computer-mediated communication rather than face-to-face communication

Virtual teams do not differ from the previously introduced traditional team in their purposes or goals, only their ways of working, i.e., using IT and communication technologies and the fact that the team members are necessarily not located in the same office (in many cases not even in the same continent) or the face-to-face meetings are not necessary or possible during the execution of their tasks. (Bell–Kozlowski, 2002). The technology-mediated nature of virtual teams is present in several studies, noting that without technology teams cannot have a virtual nature (Lipnack–Stamps, 2000). (Kupa, 2020a)

The virtual nature of these teams is a complex and multidimensional construct since, even if there are two teams, using the same technology, the extent to which the technology is used defines which of them (if either) can be considered as a virtual team. Nowadays every team uses technology to a certain extent. Emails and other video and chat applications have become significant communication tools in almost all teams. Thus, for the sole reason that a team uses emails and Zoom, the virtual nature cannot be defined as these could also define a team that conducts only certain activities virtually – i.e., uses emails for tracking purposes, chats in the loud office, etc. This means that almost every team adopts some virtualness in its nature, but for the purposes of qualifying as a virtual team, technology is not enough, without the geographical dispersion these teams cannot be considered virtual. (Berry, 2011; Kupa, 2020a)

The past two decades have brought significant growth in the use of virtual teams, with its peak being reached in 2020 due to the coronavirus pandemic. According to Gartner (2020) 88 per cent of global organisations encouraged their employees to work from home since the beginning of 2020, irrespective of whether they were affected by the virus or not. 97 per cent of organisations decided to cancel business related travel, thus making it impossible to conduct face-to-face meetings in virtual teams. Bakonyi and Kiss-Dobronyi (2020) conducted a survey in Hungary, where 73 per cent of the participants responded that they had been asked by their employers to work from home for a certain period. This shows that

the significance of virtual teams has increased even further, however longer-term effects of the COVID19 peaks is yet to be determined. What can be seen is that despite of the current pandemic, the number of virtual teams deployed by companies have been growing for some time due to globalisation, innovation, and better access to infrastructure.

There are several reasons why companies opted for setting up virtual teams within their organisations. The benefits arising with virtual teams are, amongst others, flexibility, cost efficiency, better utilisation of time and space, and maximising expertise of the globally dispersed talent pool. At the same time, these benefits pose several challenges to teams, such as overcoming a lack of personal connections, different cultural backgrounds, language barriers and technological issues (Kupa, 2020a). The leader's role is to help the team overcome these challenges and, at the same time, exploit the benefits and opportunities. Besides these, the focus of the leaders should be on performance management and team development and learning. However, due to the lack of face-to-face interactions, the latter is difficult to perform (Bell and Kozlowski, 2001) and requires the willingness and positive attitude of the individual team members.

Learning is part of all stages of team development; however, it is often hindered when using various virtual tools for communication that is present in virtual teams. Zakaria et al. (2004) noted that since learning is not purely based on verbal or written communication, the lack of face-to-face contact, i.e., the limited number of non-verbal clues decreases the chance of success of the team's learning activities. In this sense, the individuality becomes even more significant in virtual teams when it comes to learning – the individuals must be ready and able to search for and process information independently and, at the same time, effectively. The self-directed learning readiness – as discussed in the next chapter – is a good indicator to assess this individuality and – if adapted correctly – could help leaders in developing efficient teams.

#### 3. Self-Directed Learning

#### 3.1. Self-Directed Learning theories

Learning is a major focus of several disciplines, however, there is a difficulty in establishing a single satisfactory definition due to the different perspectives each discipline adopts. The most common definition describes learning as a change in behaviour due to previous experiences. (Barron et al., 2015) In organisations and teams, this is not different: former experience can be decisively present in online training, or in reading books, talking to co-workers, or solving problems and finding the solutions.

In the case of virtual teams, the limitations of learning are due to the lack of face-to-face contact. Although more explicit knowledge is easier to pass on, learning often draws on tacit knowledge, which, thus, is much more challenging. Due to these limitations, there is a growing need in virtual teams for individuality and independency when it comes to learning. Self-directed learning (SDL) and self-regulated learning (SRL) focus on how the individuals approach their individual learning, what strategies they set, and how they manage their own learning. In this study the term SDL will be used to describe this phenomenon. (Kupa, 2020b)

SDL is defined by these learning strategies individuals take to achieve their learning goals. This includes identifying and assessing their training and learning needs, setting objectives, evaluating their performance and the outcomes of their learning activities. In SDL individuals take the initiative, they do not depend on others to tell them how to approach learning, they are able to formulate their own goals and overall can be trusted with managing their time and resources as well. (Knowles, 1975; Kupa, 2020b)

Though the individuality and independency are the core attributes of SDL, both Greg (1993) and Garrison (1997) argued that SDL could also enable corporations and teams to utilise peers, members or anyone who can be considered as a learning resource to enhance the effectiveness of learning. Some prominent studies (Chicchinelli et al., 2018; Pardo et al., 2016) have also found correlations between SDL and academic outcomes of students. SDL can be used for enhancing both private and professional knowledge irrespective of institutional, geographical, or situational differences (Abdullah et al., 2008), which also confirms its importance in virtual team settings. With the rapid improvement in diverse technology, online and virtual learning tools are readily available for learners. These are frequently used in virtual teams as well. (Kupa, 2020b)

When it comes to further classification of SDL, there are several approaches and divisions of domain. According to Barnard-Brak et. al. (2010) self-regulated learning skills include goal setting, time management, task strategies and environment structuring. Later this was extended with mood adjustment, self-evaluation, and help-seeking by Hong et al (2021). Another classification – which will be the focus of this paper – is based on Guglielmino's (1997) Self-Directed Learning Readiness Scale, which was later adjusted and adapted by Fisher et al (2001). In Fisher's analogy, there are three main domains of SDL: self-management, self-control, and desire for learning. Self-management refers to the ability of the learners to identify their needs, set their goals, and allocate their energy and time to

learning. Self-control refers to the independency of the SDL learners, meaning that the learner is an independent individual, capable of analysing, planning, implementing, and assessing their learning activities independently. Desire for learning refers to the strong motivation of learners to acquire knowledge (Fisher et al., 2001), (Kupa, 2020b).

# **3.2.** SDL Measurements

There are several instruments that have been developed to measure SDL, such as the Self-Directed Learning Readiness Scale (Guglielmino, 1997), which is one of the first instruments to measure self-direction in learning and has been validated in several academic studies. One of these is the Self-Directed Learning Readiness Scale for Nursing Education (SDLRSNE) (Fisher et al., 2001), which is an adaptation of Guglielmino's SDLRS for the nursing education sector, and it has been validated in several academic studies.

Similar instruments are the Self-Directed Learning Instrument (SDLI) (Cheng et al., 2010) and the Self-Rating Scale of Self-Directed Learning (SRSSDL) (Williamson, 2007). These instruments have also been translated into various languages and adapted for different scenarios, authenticating the scientific interest for this type of measurement.

# 3.3. Fisher's SDLRSNE

Fisher et al. (2001) took the available literature and compiled a list of attitudes, abilities, and personality characteristics of self-directed learners. The complete list consisted of 93 items among which a significant number of items were drawn from other SDLR scales such as Guglielmino's (1997), Knowles's (1975) or Candy's (1991) measurements. The Delphi technique was used to gain consensus amongst the characteristics required for SDL through an expert panel. For an item to be retained at least 80 per cent consensus had to be achieved. (Fisher et al, 2001)

Out of the 93 items brought to the panel, 40 items remained after the principal component analysis and factor analysis. These items were divided into three subscales as follows (Fisher et al, 2001):

#### Self-Management:

- I manage my time well
- I am self-disciplined
- I am organized
- I set strict time frames
- I have good management skills
- I am methodical

- I am systematic in my learning
- I set specific times for my study
- I solve problems using a plan
- I prioritize my work
- I can be trusted to pursue my own learning
- I prefer to plan my own learning
- I am confident in my ability to search out information

# **Desire for Learning:**

- I want to learn new information
- I enjoy learning new information
- I have a need to learn
- I enjoy a challenge
- I enjoy studying
- I critically evaluate new ideas
- I like to gather the facts before I make a decision
- I like to evaluate what I do
- I am open to new ideas
- I learn from my mistakes
- I need to know why
- When presented with a problem I cannot resolve, I will ask for assistance

# Self-Control:

- I prefer to set my own goals
- I like to make decisions for myself
- I am responsible for my own decisions/actions
- I am in control of my life
- I have high personal standards
- I prefer to set my own learning goals
- I evaluate my own performance
- I am logical
- I am responsible
- I have high personal expectations
- I am able to focus on a problem
- I am aware of my own limitations

- I can find out information for myself
- I have high beliefs in my abilities
- I prefer to set my own criteria on which to evaluate my performance

Fisher et al. (2001) aimed that this scale be used in nursing education, to assist nurse educators in diagnosing their students' learning needs and thus implement teaching strategies that best suit the students' needs. Due to the generic wording of the questions, however, the questionnaire could be used not only for nursing educators or specifically in education, but to support virtual teams in their learning path.

Fisher and King (2010) re-visited the SDLRSNE to provide evidence of construct validity for the subscales. This exercise resulted in making 11 items from the list redundant, while keeping the factor structure similar. For the purposes of this study the original 40 item list was chosen and will be the base for further analysis.

The aim of the present study is to bring together the theories of virtual teams and those of self-directed learning to provide a resource which plays a significant role in the success of the team pertaining to the individuals. Through data collected among adult working population and extensive statistical analysis, our goal is to gather supportive evidence for the applicability of self-directed learning readiness beyond student populations and to confirm that the original or a modified version of the SDLRSNE scale is applicable in virtual teams. If such confirmation is not possible, then to explain the differences in terms of the context.

#### 4. Methods

The 40-item SDLRSNE developed by Fisher et al. (2001) was chosen to be in the focus of the study to test whether the same scale and factor structure could be applied for virtual teams. The SDLRSNE has been chosen to be the instrument tested as it had been validated several times and the wording of the 40 statements is simple enough to be understood for those who speak English as their second language. The original English questionnaire was peer-reviewed by a panel of Hungarian PhD students at the Széchenyi István University. Based on this exercise, the questionnaire was administered with the original 40 items in English for data collection purposes. Although Fisher and King (2010) reduced the 40 items to 29 in their re-evaluation study, we decided to keep all the original questions, thus providing a bigger pool of questions to be analysed and used for model development.

The aim of this research is to test the hypothesis according to which the original 40-item SDLRSNE as an instrument to test self-directed learning readiness is suitable to be applied

in virtual teams with the same subscales. Should the hypothesis be rejected, we are determined to develop our own SDLR construct.

#### 4.1. Data Collection

The data collection from the questionnaire started the end of September. The questionnaire has been prepared in Google Sheets and has been circulated online in social media platforms, such as several professional Facebook groups, LinkedIn, etc (the questionnaire has further been shared by volunteers as well), the participation was fully voluntary. Participants were asked to evaluate the items through a five-point Likert scale to the degree that individual items reflect their own characteristics. Score 1 indicated "strongly disagree", while score 5 indicated "strongly agree". Furthermore, several demographic and clarification questions were asked. Respondents could be categorised as working in virtual teams if more than 30 per cent of their time was spent working and cooperating virtually with their teammates.

Until the end of October 2020, 199 responses had been collected, and no further responses have been recorded afterwards, thus the data collection stopped. Out of the 199 responses 146 fulfilled all required conditions to be considered in the data analysis, i.e. fulfilled the condition that the participant works at least 30% of his/her time virtually when it comes to teamwork. From a demographical perspective, the total population of respondents and the chosen population had the following characteristics (Table 1):

	Gender	Age	Time spent in their current team	Number of direct team members	Percentage of virtual cooperation
Total Population (200)	Female: 112 Male: 86 Other/Prefer not to say: 2	18-24: 8 25-34: 111 35-44: 67 45-54: 10 55-64: 3	0-3 months: 19 4-7 months: 10 8-11 months: 19 1-3 years: 96 4-6 years: 38 7+ years: 27	2-4: 29 5-7: 68 8+: 102	0-10%: 10 11-20%: 16 21-30%: 27 31-40%: 19 41-50%: 13 51-60%: 29 61-70%: 23 71-80%: 18 81-90%: 17 91-100%: 27
Selected responses (146)	Female: 80 Male: 65 Other/Prefer not to say: 1	18-24: 6 25-34: 80 35-44: 52 45-54: 6 55-64: 2	0-3 months: 15 4-7 months: 7 8-11 months: 16 1-3 years: 66 4-6 years: 31 7+ years: 11	2-4: 20 5-7: 53 8+: 73	0-30%: 0 31-40%: 19 41-50%: 13 51-60%: 29 61-70%: 23 71-80%: 18 81-90%: 17 91-100%: 27

Table 1: Demographical data of the responses	Tabl	le 1	1:	Demogra	phical	data	of the	responses
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Source: Own evaluation

#### 4.2. Data Analysis

Data of the final sample of 146 working adults was subjected to methods of both exploratory and confirmatory factor analysis (EFA and CFA) as well as principal component analysis (PCA). Cronbach's Alpha was calculated for the original scale confirming its usability, however, the PCA, the EFA and the CFA did not confirm the original SDLRSNE factor structure (Fisher et al. 2001) on our sample, nor did the three one-factor congeneric model version of the SDLRSNE (Fisher and King, 2010) result in a good fit. Subsequently, we subjected our sample of adults working in virtual teams to exploratory factor analysis with the aim of establishing a new factor structure for all or at least most of the original 40 items. CFA was also reiterated after having removed items with the lowest factor loading. Due to low correlations, however, no meaningful solution was found at this level of inquiry. Finally, confirmatory factor analysis was applied aiming at maintaining the original threedimensional factor structure but with a much-reduced item count. Content validity was sought through trying to select *best items* covering the core content of each dimension. Symmetry was considered to give equal weight to each subscale, and the three factors were analysed together – as opposed to the congeneric models (Fisher and King, 2010) – to legitimise the three subscales belonging together in one questionnaire despite the relatively low correlation among the dimensions. The data analysis process carried out in this paper, in practical terms, could be interpreted as the creation of a short form of the original SDLRSNE, because the reduced scale captures most of the original construct in terms of context. On the other hand, if we consider the context of virtual teams, the developed SDLR9 scale can be regarded as a new construct. All analyses were carried out with the statistical software R studio (RStudio Team, 2020).

#### 5. Results

Given our data with adult working population from a cross-section of virtual teams we first aimed at testing the known SDLRSNE models in the literature. We approached the process of factor analysis as an experiment to confirm the established self-directed learning readiness theory but knowing that several modified scale versions had been already published and perhaps our analysis would lead to a new one. We first resorted to confirmatory factor analysis to test the 3 factor 40 item SDLRSNE developed by Fisher et al. (2001) and the 29 item three one factor congeneric model used some 10 years later by Fisher and King (2010) to confirm the basic factor structure of the self-directed learning readiness construct. Results on our data set of adult population working in virtual teams were

insufficiently good to confirm these models. CFA results for the 3 factor 40 item SDLRSNE showed a bad model fit (CFI = .552, RMSEA = .089, SRMR = .101). Alpha values for the three factors were .81, .76 and .78 respectively. CFA for the three one factor congeneric model showed poor fit for the first two factors while bad model fit for the third factor bringing us, overall, to reject the model for virtual teams. (Factor 1: CFI = .809, RMSEA = .097, SRMR = .072; Factor 2: CFI = .842, RMSEA = .09, SRMR = .073; Factor 3: CFI = .589, RMSEA = .113, SRMR = .09). CFA results are summarized in Table 2.

Models	X2	df	р	CFI	TLI	RMSEA	SRMR
40 item SDLRSNE 3-factor	2666	780	.000	.552	.525	.089	.101
Three one factor							
congeneric							
Factor 1	544	78	.000	.809	.771	.097	.072
Factor 2	386	55	.000	.842	.803	.090	.073
Factor 3	593	120	.000	.589	.526	.113	.09
SDLR9 second order factor model	352.28	36	.000	.097	.096	.049	.049

**Table 2. Confirmatory Factor Analysis of Self-directed Learning Models** 

#### Source: Own evaluation

Since the 3 factor 40 item SDLRSNE was originally arrived at through principal component analysis (Fisher et al., 2001), we computed a similar analysis on our sample with varimax rotation for 3 factors, however, the total variance explained by the model was only 30 per cent. We wanted to map the construct's factor structure further with exploratory methods, thus we resorted to exploratory factor analysis. We first computed a Bartletts test to make sure if items are correlated enough for an EFA (X2 = 2389, p = .000). We then computed a Kaiser-Meyer-Olkin (KMO) Test for Sampling Adequacy to make sure that our dataset has enough subjects (Overall MSA = .78). Subsequently, we computed the EFA for the 3-factor model using oblique rotation (since factors within the same scale are expected to correlate) and using the maximum likelihood factor math. Fit indices overall were insufficient to confirm the model (CFI = .703, RMSEA = .08) and the model overall accounted only for 30 per cent of the variance of the items, just like in the case of principal component analysis.

Because the 3-factor models know from the literature failed on our sample, we set out to estimate anew the number of factors for the EFA. To determine the number of factors we used the Kaiser criterion with eigenvalues above .7 as per the newer approach and eigenvalues above 1 as per the traditional approach. The number of factors suggested by the Kaiser criterion to set for the EFA was 6 and 5, respectively. We also computed a parallel analysis which compares data to randomised iterations to be able to select all factor with eigenvalues significantly above the randomised data. For this we used a scree plot (Figure 1) to determine the point of inflection.



Figure 1. Parallel analysis scree plot for EFA

#### Source: Own evaluation

Results of the parallel analysis suggested we use 7 factors. Keeping in mind that parsimony dictates that simpler models with fewer factors are preferable over more complex ones we computed EFA for all suggested factors with the results shown in Table 3. Since none of our new EFA models with all 40 items manifested a good model fit and explained sufficient cumulative variance, we tried to eliminate items with factor loadings lower than

.3. After several iterations we abandoned the exploratory method and tried to do the same item selection based on factor loading results with confirmatory factor analysis for the 3-factor model. Fisher and King (2010) used a similar approach to arrive to the congeneric one factor models, the difference being that, as per our logic, we aimed at keeping the factor structure intact if we must eliminate items. The self-directed learning model was not possible to confirm with this approach either.

Cumulative						
EFA Models	Variance	CFI	TLI	RMSEA		
3 Factor model	.3	.703	.643	.08		
5 Factor model	.37	.826	.761	.068		
6 Factor model	.41	.87	.809	.063		
7 Factor model	.43	.898	.839	.059		

Table 3. Exploratory Factor Analysis of Self-directed Learning Models

# Source: Own evaluation

Finally, we changed our experimental approach from trying to keep most of the original items to using only as many items as necessary and possibly keeping the original three factor model. Looking at the correlation table we identified possible items and considering the broadest possible content we determined best items for our subsequent confirmatory factor analysis. Knowing that three items per factor are minimum necessary, and keeping in mind model aesthetics, we aimed at a 9 item 3 factor model with three items loading on each factor. We also experimented with second order models driven by the idea that perhaps self-directed learning readiness is a separate latent variable in individuals that explains their levels of the first order latent factors. The model that we found, so to say, mirrors the traditional factor structure with three correlated factors. But more than this, for the first time, self-directed learning readiness is shown to be a higher order latent construct that explains the first order factors. We think that our new model is significant because it confirms the legitimacy of the self-directed learning readiness measure for virtual teams of working adult population, while at the same time it represents evidence for the higher order self-directed learning readiness factor.

#### 6. Discussion

As per the standard of several published studies (Newman, 2004; Bridges et al., 2007; Smedley, 2007), internal consistency is a decisive factor when evaluating the SDLRSNE. Based on the results, the Cronbach's Alpha scores support the applicability of the original 40 item SDLRSNE questionnaire in its original form on our sample of Hungarian adults working in virtual teams. On the other hand, deeper analysis about the factor structure of the construct revealed the insufficiency of the original 40-item scale (Fisher et al, 2001) on our sample, as several attempted methods of analysis (CFA, PCA with varimax rotation and EFA with oblique rotation) resulted in not supporting the applicability of the original SDLRSNE questionnaire for virtual teams. The revised scale of Fisher and King (2010) with 3 congeneric factors was also not possible to confirm on our sample. Thus, our hypothesis that the same 40-item SDLRSNE could be applied for virtual teams has to be questioned.

On the other hand, we did not only aim at confirming the SDLRSNE's applicability, but we were inspired by Fisher and King to revise and change the SDLRSNE scale and test whether by using different techniques and approaches we could find the best scale for the SDLR construct for virtual teams – more specifically for the working adult population of our sample. First, we tried to keep all items and recalibrate the factor structure, but EFA results failed to point to any alternative factor structure. We then tried to maintain the factor structure but eliminate weaker items. Larger models with many items did not fit as per our EFA and CFA results. The statistical reason behind these failed models is that there is low correlation between items in general on our sample. Finally, we found satisfactory models with low item numbers, thus we propose for adult working population in virtual teams the newly developed SDLR9 scale. The factor structure and the 9 items of the SDLR9 scale is the following (Table 4):

Self-Management	<b>Desire for Learning</b>	Self-Control
I am organized	I enjoy learning new	I prefer to set my own goals
I have good management	information	I prefer to set my own
skills	I have a need to learn	learning goals
I prioritize my work	I enjoy studying	I prefer to set my own criteria on which to evaluate my
		performance

**Table 4: Factor structure of the SDLR9** 

Source: Own evaluation.

When this reduced item scale had been discovered during the analysis as a potential fit for the virtual teams, first the applicability of the items had to be analysed. Interestingly, when comparing the SDLR9 and the 40-item SDLRSNE, it seems that the SDLR9 managed not only to reduce the number of questions while keeping the same factor-structure but was able to mirror much of the essence of these subscales intact even after radically reduced item number. As noted in the theoretical analysis, self-management refers to the ability of learners to identify their needs, set their goals and allocate their time and energy to learning. The three items in this sub-scale reflect these requirements, as they cover management, prioritisation, and organisation skills of the individuals. Desire for learning focused on the strong motivation and preferences of learners to acquire knowledge – the reduced subscale in SDLR9 also focuses on the need and motivation for learning. When it comes to self-control, the original items were revolving around the independency of the individual in their learning path which can also be seen in the 3-item subscale, as the wording emphasises the preference for individuality in their learning and goals.





#### Source: Own evaluation

The SDLR9 also has excellent psychometric properties as a unified model confirmed by CFA in contrast to the larger models proposed in the literature. Moreover, for the first time we can propose the SDLR construct as a higher order latent variable with the three original first order factors (Figure 2). A significant theoretical implication of the self-directed learning readiness construct as a higher order variable is that SLDR was never conceived as a unified personal resource that would work beyond the original first order factors of self-

management, desire for learning and self-control. The low correlations that we observed when considering all items explains not just why the larger models did not work specifically on our sample, but probably also why previous investigations found it hard to fit all three factors in one factor analysis (Fisher and King, 2010). By radically reducing the item number and taking advantage of the more correlated items one could argue that we arrived at a fundamentally different construct from the original SDLR as applied for nursing education. We would not necessarily contradict this observation primarily because the context of our research is outside of nursing and education. For working adults specifically from the world of virtual teams SDLR may mean somewhat different things, but whatever they are, they are important for the management literature. Thus, we are confident to propose the self-directed learning readiness construct for virtual teams and the related SDLR9 scale not necessarily as a shorter version of the 40 item SDLRNE, but as an individual instrument. Content analysis of the SDLR9, we believe, would show that the essence of the original SDLRNE is captured rather well, therefore given certain considerations such as time constraint or repetitive measurement, the SDLR9 could also be conceived of as a short form of the SDLRNE. The higher order factor structure evidenced in our model is an interesting development that would require follow up investigation on other samples, but it has the potential to elevate the research in self-directed learning readiness to a next level.

#### 7. Conclusions

Virtual teams require different skills and capabilities from their leaders and members. This research aimed at looking at the level of the individual and analyse whether selfdirected learning readiness scales could be applied in virtual team settings. We collected a sample of 200 working adults from virtual teams in Hungary to test our hypothesis whether the SDLRSNE scale of Fisher et al. (2001), previously tested only in nursing education, could be adapted without changes to our sample. Based on the results of the statistical analysis, this hypothesis had to be rejected, which could be explained by applying the scale to a different type of learners (working adults, who are learning on the job), on a different social group (working adults) and from a different country (Hungary).

Although our statistical analysis did not allow us to confirm our original hypothesis, the research resulted in a new SDLR9 scale. This model follows the same 3-factor structure as the original 40-item SDLRSNE, the reduced number of items is still sufficient to reflect the requirements set forth in the academic literature for self-management, desire for learning

and self-control. At the same time, as a novelty, it proposes self-directed learning readiness as a higher order latent variable, which was not present in the previous models.

There are, inevitably, limitations to this theoretical model which should be further tested to prove its suitability for virtual teams. The next step should be to validate the model, collect data from working adults in virtual teams and perform the same confirmatory factor analysis and statistical methods. If the model could be validated, this could provide a great tool for the leaders of virtual teams in the selection, learning and development process.

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#### Paper Evaluation for Chapter VI

This paper applied the methods and directions drawn in the research design published at Tér-Gazdaság-Ember. The aim was to validate the applicability of the SDLRSNE scale to virtual teams based on its own data collection, which took place in the fall of 2020 – i.e. at the time when several teams have already switched to virtual operations due to COVID-19 for around 6 months. After the data cleansing, 146 participants out of the 200 responders have been selected to fit all criteria to qualify as members of virtual teams and the data analysis was performed based on their answers solely.

Although the results of the statistical analysis did not confirm the applicability of the original (Fisher et al., 2001) or the revised (Fisher and King, 2010) SDLRSNE model, a new, streamlined SDLR9 scale could be developed. The elements of this SDLR9 model can be also grouped to the same three subsets of Self-Management (I am organized, I have good management skills, I prioritize my work), Desire for Learning (I enjoy learning new information, I have a need to learn, I enjoy studying) and Self-Control (I prefer to set my own goals, I prefer to set my own learning goals, I prefer to set my own criteria on which to evaluate my performance), however at the same time also had a higher-order factor, that could be interpreted as Self-Directed Learning Readiness, thus suggesting a great applicability of this model.

Of course, due to the novelty of this model, further analysis will be required on several other data sets, however this suggest that Self-Directed Learning Readiness Scales could be great tools for virtual teams in the future, thus this paper clearly focuses on research questions Q3 and Q4.

From a leader's perspective – as mentioned previously – this could help in selecting those members, who have higher scores, i.e. could better adapt to the virtual learning space and of course, could support the leaders in defining performance and learning goals for the individual team members.

#### **Chapter VII – Summary**

#### 1. Findings, Limitations and Future considerations

This dissertation provided a thorough analysis on leadership and team development in virtual teams. Our aim during the research journey was simple: provide a theoretical analysis and background to our problems and find a practical solution to tackle it. As introduced in Section 3.2 of Chapter I – Introduction, this doctoral dissertation focused on several research questions, that could be divided to two main sections.

The first set of research questions discussed in Pillar I of the dissertation focused on the differences between traditional and virtual teams and how the leader should manage these differences in different stages of team development:

# Q1. What is the difference between the leader's role in virtual teams compared to the "traditional teams"?

# Q2. What are the practical tools and techniques available for the leaders of virtual teams in different stages of team development and how they differ from the ones applicable in "traditional teams"?

The in-depth literature review, the theoretical synthetisation of the applicable academic literature and the professional experience of leaders and coaches and the case study presented in Pillar I brought light to the following findings in reflection to the above research questions:

- The benefits and challenges of virtual teams cannot be separated a benefit can easily turn into a challenge, if not managed properly. Thus, the role of a leader is even more crucial in virtual teams.
- 2. The leader's role is more significant in virtual teams in the forming and storming stage, since the lack of interpersonal communication, limited opportunities to form informal relationships makes the establishment of trust even harder. On the other hand, the leader's role is less significant in the norming and performing stage, similarly to "traditional teams", since by that time the team works as a "well-oiled machine" with limited intervention required
- 3. The biggest difference between traditional teams and virtual teams is the "how" and not the "what", when it comes to tools and techniques. Both types of teams face the almost same issues during their evolution, however due to the nature of virtual team set-ups, some tools and techniques must be adapted to work in virtual teams by

implementing the same issue resolution and leadership techniques and tools in new ways than before.

The novelty and uniqueness of the findings presented in the journal papers and conference proceedings of Pillar I lies in the theoretical synthetisation of the academic literature and its implementation to a practical toolkit, which has not yet been presented in the academic literature of virtual teams. This was one of the goals when starting the research journey: bringing the theory into practice, which this toolkit is a great example for.

On the other hand, even though the toolkit is a new and unique collection, it has several limitations. First, it is an inventory of tools and techniques and not an overall solution to every problem a leader may face. The authors used their leadership experiences, case studies from coaching sessions, which of course gives a certain limitation to the toolkit as well. Furthermore, the toolkit is not a sole solution at all: the leader should be able to make the decision on how and when to apply it – based on their experience and knowledge of their team. Thus, the toolkit will not transform a "bad" leader into a "good" one, it only provides a summary that someone with great leadership skills can utilize.

For future considerations, this toolkit can be further developed and tested, ensuring that it evolves as the technology and the virtual team operations develop with time. Another interesting aspect could be providing a toolkit for the team members, i.e. bringing in the perspective of the team members to extend this research as well (which is partially done in Pillar II of the dissertation).

The second set of research questions discussed in Pillar II of the dissertation focused on the individuals' contribution to the success of team development and the applicability of the SDLR scales in virtual teams:

### Q3. Why is independency and individuality important in virtual teams?

# Q4. Is the SDLRS a suitable tool to support the leaders in choosing the right team members and facilitate their involvement in their learning paths?

The in-depth literature review on Self-Directed Learning and the empirical research on the applicability of the SDLR scales – based on a preliminary research design – in virtual teams presented in Pillar II brought light to the following findings in reflection to the above research questions:

1. Independency and individuality in learning (i.e. SDL) is an important way how an individual can contribute to the success of the virtual team. Since there is a limited opportunity to connect informally during working hours, the more independent an

individual is when it comes to learning (on-the-job or training, does not matter), the better they can fit into the operation of a virtual team.

- SDLR scales may be used in virtual teams, however with significant modification and simplification (SDLR-9) – the original 40-item Fisher et. al (2001) questionnaire had to be reduced to a 9-item model, while keeping the same factor structure with a higher latent variable.
- 3. SDLR-9 could be used in all stages of team development, but with a different focus: in the forming stages as part of the team member selection, in later stages to define the learning needs more efficiently and the involvement of the leader as well.

The SDLR-9 model is a unique and new method to measure SDLR in virtual teams: first, the SDLR scales have never been tested in virtual teams or in any other Hungarian population. Secondly, a previously 40-itemmethod has been successfully reduced to a 9-item questionnaire at the same time keeping the original factor structure. Though similar simplification has been done (i.e. Fisher et al. used 40-item scale, which they later reduced to 29), whoever not to this scale with the same results. The findings of course, have certain limitations. The SDLR-9 has been developed based in Hungary and on a limited number of responses. Thus, the SDLRS-9 model should be further evaluated and validated through data collection and analysis in both Hungary and other countries as well. It is important to note that failing to validate this model would not mean that SDL itself is not an important aspect in virtual teams, only that the measurements that worked in nursing education are not suitable for virtual teams. Overall, when it comes to virtual teams, where team members are not always available to each other, being able to tackle issues and gather new information efficiently will always be important and could be a success criterion for them. The leader should focus on the individuality and independency of the potential team member when making decisions about the team structure and the expectations regarding the individual's performance. Thus, as a future consideration, the importance of individuality, independence in virtual teamwork – which may sound as a paradox – should be in more details analysed.

#### 2. Summary and Conclusions

"Virtual teams are here, and they are here to stay" (Bell and Kozlowski, 2002, p. 45). Virtual teams became the part of our everyday lives in the past few years. Things that were thought could not be performed virtually are now routinely done this way and more and more companies are introducing flexible working options and are not afraid to reach out to talents across borders and continents. The way the research journey evolved was quite like this emergence of the virtual teams.

First, we wanted to find a solution to a complex organisational issue: being part of a multinational company's project team, working across different hubs, it became clear that the issues the team was facing were not tackled properly by the leadership of the Programme. This led to the deeper analysis from Tuckman's (1965) team development perspective, which showed that the team was stuck in the storming phase and incorrect leadership decisions and tools resulted in deeper conflicts and a below expectation performance. When this analysis was done and published, we decided to dig even deeper to the literature of leadership and team structures and that is when virtual teams became the focus of the dissertation – since the project team in the case study was also a virtual or at least a semi-virtual team. This case study as published by Kupa and Komlósi (2020) showed how important leadership decisions are in virtual teams that there are some differences compared to the traditional team set-ups, however, did not conclude on a solution or proposal on how these issues can be resolved. The most important takeaway from this analysis was the importance of leadership and the correct application of tools and techniques that are available for them.

Secondly, during the literature review more and more information became available on how virtual teams operate, what are their benefits and biggest challenges and what aspect a good leader should consider when setting up a virtual team. This analysis helped in defining the two main aspects of virtual teams: the geographical dispersity of the team members and the usage of different IT and communication tools to perform their activities. It also became evident that benefits and challenges in virtual teams cannot be separated, even so, every challenge originated from a possible benefit, when it was not handled correctly. For example, if virtual teams could benefit from the different cultural backgrounds of their team members, the cultural differences could also hinder their operations. Or the differences in the location and this the time-zones could be utilized to enable 24/7 availability from the whole team's perspective, however at the same time cooperation can be hindered due to having issues to find a suitable time for everyone. The main message of this analysis was also a focus on the leader's role: every challenge could be tackled, all risks can be mitigated, however that is mostly the responsibility of the leader.

This message led to the need for a summary on available tools and techniques that can help the leaders of virtual teams in tackling these challenges and providing an overview on the differences between traditional and virtual teams. This is when we asked Beáta Barkóczi, a certified organizational coach to join us in writing a research paper supporting us with her over 17 years of experience in coaching and organisational dynamics. We wanted to continue using Tuckman's (1965) five stages of team development theory and drew up our analysis of the leaders based on several aspects: the functions and roles of the leaders, the tools, and technologies applicable in each stage and noting the biggest differences on how these tools could work in traditional and virtual team setups. At the end of this thorough analysis, we summarized our findings in a toolkit format, which could also serve as a cheat sheet for leaders. On the other hand, this analysis surprisingly showed that besides the geographical differences and the usage of ITC technologies, virtual teams are not that different from traditional teams as we thought. The focus should be on how the tools and technologies are applied and not which one is chosen for a particular problem: virtual teams require more frequent intervention, more involvement and altogether a more intense role for the leader, however the solutions are similar in these set-ups as well.

This analysis closed the first pillar of this dissertation, that focused on the leaders' role in the operation and development of virtual teams. The second pilar of the dissertation brought in a different perspective – how individuals can contribute to the development of their team and of their own. The chosen theory and model might seem a bit off first, since that mostly focuses on learning, however when it comes to the performance and development of the team, without proper learning abilities, it is hard to be successful. Thus, we took the concept of Self-Directed Learning and the scales that were set up to measure individual's readiness for SDL and tried to re-validate these measures for the virtual team set-ups. The biggest challenge in this case was that such analysis has not yet been done in this sector, all previous validations were done in nursing education or other educational areas. Thus, we aimed at using the most general model by Fisher et al. (2001), which consisted of a 40-item questionnaire. We took this questionnaire, added some demographical element to be able to screen out those respondents who do not fit the criteria of a member of a virtual team started the data collection in September 2020. After a 1,5-month data collection, 199 responses were collected, out of which 146 was suitable for analysis as those respondents qualified as members of virtual teams. Our first finding was that either the original model (Fisher et al. 2001) or the revised model (Fisher and King, 2010) could be applied in virtual team set-ups in Hungary. On the other hand, our statistical analysis showed that a simpler model (9-items) could fit with an even higher-order variable our needs and we named it SDLRS-9.

The aim of coming up with a new model was two-fold: firstly, to have a model that could work for virtual teams, which is a theoretical aspect. Secondly, to be able to use the model in practice: if the SDLRS-9 can be used in virtual teams, which can be validated later by other data collections, this could also serve as a great measurement tool for leaders. SDLRS-9 can be used during the forming stage of a virtual team in the selection process. The developmental needs and the leader's involvement could also be defined easily by using the SDLRS-9 scale. Thus, our aim is to re-validate our findings and come up with an applicable model for virtual teams as well.

From the perspective of virtual teams itself, we could see a big shift due to the COVID-19 pandemic, when people were forced to work virtually due to safety reasons. The question is whether the trend that has been increasing in the past and is now at an overall peak would follow in the post-pandemic world. We deem it quite unlikely that virtual teams will be only the "thing of an era", even if the trend may slow down, thus it will be crucial in management studies to further research on how these teams operate and focus on the practical solutions of this team set-up as well. There should be an emphasis on whether there are actual differences between traditional teams and virtual teams besides the geographical dispersity and ITC technology usage, or the same problems and issues could arise and may be handled similarly in both. Before writing this dissertation and research papers, our gut answer to this question would have been "yes, they are completely" different, however our research showed that it may not be the case, thus this aspect should be researched further as well.

To summarize, our research has shown that the academic literature on both the theoretical and practical aspects of virtual teams is quite young and novel. The direction of the future research in the area should be driven by practice and not theory however – the "what" is mostly similar to the traditional teams, the question is the "how", and the academic literature should reflect this as well.

Virtual teams will not cease to exist, even after the pandemic is over. More and more technologies will emerge that could further increase their applicability and via digitalization and agendas that are in the focus of today's companies, virtuality will be an everyday thing. The academic research should react to this as well and provide the practitioners with the right tools, models, and techniques to cope with that. We believe our research made some contribution to this agenda and we will continue to focus on this practical perspective in the future as well.

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