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MASTER'S THESIS

**THE RELATIONSHIP BETWEEN TRANSFORMATIONAL  
LEADERSHIP AND DIGITAL TRANSFORMATION IN RESEARCH  
AND DEVELOPMENT DEPARTMENTS**

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## LIST OF ABBREVIATIONS

**3D** – three dimensional

**AI** – and artificial intelligence

**ARRS** – Slovenian Research Agency

**BI** – business intelligence

**CPSs** – cyber-physical systems

**GDP** – gross domestic product

**IoT** – internet of things

**IT** – information technology

**MLQ** – The Multifactor Leadership Questionnaire

**Mp3** – MPEG-1 Audio Layer 3

**MPEG** – moving picture experts group

**PDF** – portable document format

**R&D** – Research and development

**SOP** – standard operating procedure

**VHS** – Video home system



## INTRODUCTION

For the last century, the interest in studying the collective behaviour of different social aspects has been on the rise with some of the research either directly or indirectly talking about leadership. The research area has developed in three major waves of conceptual, empirical, and methodological advances. The first wave appeared in 1950's with a focus on behavioural and attitudinal researches, the second wave came in 1970's and 1980's focusing on behavioural, socio-cognitive, and contingency researches, while the third wave has been prevalent from 2000's onward focusing on the transformational, social exchange, team, and gender-related research ( Lord, Day, Zaccaro, Avolio & Eagly, 2017).

Our work will be based on Transformational Leadership, currently deemed to be one of the most successful leadership approaches (Aarons, 2006; Yahaya & Ebrahim, 2016) when referring to the enhancement of innovation (Jung, 2001; Jung, Wu & Chow, 2008; Leblanc, Rousseau, & Harvey, 2022; Sosik, Avolio & Kahai, 1997) and the empowerment of the change of the organization (Bass & Avolio, 1994; Sarros, Cooper & Santora, 2008). As Greek philosopher Heraclitus said 2500 years ago: “the only constant, present in all aspects of our lives, is change”. Therefore, innovation is a crucial factor leading to organisational success in nowadays highly competitive and dynamic environments (Škerlavaj, Černe, Dysvik, Nerstad & Su, 2017) and in digital transformation (Vey, Fandel-Meyer, Zipp & Schneider, 2017) while also being a key driver of all research and development (hereinafter referred to as R&D) activities.

Burns (1978) was the first scholar to define transformational leadership as “when one or more persons engage with others in such a way that leaders and followers raise one another to higher level of motivation and morality” (p. 20). Transformational leadership provides a better and more efficient way of leading in a complex and diverse work groups and organizations. It requires a change in the emphasis as well as the orientation of a leader, and is unique in four ways:

- a leader exhibits charisma and influence with high standards of excellence;
- it is a motivating and inspiring approach;
- it challenges followers to think critically, for themselves;
- it is considerate and compassionate (Yorges, Weiss & Strickland, 1999).

Most of the empirical research also show positive correlations between transformational leadership and performance (Gong, Huang & Farh, 2009). The approach is seen as long-term goal oriented, which goes beyond the norm of reciprocity and focuses on the intrinsic needs of a higher order (Podsakoff, MacKenzie, Moorman & Fetter, 1990).

Since this approach involves influencing the followers with high standards of excellence, motivating, and inspiring them as well as challenging them to think critically, creatively and being considerate towards their work, it is well suitable to be used when an organization is

still in its development stages or when big transformational changes are set and ongoing in the organisation.

The concepts researched in this thesis will relate to the relationship of transformational leadership and its key factors, the skills of the leaders and their influence on the success of the organization, the digital transformation and dealing with the “Valley of Death” problem.

Digital Transformation refers to a plethora of activities—from IT modernization (e.g., cloud computing) to digital optimization and the invention of some new digital business models (Gartner’s Glossary, n.d.). In order to transform a business, the new digital business model has to be established. Digital transformation is a continuously complex process, reshaping a company and its operations crucially. Therefore, it requires a strong, flexible, and goal-oriented leadership to drive change (Matt, Hess & Benlian, 2015).

The term “Valley of Death” refers to the challenging intermediate phase between research and successful innovation. This metaphor describes the relative lack of resources and expertise in the development phase (Markham, Ward, Aiman-Smith & Kingon, 2010; Zwilling, 2013); the challenges in creating, the needs to improvise and invent, adapt and be flexible, as well as to collaborate and preserve the common goal.

In both processes, customer experience (through customer understanding, top-line growth and customer touch points), operational processes (through process digitalization, worker enablement and performance management) and business models (to digitally modified businesses, new digital businesses, and digital globalization) can be either reshaped or transformed (Barron & Amorós, 2020; Ford, Koutsky & Spiwak, 2017; Westerman, Bonnet & McAfee, 2014).

In both processes (digital transformation and the “Valley of Death”), big disruptions are present. The road from beginning to end is not a comfortable highway—it is a long, curvy, bumpy, and partly an extremely narrow cart track road. To successfully achieve the desired goals in an organization, transformational leadership approach is the most suitable with its four main behavioural components: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bass & Avolio, 2004). A leader has to possess high sensitivity for problem occurrence and has to be a problem solver who sets a common goal. Presenting a clear vision to one’s subordinates will result in their need to accept the goal and be brought together to collaborate and work towards it while simultaneously solving the problems that occur in the meantime in a creative way. The tasks everyone deals with are challenging and complex. Therefore, motivation, interpersonal skills and collaboration are needed to keep everyone on the same common path. A transformational leader provides some guidance and support to their subordinates, motivates them, finds out their needs, and desires to provide them with the possibilities to learn and build on their competences and to improve organizational performance results in the future.

The purpose of this thesis is to identify the suitable concepts of leadership and the skills of a leader. We will discuss why those skills are important in each of the observed departments, focus on their specifics and the reasons for it and will suggest how those skills can enable success as well as what they lack.

Our main aim is to identify most suitable and crucial factors, concepts and skills of successful leadership needed in the organization while undergoing massive changes and enumerate the reasons for their importance.

The supplementary goals of the thesis are to examine whether transformational leadership differs in various organizations' R&D departments. It is in our interest to highlight how does the move to the 4.0 era, with digital implementation and transformation, affect the organisations' work processes.

In parallel, we will examine how successful are organizations in tackling the "Valley of Death" problem and if there is a relationship between the transformational leadership style, the success in the digital transformation process, and in the crossing of the "valley".

The research questions, which will be the focus of our empirical multimethodological research work, are:

- Research question 1: How does transformational leadership differ, and which components are constant across different R&D departments in different organizations?
- Research question 2: How is digital transformation reflected and implemented in R&D?
- Research question 3: How do different organizations deal and overcome the "Valley of Death" problem?
- Research question 4: How does transformational leadership influence and contribute to digital transformation?
- Research question 5: How does transformational leadership influence and contribute to crossing "the valley"?

To achieve the above-mentioned goals, we will use the methods presented below. We will initiate our research with theoretical part, where we will review existing literature and previous research on transformational leadership, its practices in different organizations and leadership in R&D departments with a purpose to understand their extended use, its unused potential, digital transformation process and the "valley of death" problem. We will elaborate on the concepts of transformational leadership and their implementation in practice. By closely elaborating on the theoretical concepts of transformational leadership, we will identify the main practices that characterize the utilization of these concepts in practice. We will perform a literature review using a description method and synthesis.

For the empirical part of our research, we plan to conduct in-depth interviews with department heads of four organizations. The idea is to do interviews in the following four organizations:

- Start-up organization: research and development company, working in a field of data science for pharmaceutical companies.
- Two smaller industrial organizations: research and development department of a company, working on polymer-based materials such as acrylic glass, composite acrylic material and other innovative polymer material products.
- Multinational organization: research and development department of a company in pharmaceutical industry.

Qualitative method with exploratory research (including a case study and an interpretation) is, in our case, the only suitable research method. We will conduct in-depth semi-structured interviews with leaders and seek specific information as well as in-depth insights. We will be assisted by studied literature in the theoretical part and by the questions formed for the leaders of four companies. The questions asked will help us find out in what way are the concepts of transformational leadership, digital transformation and the “Valley of death” established in the chosen companies. Since organizations exist at different stages and some of them have their operations at more expanded levels (more focused on either research, development, or, possibly, both being covered, well established, and incorporated in the overall process), interviews are flexible enough to get as detailed and specific with respondents as possible and expand on the topic when needed. In the following, we will present the survey questionnaire. To determine the level of transformational leadership, we will use Bass’s and Avolio’s (1995) approach – The Multifactor Leadership Questionnaire™ (MLQ – also known as MLQ 5X short or the standard MLQ) (Appendix 2). The survey is the standard procedure to measure a broad range of leadership types and identifies the characteristics of a transformational leader. The questions in the survey are closed type. The survey questionnaire will serve us for greater objectivity, reliability, and validity of given answers. To conclude, we will use the method of synthesis and the summary method, with which we will summarize the acquired knowledge and findings.

The thesis is divided into nine main chapters. The first chapter elaborates the main concepts and definitions of the Leadership. The second chapter is about Transformational leadership and its effects on performance of individual followers, teams, and organizations. The third chapter, Leader characteristics, reviews the role and the main competencies of the leader. The fourth chapter is about Digital transformation, its fundamentals, different digital transformation strategies and key success factors. In the fifth chapter we review the “Valley of Death” concept, the logic behind, its importance and explanation of the mechanism of “bridges crossing the valley”. The sixth chapter is the empirical part of the thesis. We present the methodology and research procedure, following by the results of MLQ survey and the extracts from the interviews. The seventh chapter is summing up the acquired knowledge and findings with our theoretical contributions, practical implications, and limitations for further research. The thesis concludes with a conclusion, a list of literature and an appendix containing the questionnaire, summaries of interviews and MLQ survey with the results.

# 1 LEADERSHIP

The term leadership refers to various positions – depending on the given situation; for instance, in a business setting it describes executives in charge for establishing and conducting the company’s strategy, in politics it could be assigned to a leader of a political party or someone prosecuting an imposing cause or a movement, in school environment it would describe the most popular kid, in sports it may be applied to the lead player in a team or it could be assigned to an whole organization with an influence on a society or a market. Complexity of current time and fast changes of the world are contributing to the fact that it is getting increasingly difficult to assign only one definition of the concept of leadership.

In this chapter, our attempt is to define leadership. We will examine different leadership definitions of well-respected individuals from business world and academic setting. We will compare them and elaborate on each. Lastly, we will review selected leadership styles and their main components.

## 1.1 Definition of Leadership

When searching for the right definition, which would effectively explain the wide usage of the term, we examine how some of the most respected influencers in business of our time have put their view on leadership into words.

Peter Drucker (1996), a well-respected thinker of modern business, stated it as: "The only definition of a leader is someone who has followers.", which by itself is not wrong, yet too simple. When a new police councillor is put in the command of 150 police officers to deal with crowd of protesters, he does not know the police officers directly and rather rarely leaves his office, hardly speaks to the men and women in his unit. His orders are routine and are perhaps given through a subordinate. Officers have to act in a coordinated manner and according to the instructions, they have to follow the orders. But this does not make the new police councillor a leader, but a commander (Kruse, 2013).

Warren Bennis (Booher, 1992) defined leadership as "... capacity to translate vision into reality." and it is in a way similar to Robert J. House’s (1996) definition: “leadership is ultimately about creating a way for people to contribute to making something extraordinary happen”. Those two are including vision and purpose; however, every New Year many people have their New Year's resolutions listed and a vision for the upcoming year. One of the most common ones is to get in shape and start going to the gym regularly, but that does not make someone a leader, but a gym member. The problem with this definition is that it does not include anyone else – it’s a single person definition.

Bill Gates (The Verge, 2015) in the interview said, "As we look ahead into the next century, leaders will be those who empower others." This definition includes “others”, but it lacks the parts about goal or vision. Since empowerment is a good thing, it may also lead to

extreme behaviour, which causes misalignment with the rest of the company. Krikpatick and Locke (1991) proposed that “effective leader is an individual with the capacity to consistently succeed in a given condition and be recognized as meeting the expectations of an organization or society”.

Academics (Chemers, 1997; Chin, 2015) explained it as: “a process of social influence, in which one person can enlist the aid and support of others in the accomplishment of a common task”, which is similar to Kevin Kruse’s (2013) definition, which we find the most general and well-rounded: “Leadership is a process of social influence, which maximizes the efforts of others, towards the achievement of a goal”. He included followers, strong social influence of a leader (but not in terms of excessive authority or power over them; personality traits, attributes, or a title are not specifically required), a goal (not just influence with no intended outcome) and the inclusion of “maximizing the efforts”, which sums up many styles and paths to effective leadership.

Nevertheless, this definition may as well be outdated. Leaders focused on improving efficiency and productivity, but nowadays leaders also have to face such factors as the digital revolution and fast adaptability to remote work, with less influence and power over efficiency and productivity of employees. A good leader will find a way to exploit such developments, adapt and target employee’s advantages. Followers are influenced by the right way of communicating, establishing common vision, persuasion, enthusiasm, emotional influence, etc. (further explained in the following chapters). With those competencies, leader achieves trust and confidence to lead the followers by their own will and use all their knowledge and abilities.

## **1.2 Leadership Styles**

The manager directs and influences employees through their professional status, power, and personal relationships. Rotemberg and Saloner (1993) claimed that leadership style of an organization is selected based on the nature of work, influenced by the stakeholders (mainly the needs of subordinates) and the desire to maximize the profits. Leadership also includes implementation of plans by motivating and providing direction to subordinates (Kilani, Mahayreh & Harahsheh, 2016). Wu’s (2009) research points out the importance of leadership style on the influence in functioning of the organization.

Every leader has its own style of leadership (Khan, Khan & Qureshi, 2015) with different levels of charisma, power of influence, interaction with followers, their response, energy flow between both parties etc. (Price-Dowd, 2020). Understanding the personal leadership style is important. However, it is not the most practical approach to examine every single individual for academic purposes. It is true that not even two leaders are the same, however, they can be similar in the approaches they take. With the intention to study leadership styles and compare their success in different cases, several leadership styles have been defined (Dulewicz & Higgs, 2005). In what follows, we will examine The Full Range Leadership

Model Theory, three modern leadership styles (laissez-faire, transactional and transformational) introduced by Burns (1978), outcome variables, and organizational commitment.

### 1.2.1 Laissez-faire Leadership

The laissez-faire leadership style is giving employees plenty of freedom to make their own decisions and complete tasks on their own. In today's world it is important more than ever, as it fosters creativity and responsibility among subordinates. It allows the teams to be creative and autonomous by providing freedom to make decisions on their own and take actions (Yang, 2015).

However, it does not always provide the best outcomes and can lead to ineffective decision making and a lack of direction. The lack and non-presence of effective leadership is as well described with laissez-faire (Yulk, 2010). It includes indecisiveness when making decisions, avoidance of giving directions and leadership responsibilities, disregard of problems, passive role playing in group affairs with not following up, refusing to intervene, and poor interaction with other group members (Gill, 2006; Sadler, 2003). Laissez-faire leaders can ignore problems and subordinates (Yulk, 2010), consisting of no feedback, reward, leader involvement, and contribution, which disable the growth of followers (Northouse, 2007).

For the laissez-faire leadership style to be successful, careful consideration, monitoring of the performance, and the guidance offered where and when needed are required. It may work well with a highly motivated and skilled team but might not be suitable for every workplace situation. Before employing the laissez-faire leadership style, it is important to carefully evaluate the individual strengths and weaknesses (Khan, 2022).

### 1.2.2 Transactional Leadership

The model of transactional leadership was originally developed by Burns in 1978. He defined it as the type of leadership, when a person connects to others with the intention of exchange of valued things (economic, political, or psychological in nature) (Burns, 1978). It could be used in many settings and organizations. Both parties (leader and follower) have related intentions, but the relationship is not reaching beyond the exchange of valued benefits (Yahaya & Ebrahim, 2016). That kind of relationship between both parties is not likely to trigger follower's extra-role behaviour (Erhart & Nauman, 2004) and does not bind the leader and follower in a mutual and continuing pursuit of a higher purpose (Burns, 1978).

In 1985 Bass expanded Burns' work and developed the transactional leadership theory. Bass proposed that transactional leadership is characterized by an exchange based on discussion between leaders and followers on the leader's requirements and rewards received by followers if they assure and satisfy conditions (Bass & Avolio, 1994). Leaders are not

concerned with employee's personal development (Northouse, 2007), instead are more focused on goal accomplishment (Aarons, 2006) with clarifying tasks and offering rewards for positive performance and punishment for negative performance (Burns, 1978). Followers are rewarded with praise and rewards for behaviour and performance which meets the expectations of the leaders (Bass & Avolio, 1994; Northouse, 2007) or with the avoidance of punishment for non-performance or lack of goal achievement (Bass, Avolio, Jung & Benson, 2003).

Transactional leaders use their power to consult, influence, and motivate employees to produce the desired goals by making it clear what the target is, demonstrating how to achieve it, explaining the evaluation, motivating, providing feedback and rewards if employees meet the target by offering some form of satisfaction based on need, such as pay or other rewards in return for work effort. This leads to followers achieving desired outcomes which leaders expect, not because subordinates are passionate and committed to their jobs, but because of the exchange or rewards offered by leaders (Bass, 1985; Sadler, 2003; Yulk, 2010).

### 1.2.3 Transformational Leadership

Transformational leadership is one of the leadership approaches that continuously attracts the attention of researchers (Bass & Avolio, 2004; Grošelj, Černe, Penger & Grah, 2020; Yahaya & Ebrahim, 2016; Jung et al., 2008). It is the most influential leadership theory of the last two decades (Yahaya & Ebrahim, 2016). This is also the reason why we will focus the most of our attention on it in the following Chapter 2.

Burns (1978) was the first to differentiate between transformational and transactional leadership. His theory was developed based on research of political leaders. He defined the concept of transformational leadership as the occurrence, "when one or more persons engage with others in such a way that leaders and followers raise one another to higher level of motivation and morality".

Later in 1985, Bass successfully extended Burns' research. His conclusions have until now been the basis for transformational leadership theory. Difference between transactional and transformational leadership is that transactional provides efficiency and satisfaction with results in the short run, while transformational generates the sense of working for higher purpose, higher engagement, long-term effort, creativity, and productivity. Transformational leadership changes, prepares and persuades subordinates to give their best effort. Leader raises awareness of followers, moves their focus to their higher-level needs, prepares and persuades them to go above self-interests and to work beyond the expectations. With all that, subordinates are willing to give all the support to the leader and try to satisfy their leader's expectation as well as possible (Bass, 1985).

Transformational leaders appeal to higher ideals, moral values, empowerment of followers to foster employee creativity, and produce profound and fundamental change (Garcia-



Morales, Jimenez-Barrionuevo & Gutierrez-Gutierrez, 2012); it is closer to a process than a behaviour (Burns, 1978). In contrast to transactional, transformational leaders provide more commitment, higher performance, morality, and deeper levels of connection of both leader and follower (Burns, 1978).

#### 1.2.4 Relationship Between Transactional and Transformational Leadership

Burns (1978) in his definition puts transformational and transactional leadership on the opposite sides and believes that leaders perform either transformational or transactional leadership behaviour (Figure 1). In Bass's (1985) explanation the line is blurred: he explains it with transformational and transactional leadership being two extreme dimensions and effective leaders use both (Bass, 1998), transformational and transactional leadership behaviours, but in different extend depending on situation (Aarons, 2006). In Figure 1, we presented the difference visually. Burns' discrete options for either transformational or transactional leadership and Bass's explanation those are two opposite dimensions and leaders can use the combination of both. Transactional leaderships behaviours are used because of social exchange elements in their relationship with followers and transformational to get more commitment and higher engagement from subordinates (Bass, 1998).

*Figure 1: Burn's and Bass's Explanation of Relationship between Transformational and Transactional Leadership*



*Source: Adapted from Bass (1998) and Burns (1978).*

### 1.3 Components of Leadership Styles

Leading is the way to help people move into action. Unfortunately, there is no formula available that can teach a certain leadership style. In addition, what works for some leaders will not necessarily work for others, and what works at certain times will not necessary work

all the time. However, main components of transactional and transformational leadership style have been determined and with them the most important differences highlighted.

### 1.3.1 Components of Transactional Leadership

Before the collaboration between leaders and subordinates begins, leaders set clear goals and expectations for outcomes and subordinates' performance. Leaders and subordinates both negotiate the desired rewards for work done (Bass et al., 2003). To set objectives, standards of performance and rewards, leaders tend to use directive style (Gill, 2006). Next, we describe the three main components (contingent reward, active and passive management by exception) (Yahaya & Ebrahim, 2016) of transactional leadership and examine how those contribute to leadership capabilities.

Contingent reward (and responsibilities) is agreed between both parties based on the performance objectives and standards to be accomplished (Yahaya & Ebrahim, 2016). Superior party sets promise to provide agreed reward if subordinate achieves assigned tasks; subordinate will get reward for their work done or receive criticism and be punished for lack of achievement (Yahaya & Ebrahim, 2016). Two studies (Schriesheim, Castro, Zhou & DeChurch, 2006; Vecchio, Justin & Pearce, 2008) concluded on contingent reward as being significantly related to individual's performance. One of the most important characteristics of transactional leaders is clear specification of subordinates' performance expectations and providing rewards for meeting these expectations (Bass, 1985).

Management by exception is used by leaders to monitor and intervene in exceptional circumstances only (Boerner, Eisenbeiss & Griesser, 2007), and therefore differs from the contingent reward. It is a practice to correct follower's performance either in anticipation of the problem (active management by exception) or after the problem occurs (passive management by exception) by leader's intervention (Yahaya & Ebrahim, 2016).

Active management leaders take initiative to observe employees' behaviours and judge bad behaviours (Wu, Liu, Song & Liu, 2006). Active management by exception refers to a superior who actively monitors subordinate's job, with intention to find errors and deviations (Gill, 2006). Leaders systematically monitor employee's performance and intervene when mistakes or problems occur, they actively search for problems and correct errors as those are detected, interfere, and take corrective actions when subordinates fail to perform up to standard (Bass, 1985).

In passive management by exception, the reaction of leaders to the problems is not systematical; standards are set in advance and only if error occurs, they intervene (Gill, 2006). It depends on the subordinate to point out the error and gain the attention of a passive management leader (Limsila & Ogunlana, 2008).

### 1.3.2 Components of Transformational Leadership

According to Bass and Avolio (2004), transformational leadership contains the following four behavioural components: idealized influence, inspirational motivation, intellectual stimulation and individualized consideration. We will describe each of them and look at their contributions to leadership capabilities.

First behavioural component, idealized influence, is related to leader's integrity, charisma, capacity to articulate and share vision and high expectations, motivate, inspire, challenge and be a role model for subordinates (Bass et al., 2003; Gill, 2006; Wang, Oh, Courtright & Colbert, 2011). Leader puts subordinates' desires and needs before their own (Bass et al., 2003); subordinates are not only attracted to leader's charisma but also to high moral and ethical standards (Northouse, 2007). Followers feel included and as an important part in organization, which leads to gratefulness and admiration towards a leader. Followers want to commit, contribute and add value to a leader's mission with their best work possible (Yahaya & Ebrahim, 2016).

Charismatic leaders easily persuade followers. A leader with charisma reinforces the image of competence, promotes shared values, vision and sense of purpose to followers, awakens their emotions, enhances enthusiasm among subordinates and honestly shares potential risks and successes with them; as a result, followers trust and admire their leader and are willing to share and commit to their vision (Bass et al., 2003). In Chapter 3.2: Competencies of a Leader we will delve deeper into the concept of charisma. Leaders become role models for subordinates (Bass, 1985).

Leaders demonstrate the attitude of idealized influence. They are leading by example, acting in ways that are consistent with the articulated vision (Wang et al., 2011) to successfully stimulate enthusiasm in a team between individuals and build confidence in their capacity to complete tasks successfully and attain group objectives (Yulk & Van Fleet, 1982).

The inspirational leader provides followers with increased drive to work hard and to dedicate fully to reach organizational goals. With inspirational motivation leader creates and shares their vision with followers in an inspiring way and gains their reliability, commitment and trust (Hoyt, Goethals & Riggio, 2006). Leader inspires and motivates with communicating and setting a clear vision, linking personal and organizational goals, developing team spirit among subordinates, and treating problems as opportunities to learn; this enables to set higher and more challenging goals and tasks for the followers and encourage them to achieve more than they would in their own self-interest (Gill, 2006; Northouse, 2007; Yahaya & Ebrahim, 2016).

Intellectual stimulation is leader's capability to intellectually stimulate and challenge subordinates' existing assumptions and do more, find new ways, challenge their way of thinking, be innovative and creative in problem solving and to become actively involved in

group decision making (Hoyt et al., 2006; Limsila & Ogunlana, 2008, Yahaya & Ebrahim, 2016).

Consideration for each individual subordinate is an important side of relationship between leader and subordinate (Bass, 1985). It gives leaders a chance to enhance relationship with each subordinate by genuine care for the subordinate's individual needs, perspective, and personal development (Hoyt et al., 2006; Limsila & Ogunlana, 2008). With recognition of subordinate's work, leader acts as a mentor, gives them constructive feedback, delegates further responsibilities and creates learning opportunities for followers, with intention of developing the follower to higher levels of potential (Bass et al., 2003; Gill, 2006; Sadler, 2003; Yahaya & Ebrahim, 2016). Dealing with each subordinate as a unique individual enhances their feelings of trust in and satisfaction with the leader (Wang et al., 2011). Individualized consideration directly relates to a subordinate's satisfaction with their workspace (Bass, 1985).

## **2 TRANSFORMATIONAL LEADERSHIP**

Bass's (1985) book *Leadership and Performance Beyond Expectations* on transformational leadership has gained a lot of attention over the past years; considering only citations it was referenced almost 27,000 times. Transformational leaders are introducing changes in work methods, processes, and systems for long-term benefits (Pearce & Ensley, 2004). Their strong attributes are attractive vision and compelling presentation, emphasising innovation, addressing their followers individually and being a role model to them (Bass & Avolio, 1995). In what follows, we will focus on effects of transformational leadership performance on individual, team, organization, and overall innovativeness of the organization.

### **2.1 Effect on Individual Follower Performance**

Transformational leadership behaviour components, described in Chapter 1.3.2., are expected to motivate followers to perform at their best. Transformational leadership is positively related to individual follower general job performance in its individual task, contextual and creative performance (Wang et al., 2011).

Transformational leaders encourage subordinates to assess the existing situation, challenge and change their own values and beliefs (Aryee, Walumbwa, Zhou & Hartnell, 2012; Bass et al., 2003). With enabling and motivating followers to complete their assigned tasks, a transformational leader connects work roles to a persuasive and powerful vision, resulting in followers' perception of their work as more purposeful and important, causing increase in intrinsic motivation (Wang et al., 2011; Zhu, Avolio, & Walumbwa, 2009). Additionally, a transformational leader functions as a coach or a mentor to their subordinated. They instil a belief that subordinates can reach the targets that are set for them, resulting in higher levels

of self-efficacy and positive affect on performance (Wang et al., 2011; Yulk & Van Fleet, 1982).

Transformational leadership is also positively related to contextual performance. Contextual performance is describing intrinsically motivated behaviours of subordinates, adding to the psychological and social context around the assigned work description. Increase in effort and doing work beyond their official job roles is seen as its consequence (Wang et al., 2011).

Transformational leaders have the ability to increase social identification and internalize the goals of the collective. Strong team affiliation and internalized goals of the collective motivates subordinates to be good “team-players”, enhancing selfless behaviours and commitment to a common goal (Bass & Avolio, 1993; Hoyt et al., 2006; Wang et al. 2011).

Subordinates are feeling more empowered when transformational leaders are not micro-managing them and were less involved in direct supervising (Grošelj et al., 2020). As a result, they feel respected, autonomous, and intrinsically motivated (Yang, 2015).

Transformational leadership is positively related to creative performance. Leaders empower their followers to be problem solvers with encouragement and intellectual stimulus to challenge the status quo, question assumptions, take risks, suggest innovative ideas, and engage in divergent thinking (Bass, 1985). Subordinates experiment without fear. If they fail, they grow in their knowledge and creativity and are not burdened by it (Jung, 2001; Wang et al., 2011). They foster intellectual capacities and inspire subordinates to discover and embrace opportunities, leading to higher levels of innovative work behaviour (Afsar, Badir & Bin Saeed, 2014).

Although transformational leadership does not further enhance individual task performance (as for example transactional leadership with contingent reward), it has a positive effect on contextual performance due to individual’s identification with the organization, internalization of common goals, and the presence of transformational leaders as role models (Wang et al., 2011).

## **2.2 Effect on Teams and Overall Organizational Performance**

When it comes to growth, a transformational leader understands the market and changes in the environment, and is able to transform the organization, relationships, and increase motivation to adapt to current needs (Grošelj et al., 2020). Transformational leadership and team level performance are correlated (Wang et al., 2011). Leaders communicate targets and vision to the team, motivate individuals to work toward the collective vision, and encourage strong team cohesion (Bass, 1985; Bass et al., 2003). High degree of social identification and vocal expression of leader’s confidence and trust in the team is enhancing motivation to achieve team-level goals (Bass et al., 2003; Hoyt et al., 2006) and strong team collaboration,

which enables coordination and cooperation among group members and facilitates overall better performance of a team (Wang et al., 2011).

Also, overall organizational-level performance is positively related to transformational leadership by team cohesion, motivation, goal compliance of the top management, and the communication of a shared vision that serves to align their efforts (Bass, 1985; Wang et al., 2011). The effect of transformational leadership at the top of the organization can cascade down through to leaders at lower levels, enhancing overall leadership style, organizational climate, system, strategy, and performance in the organization (Jung et al., 2008; Waldman & Yammarino, 1999). They foster innovative work behaviour in a way that strives towards common organizational goals (Majumdar & Ray, 2011).

Transformational leadership explains unique variance in team performance beyond transactional leadership, by providing direction through vision, motivation to work towards team objectives, and stronger team potency and cohesion (Bass et al., 2003; Wang et al., 2011).

### **2.3 Effect on Innovation in the Organization**

Idea generation and implementation are tightly connected to the style of leadership (Černe, Batistič & Kenda, 2018). When expecting innovation and creativity as one of the outcomes, it is particularly relevant to choose the leadership style accordingly (Černe, Jaklič & Škerlavaj, 2013; Škerlavaj, Černe & Dysvik, 2014). Transformational leaders have a positive influence on enhancing organizational innovation by encouraging employees to think creatively (Sosik et al., 1997; Zuraik & Kelly, 2019), engaging with employees' personal value systems, and increasing levels of motivation toward organizational vision, as already mentioned in previous chapters. The highest levels of innovative behaviour are achieved when the level of psychological empowerment is high (Grošelj et al., 2020). The result is enhanced organizational innovation with articulated vision and provided individual support (Sarros et al., 2008). With high psychological empowerment and absence of micromanagement employees feel respected and autonomously motivated (Yang, 2015), resulting in higher inclination to innovation (Grošelj et al., 2020).

Jung, Chow and Wu (2003) in the study found that transformational leadership has positive influence on organizational innovation, mainly because of intellectual stimulation, encouraged team discussion, and trial of different ideas and approaches. It was confirmed in recent study that when leaders are practicing more transformational leadership style approaches, the followers are more innovative (Grošelj et al., 2020).

A competitive, performance-oriented organizational culture, infused with the combination of transformational leadership factors (articulating vision, intellectual stimulation and providing individual support) is likely to have a suitable climate for organizational innovation. Leaders with visionary approach are more inclined to provide resources, funding,

experts, time to pursue creative ideas, and rewards to innovate. Those organizations are in short term focused on efficiency and cost cutting, but in the long term are driving innovation further. Transformational leadership has a positive effect on them, by providing suitable climate for organizational innovation (Sarros et al., 2008). According to Khan and Khan (2019) transformational leadership has a positive impact on innovation through enhanced organisational learning and honest and open knowledge sharing between subordinates.

### **3 LEADER CHARACTERISTICS**

The key role of successful management in any organization goes to a good leader. Even if that is not an officially assigned role, there is a person that possesses it. Recent study (Grošelj et al., 2020) stresses the importance of a leader's self-awareness, positive modelling, and ethical organizational context, while also having positive impact on individual, team, and organization performance. In this chapter, we will focus on the role of a leader, qualities and what kind of knowledge is important for a modern successful leader to have.

#### **3.1 The Role of a Leader**

Important role of a leader is setting an example for values, behaviours and considerations expected from employees. It can be formally assigned to a position, for example manager or department head, or it can be informally given to an employee who has the charisma that attracts others to follow. Here we will focus only on formally assigned leading positions.

Key role of a leader is to make work done as effectively and efficiently as possible, by organizing and assigning work to people with skills and attributes needed to achieve best results of desired goals (Dimovski & Penger, 2006). Key attributes for successful leadership are cognitive, functional, and social competences. The leader is responsible for organization (Svetlik, 2009), communication (Ferjan, 1998), relationships and resolving conflicts (Možina, 2002), motivation (Černe, Nerstand, Dysvik & Škerlavaj, 2013), stimulative work environment (Černe, Hernaus, Dysvik & Škerlavaj, 2017), inclusion of employees in decision making (Landry, 2020), and organizational culture (Shahzad, Luqman, Khan & Shabbir, 2012).

#### **3.2 Competencies of a Leader**

To capitalize on and to cope with the fast-moving ever-changing competitive conditions in business, greater effectiveness and flexibility are needed. Leader's influential personal qualities, social perception, behavioural flexibility, and professional knowledge are directly correlated to the performance, power, success, and achievement of organizational goals.

Bennis (1987; cited in Thach & Thompson, 2007) talks about a leadership competency of vision and goal-setting, interpersonal skills, self-awareness and technical competence regarding the specifics of the business in which the leader works as the ones which have

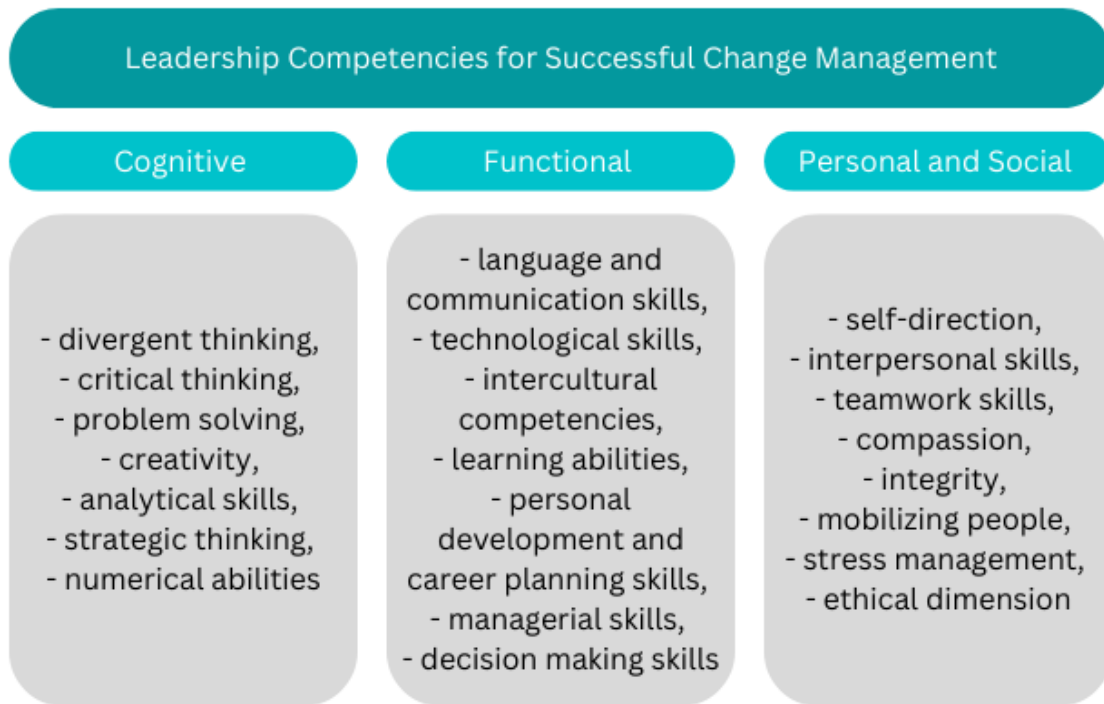
been proven through the time as necessary for effective leadership. John C. Maxwell (1999) in his book talks about 21 personal qualities of a good leader: character, charisma, commitment, communication, competence, courage, discernment, focus, generosity, initiative, listening, passion, positive attitude, problem solving, relationships, responsibility, security, self-discipline, servanthood, teachability, vision. Additional commonly referenced competencies also include integrity and honesty, goal orientation, change management, innovation, tech savviness, and interpersonal skills like diversity consciousness, developing others, team leadership, influence skills, conflict management, emotional intelligence, and humour (Jackson, 2017; McCauley, 2006; Pagon, Banutai & Bizjak, 2008; Riggio, 2014; Thach & Thompson, 2007).

Competencies can also be divided into cognitive (divergent thinking, critical thinking, problem solving, creativity, analytical skills, strategic thinking, numerical abilities), functional (language and communication skills, technological skills, intercultural competencies, learning abilities, personal development and career planning skills, managerial skills, decision making skills), and personal and social abilities (self-direction, interpersonal skills, teamwork skills, compassion, integrity, mobilizing people, stress management, ethical dimension) (Figure 2), and skills based on a combination of cognitive and practical skills, knowledge, motivation, orientation values, beliefs, emotions, and other social and behavioural components (Pagon et.al., 2008).

From the literature review, we determinate twelve main attributes of a modern leader. In what follows, we will go through them and describe their contribution to successful leading.



Figure 2: Leadership Competencies for Successful Change Management



*Adapted from Pagon et al. (2008).*

### 3.2.1 Self-awareness

Self-awareness is the competence to recognize (personal and other's) strengths and weaknesses, triggers, motivators, emotions and reactions and ability to use this awareness to manage behaviour and relationships (Esimai, 2018; Hartung, 2020). It requires taking a deeper look at feelings, reasons for them and how those could turn into reactions (Tekleab, Sims, Yun, Tesluk & Cox, 2007). With the absence of self-awareness, leaders can appear a bit arrogant (Business News Daily, 2020). Self-awareness is one of the core components of emotional intelligence (Bradberry & Greaves, 2009)

### 3.2.2 Integrity/Honesty

A leader should know how to express their honest opinion and the truth. Executives with the highest integrity and who are trusted most are truthful about all things - unimportant as well as important. They pay attention and are accurate about details. High-precision and truthfulness is a good way to gain trust, the ticket of admission to leadership. Trustworthiness is integrity in action (Aas, Ellingsen & Lindøe, 2008; Bower, 1997; Engelbrecht, Heine & Mahembe, 2017; Palanski & Yammarino, 2007).

Fairness and trustworthiness complete each other. In English Dictionary (“Fair”, n.d.) *fair* is defined as right, reasonable, with equal standards and not allowing personal opinions to influence judgment, equitable, unprejudiced, impartial, dispassionate, and objective. In America, an unfair boss is impaling to a deficient character, on the other hand a boss who is tough, but fair is to be admired (Bower, 1997). If fairness and trust are integrated in a company culture, then these qualities will flourish to company’s great benefit (Bacha & Walker, 2013; Lips-Wiersma et al., 2020).

### 3.2.3 Charisma

Charisma is the ability to persuade others and connect with them using the means of authentic presentation, high self-confidence, self-esteem, self-assurance, and energy. It enables individuals to provide a clear vision and sense of purpose, rise emotional response, enhance enthusiasm among subordinates, enables interpersonal connections and sharing successes and risks. The leader gains the admiration of followers and makes them want to share and commit to the vision (Bass et al., 2003; House et al., 2017; Hu & Dutta, 2022). To be able to influence others it is necessary to first build a foundation of trust, understanding the motivation of subordinates and encourage them to share their opinions (Landry, 2018).

### 3.2.4 Humble Behaviour

Arrogance, selfishness, conceit and egotism in a leader are poisonous qualities to company culture, environment and relationships in the team. However, leaders can never be hypocritically humble; good leaders are simply unassuming in their behaviour (Bower, 1997; Kelemen et al., 2022; Liu, Liu, Wang & Wang, 2022).

Successful leaders are as humble in the surroundings they create and tolerate as they are in their behaviour (Al Hawamdeh, 2022). Casualness and informality contribute to a leadership culture, lower stress the employees are experiencing and enhances creativity and innovation (Afshan, Kashif, Khanum, Khuhro, & Akram, 2021). In many successful high-tech companies, casualness is integral to the company culture; everyone dresses and behaves informally (Bower, 1997). If leaders have an unassuming manner with the casualness and informality, the resulting behaviours of people will fit naturally into a leadership culture (Cho, Schilpzand, Huang & Paterson, 2021), making it more unbossed (Novartis, 2020).

### 3.2.5 Communication

A leader’s most powerful tool is communication (Dewan & Myatt, 2008; Flauto, 1999; Linjuan, 2014). Effective communication shares context, aspirations, and tangible benefits in honest and transparent way (Handscomb, Honigmann & Reddy, 2021). If communication lacks important information, it can easily be misinterpreted, creating obstacles, and thus preventing progress. For effective communication it is important that the leader can adapt

their communication style, that they communicate clearly and transparently, hold open body language, actively listen, give the ability to give feedback and ask questions (Landry, 2019). Before the COVID-19 pandemic, people were already spending about 85% of their time on the phone, on email, and in meetings (Cross, 2021). During the pandemic that percentage has gone up (Cross, 2021). All of that can lead to the collaboration overload and one of its costs is loss of engagement (Cross, 2021). Virtual collaboration is here to stay. Virtual meetings, emails, instant messages, phone calls, face to face conversation – effective communication is vital to gain trust, align efforts, clearly present goals, encourage collaboration, and inspire (Reed & Allen, 2021).

### 3.2.6 Listening with Combination of Open- and Broad-mindedness

Active listening helps the other person feel included, heard, and understood. That involves paying close attention, asking nonleading and brief questions, showing interest and understanding without implying agreement (Bower, 1997; Kluger & Itzhakov, 2022; Petrilli, 2022). In Fortune magazine, Peter Nulty (1994) describes the importance of listening and its consequences. He is examining the role played in the election of six new members of the National Business Hall of Fame. Of all the skills of leadership, he finds listening as one of the most valuable and the one which is understood the least. Those who remain “ordinary” leaders listen only sometimes, but a few, the exceptional ones, never stop listening. They are hearoholics, always paying attention to advisers, customers, inner voices, and competitors (Baker, Dunne-Moses, Calarco, & Gilkey, 2019).

At first thought, this simple attribute, in combination with open-mindedness, can have enormous importance and contribute to competitive advantage for any company. Leader with an open mind generally makes better decisions, learns, and asks for needed or missing information, generally establishes more positive relations with subordinates (Al Abrow et al., 2021; Tse & Mitchell, 2010). The question of why chief executives are not more open-minded may have an answer in the established command-control system. The chief executive is mostly managing from the top. People are usually not extensively questioning chief executives, and they seldom or just quietly disagree with them. The result of that is a self-believing CEO and commander of others. Self-assurance can be a plus, but it can quickly lead to egotism and even arrogance. It closes minds. The ability to consider and tolerate different views and opinions, adapt and being flexible, being undisturbed by little things, willing to overlook small errors, and easy to talk to, having a sense of humour, we consider as broad-mindedness (Bower, 1997).

### 3.2.7 Flexibility and Adaptability

The world nowadays is filled with ambiguous, adaptive challenges with no reliable, known, and well-tested solutions. Adaptive challenges, in comparison to technical challenges, call for a different problem-solving capacities (Kim & Choi, 2018), risk tolerance, adaptive

mind-set (which requires being flexible and responsive to the environment) (Pak, Polikoff, Desimone & Saldívar García, 2020), asking novel questions, possessing the diversity of thought, paying attention to patterns, and being cross-functional to gain greater insights and allow for creative collaboration (Baron, Rouleau, Grégoire & Baron, 2018; Bower, 1997; Reiter-Palmon, 2003).

Leaders with the adaptive mind-set are more likely to steer their organizations through constant change, but keep their vision, empathy, creativity, and resilience (Al-Ghazali, 2020; Grashow, Heifetz & Linsky, 2009). Adaptive leaders help their teams embrace paradoxes productively rather than battle them. They are able to manage the tensions between opposed mind-sets and approaches (Bower, 1997).

### 3.2.8 Tech Savviness

To stay on top of changes and to embrace the power of data, design, and digital, leaders need to build foundational knowledge about what these advanced technologies are and how they could create business value (Čater, Čater, Černe, Koman & Redek, 2021; Guzmán, Muschard, Gerolamo, Kohl & Rozenfeld, 2020; Santoso, Elidjen, Abdinagoro & Arief, 2019; Dike, 2015). From machine learning and artificial intelligence to technology modernization and digital customer personalization, design thinking and digital product management (Darino, Ogeah & Srinivasan, 2018; Oberer & Erkollar, 2018). More on that will follow in Chapter 0.

### 3.2.9 Intuitiveness, Compassion and Good Judgment

Intuitiveness is the ability to instinctively gather information without conscious reasoning or fact, also known as a “sixth-sense”, “gut feeling” or “inner knowing” (Stupple, 2022). Sensitiveness to subordinates’ culture and feelings, politeness, carefulness, considerateness and understanding when replying to them (Bonsu & Twum-Danso, 2018; Dinibutun, 2020). Saying things in a way that is not offensive and dispiriting (disruption can only appear when criticism is intended). Situations are created and must be dealt with by the people. Problems usually appear in disruptive situations with disagreement. Sensitiveness to situations means ability to resolve them with careful analysis of facts that must be combined with an acute sensitivity to the feelings and attitudes of the people involved (Bower, 1997; Downey, Papageorgiou & Stough, 2006; Erenda, Metelko, Roblek & Meško, 2017; Schmid Mast, Jonas, Cronauer, & Darioly, 2012).

John Gardner (1990) summed up judgement as: “... the ability to combine hard data, questionable data, and intuitive guesses to arrive at a conclusion that events prove to be correct. Judgment-in-action includes effective problem solving, the design of strategies, the setting of priorities, and intuitive as well as rational judgments. Most important, perhaps, it includes the capacity to appraise the potentialities of co-workers and opponents.”

### 3.2.10 Taking Initiative

Another important attribute of a leader is the ability to take the initiative – to consider available information, use judgment, decide, and act (Bruttel & Fischbacher, 2013). The important thing is to keep alert and open to opportunities for action, which are open to every employee in the company. These can play an important role for success and competitive advantage of an organization (Miles, 2022). Everything happens because someone took the initiative for it. When a company is running based on a network of leaders strategically stationed throughout the company, chances of someone taking the initiative for a given opportunity increases. As leaders, constituents can suggest initiatives as well (Bower, 1997).

Leaders demonstrate ownership by identifying and grasping the opportunities (Tsai, Poquet, Gašević, Dawson, & Pardo, 2019). Proactivity is a work behaviour defined by its self-starting nature and persistence in overcoming difficulties that arise in the pursuit of a goal (Frese & Fay, 2001). By taking initiative, successful leaders appear flexible, confident, and courageous (The Institute of Leadership & Management, 2017). They spot and take advantage of opportunities that others pass by; they take appropriate (proactive rather than reactive) action (Villaluz & Hechanova, 2019). They do not wait for someone to tell them what to do. Instead, they help their teams and organizations to innovate, progress and to overcome competition (The Institute of Leadership & Management, 2017).

### 3.2.11 The Capacity to Motivate

In modern managing leaders use a wide range of motivators. From individual monetary rewards (Hua, Cheng, Hou, & Luo, 2020), promises of advancement within the company (Lipman, 2014), to everyday motivators for example by giving recognition for their contribution (Heathfield, 2019), being treated fairly, with dignity and consideration (Dumas & Beinecke, 2018; Karanika-Murray & Michaelides, 2015; Paais & Pattiruhu, 2020; Shafique & Kalyar, 2018; Sousa & Rocha, 2019). John W. Gardner (1987) describes it as: “More than any other attribute, this is close to the heart of the popular conception of leadership—the capacity to move people to action, to communicate persuasively, to strengthen the confidence of followers.”

Social intelligence of a leader is critical for success in the complex, dynamic, variable social environment that describes most of organizations. The social knowledge structures are complex portrayals of people, situations, and interactions that leaders encounter in their organizational problem-solving efforts (Zaccaro, 1991).

### 3.2.12 Partnership Skills

One way for organization to build scale and skills quickly both inside and outside of the organization are partnerships (Ibarra & Hunter, 2007). With the ability to look for inspiration

outside the industry, strong business-development capabilities, network management and agile habits of leaders' mind can positively contribute to effective development of partnerships (Buckley, Glaister & Husan, 2002; Cortellazzo et al., 2019; Darino, 2018).

### **3.3 Strong Competencies and Characteristics of Transformational Leaders**

Transformational leaders focus on subordinate's individual needs and personal development (Yahaya & Ebrahim, 2016) and on inspiring change (Rizvi, 2022). As already mentioned in Chapter 2.3, they passionately and enthusiastically motivate subordinates to do more than the expected (Rizvi, 2022). That can be achieved by:

- rising awareness of subordinates of the importance and value of task goals,
- persuading subordinates to put goals of organization before their own self-interests,
- increasing subordinates' high-level needs (Bass, 1985).

To achieve those, Podsakoff et al. (1990) is proposing six key factors of transformational leadership:

- identifying and articulating a vision for the future: leader identifies new opportunities for organization, develops, articulates, and inspires subordinates with organizational vision of the future,
- providing an appropriate role model: leader sets an example for employees to follow which is consistent with the imposed values,
- fostering the acceptance of goals: leader promotes cooperation among teammates and encourages them to work together toward a common goal,
- setting high performance expectations: leader's expectations for excellence, quality, high performance,
- providing individual support: leader respects followers and is concerned about their personal feelings and needs,
- providing intellectual stimulation: leader challenges followers to re-examine some of their assumptions about their work and rethink how it can be performed.

A transformational leader is mindful of the impact and effects that recognition and appreciation have on emotional excitement of subordinates (Stone, Russell & Patterson, 2004). They distinguish and establish shared common values within a team and empower individuals to contribute their best to the common goal with creative problem solving (Limsila & Ogunlana, 2008; Ozaralli, 2003). Leaders are involved in progress and development of employees, intrinsic motivation, building commitment, shared values, shared vision, and employee development. As a result, subordinates trust, admire, are loyal and have higher levels of respect toward transformational leaders (Rizvi, 2022; Yulk, 2010). Transformational leadership style is effective when leading a team through challenging situation or project.

## 4 DIGITAL TRANSFORMATION

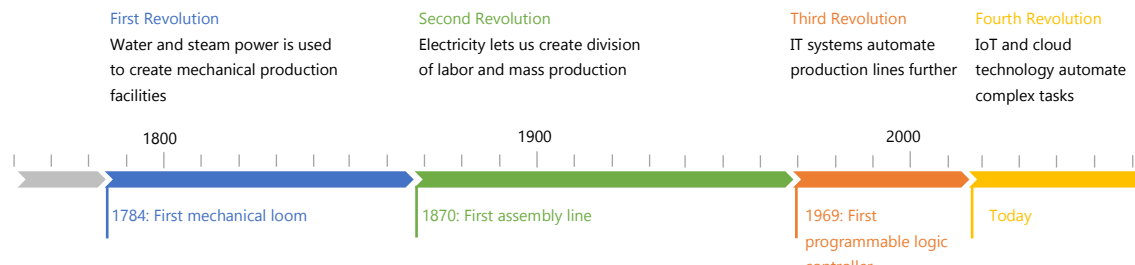
The fourth industrial revolution (or Industry 4.0) will fundamentally change the way we live, work and relate to one another. It is expected that the transformation will be unlike anything humankind has experienced before, because of its scale, scope, and complexity (Schwab, 2016). It includes the use of modern technology to automate traditional manufacturing, industrial processes, and practices. In automation, machine to machine communication, internet of things (IoT) and artificial intelligence (AI) are used for self-monitoring and better communication without human intervention (Moore, 2019). How the fourth revolution will unfold is still unknown. It is important that the response is well thought through, because of its long-lasting effects. Schwab (2016) emphasised that innovation and the new system will have to be "... integrated and comprehensive, involving all stakeholders of the global polity, from the public and private sectors to academia and civil society."

In this chapter, we will firstly describe the difference between digitization, digitalization, and digital transformation, continue with opportunities, impact, challenges, and future in Industry 4.0. Lastly, we will focus on the models for digital transformation, the skills needed and arising challenges.

### 4.1 Fundamentals of Digital Transformation

The first industrial revolution emerged in the eighteenth century (Figure 3). The utilization of water and steam as a source of power to mechanize production brought major changes to industries. The second industrial revolution took advantage of electric power as a source of power to create safer and much more efficient mass production with assembly lines. In the third industrial revolution, information technology and computers were integrated into manufacturing and to some degree automated production (Muhuri, 2019).

*Figure 3: Industrial Revolution Timeline*



*Source: Jeppesen (2015).*

The fourth industrial revolution, which is currently present, is stemming from the third industrial revolution. It represents the merging of technologies, blurring the lines between the physical, digital, and biological spheres (Schwab, 2016). It is supposed to lift us to the

next level of production, where machines will start to control themselves and each other, and perform individual functions (Muhuri, 2019). If we compare the fourth revolution to any of previous ones, it is evolving at an exponential rather than at a linear pace, disrupting almost every industry. It is requesting the redefinition and transformation of entire systems of production, management, and governance (Schwab, 2016).

Components, essential in industry 4.0 are cyber-physical systems (CPSs), additive manufacturing, virtual and augmented reality, cloud computing, big data analysis, data science, etc. To keep the industrial ecosystems strong, digitization is essential and necessary, but as a result the systems become highly complex. Many challenges have emerged, which now represent a bottleneck to successful implementation of 4.0, for example information security, reliability, integrity (Muhuri, 2019). To avoid any further confusion, we will define the terms ‘digitization’, ‘digitalization’ and ‘digital transformation’.

#### 4.1.1 Digitization

Digitization refers to the process of converting (encoding) analogue information into digital (binary) form of zeroes and ones to enable computers to store, process, and transmit information (Bloomberg, 2018). According to the Gartner IT Glossary (n.d.): “Digitization is the process of changing from analogue to digital form, also known as digital enablement. Said another way, digitization takes an analogue process and changes it to a digital form without any different-in-kind changes to the process itself.”

Since the process of digitization has been present for quite some time, there are many examples: converting a physical document into PDF, by scanning or photographing it, converting video from VHS tape to MPEG file, or converting audio cassette to mp3 format (Lights onData, 2020).

#### 4.1.2 Digitalization

Digitalization does not have a single, clear definition. In academia, digitalization is referred to as “... the way in which many domains of social life are restructured around digital communication and media infrastructures.” (Brennen & Kreiss, 2016). The definition is based on how people interact; both in work and off-work spheres of life becoming digitalized, by moving from analogue technologies (mail, telephone calls, office meetings) to digital ones (e-mail, chat, social media, video meetings).

The definition in Gartner’s Glossary (n.d.) is focusing on business rather than social interactions: “Digitalization is the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business.”, by usage of digital technologies and information. In compliance with this definition, digitalization is not referring to social interaction, but more to business



operations. In other words, digitalization is leveraging digitization to improve business processes.

A good example is the digitalization of the enrolment process at the University of Ljubljana in 2020. Until recently, every new student enrolment had to be physically filled in and submitted to the student office by standard mail. Because of the current situation with Covid-19, physical contacts had to be reduced to a minimum to prevent virus spreading, so enrolment was completely digitalized. The process differed depending on the Faculty.

#### 4.1.3 Digital Transformation

Digital transformation is a process which requires the organization to consider possibilities for overall improvements, fundamentally shifting core competencies as the whole operation becomes customer-oriented. A digital transformation plan will often consist of multiple digitalization projects, but if believed there is nothing more to digital transformation than digitalization, a serious strategic mistake is being made (Bloomberg, 2018).

We again look at Gartner's Glossary (n.d.) definition: "Digital transformation can refer to anything from IT modernization (for example, cloud computing), to digital optimization, to the invention of new digital business models. The term is widely used in public-sector organizations to refer to modest initiatives such as putting services online or legacy modernization. Thus, the term is more like "digitization" than "digital business transformation.", it is clearly stated that the term is misused. To transform a business, a new digital business model has to be established.

## 4.2 Industry 4.0

The general transformation of digital integration and intelligent engineering made a huge move towards futuristic technology. Nowadays, every device provides machine learning and data collection. Currently, the biggest priority is to make processes and machines highly automated and safer. With emerging technology in areas of AI, robotics, the IoT, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, material science, energy storage and quantum computing, potential and opportunities provided by billions of connected mobile devices, with storage capacity, efficient processing power and access to knowledge via internet connection are becoming unlimited (Schwab, 2016).

AI is already all among us and is getting better and widely used (self-driving cars, drones, virtual assistants, translating software). The exponential increase in computing power in the recent years has enabled remarkable development in AI (Schwab, 2016). Wide collection and availability of massive amounts of data has enabled the development of software used to discover new drugs (Jamkhande, Ghante & Ajgunde, 2017), algorithms used to predict our cultural interests (Dourish, 2016), and in that way help and protect society.

The main components of Industry 4.0 are cyber-physical systems, IoT, smart industry and smart manufacturing, industrial wireless networks, semiconductor industry, cloud computing and cloud based manufacturing systems, energy based systems and energy efficiency issues, automated engineering, human-machine interface, augmented reality, production engineering, security issues, optimization, virtual engineering, visual computing, scheduling, artificial intelligence, hybrid approaches in industry 4.0, miscellaneous technologies, to name a few (Muhuri et al., 2019). Because of the extent of ongoing and upcoming transformation, we will delve deeper into the opportunities, challenges and its impacts.

#### 4.2.1 Opportunities of Industry 4.0

One of the most promising and desired potentials of the fourth industrial revolution is the raise of income levels and the standards of living globally (Schwab, 2016). Until now, the first world population (consumers who have been able to afford it) have gained the most from digital. It enabled higher efficiency and enjoyment of their lives with ordering Uber, booking a cheap flight on Skyscanner, buying new products on Amazon, making payments through a mobile bank, listening to music on Spotify, watching entertainment content on YouTube and Netflix (Schwab, 2016).

Opportunities for the future are almost endless, driven by creativity, innovation, and eagerness of innovators. Technological innovation will be responsible for the gains in efficiency and productivity on a long-term, lower transportation and communication costs, higher effectiveness in logistics and global supply chains, all resulting in opening of new markets and economic growth (Schwab, 2016).

#### 4.2.2 Challenges of Industry 4.0

In an interview for Harvard Business Review (Bernstein & Raman, 2015), Brynjolfsson and McAfee have considered the downsides the industrial revolution 4.0 will bring. It could lead to greater inequality. Brynjolfsson: “But digitization has brought with it some thorny challenges. That shouldn’t be a shock. Throughout history, positive economic developments have often had unpleasant side effects. For instance, the first Industrial Revolution created vast wealth but also brought us pollution and disease and the exploitation of child labour. Digitization is creating new types of economic disruption. In part, this reflects the fact that as computers get more powerful, companies have less need for some kinds of workers. Even as it races ahead, technological progress may leave some people—perhaps even a lot—behind.” McAfee: “There’s no economic law ensuring that as technological progress makes the pie bigger, it benefits everyone equally. Digital technologies can replicate valuable ideas, processes, and innovations at very low cost. This creates abundance for society and wealth for innovators, but it diminishes the demand for some kinds of labor.”

Schwab (2016) believes that in the future, talent will represent the critical factor of production compared to capital, and expects a rise in segregation on the job market into “low-skill/low-pay” and “high-skill/high-pay”, which will enhance social tensions. According to Schwab (2016), technology has been the root cause of stagnated or decreased incomes for a greater part of western countries. The demand for highly skilled workers has increased and the demand for workers with lower education and less skills has decreased; the result is a job market where the demand is strong at the high and low ends, hollowing out at the middle (Schwab, 2016).

#### 4.2.3 Impact of Industry 4.0

The fourth industrial revolution is not only shifting what we do and how we do it, but also who we are and how we interact. It is influencing our identity, privacy, relationships, consumption patterns, notions of ownership, the time we devote to work and leisure, how we develop our skills, career, and the way we socialize.

Frustration and anger can also be intensified with pervasiveness of digital technologies and the approach of sharing information on social media. The latest data on DataReportal.com is estimating 4.14 billion users of social media in October 2020, which represents 53% of total global population. The extent of connection should provide better cross-cultural understanding, acceptance and cohesion, but effects seen are rather opposite, with propaganda and support of extreme movements (Vinnakota, 2017), and highly effecting political polarization (De-Wit et al., 2019; Kiley, 2017; Kozinets, 2017).

However, not all is bad. In business, innovation and disruption are accelerated, creating constant surprises even for most well-informed individuals. It is clear that the companies adapting to industry 4.0 are seeing positive impacts on their businesses compared to others (Deloitte Insights, 2018; Nagy, 2018).

The fourth industrial revolution has four main impacts on business regarding (Schwab, 2016):

- customers are the epicentre of the economy,
- product enhancement with digital capabilities increasing value,
- collaborative innovation and disruption,
- organizational forms.

Supply Chain 4.0 is benefiting from the IoT, use of advanced robotics and implemented advanced analytics of big data. Heavily equipped with sensors, everything automated and connected helps with collection and analysis of data to improve performance (Alicke, Racher & Seyfert, 2016). The demand side is changing as well, with growing transparency and data collection about client involvement, participation and behaviour. Consequently, businesses are forced to adapt their business models (Schwab, 2016).

Companies are forced to rethink how they do business. Because of the extent of ongoing and upcoming transformation we will go more in depth with opportunities, challenges and its impact. To cope, leaders and executives need to understand the environment which is changing, challenge their teams and continuously innovate and adapt to new trends.

#### 4.2.4 Future of Industry 4.0

The future needs to be shaped in a way that favours humans, by putting people first. The globally shared view on how technology is affecting our lives and reshaping our economic, social, cultural, and human environments, must be established. Decision-makers should think strategically about the forces of disruption and innovation shaping the future and decide so that everyone will benefit.

The most dehumanized form of Industry 4.0, in one of the possible ways (also shown in a well-known movie *I am Legend* (2007) with Will Smith in the main role) may have the potency to “robotize” humanity and to take away the ability to control technology. However, it can also lift humanity into a new collective and moral consciousness, based on a common sense of future, creativity, empathy, and control. In the end, the responsibility comes down to people and their values. They are the ones making sure the last wins out with the choices they make on a day-to-day basis as citizens, consumers and investors (Schwab, 2016).

### 4.3 Digital Transformation Strategies

In recent years, industries are increasingly conducting initiatives to explore new digital technologies and their benefits, with transformation of their key business operations, products, processes, sales channels, supply chains, organizational structures and management concepts included. The potential benefits of digitization are widely diverse – from increases in sales or productivity, innovations in value creation, to novel forms of interaction with customers (Matt et al., 2015). The result can possibly be that entire business models are reshaped or replaced (Downes & Nunes, 2013).

Digital transformation initiatives may be driven by business opportunities and advances that those digital technologies bring, or by the fear of being outperformed by competitors. Companies have already recognized that innovative digital technologies have or will cause major changes in their competitive landscape. An increasing number of companies understands that to stay relevant, they need to transform and think about relevance of their value propositions for their established products and services in the future (Hoberg, Krcmar & Welz, 2017).

#### 4.3.1 Difference of Digital Transformation to Other Corporate Strategies

The transformation strategy in a business-centric perspective focuses on defining a strategy as well as deciding on the resources allocated to pursuing the transformation of products, processes, and organizational aspects. Digital transformation strategies go beyond the process paradigm. They include changes to products, services, and business models as a whole, taking on a different perspective and pursuing different goals, including digital activities at the interface with customers. Digital business strategies often discuss the possibilities and the effects of digital technologies for a firm as a whole, interweaving corporate strategies and digital transformation strategy (Matt et al., 2015).

#### 4.3.2 The Four Elements of Digital Transformation Strategies

Digital transformation strategies have four elements in common (Figure 4) (Matt et al., 2015):

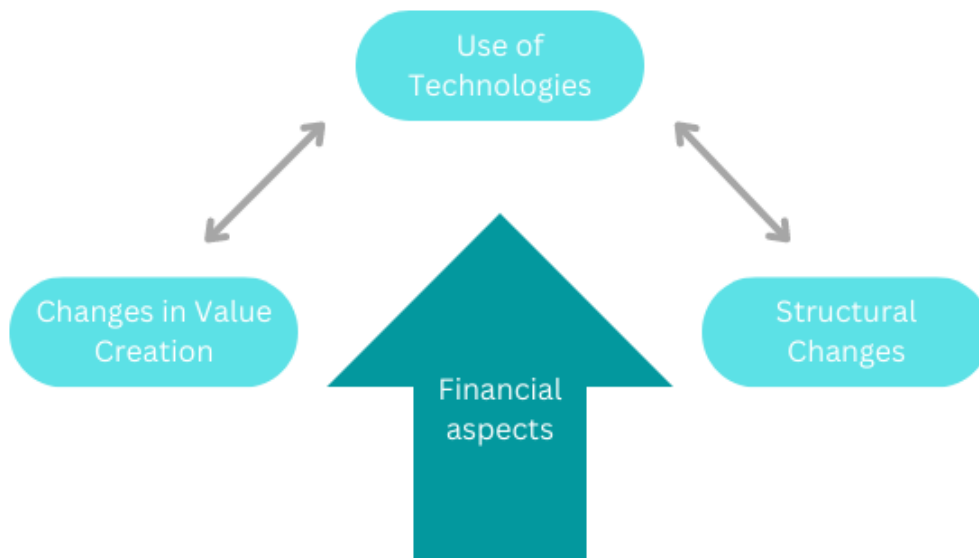
- Use of technologies: a company's view on new technologies and its ability to utilize these technologies. A company decides on its goal – becoming a market leader in terms of technology usage, which is riskier and requires certain technological competences but can lead to competitive advantages in terms of having the ability to make other firms dependant on one's technology by creating own technological standards, or fulfilling the business operation and resort to already established standards.
- Changes in value creation: the impact on firms' core business and overall business model, how much the activities deviate from the classical core business, opportunities to expand and/or differentiate current products and services portfolio.
- Structural changes: regarding organizational setup, with focus on the stage where the new digital activities are establishment, whether it is principally products, processes, or skills that are affected most by these changes.
- Financial aspects: considering a firm's urgency to act and its ability to finance a digital transformation; both a driver and a bounding force for the transformation.

#### 4.3.3 Areas of Digital Transformation

Digital transformation is a continuous complex process, which strongly reshapes a company and its operations. Therefore, it requires strong leadership to drive change. Top management support is essential. To deal with resistance, transformation leadership skills are essential and require a vision for what parts of the company they want to transform, with focus on what is important, and the active involvement of the different stakeholders affected by the transformation (Matt et al., 2015).

Companies are transforming customer experience (through customer understanding, top-line growth and customer touch points), operational processes (through process digitalization, worker enablement and performance management) and business models (to digitally modified businesses, new digital businesses, and digital globalization) (Westerman et al., 2014).

*Figure 4: Relationship between four elements of digital transformation*



*Adapted from Matt et al. (2015).*

#### **4.4 Key Factors for Success in the Process of Digital Transformation**

Successful digital transformations are rare. Forth and the team of consultants (2020) from Boston Consulting Group have determined six factors that are responsible for its success; they claim that the odds of success increase from 30% to 80%. Those six factors are:

- crafting a clear and integrated strategy: describing why, what, and how to specific, quantified business outcomes,
- committing to leadership from the top down: high leadership engagement and alignment, including middle-management ownership and accountability,
- putting the best people at the right places: identifying and freeing up the most capable resources,
- adopting agile governance mindset: fast addressment of barriers, adapting and changing contexts, driving cross-functional, mission-oriented, “fail-fast-learn” behavioural change into the wider organization,
- monitoring and measuring the progress: clear metrics and targets established around processes and outcomes,

- rethinking and modernizing tech stack: to enable secure, scalable performance, rapid change deployment, and seamless ecosystem integration.

## **5 VALLEY OF DEATH OF SCIENCE BASED INNOVATION**

The key to maintain or achieve competitive advantage in the times of high globalization levels is new product or service development. The biggest reason why companies have a problem with converting technology concepts into products is that implementing new ideas to market is not a steady and smooth ride (Sahoo, 2016).

The metaphor of the “Valley of Death” is describing a transitional period before a new business reaches a breakeven point. Besides that the metaphor explains why commercialization projects often fail to achieve their goals (Al Natsheh et al., 2021).

Governments and private initiatives determine a part of the budget and reshape their regulations to support and encourage innovation, entrepreneurship, and scientific commercialization (Barron & Amorós, 2020). For the benefit of the society, the innovation process should be more complex than simply making new discoveries. Those should be implemented into useful and innovative products, services, or processes – from research and development (R&D) to Product Development (Tarver, 2020). To bridge between research and the market, some mechanisms have emerged with a purpose of supporting academics and researchers to cross the valley of death and start new science-based ventures (Barron & Amorós, 2020; Kos, 2020).

It is important to understand why a blockage exists and how it can be overcome, given the financial resources that governments provide for R&D activity (Ford et al., 2007). The position, “where good lab discoveries go to die because they lack the funding necessary to become a commercial product” as Heller & Peterson (n.d.) described it, is often noted as a key barrier in process.

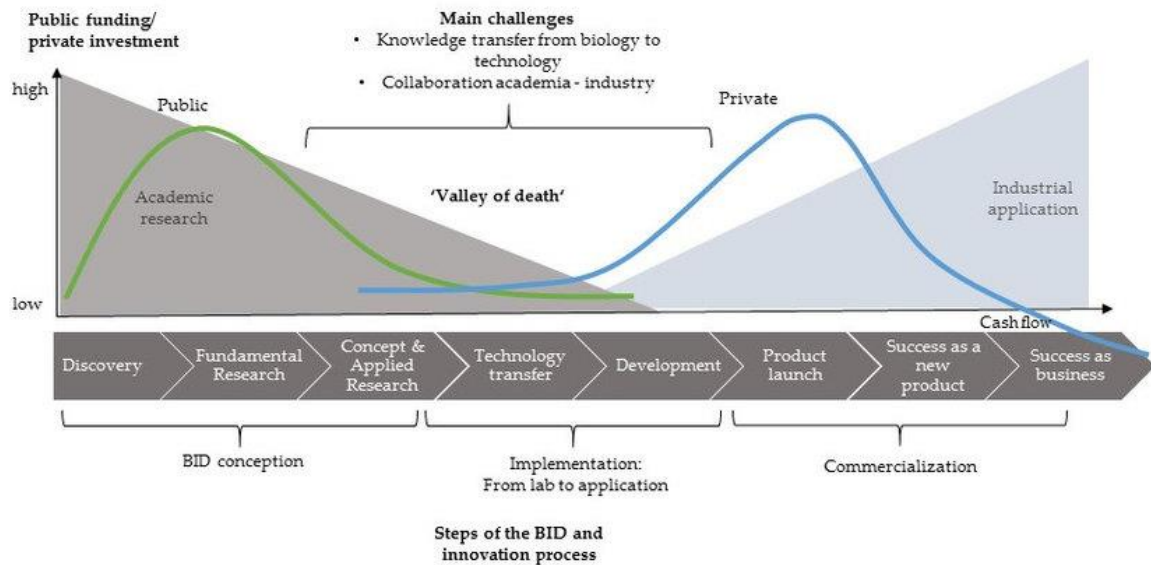
### **5.1 Definition of the Valley of Death**

The Valley of Death is a metaphor, used to describe the relative deficiency of resources and expertise in the development stages (Figure 5); the term referring to the common problem of the negative cash flow in the last stages of development, scaling or early stages of introduction to the market, before innovation brings in revenue from customers (Kos, 2020; Markham et.al., 2010; Zwilling, 2013).

The metaphor is describing a lack of much needed resources and the dilemma about the access to resources – there are more resources in the terms of research expertise on one side and more in terms of commercialization expertise and financial resources on the other side of the valley. In the “valley”, a set of roles and activities need to be examined, which help to move projects from one side to the other. Preparation of ideas for commercial development

is not just a function of R&D, but depends on wider organizational variables (Kos, 2020; Markham et al., 2010).

*Figure 5: Valley of Death*



*Source: Chirazi, Wanieck, Fayemi, Zollfrank & Jacobs (2019).*

The challenge of new ventures is very real; according to a Gomper and Lerner (2002), 90% of new projects, which do not attract angel or venture capital investors, fail in the first three years. The main problem lies in investors requiring a tested business model and possibility to scale before they invest (Lerner, 1998). Investments in research and development are riskier and less desired (Zwilling, 2013).

## 5.2 The Role Theory Application in the Valley of Death

Markham (2010) uses role theory as a theoretical foundation for animation of the activities in the valley. Using the theory, he was able to facilitate the roles, positions, relationships processes and resources over which the respective role players have influence. He was also able to analyse role-related behaviours, for example expectations, norms, performance, evaluation and sanctions.

Three informal roles for the interpretation were used:

- Champion: central figure in need of resources; a person who identifies and values the idea, adopts and advocates a project, operates through the innovation process, needs to accept risk in promoting and selling ideas to other people (sponsors) to get the needed support.
- Sponsor: those who provide broader project support, protection or resources needed for projects to pass the Valley of Death; may be higher, lower or at the same level in

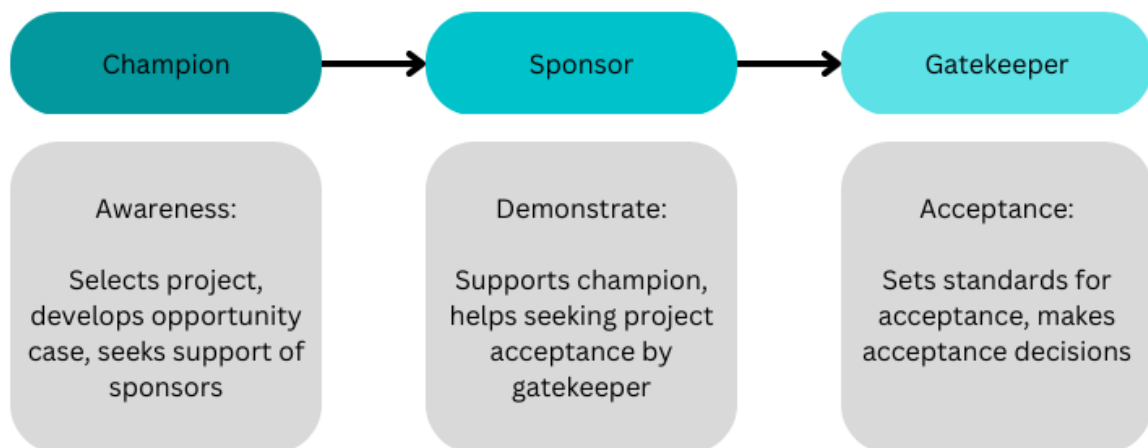


the organization as the champion. They identify critical resources needed for project progress, including top management support, access to technical resources, marketing advice, financial resources and analyses.

- Gatekeeper: the one with informal role who collects, sorts, and mediates the information from an individual level to an organizational level, spans internal boundaries, sets decision about idea criteria and provides access to resources for projects that meet their criteria; the gatekeeper is in an associated role with both the champion and the sponsor (Markham et al., 2010).

For effective and efficient crossing of Valley of Death, study suggests collaboration and coherent work between all three roles (Figure 6) with the same goal – to successfully implement the innovation on the market. Champion and sponsor are directly goal oriented, with intention to complete the development of the idea. They need resources that can be accessed by convincing and accomplishing gatekeepers’ standards.

*Figure 6: Relationship among Champion, Sponsor and Gatekeeper*



*Adapted from Ford et al., 2007.*

### 5.2.1 Importance of Roles

Considerable action is present before the entire development processes. In fact, it is not just additional technical development, but business type as well. Work and effort needed to be done in the “valley” in order to connect the last stages of research with the first stages of product innovation are intended to successfully bridge research and development with critical commercial decisions being made (Markham et al., 2010).

Markham (2010) also observes patterns of role behaviour – at the beginning, the most important role is the one of the champion, but it decreased as the project continued with remaining high influence. On the other hand, the sponsors’ importance increased with time

and the gatekeepers' importance increased significantly at the end. Another finding was that general activities usually happen in a logical and predictable order, which is useful for preparing and assigning roles and responsibilities for crossing the valley. Markham's (2010) research observes the same pattern as Van de Ven and Grazman (1985) of broad arrangement in activity levels over time, contrasting the common practice of assigning innovation roles as a static set of behaviours.

### 5.3 Logic behind the Valley of Death

Before discussing the "valley", we need to understand what are the "peaks" on both sides and why those appear. Funding for basic research and late commercialization stage of R&D projects (Figure 7) is generally more accessible than funding for the intermediate stage. Ford and his research group (2007) have concluded that the Valley of Death emerges as a natural and expected consequence due to the noneconomic investment activity into basic research in the first step, which creates the division at the second stage, known as the Valley of Death.

Figure 7: The Innovation Sequence

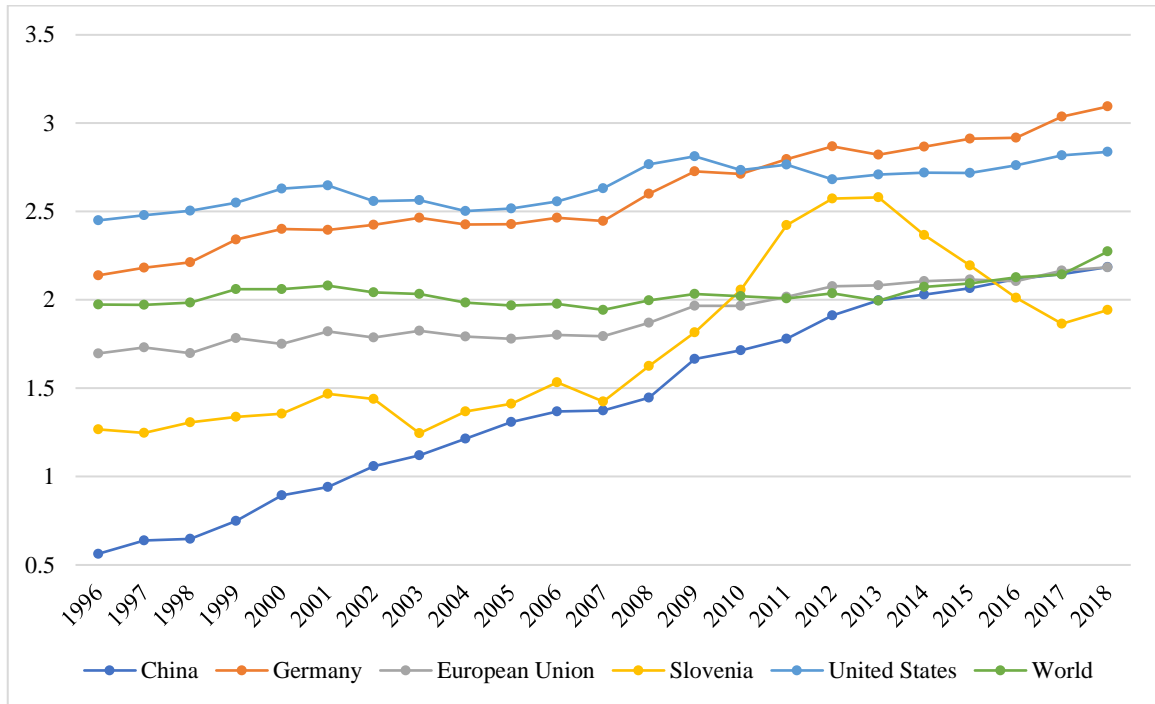


Adapted from Ford et al., 2007.

Governmental noneconomic activities are likely to increase social welfare by increasing the overall level of innovation in the economy. Direct and indirect support of research and development is directly correlated with improvement of country's competitiveness in the global economy.

Comparatively, the World Bank (2020) reports that China has doubled its rate of R&D spending from 0.55% of GDP in 1996 to over 1.35% in 2006; in 2018 being at 2.2% of GDP with constant growth averaging at 6.5%. Slovenia's contribution to R&D in 2018 was 1.9% of GDP, with significant drop since 2013, when it was at almost 2.6% of GDP (World bank, 2020). In Figure 8 it is visible that Slovenia, compared to other presented countries which are leaders in innovation and technology, has the largest swings in number of resources reserved for R&D in years since 2002 until 2018.

Figure 8: R&D expenditure (in % of GDP) of Slovenia, Germany, EU, US, China and World



Source: The World Bank (2020).

#### 5.4 The Importance of the Valley of Death

Markham et al. (2010) discusses the importance of “valley” to identify social roles, human and physical resource issues, cultural training and structural and managerial practices for innovation. They described the “valley” like a chaotic, messy and confusing place but in reality, it is a period among two better-organized functions. The “valley” is a specific stage with particular challenges between better understood, organized and funded areas of development.

When in the “valley”, it is important that participants change their mentality and realize the reality, limitations and downsides of their technology and get the real picture of the market. Usually, scientists start with ideas outside the reality of the market and gradually limit their projects, also due to academic requirements and obligations (Barron & Amorós, 2020).

#### 5.5 Crossing the Valley of Death

Specific mechanisms have emerged to bridge research and market (for example consortia, business incubators and accelerators), which provide methodologies comprising knowledge, experience, feedback, and mentoring to entrepreneurs (Gamo et al., 2017).

### 5.5.1 Valley Entry

Barron and Amorós (2020) have taken a closer look the process of the participants, their emotions, obstacles, and problems when entering and while crossing the “valley”.

- Looking for customers: The first surprisingly stressful and frustrating moment for the participants were the first interviews. Going out looking for customers, they found out that the process is more complicated than they imagined. The experience was the same for those who have a good network established in the industry.
- The capacity to explain their technologies in business terms: the research group observed that the teams had a hard time drafting, explaining their technology and communicating the business idea. For scientists with high level of expertise, it is not very easy to translate their ideas into the common language used in the market.
- Knowing what their market is: participants resisted discussing about the market. Their high confidence in their technology was reflected in defending their ideas even if the indicators were pointing in a different direction, using phrases like “everybody is my market,” “I have many different markets for my technology,” and “We think that this project will change the industry”. They were lacking information about their customers and what their needs are, with high emotional attachment to developing their unique technology and not taking account of the customer’s needs. Another important thing is being familiar with regulations or industry requirements to sell in a certain market, competition, costs and alternative solutions.

After the entry and their first research about the market and customers, groups can take different routes:

- they decide to abandon the research, after the technology validation, which is positive because it doesn’t waste time and avoids unnecessary expenses,
- improve research and prepare for the commercialization phase, they decide to go back to the lab and improve their projects and align them to the market gaps and targeted customers (Barron & Amorós, 2020)

### 5.5.2 Explanation of the Mechanism of Bridges Crossing the Valley

Even though funding programs help and contribute to overall success, it is usually not enough to fill in the lack of necessary expertise to cross the valley. That can demand commercialization of technologies and research, precise analysis of technology needs, market size, entrepreneurial management, funding, and incentives skills (Frank, Sink, Mynatt, Rogers & Rappazzo, 1996; Nemet, Zipperer & Kraus, 2018). To analyse the problem, it is important to understand what the bridges are and how they work.

In Slovenia, the government contributes in terms of financing and in laws of science and technology or public policies focused on supporting the commercialization. The responsible

independent public funding organization is The Slovenian Research Agency (ARRS). It is performing tasks related to the National Research and Development Programme and creation of European Research Area. ARRS is splitting resources for scientific research mainly from the national budget, supporting scientific research and its application, using evaluation standards, providing the transparency of research, promoting cooperation, and analysing R&D activities in Slovenia (ARRS, 2020).

Angel investors are typically wealthy individuals, investing their own money into the formation of new start-up companies in early stages, to bridge their financing needs, often more willing to take bigger risks than traditional financing institutes. They usually demand exchange for their investment in form of convertible debt or equity. Angel investments typically don't have to be paid back in case a start-up does not cross the "valley of death" successfully. Many start-up founders are usually learning everything from scratch, so having that angel investor with a lot of knowledge on the team is a huge advantage and can boost the speed of growth. Angel investors will expect a certain amount of involvement as the company moves forward (StartUps.com, 2019).

Venture capitalists are employees of venture capital firms. They invest other people's money (which they hold in a fund) into companies. It is a great way of financing for start-ups that are looking to scale big and fast, but the start-up has to be prepared to take a fairly large investment and following growth. Like an angel investment, the start-up is not obligated to pay back the investment if it is not successful. Nevertheless, venture capital firms are expecting a return on their investment usually in the form of equity (StartUps.com, 2019).

Business incubators are organizations or companies with intention of speeding up the growth and success of a start-up in the early stage, providing services such as management training, mentorship, expertise, networking, and office space. They are often government-funded and generally take no equity, and rarely provide funding. They are often a good path for start-ups to find and meet angel investors or get venture capital, prepare state governments funding, or some other economic-development coalitions and investors (Entrepreneur Europe, 2020).

A business accelerator is a program that gives developing companies access to mentorship and educational components, networking with potential investors and technical and logistical resource support that help them become a stable, self-sufficient businesses. Accelerators can be either privately or publicly funded. They are highly competitive and open to anyone, organizing pitch events or demo days (BDC, 2020).

## **6 EMPIRICAL ANALYSIS**

The theoretical part of this master thesis was following the literature review and listing the main concepts in the field of transformational leadership and digital transformation. Through the empirical part of our research, we want to explain how the transformational leadership style contributes to a transformation of an organization, such as digital transformation or

crossing the “valley of death”. We want to connect the theory to practice and define the main contributing factors of a successful leadership.

We aim to identify the most suitable and crucial factors, concepts and skills of successful leadership needed in the organization while it is undergoing massive changes, and enumerate the reasons for their importance.

The goals of this research are to determine how transformational leadership differs in R&D departments of various organizations, how does the move to the 4.0 era, with digital implementation and transformation, affect the organisations’ work processes, how successful are the organizations in tackling the “Valley of Death” problem and if there is a relationship between the transformational leadership style, success in the digital transformation process and the crossing of the “valley”.

## **6.1 Methodology**

For the empirical part of this thesis, we decided to conduct semi-structured in-depth interviews in combination with a short questionnaire. With semi-structured in-depth interviews we have the flexibility to discuss topics with leaders, to explore what their priorities are and how they differ (Bregar, Ograjenšek & Bavdaž, 2005). We wanted to explore the topic in-depth and possibly discover new features of leadership that may not yet be published in literature.

A semi-structured interview is started by the interviewer defining the framework content. The interview is conducted through sub-topics needed to round out the whole. The method allows for an open conversation around pre-determined issues, enables asking complex and open-ended questions and controlling the quality of the answers (Wilkinson & Birmingham, 2003). With an interview guide approach, the interviewer prepares a reminder on the questions/topics needed to be covered in the conversation.

The biggest advantage of such an approach is that the data is more systematic and comprehensive, while at the same time the interview is quite relaxed and informal. For this type of interview, the interviewer must be skilled and experienced, as deeper questions should be asked to get more detailed and specific information and insights. At the same time the conversation should be lead in a way to cover all topics in the reminder. The disadvantage of such an approach is that the interview can refer too much to the topics in the questionnaire, thus preventing the discussion of other important topics that would shed further light on the topic (Patton, 1990).

However, more structured approaches are needed when we want to evaluate the leadership style. That was the reason we decided to prepare two questionnaires, one for the leaders and one for their subordinates, with which we wanted to evaluate the influence of transformational leadership style on digital transformation in the company. For assessment

of transformational and transactional leadership behaviour we used The Multifactor Leadership Questionnaire (MLQ-5X) (Avolio & Bass, 2004; Bass & Avolio, 2000). Based on the answers of the questionnaires we will be able to calculate coefficients from 0 to 1. The MLQ-5X is available from Mind Garden, Inc. (Garden, 2022).

## **6.2 Research Procedure**

Before conducting the interviews, we prepared a list of topics/questions based on research questions and theoretical starting points for interviews with leaders (Appendix B). With the in-depth interviews we will examine the following research questions:

- How does transformational leadership differ, and which components are constant across different R&D departments in different organizations?
- How is digital transformation reflected and implemented in R&D?
- How do different organizations deal and overcome the “Valley of Death” problem?
- How does transformational leadership influence and contribute to digital transformation?
- How does transformational leadership influence and contribute to crossing “the valley”?

### **6.2.1 Interviewees**

When selecting the interviewees, we set the criteria: the interlocutor must be a leader in the organization, the organization must have at least 10 subordinates and it should be engaged in research and development.

### **6.2.2 Course and Conduct of Interviews**

We conducted interviews in four different organizations.

Organization 1 is a start-up company. The core business is helping their clients transform business processes through application of data science, advanced analytics, and machine learning, with the combination of business transformation services, data science approach and change management (service). The company is based in Ljubljana with 12 employees in total.

Organization 2 is a company that produces and processes high-quality functional products of polymers, cast acrylic glass sheets, chemical products, polishes, and other chemical products (production). The company is situated in Trebnje and employees around 80 individuals.

Organization 3 is a middle-sized company, producing and recycling polyethylene film from low and high-density polyethylene (production). The company is divided into extrusion, assembly, and regeneration. With its own development, innovations and constant investment

in modern technologies, the company secures a key competitive advantage. The company employs 130 people.

Organization 4 is a big company, developing, manufacturing, and marketing high-quality medicines (R&D and production). The company is one of divisions of a multinational cover brand. It is based in Ljubljana employing approximately 2500 people. The research and development centre is one of the key development locations for technologically demanding projects.

In each organization we held a conversation with the leader. The interviews were 40 to 60 minutes long. The conversations were recorded with the agreement of the interviewees. That enabled better focus on the conversation, without worry about taking the notes and later better analysis.

Leader 1 is CEO of Organization 1, male, 51 years old, with bachelor's degree and more than 15 years of experience in leadership positions. His subordinates are highly educated (two with PhD, and four with the master's degrees).

Leader 2 is Head of Research and Development in Organization 2, female, 40 years old, with PhD and 5 years of experience as a Head of department. Her subordinates have high school or bachelor's degree.

Leader 3 is a CEO in Organization 3, male, 38 years old, with bachelor's degree and 5 years' experience as a CEO. His subordinates have mostly completed high school or bachelor's degree.

Leader 4 is a Head of Strategic sourcing in Research and Development centre in Organization 4, female, 42 years old, with master's degree and more than 10 years of experience in this role. Her subordinates hold bachelors or master's degrees.

### 6.2.3 Analysis of Information

We transcribed all interviews (Appendix B), analysed the answers using the thematic synthesis method, and wrote the conclusions with key similarities and differences in their answers. To identify most suitable and crucial factors, concepts, and skills of successful leadership, we compare answers to the theoretical part of the thesis and to our own opinion.

## 6.3 Results of MLQ survey

MLQ questionnaire was completed by the leader and one of their subordinates. We calculated the average of their answers per each question and the coefficients. The highest coefficient of transformational leadership (Table 1) was detected in Leader 1 (0.937), following Leader 4 (0.868), and Leaders 2 and 3 (0.774) both with the same coefficient. The



results are correlated with years of experiences in leadership position – the longer in leadership position, higher transformational leadership coefficient.

Leader 2 has the highest coefficient of transactional leadership (0.800), followed by Leader 1 (0.750), Leader 4 (0.688) and Leader 3 (0.625).

All the leaders have rather low coefficients for passive avoidant leadership. Surprisingly, the highest coefficient was reached by Leader 1 (0.475), following Leader 3 (0.438) and Leaders 2 and 4 (0.388). Interestingly, both Leaders 3 and 4 are female. However, there was not a particular question to differentiate the results by genders.

*Table 1: Coefficients of Transformational leadership, Transactional leadership and Passive-avoidant leadership of Leader 1, Leader 2, Leader 3, Leader 4*

	<b>Transformational leadership</b>	<b>Transactional leadership</b>	<b>Passive-avoidant leadership</b>
<i>Leader 1</i>	0.916	0.750	0.475
<i>Leader 2</i>	0.774	0.800	0.388
<i>Leader 3</i>	0.774	0.625	0.438
<i>Leader 4</i>	0.868	0.688	0.388

*Source: Own work.*

In questions analysing Inspirational motivation, all leaders reached high coefficients (between 0.825 and 0.975) (Table 2). Idealized influence is assessed in two factors: behaviours and attributes. In idealized influence (behaviours) Leader 4 stands out with coefficient 0.933. The range between coefficients idealized influence (attributes) differs from 0.967 in Leader 1 to 0.600 in Leader 3, which correlates well with coefficients of transformational leadership.

*Table 2: Coefficients of Inspirational motivation, Idealized influence (behaviors), Idealized influence (attributes) of Leader 1, Leader 2, Leader 3, Leader 4*

	<b>Inspirational motivation</b>	<b>Idealized influence (behaviours)</b>	<b>Idealized influence (attributes)</b>
<i>Leader 1</i>	0.975	0.800	0.967
<i>Leader 2</i>	0.825	0.633	0.767
<i>Leader 3</i>	0.850	0.833	0.600
<i>Leader 4</i>	0.850	0.933	0.833

*Source: Own work.*

The coefficients of active management by exceptions (Table 3) are between 0.775 in Leader 2 and 0.425 in Leader 4. Passive management by exceptions coefficient are very close together, ranging between 0.450 and 0.500. Coefficients of contingent reward are all high (between 0.950 and 0.700). On the other hand, Laisses-Faire coefficients are rather low, ranging from 0.233 to 0.467.

*Table 3: Coefficients of Management by exception (active), Management by exception (passive), Contingent reward, Laissez-Faire of Leader 1, Leader 2, Leader 3, Leader 4*

	<i>Management by exception (active)</i>	<i>Management by exception (passive)</i>	<i>Contingent reward</i>	<i>Laissez-Faire</i>
<i>Leader 1</i>	0.575	0.475	0.925	0.467
<i>Leader 2</i>	0.775	0.450	0.825	0.300
<i>Leader 3</i>	0.550	0.500	0.700	0.233
<i>Leader 4</i>	0.425	0.450	0.950	0.233

*Source: Own work.*

The results of effectiveness (0.875–0.825), extra effort (0.933–0.767) and satisfaction (0.900–0.750) are all rather high (Table 4). Leader 1 and Leader 4 stand out in extra effort.

*Table 4: Coefficients of Effectiveness, Extra effort, Satisfaction of Leader 1, Leader 2, Leader 3, Leader 4*

	<i>Effectiveness</i>	<i>Extra effort</i>	<i>Satisfaction</i>
<i>Leader 1</i>	0.850	0.900	0.900
<i>Leader 2</i>	0.825	0.700	0.750
<i>Leader 3</i>	0.850	0.767	0.800
<i>Leader 4</i>	0.875	0.933	0.850

*Source: Own work.*

In the results we clearly observed lower coefficients in most of the cases for Leader 3. High influence of subjective view and self-criticism is expected for self-grading.

To conclude: the most transformational leadership characteristics and the highest coefficient for transformational leadership is in Leader 1, who has the longest resume of leadership experiences. He is also working with subordinates with the highest level of education. For a start-up company, where the core business is consulting their clients on how to transform their business processes, inspirational motivation and idealized influence are ideal characteristics for guiding and inspiring his subordinates and clients for a change. The second highest score was in Leader 4, the second most experienced leader. Her subordinates are relatively highly educated. From our interview we also found out that the company is investing in leaders by coaching, seminars and other educational services provided. Leaders 3 and 4 have the same scores of transformational leadership coefficients. They are both with around 5 years of experiences in a leadership position in middle-sized companies, with relatively low education levels of their subordinates. However, because of the lower overall self-scoring and relatively high scores of his subordinates, also his average coefficient is lower. For that reason, we are classifying leaders from the highest to lowest level of transformational leadership style in the following order: Leader 1, Leader 4, Leader 3, Leader 2.

## 6.4 Interview Findings

In the following chapter we will compare and analyse the information gathered through interviews.

### 6.4.1 Leadership

In all four interviews, the leaders were aligned with the key role of a leader. A good leader is most importantly able to lead the team to reach their goal. This might be to ensure business continuity or successfully completing the project. Besides that, the leader is responsible for the team; meaning they have to choose, connect, inspire, motivate and give the freedom to subordinates to perform an activity, so they will be willing to upgrade it over the time.

One of the most highlighted leadership characteristics is being able to establish genuine contacts with the team and outside the team. Besides that, leaders exposed the importance of being bright and able to quickly extract the essence, taking initiative, motivating subordinates, conformation, feedback, open mindedness, optimistic outlook and giving subordinates the freedom to decide their way of doing things or in other words giving them place for manoeuvres and communication.

When discussing the relationships between the leader and subordinates, their opinions were rather different. Males (Leaders 1 and 3) were more inclined to form friendships with subordinates and spend their free time together as well, while females (Leaders 2 and 4) like to differentiate business and private life. However, they all emphasized the importance of trust in both parties, prefer face to face, open and informal communication. The main tools helping all of them are asking a lot of questions, active listening, and empathy.

To guarantee the time for discussion, Leaders 1, 2 and 4 are having regular face to face meetings with their subordinates to give feedback and discuss current affairs and their expectations. Leader 4 is acknowledging room for improvement (also for her growth) through coaching subordinates and guiding them towards the solution rather than imposing it. However, the coaching process requires a lot of time, which in her case is often not available. For her the most important values are to empower subordinates, embrace their curiosity, improvement, and team spirit.

Interestingly, Leader 1 has the system of tracking his and subordinate's expectations. He emphasized the importance of understanding the team and connecting individual's vision to the role in a way that employees also see their work as fulfilling their vision. He explained: "Because I work with highly educated people, for whom work is not just a means of survival and they want more, perfection, a challenge. They simply want more. In working with such people, I think it is extremely, extremely important to understand what such an employee wants and to help him connect his job through his eyes. When thinking about where and how to direct an individual's development, I want to have a good relationship and contact with

the employee, so that I can always ask him what he wants in the next phase and with an understanding of his wishes. In further planning, I listen to this wish as best as possible. And this personalization is extremely important. Within that, I try to adapt as much as I can. This flexibility is not exactly infinite, but it is a lot.” In his explanation we detected strong individualized consideration, by considering each individual subordinate and establishing strong and genuine relationship between leader and subordinate (Bass, 1985). His care for the subordinate's individual needs, perspective, and personal development (Hoyt et al., 2006; Limsila and Ogunlana, 2008). With recognition of individual work contribution and his mentorship, he is creating learning opportunities for subordinates with intention of developing follower's higher levels of potential (Bass et al., 2003; Gill, 2006; Sadler, 2003; Yahaya and Ebrahim, 2016). By tracking his and subordinate's expectations he is also able to *intellectually stimulate*, by delegation of the specific tasks to subordinates, where subordinate's vision or wish to perform and improve is. When the tasks and desires are aligned, the drive for work is increased. Nevertheless, his ability for *inspirational motivation* and *idealized influence* are strong as well and are shown in his capacity to clearly articulate and share his vision, integrity and charisma, high expectations, optimistic outlook, motivation, inspiration (Bass et al., 2003; Gill, 2006; Wang et al. 2011). These findings are aligned with Results of MLQ survey, where Leader 1 reached high coefficients for inspirational motivation and idealized influence.

Leader 2 is working with subordinates with lower educational levels. She is encouraging her employees to take on more responsibilities, improve, and achieve more than they would in their own self-interest (Gill, 2006; Northouse, 2007; Yahaya and Ebrahim, 2016), which is aligned with her high coefficient in *inspirational motivation* from MLQ survey. She observed a correlation between the level of education on one hand and desire and motivation on the other. The employee with lower education level is more interested in completing the eight-hour workday, and employee with higher educational level is showing more desire to participate in fairs and extending knowledge with additional courses and materials. In her team, salary and bonuses are the biggest motivation, which in accordance with literature, describes transactional leadership (Burns, 1978; Erhart & Nauman, 2004; Yahaya & Ebrahim, 2016). Besides that, she observed a difference between genders. For men, the financial payoff is more important than relationships, for women the priority is the opposite. Her reliance on *contingent reward* is seen also in MLQ survey results with a high coefficient.

Leader 4 is acknowledging room for improvement in her leadership (also for her growth) through coaching subordinates and guiding them to the solution rather than imposing it. By clear expression of the most important values for her, which are to empower subordinates and embrace their curiosity (Limsila & Ogunlana, 2008; Ozaralli, 2003), improvement, and team spirit (Gill, 2006; Northouse, 2007; Yahaya and Ebrahim, 2016), we corroborate the results of MLQ survey. From the components of transformational leadership we strongly detected *idealized influence* in her integrity, charisma, capacity to articulate and share vision and high expectations, motivate, inspire, challenge and be a role model for subordinates

(Bass et al., 2003; Gill, 2006; Wang et al. 2011), *inspirational motivation* by inspiring and motivating with communication and setting a clear vision, developing team spirit, setting challenging goals and tasks for the followers and encouraging them to achieve more than they would in their own self-interest (Gill, 2006; Northouse, 2007; Yahaya & Ebrahim, 2016), and *intellectual stimulation* by treating problems as opportunities to learn, challenging subordinates' existing assumptions, to finding new ways, challenging their way of thinking, being innovative and creative in problem solving and becoming actively involved in group decision making (Hoyt et al., 2006; Limsila and Ogunlana, 2008, Yahaya and Ebrahim, 2016). *Individualized consideration* was detected in her recognition of individuals work, creating learning opportunities and caring for personal development (Hoyt et al., 2006; Limsila and Ogunlana, 2008).

Compared to Leaders 1, 2 and 4, in Leader 3 we also detected the laissez-faire leadership style. He emphasized the importance of giving subordinates freedom to decide and space for manoeuvres, for them to decide the best way of completing their tasks. We detected *idealized influence* integrity (Engelbrecht et al., 2017; Pagon et.al., 2008) and charisma (Bass et al., 2003; House et al., 2017; Hu & Dutta, 2022; Yorges et al., 1999). Some signs of *inspirational motivation* by developing the team spirit among subordinates and increasing the drive to work hard and to dedicate fully to reach organizational goals (Hoyt et al., 2006). He deals with each subordinate as a unique individual, which is enhancing their feelings of trust in and satisfaction with the leader (Wang, 2011), which he already observed. On the other hand, we did not observe any elements of *intellectual stimulation* during our interview.

Leaders with whom we conducted interviews did not stress the importance of tech savviness. Leaders 3 and 4 shared the opinion that for a successful leader it is much more important to be open to new technologies and ideas that arise within the team, being able to understand the impact and being willing to support and encourage them to come to life.

#### 6.4.2 Digital Transformation

Digitalization and digital tools are very important for Organization 1. They use digital tools in every way possible. A part of their business is also helping clients improve organizational efficiency using digital tools and analyse data (big data). Leader 1 expressed the importance of their work being interconnected and having effective communication in the virtual world, and not working “on paper”. Virtual meetings, emails, instant messages, phone calls, face to face conversations – effective communication is vital to gain trust, align efforts, clearly present goals, encourage collaboration and inspire (Reed & Allen, 2021). For the tools, which helps them do their work, they are using G-Suite, Slack, Dynalist, PowerBI and for the smoother collaboration with clients also MS Teams and SharePoint: “I think the key thing is that we only need one laptop or phone, internet access and we can work/check/advise... I strive to be able to work from anywhere, always connected.” Since Organization 1 is a young company, highly independent system of working process has been

established from the beginning. Even though this remote working has been widely adopted in 2020 during Covid-19, many companies nowadays want their employees to work from the office. For Organization 1 that is not the case. Their work is completely remote to the extend they do not even have their own office.

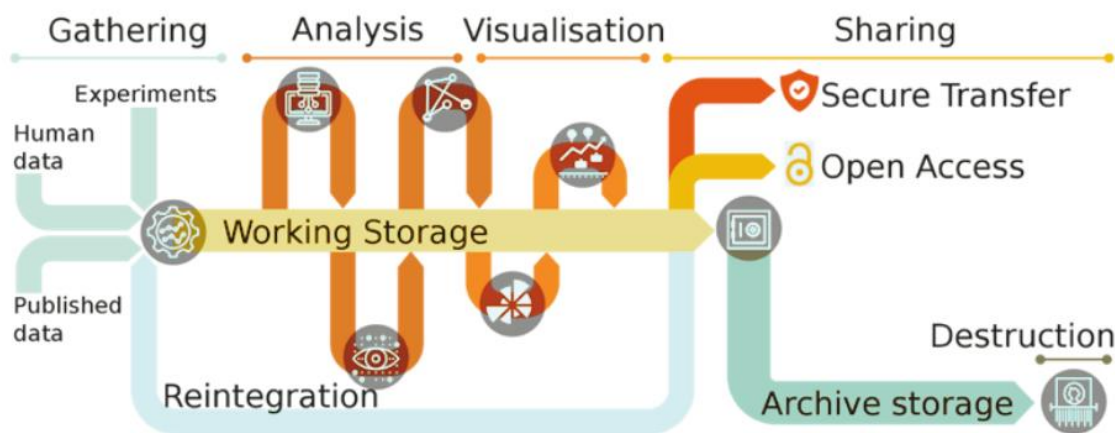
For their further development, they also plan to use analytics for their own work. They want to establish an interactive visualization tool with which they will be able to transparently report their in-time services (working time on development, modelling, consulting, and project management) to the clients. The second plan is to build a platform in which they will be able to build models of decision-making systems for customers and insert them into applications. The client will have the versions of the models and they will be able to track when something is used. Because they deal with decision-making systems, the traceability of how you came to a decision is important for the client to understand the development process and trust the model. However, Organization 1 is rather different from other cases. Even though we are talking about research and development in all four organizations, Organization 1 is the only service company, for that reason it is hard to compare directly, nevertheless their plans are big and bold.

Organization 2 has in last 3 years been investing in optimization and automatization of a part of their production. They still plan some smaller investments in speeding up two production processes. In the last year, they reorganized the working positions and optimized the use of materials, shortened the production process and achieved higher productivity by using Lean Six Sigma: 5S Method. The result of that was a higher competitiveness on the market. The advantage of digitalization is noticed especially in R&D, where all information is always available to all employees and the occurrence of mistakes is lower. In production, digital distribution of standard operating procedures (hereinafter referred to as SOP) is ensuring all the employees have been notified about the latest versions. Their current initiatives are to establish an in-time KPI dashboard, which will be showing norm, quantity produced and excrement so they will have direct feedback of their performance to which their stimulation is and will be bound. To really digitally transform their production to achieve Industry 4.0 and competitive advantage, they are expecting a high need for resources (especially financial) which are currently not available. Our evaluation is that they are currently updating to the Industry 3.0. However, when introducing new technologies Leader 2 stressed the importance of knowledge transfer to employees: “Whenever you introduce something new, they are afraid, there is resistance, productivity always drops because it is unknown to them and they feel resistance and are afraid. You have to show them, educate them, and when they get familiar with it, you can achieve better results. You just can't leave them alone.”

In Organization 3, the digital transformation initiative is completely Leader 3's idea and desire. The biggest contribution was him getting informed and seeing the value in other sectors. The current phase is to start operating in a paperless manner; instead of physical, implement digital folders, introduce bar code readers to track the material stage with

artificial vision and organize warehouse according to digital floor plan. They chose the documentation system with implemented artificial intelligence but is currently not yet in use. Technologically they have upgraded their production with the latest possible production equipment to be able to collect data. They are collecting it (Gathering phase on Figure 9) but have not established a BI (Business Intelligence) system which would also clean, analyse and prepare visualizations to be shared. Their goal is to establish a reintegration loop, so the system will be able to recommend improvements on repeating processes to be shortened. Organization 3 is at the beginning of their digital transformation path, but their plans are to achieve just in time information available anywhere and prepare for the 4.0 era.

*Figure 9: Data Management*



*Source: Shafee & Buttery (2020).*

Organization 4 has boldly embarked on a transformation. They are establishing IoT in their laboratories to prepare a digital laboratory journal, collect all the data centrally and model the research process. Even though it is multinational company, the majority of digital transformation initiatives start in Slovenian hub. Similar to other departments, the digital revolution of the Strategic sourcing department is starting in Slovenia and Leader 4 is a strong supporter. The concept of data collection for transparent tracking of ordering process for all stakeholders and measuring KPI (cycle time, savings, responsiveness, lead times, etc.) of the department is developed, currently just before the execution. With that information they are expecting to develop a better strategy for supplier qualification, visible challenges supported with data to focus on solving them and have transparent collaboration within the company. Overall, Organization 4 is establishing 4.0 way of working process in a wide variety of activities.

We can corroborate Schwab's (2016) observation. Organizations expect that with their digital transformational incentives they gain efficiency and productivity on a long-term, higher effectiveness, resulting in opening of new markets and economic growth.

Based on the information gathered through interviews we would classify organizations from the highest to lowest level of the (plan for) digital transformation in the following order: Organization 1, Organization 4, Organization 3, Organization 2. Organization 1 is a company helping other companies to embrace digital transformation. Organization 4 is embracing digital transformation boldly in every working process possible, Organization 3 has big plans for digital transformation but has a long way to go. Organization 3 is establishing 3.0 production process with in-time data collection.

### 6.4.3 Valley of Death

With Leader 1 we discussed 'the Valley of Death' phase. He described the phase as: "... a very difficult phase because you are placing four corners at once to build a basic structure." According to Leader 1, the biggest threat during the 'Valley of Death' phase for Organization 1 was to establish the appropriate culture. Culture of responsibility, adaptability, growth and improvement, team spirit and winning mentality. He explained that people will want to stay in a company because of the culture not because of the salary, because this will certainly be higher elsewhere. Not only that the culture is keeping them in a company, but it is also developing them and pushing them forward. For him the culture is superior to the way of working and the tools. The most important thing is that company's main asset, people, feel good. When he asks the employees about what is most important to them, the answers are not a beautiful office, money or something material, but a good environment in which they will learn, grow and feel good. He stressed the importance of involving people into the establishment of the culture. Every single employee has to make a contribution to achieve an inclusive culture that will accept all skin colours, all sexual orientations, everyone regardless of their interests. The culture should be inclusive and binding. This can also be seen externally, and customers will recognize it as well. If we ourselves are masters of transformation, the customer will also notice it. "If you want to be the one who promotes change, you have to be the one who knows how to accept it."

However, every company has an unstable phase occasionally, as the working process or business model is no longer possible and needs to be adjusted. As companies change, they inevitably come into such negative periods. Leader 1 finds it important to adapt, overcome and embrace the change of those difficult and unstable periods. For him those times are the most interesting. As a result of previous working experiences in transformation and growth he got used to constant change. When uncertainty is high, believing in what he is doing helps him the most.

If he would go through the whole process one more time, many things would be executed differently, but the concept would be the same. However, realizations of operational shortcomings come as a surprise and are hard to predict.



## 7 DISCUSSION

### 7.1 Theoretical Contributions

The purpose of this thesis is to identify the suitable concepts of leadership and the skills of a leader. We discussed why specific skills are important in each of the observed departments, focused on their specifics and the underlying reasons. In this chapter, we will review the most important skills of a leader and answer our research questions.

#### 7.1.1 Suitable Skills for a Leader in R&D Departments

A good leader is most importantly able to lead the team to reach their goal (Lord et al., 2017; Penger & Dimovski, 2006); this might be to ensure business continuity or in other cases successfully completing a project (Villaluz & Hechanova, 2019; The Institute of Leadership & Management, 2017; Wang et al., 2011; Bower, 1997).

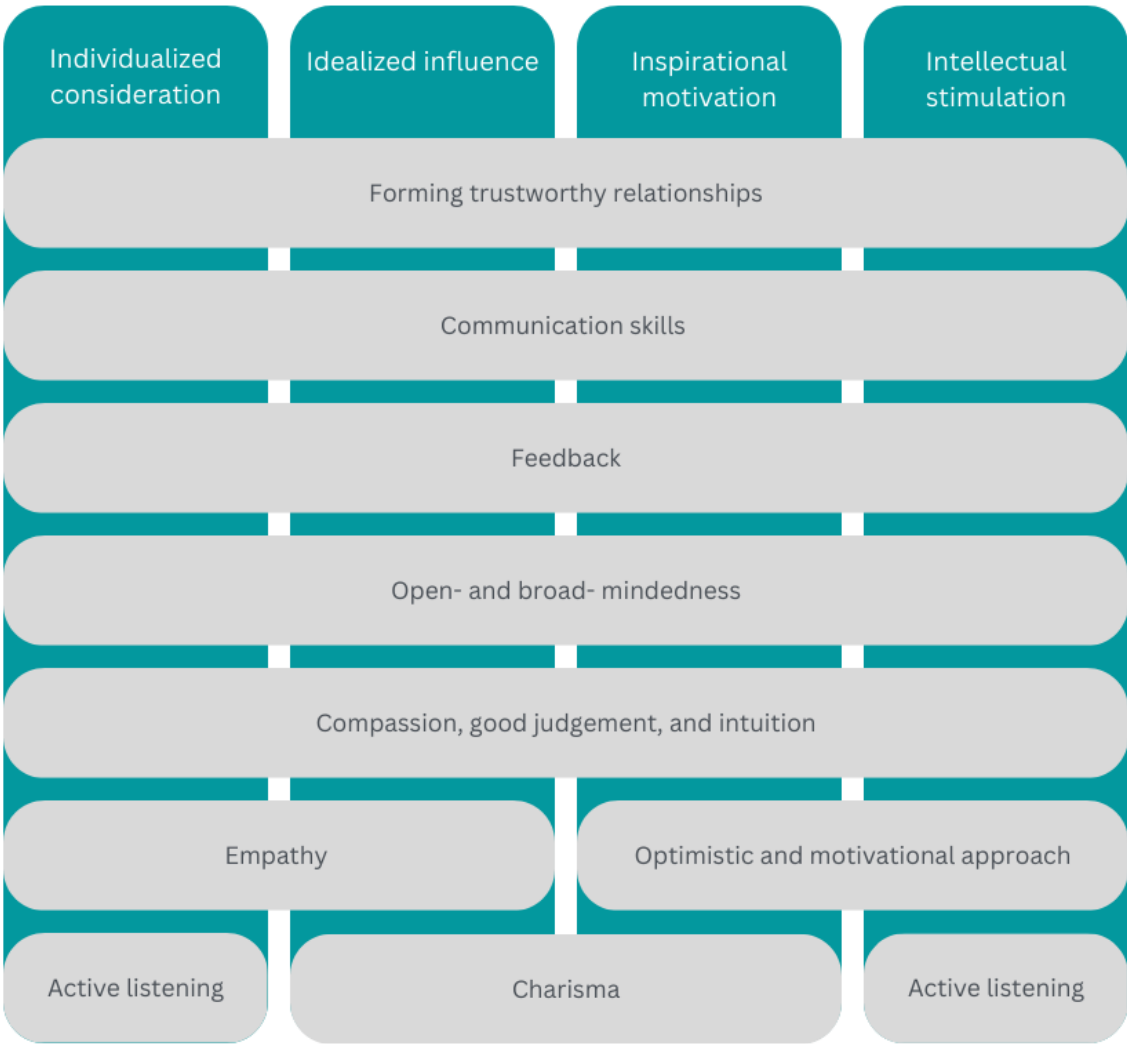
The connection between a leader and their subordinates ensures following the defined business goals and strategy (Bruttel & Fischbacher, 2013; Frese & Fay, 2001; Bower, 1997). If a leader is responsible for reaching the goal, they need the subordinates to all work together to achieve it. Without the support of the subordinates they are not able to reach the goal. They need support from the bottom up. Their subordinates will support the vision and work much harder towards the goal if they felt they were contributing from the beginning – if they were asked for their opinion and the opinion was considered or implemented. To successfully align and to take everyone's views, opinions and expectations, a leader needs to *actively listen* (Bower, 1997; Kluger & Itzchakov, 2022; Petrilli, 2022; Nutly, 1994), be *open and broad minded* (Al-Abrrow et al., 2021; Bower, 1997; Kluger & Itzchakov, 2022; Petrilli, 2022; Tse & Mitchell, 2010;) and have good *communication skills* (Dewan & Myatt 2008; Ferjan, 1998; Flauto, 1999; Handscomb, 2021; Linjuan, 2004; Maxwell, 1999; Pagon et.al., 2008). The goals should be defined with *compassion, good judgement, and intuition* (Stupple, 2022) and communicated in an *optimistic* (Dumas & Beinecke, 2018; Karanika-Murray & Michaelides, 2015; Paais & Pattiruhu, 2020; Shafique & Kalyar, 2018; Sousa & Rocha, 2019) and *motivational approach* (Dumas & Beinecke, 2018; Karanika-Murray & Michaelides, 2015; Paais & Pattiruhu, 2020; Shafique & Kalyar, 2018; Sousa & Rocha, 2019;), with *feedback* (Bass, 1985; Sadler, 2003; Yulk, 2010), and *empathy* (Al-Ghazali, 2020; Grashov et al., 2009). We corroborate the importance of good and healthy relationships between leader and subordinates (Bass, 1985).

In the theoretical part, we were describing the importance of partnership skills (Buckley et al., 2002; Cortellazzo et al, 2019; Darino, 2018; Ibarra & Hunter, 2007). Now, with the empirical part in mind, we are extending that to the *skill of forming trustworthy relationships*.

In contrast to the literature (Čater et al., 2021; Dike, 2015; Guzman et al., 2020; Santoso et al., 2019), leaders with whom we conducted interviews did not put too much emphasis on the importance for leaders to be tech savvy. Leaders 3 and 4 shared the opinion that it is much more important for a successful leader to be open to new technologies and ideas that arise within the team, be able to understand the impact and to be willing to support and encourage them to come to life.

Those characteristics also directly impact and help improve components of transformational leadership (Figure 10).

*Figure 10: Relationship between components of leadership characteristics and transformational leadership.*



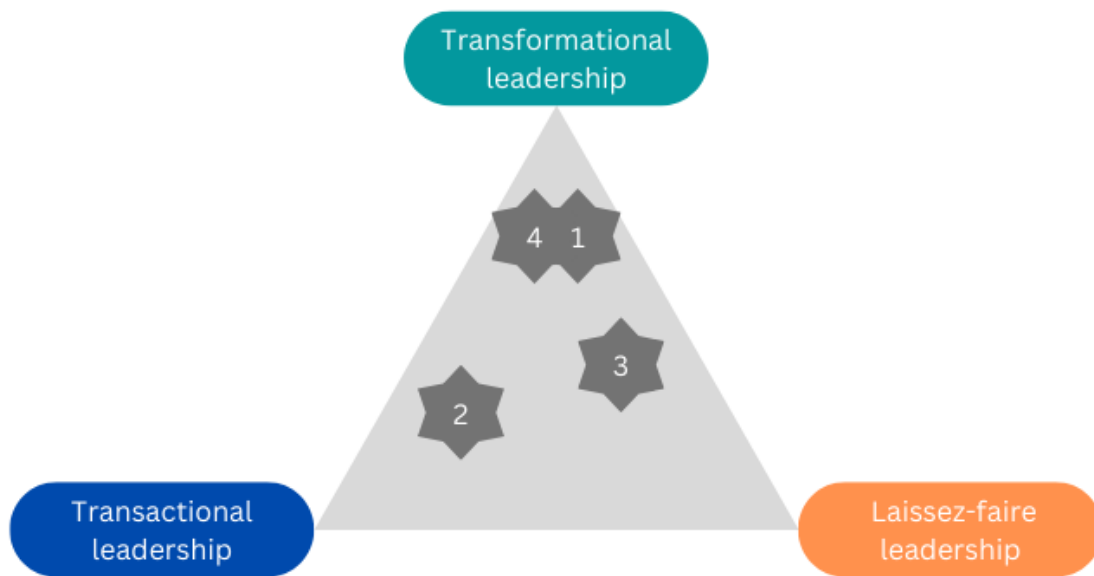
*Source: Own work.*

We corroborate Rotemberg’s and Saloner’s (1993) claim that the leadership style of organization is selected based on the nature of work, influenced by the stakeholders (mainly

the needs of the subordinates). Leader 3 adapted her leadership to a more transactional leadership style. Her subordinates are not motivated with any other aspect than financial.

In Bass’s (1985) explanation, the line between transformational and transactional leadership is blurred: he explains it with transformational and transactional leadership being two exceeding dimensions and that effective leaders use both (Bass, 1998) (Figure 1). We advance their explanation: transformational, transactional, and laissez-faire leadership are three exceeding dimensions. Effective leaders use all three, in different extend depending on the situation (Figure 11).

Figure 11: The surface between transformational, transactional and laissez-faire leadership.



Source: Own work.

We are aware our sample of four different organizations and interviews with their leaders is not big enough of a sample to be representative. However, we can conclude some insights from the surveys and our discussions.

### 7.1.2 Answering Research Questions

Research question 1: How does transformational leadership differ, and which components are constant across different R&D departments in different organizations?

Transformational leadership across different R&D departments in all four organizations demonstrates the attitude of idealized influence. Leaders are articulating their vision, leading by example, and acting in a consistent way. They are increasing subordinates' drive to work hard and to dedicate fully to reach organizational goals. All the leaders have strong integrity, charisma, capacity to articulate and share vision and high expectations. Followers feel included and as an important part in the organization. Even though contingent reward is one

of the most important characteristics of transactional leadership, it still plays high importance in R&D departments.

All the leaders are finding great value of clearly specificizing the performance expectations of subordinates and providing rewards when meeting them. However, here is important to distinguish specification of the responsibilities from micro-management of the subordinate. Leaders who are allowing more freedom for their subordinate to decide what would be the path they will take, reached higher transformational leadership coefficients and embraced the ideas to arise from the bottom up.

Research question 2: How is digital transformation reflected and implemented in R&D?

R&D departments are digitally transforming, but all in their individual way and pace, depending on a stage they are in, overall financial capabilities, and support. They are all acknowledging the value of digitalization and work towards it with their own pace and capabilities.

Incentives for digital transformation have higher support in bigger companies (in our case Organization 4). Employees are coming up with ideas and take additional responsibilities to their day-to-day job. The company is also encouraging it, financial resources can be ensured (if the idea is good and reasonable for the business), giving them internal resources, support, and at the end also awards and recognitions if or when projects are completed successfully. Digitalization and digital transformation projects that have already been done are widely adopted and the company is familiar with the advantages.

In middle-sized companies the number of incentives drops significantly. In Organizations 2 and 3 there was just one ongoing project. There are less (or no) ideas coming from the bottom up. Employees are more interested in their own day-to-day job and not taking on additional responsibilities. In both of our cases leaders are idea owners. Usually, they outsource activities. The place for manoeuvres is much smaller, projects are more expensive, and the risks are higher.

In small companies the processes are not established yet and everyone is contributing. Ideas are generated and pivoted daily. Resources are allocated internally if available. It might be that we were talking with a digitally savvy Organization 1. However, other start-ups are also heavily embracing technology and benefiting from it. For example, in 2020 AI start-up founding grew to 8.2 billion dollars and Silicon Valley ranked number one in Top 30 Global Start-up Ecosystems, while 60% of entrepreneurs agree that AI is currently the most promising innovation technology and will remain so for the next decade (Thrivemyway.com, 2022).

Research question 3: How do different organizations deal and overcome the “Valley of Death” problem?

Like digital transformation, the “Valley of Death” for innovation is also a challenging time. Not only challenging – in fact it is crucial. The problem is usually of a financial nature (Markham et.al., 2010; Zwilling, 2013). Companies try to ensure funding, to find the right product market fit, and do some business. That is why the main concern for Leader 1 in Organization 1 was a surprise to us. Here we are advancing the usual financial challenges with the challenge of establishing the appropriate culture. We believe that should be just as important of a topic to start thinking and working on it from the beginning.

Research question 4: How does transformational leadership influence and contribute to digital transformation?

Based on the information gathered through interviews we classified organizations from the highest to lowest level of the (plan for) digital transformation in the following order: Organization 1, Organization 4, Organization 3, Organization 2 (Chapter 6.4.2). Based on the results from the survey, we classified leaders from the highest to lowest level of transformational leadership style in the following order: Leader 1, Leader 4, Leader 3, Leader 2 (Chapter 6.3).

According to our classification transformational leadership correlates to incentives and inclination to support digital transformation. All leaders are open to more ideas. However, those with higher transformational leadership coefficient are more inclined to support those ideas and/or to implement them into overall company’s vision. The digital transformation is challenging. Many old working processes are challenged or changed. Transformational leadership helps to align everyone, by charismatically articulating their vision, setting high expectations, and motivating. Followers commit, contribute, and add value with their best work possible to leader's mission. The leader is usually the project owner and is responsible for tracking the progress.

Research question 5: How does transformational leadership influence and contribute to crossing “the valley”?

Due to only one example of a small, young, start-up company it is hard to conclude the influence and contribution of transformational leadership style to crossing “the valley”. However, it seems like transformational leadership would be the right approach of successfully attract, motivate, inspire, and align subordinates, investors, and clients.

## 7.2 Practical Implications

Our recommendations for the leadership in R&D departments are following:

**When defining goals and values, include subordinates and clearly communicate your vision.** Involve subordinates into the establishment of the culture and determination of goals. Every single employee should contribute to achieving an inclusive culture. Find a common denominator between company and employee goals. Determine clear values and goals that

employees will internalize; present them and act accordingly. Start-ups should establish and define their culture from the beginning, even though it does not look like the most important element. It will enhance affiliation to the organization or department. To align the team (or persuade outside partners), leader needs to clearly specify their words when communicating vision. Vision should include every teammate who contributes. If that is not possible, it needs to be communicated, so they will feel heard and considered. Everyone needs to understand the final decision. This step was acknowledged as well by Miles (2022).

**Give autonomy to subordinates.** After goals (or values) have been set, leaders need to allow subordinates to contribute in their way. The leader needs to allow creativity, establish responsibility and provide feedback. Pattnaik and Sahoo (2021) described the positive influence of job autonomy and supportive management directly and positively influenced organizational citizenship behaviour.

**Annual or semi-annual internal interview.** The concept is not new, and many companies have them already established. However, some companies are still lacking. We recommend leaders to set annual or semi-annual internal interviews to discuss accomplishments, feedback, contributions, goals, expectations of a subordinate. Those interviews should be open and honest discussions.

**Establish accountability - keeping track of expectations.** To embrace the transformational leadership with *individualized consideration*, *intellectual stimulation* and *inspirational motivation*, leaders could keep track of subordinate's expectation. For relations to be satisfactory, an important thing is honesty and accountability. For that reason, keeping track and working towards meeting expectations from subordinates, clients and other business partners is adding long term value in terms of trust and loyalty. People will feel included and heard and will know their opinion is important. For those reasons we are recommending exchanging expectations and feedback and reviewing every six months as a check-in meeting (with subordinates on semi-annual meetings). It should be as important as other business objectives, and everyone should take it seriously and work towards continuous improvement.

**Get to know subordinates and consider each subordinate as a unique individual.** Get to know subordinates' personality type, their motivation, their expectations, their vision for themselves, their drive. This could also be related to their personal life (in case they are going through challenging time or have different needs). It will enhance their feelings of trust in and satisfaction with the leader and satisfaction with their workspace. By knowing the subordinate, a leader is able to adapt their actions and offer (financial and non-financial) regards that meet subordinates needs and motivational factors.

**Take care of relationships.** Relationships inside and outside of the organisation are of equal importance. Clients, suppliers, business partners, subcontractors – even if we are talking about the business, it is not only about the profit. We cannot measure the success of

relationships with KPI's. However, it should remain high on priority list. People are the most important for an organization.

**Choose key promoters of new technologies.** When embracing digital transformation, it is important to establish a team of key users and promoters. Key users will contribute key requirements so that the solutions will serve their needs. Promoters will help spread the enthusiasm for new technologies and solutions implemented. It is best that key users and promoters are the same person (some kind of super users), but it is not necessary.

The main promotor is the leader and they should act according to *idealized influence* - share vision and high expectations, motivate, inspire and be the role model. Promoters need to have the ability to *inspirationally motivate*. They will experience backlash, resistance and dissatisfaction of their colleagues and will need to motivate them to embrace the change.

### 7.3 Limitations and Future Research

The main limitation we were experiencing was difficulty to get access to an interlocutor. Leaders have tight schedules and a lot of responsibilities. It is their goodwill to take the time and be ready to have the interview. We are aware our sample of four different organizations and interviews with their leaders is not big enough to be representative. However, we can conclude some insights from the surveys and our discussions that can inform future research.

For MLQ survey to provide us deeper insights all (or as many) of their co-workers should complete it and the results should be averaged to delimitate outliers.

In our case, two leaders were not comfortable with all of their subordinates grading them, so we decided to perform the same procedure in all cases. The leader and one of the subordinates were completing the survey.

Differences in answers of Leaders 1, 2, 4 with the answers of their subordinate were not significant. Consequently, we are assuming they were realistic when answering the survey. However, when comparing the results of Leader 3 and his subordinate, the results are obviously different. When self-grading, the answers could go in three directions – either respondent wants to present themselves in a better light, they try to be objective or they are critically grading themselves. As a result of small sample size and lower self-scoring, his average coefficient is also lower. If we speculate, his subordinate should be more objective than Leader 3 to himself. At the end of chapter 6.3 Results of MLQ survey we classify leaders with that in our mind.

We detected a few interesting topics for further research:

- To confirm our observations, it would be interesting to see if experience really contributes to the adoption of a leadership style and if leaders really embrace more of the transformational leadership characteristics.

- The second topic which would be interesting to cover is which of the four components (idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration) is the most important for R&D teams and adds the most to overall consideration of leader as a transformational leader.
- The third topic we are proposing is to review how to become stronger in those four transformational leadership components and how to really embrace them.
- Another important topic nowadays is how transformational leadership contributes or can contribute to the remote or hybrid working in R&D departments.
- On the topic of digital transformation, it would be interesting to track the success of the digital transformation projects in R&D departments over time, and how are those connected to transformational leadership.

## **CONCLUSION**

During the preparation of this thesis, we tried to identify the most suitable and crucial factors, concepts and skills of a successful leadership needed in the organization while it is undergoing massive changes and to enumerate the reasons for their importance.

We initiated our research with a review of the existing literature and previous research on transformational leadership, its practices in different organizations and leadership in R&D departments to understand their extended use, its unused potential, digital transformation process and the “valley of death” problem. We elaborated on the concepts of transformational leadership and their implementation in practice.

We performed a literature review using a description method and synthesis. We analysed the existing literature and later identified the organizations with R&D departments differing in size and operating in different business sectors.

For the empirical part of our research, we conducted in-depth interviews with department heads of organizations. We conducted the interviews in the following organizations:

- Start-up organization: research and development company, working in a field of data science for pharmaceutical companies.
- Two smaller industrial organizations: research and development department of a company, working on polymer-based materials such as acrylic glass, composite acrylic material and other innovative polymer material products.
- Multinational organization: research and development department of a company in pharmaceutical industry.

We conducted in-depth interviews with leaders and sought specific information as well as in-depth insights. To determine the level of transformational leadership style we used the MLQ survey. The survey was completed by the leader and one of their subordinates. Based on the insights from interviews and from the survey we described how transformational



leadership differs in various organizations' R&D departments, how digital implementation and transformation affects the organisations' work processes, what is important for an organization to successfully tackle the “Valley of Death” problem and researched if there is a relationship between the transformational leadership style and the success in the digital transformation process or the crossing of the “valley”.

With a review of scientific and popular sources on the topic of transformational leadership and digital transformation and carrying out multimethodological research, we came to the following conclusions. Transformational leadership is one of the newest leadership concepts that could and should be used in R&D departments. This type of leadership is related to empowerment, motivation and progress. Elements of transformational leadership were strongly detected at two of the R&D departments in their interview answers. The results of transformational leadership coefficients are correlated with years of experiences in the leadership position. It may be that leaders use more of the components of transformational leadership as a result of their experiences and better results when focusing on people, supporting and motivating them to embrace their initiatives and ideas.

The second construct, which we studied, is the level of digital transformation present in the companies. All four organizations and their R&D departments are aware of the importance of embracing the digital incentives. Based on information gathered from the interviews, Organizations 1 and 4 are both in the process of digital transformation. On the other hand, Organizations 2 and 3 are both currently in the process of digitalization. They are establishing their digital working space.

With the help of the primary data and the analysis of the answers, we conclude that Leaders 1 and 4 use transformational leadership style in digital transformation journey of Organizations 1 and 4, as we perceived the elements of transformational leadership. We observed a correlation between the transformational leadership style and incentives for digital transformation.

## REFERENCE LIST

1. Aarons, G.A. (2006). Transformational and transactional leadership: association with attitudes toward evidence-based practice. *Psychiatric Services*, 57(8), 1162–1169. DOI: 10.1176/ps.2006.57.8.1162.
2. ARRS. (2020). *About the Agency – Mission and vision*. Retrieved November 2020 from <http://www.arrs.si/en/agencija/mission.asp>.
3. Aas, R.W., Ellingsen, K.L. & Lindøe, P. (2008, August 5). Leadership Qualities in the Return to Work Process: A Content Analysis. *Journal Occupational Rehabilitation*, 18, 335–346. DOI: 10.1007/s10926-008-9147-y.
4. Afsar, B., Badir, Y.F. & Bin Saeed, B. (2014). Transformational leadership and innovative work behavior. *Industrial Management and Data Systems*, 114(8), 1270–1300.

5. Afshan, G., Kashif, M., Khanum, F., Khuhro, M.A. & Akram, U. (2021). High involvement work practices often lead to burnout, but thanks to humble leadership. *Journal of Management Development*, 40(6), 503–525. DOI: 10.1108/JMD-10-2020-0311.
6. Aryee, S., Walumbwa, F.O., Zhou, Q. & Hartnell, C.A. (2012). Transformational leadership, innovative behavior, and task performance: test of mediation and moderation processes. *Human Performance*, 25(1), 1–25. DOI: 10.1080/08959285.2011.631648.
7. Al-Abrow, H., Fayez, A.S., Abdullah, H., Khaw, K.W., Alnoor, A. & Rexhepi, G. (2021). Effect of open-mindedness and humble behavior on innovation: mediator role of learning. *International Journal of Emerging Markets*, ahead-of-print. DOI: 10.1108/IJOEM-08-2020-0888.
8. Al-Ghazali, B.M. (2020). Transformational leadership, career adaptability, job embeddedness and perceived career success: a serial mediation model. *Leadership & Organization Development Journal*, 41(8), 993–1013. DOI: 10.1108/LODJ-10-2019-0455.
9. Al Hawamdeh, N.(2022). The influence of humble leadership on employees’ work engagement: the mediating role of leader knowledge-sharing behaviour. *Journal of Information and Knowledge Management Systems*, ahead-of-print. DOI: 10.1108/VJIKMS-03-2022-0083.
10. Al Natsheh, A., Gbadegeshin, S.A., Ghafel, K., Mohammed, O., Koskela, A., Rimpiläinen, A., Tikkanen, J. & Kuoppala, A. (2021, March). The Causes of Valley of Death: A Literature Review, *INTED2021 Proceedings*, 9289–9298. DOI: 10.21125/inted.2021.1943.
11. Alicke, K., Rachor, J. & Seyfert, A. (2016, October 27). *Supply Chain 4.0 – the next-generation digital supply chain*. McKinsey & Company. Retrieved November 2020 from <https://www.mckinsey.com/business-functions/operations/our-insights/supply-chain-40--the-next-generation-digital-supply-chain>.
12. Bacha, E. & Walker, S. (2013). The Relationship Between Transformational Leadership and Followers’ Perceptions of Fairness. *Journal of Business Ethics*, 116, 667–680. DOI: 10.1007/s10551-012-1507-z.
13. Baker, E.L., Dunne-Moses, A., Calarco, A.J. & Gilkey, R. (2019). Listening to Understand: A Core Leadership Skill. *Journal of Public Health Management and Practice*, 25(5), 508–510. DOI: 10.1097/PHH.0000000000001051.
14. Barron, E. & Amorós, J.E. (2020). Bridging the Valley of Death: Lessons from an Entrepreneurial Program. *International Journal of Entrepreneurship*, 24(1).
15. Baron, L., Rouleau, V., Grégoire, S. & Baron, C. (2018). Mindfulness and leadership flexibility. *Journal of Management Development*, 37(2), 165–177. DOI: 10.1108/JMD-06-2017-0213.
16. Bass, B.M. (1985). *Leadership and Performance Beyond Expectations*, The Free Press, New York, NY. DOI: 10.1002/hrm.3930250310.
17. Bass, B.M. & Avolio, B.J. (Eds). (1994). *Improving Organizational Effectiveness Through Transformational Leadership*, Sage Publications, Thousand Oaks, CA.

18. Bass, B.M. & Avolio, B.J. (1995). *Multifactor Leadership Questionnaire for Research*. Mind Garden, Menlo Park, CA.
19. Bass, B.M. & Avolio, B.J. (2004). *Multifactor Leadership Questionnaire: Manual and Sample Set*, 3rd ed., Mind Garden, Redwood City, CA.
20. Bass, B.M., Avolio, B.J., Jung, D.I. & Benson, Y. (2003). Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology*, 88(2), 207–218. DOI: 10.1037/0021-9010.88.2.207.
21. BDC. (2020). *Business Accelerator*. Retrieved November 2020 from <https://www.bdc.ca/en/articles-tools/entrepreneur-toolkit/templates-business-guides/glossary/business-accelerator>.
22. Bernstein, A. & Raman, A. (2015, June). *The Great Decoupling: An Interview with Erik Brynjolfsson and Andrew McAfee*. Harvard Business Review. Retrieved November 2020 from <https://hbr.org/2015/06/the-great-decoupling>.
23. Bloomberg, J. (2018, April 28). *Digitization, Digitalization, And Digital Transformation: Confuse Them At Your Peril*. Forbes. Retrieved November 2020 from <https://www.forbes.com/sites/jasonbloomberg/2018/04/29/digitization-digitalization-and-digital-transformation-confuse-them-at-your-peril/?sh=4efb7dca2f2c>.
24. Boerner, S., Eisenbeiss, S.A. & Griesser, D. (2007). Follower behaviour and organizational performance: the impact of transformational leaders. *Journal of Leadership and Organizational Studies*, 13(3), 15–26. DOI: 10.1177/10717919070130030201.
25. Bonsu, S. & Twum-Danso, E. (2018, November) Leadership Style in the Global Economy: A Focus on Cross-Cultural and Transformational Leadership. *Journal of Marketing and Management*, 9(2), 37–52.
26. Booher, D.D. (1992, September 1). Executive's portfolio of model speeches for all occasions. *Prentice Hall Direct*. p. 34.
27. Bower, M. (1997, November 1). Developing leaders in business. *McKinsey Quarterly*, book excerpt. Retrieved November 2020 from <https://www.mckinsey.com/featured-insights/leadership/developing-leaders-in-a-business>.
28. Bradberry, T. & Greaves, J. (2009). *Emotional Intelligence 2.0*. TalentSmart, San Diego, CA.
29. Bregar, L., Orgajenšek, I. & Bavdaž, M. (2005). *Metode raziskovalnega dela za ekonomiste: izbrane teme*. Ljubljana: Ekonomska Fakulteta.
30. Brennen, J.S. & Kreiss, D. (2016, October 23). *Digitalization*. In *The International Encyclopedia of Communication Theory and Philosophy* (eds K.B. Jensen, E.W. Rothenbuhler, J.D. Pooley and R.T. Craig). DOI: 10.1002/9781118766804.wbiect111.
31. Bruttel, L. & Fischbacher, U. (2013). Taking the initiative. What characterizes leaders?. *European Economic Review*, 64, 147–168. DOI: 10.1016/j.eurocorev.2013.08.008.
32. Buckley, P.J., Glaister, K.W. & Husan, R. (2002). International Joint Ventures: Partnering Skills and Cross-Cultural Issues. *Long Range Planning*, 35(2), 113–134. DOI: 10.1016/S0024-6301(02)00034-1.
33. Burns, J.M. (1978). *Leadership*, Harper&Row, New York, NY.

34. Business News Daily. (2020, February 18). *Want to Be a Good Leader? Step One: Know Thyself*. Retrieved December 2020 from <https://www.businessnewsdaily.com/6097-self-awareness-in-leadership.html>.
35. Fair. (n.d.). In *Dictionary.Cambridge.org* dictionary. Retrived December 2020 from <https://dictionary.cambridge.org/dictionary/english/fair>.
36. Chemers, M.M. (2002). *Efficacy and effectiveness: Integrating models of leadership and intelligence*. In R. E. Riggio, S. E. Murphy, & F. J. Pirozzolo (Eds.), *Multiple intelligences and leadership*, 139–160. Lawrence Erlbaum Associates Publishers.
37. Chin, R. (2015). Examining teamwork and leadership in the fields of public administration, leadership, and management. *Team Performance Management*, 21(3/4): 199–216. DOI:10.1108/TPM-07-2014-0037.
38. Chirazi, J., Wanieck, K., Fayemi, P.-E., Zollfrank, C. & Jacobs, S. (2019). What Do We Learn from Good Practices of Biologically Inspired Design in Innovation?. *Applied Sciences*, 9, 650. DOI: 10.3390/app9040650.
39. Cho, J., Schilpzand, P., Huang, L., & Paterson, T. (2021). How and When Humble Leadership Facilitates Employee Job Performance: The Roles of Feeling Trusted and Job Autonomy. *Journal of Leadership & Organizational Studies*, 28(2), 169–184. DOI: 10.1177/1548051820979634.
40. Cortellazzo, L., Bruni, E. & Zampieri, R. (2019, August). The Role of Leadership in a Digitalized World: A Review. *Frontiers in Psychology*, 10(1938), 1–21. DOI: 10.3389/fpsyg.2019.01938.
41. Cross, R. (2021). *Beyond Collaboration Overload: How to Work Smarter, Get Ahead, and Restore Your Well-Being*, 1st ed. Harvard Business Review Press, Massachusetts, US.
42. Čater, T., Čater, B., Černe, M., Koman, M. & Redek, T. (2021). Industry 4.0 technologies usage: motives and enablers. *Journal of Manufacturing Technology Management*, 32(9), 323–345. DOI: 10.1108/JMTM-01-2021-0026.
43. Černe, M., Jaklič, M. & Škerlavaj, M. (2013). Authentic leadership, creativity, and innovation: A multilevel perspective. *Leadership*, 9(1), 63–85. DOI:10.1177/1742715012455130.
44. Černe, M., Nerstand, C.G.L., Dysvik, A. & Škerlavaj, M. (2013). What Goes Around Comes Around: Knowledge Hiding, Perceived Motivational Climate, and Creativity. *Academy of Management Journal*, 57(1), 172–192. DOI: 10.5465/amj.2012.0122.
45. Černe, M., Hernaus, T., Dysvik, A. & Škerlavaj, M. (2017). The role of multilevel synergistic interplay among team mastery climate, knowledge hiding, and job characteristics in stimulating innovative work behavior. *Human resource management journal*, 27(2), 281-299.
46. Černe, M., Batistič, S. & Kenda, R. (2018). HR systems, attachment styles with leaders, and the creativity–innovation nexus. *Human Resource Management Review*, 28(3), 271–288. DOI:10.1016/j.hrmr.2018.02.004.
47. Darino, L., Ogeah, A. & Srinivasan, R. (2018, October 12). *Developing tomorrow's leaders in life science*. McKinsey & Company. Retrieved November 2020 from

- <https://www.mckinsey.com/industries/pharmaceuticals-and-medical-products/our-insights/developing-tomorrows-leaders-in-life-sciences>.
48. Deloitte Insights. (2018). *The Fourth Industrial Revolution is here—are you ready?* Deloitte. Retrieved November 2020 from <https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/technology/gx-fourth-industrial-revolution.pdf>.
  49. De-Wit, L., van der Linden, S. & Brick, C. (2019, January 16). *Are Social Media Driving Political Polarization?* Gartner Good Magazine. Retrieved November 2020 from [https://greatergood.berkeley.edu/article/item/is\\_social\\_media\\_driving\\_political\\_polarization](https://greatergood.berkeley.edu/article/item/is_social_media_driving_political_polarization).
  50. Dewan, T., & Myatt, D. (2008). The Qualities of Leadership: Direction, Communication, and Obfuscation. *The American Political Science Review*, 102(3), 351–368. DOI:10.2307/27644525.
  51. Dike, V. E. (2015). Leadership and Management in the 21st Century Organizations: A Practical Approach. *World Journal of Social Science Research*, 2(2), 139. DOI: 10.22158/WJSSR.V2N2P139.
  52. Dimovski, V. & Penger, S. (2006). Trendi učeče se organizacije: razvoj avtentičnega vodenja in oblikovanja pozitivne organizacijske identitete. *Teorija in praksa*, 43(3/4), 427–445.
  53. Dinibutun, S.R. (2020, January). Leadership: A Comprehensive Review of Literature, Research and Theoretical Framework. *Journal of Economics and Business*, 3(1), 44–64. DOI: 10.2139/ssrn.3521205.
  54. Dourish, P. (2016, August 24). Algorithms and their others: Algorithmic culture in context. *Big Data & Society*, 3(2), 1–11. DOI: 10.1177/2053951716665128.
  55. Downes, L. & Nunes, P.F. (2013) Big-bang disruption. *Harvard Business Review*, 91(3), 44–56.
  56. Downey, L.A., Papageorgiou, V. & Stough, C. (2006). Examining the relationship between leadership, emotional intelligence and intuition in senior female managers. *Leadership & Organization Development Journal*, 27(4), 250–264. DOI: 10.1108/01437730610666019.
  57. Drucker, P.F. (1996). Your Leadership Is Unique. *Christianity Today International/LEADERSHIP, journal*. 17(4), 54. Retrieved November 2020 from <http://boston.goarch.org/assets/files/your%20leadership%20is%20unique.pdf>.
  58. Dulewicz, V. & Higgs, M. (2005). Assessing Leadership Styles and Organizational Context. *Journal of Managerial Psychology*, 20(2), 105–123. DOI: 10.1108/02683940510579759.
  59. Dumas, C. & Beinecke, R.H. (2018). Change leadership in the 21st century. *Journal of Organizational Change Management*, 31(4), 867–876. DOI: 10.1108/JOCM-02-2017-0042.
  60. Engelbrecht, A.S., Heine, G. & Mahembe, B. (2017). Integrity, ethical leadership, trust and work engagement. *Leadership & Organization Development Journal*, 38(3), 368–379. DOI: 10.1108/LODJ-11-2015-0237.

61. Entrepreneur Europe. (2020). *Getting Started with Business Incubators*. Retrieved November 2020 from <https://www.entrepreneur.com/article/52802>.
62. Erenda, I., Metelko, A., Roblek, V. & Meško, M. (2017). The Leadership Competencies and Intuitive Decision-Making of Top and Middle Level Managers in the Automotive Industry. In: Dominici, G., Del Giudice, M., Lombardi, R. (eds) *Governing Business Systems*. Springer Proceedings in Business and Economics. Springer, Cham. DOI: 10.1007/978-3-319-66036-3\_7.
63. Erhart, M.G. & Nauman, S.E. (2004). Organizational citizenship behaviour in work groups: a group norms approach. *Journal of Applied Psychology*, 89(6), 960–974. DOI: 10.1037/0021-9010.89.6.960.
64. Esimai, C. (2018, February 18). *Great Leadership Starts With Self-Awareness*. Forbes. Retrieved December 2020 from <https://www.forbes.com/sites/ellevate/2018/02/15/self-awareness-being-more-of-what-makes-you-great/?sh=199335540ddb>.
65. Ferjan, M. (1998). *Poslovno komuniciranje*. Kranj: Moderna organizacija.
66. Flauto, F.J. (1999). Walking the Talk: The Relationship Between Leadership and Communication Competence. *Journal of Leadership Studies*, 6(1–2), 86–97. DOI: 10.1177/107179199900600106.
67. Ford, G.S., Koutsky, T.M. & Spiwak, L.J. (2007, September 1). A Valley of Death in the Innovation Iequence: An Economic Investigation (final report). *Phoenix Center for Advanced Legal and Economic Public Policy Studies*. Prepared for the Commerce Department, Technology Administration, Under Study Contract No. SB1341-05-2-0023 administered by KT Consulting, Inc. DOI: 10.2139/ssrn.1093006. Retrieved November 2020 from <https://ssrn.com/abstract=1093006>.
68. Forth, P., Reichert, T., de Laubier, R. & Chakraborty, S. (2020, October 29). *Flipping the Odds of Digital Transformation Success*. Boston Consulting Group. Retrieved November 2020 from <https://www.bcg.com/publications/2020/increasing-odds-of-success-in-digital-transformation#factor1>.
69. Frank, C., Sink, C., Mynatt, L., Rogers, R., & Rappazzo, A. (1996). Surviving the valley of death: A comparative analysis. *The Journal of Technology Transfer*, 21(2), 61–69. DOI: 10.1007/BF02220308.
70. Frese, M. & Fay, D. (2001). The Concept of Personal Initiative: An Overview of Validity Status. *Human Performance*, 14(1), 97–124. DOI: 10.1207/S15327043HUP1401\_06.
71. Gamo, N.J., Birknow, M.R., Sullivan, D., Kondo, M.A., Horiuchi, Y., Sakurai, T., & Sawa, A. (2017). Valley of death: A proposal to build a translational bridge for the next generation. *Neuroscience Research*, 115, 1–4. DOI: 10.1016/j.neures.2016.11.003.
72. Garcia-Morales, V.J., Jimenez-Barrionuevo, M.M. & Gutierrez-Gutierrez, L. (2012). Transformational leadership influence on organizational performance through organizational learning and innovation. *Journal of Business Research*, 65(7), 1040–1050.
73. Gardner, J.W. (1987). *Attributes and context*. *Independent Sector, Leadership Papers* 6, p. 15.
74. Gardner, J.W. (1990). *On Leadership*, Free Press, New York, p. 49.

75. Gartner IT Glossary. (2020). *Digitization*. Retrieved November 2020 from <https://www.gartner.com/en/information-technology/glossary/digitization>.
76. Gartner IT Glossary. (2020). *Digitalization*. Retrieved November 2020 from <https://www.gartner.com/en/information-technology/glossary/digitalization>.
77. Gartner IT Glossary. (2020). *Digital Transformation*. Retrieved November 2020 from <https://www.gartner.com/en/information-technology/glossary/digital-transformation>.
78. Gill, R. (2006). *Theory and Practice of Leadership*, Sage Publications, London.
79. Gomper, J. & Lerner, P.A. (2002). *The money of invention how venture capital creates new wealth*. Association for Computing Machinery. New York, NY. DOI: 10.1145/504689.763904.
80. Gong, Y., Huang J.-C. & Farh, J.L. (2009). Employee Learning Orientation, Transformational Leadership, and Employee Creativity: The Mediating Role of Employee Creative Self-Efficacy. *Academy of Management Journal*, 52(4), 765–778. DOI: 10.5465/amj.2009.43670890.
81. Grashow, A., Heifetz, R. & Linsky, M. (2009) *The Practice of Adaptive Leadership: Tools and Tactics for Changing Your Organization and the World*, Boston, MA: Harvard Business Press.
82. Grošelj, M., Černe, M., Penger, S. & Grah, B. (2020). Authentic and transformational leadership and innovative work behaviour: the moderating role of psychological empowerment. *European Journal of Innovation Management*, 24(3), 677–706. DOI: 10.1108/EJIM-10-2019-0294.
83. Guzmán, V.E., Muschard, B., Gerolamo, M. Kohl, H. & Rozenfeld, H. (2020). Characteristics and Skills of Leadership in the Context of Industry 4.0. *Procedia Manufacturing*, 43, 543–550. DOI: 10.1016/j.promfg.2020.02.167.
84. Handscomb, C., Honigmann, D., & Reddy, M. (2021, August 30). *Unleashing the power of communication in agile transformations*. McKinsey & Company. Retrieved December 2020 from <https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/the-organization-blog/unleashing-the-power-of-communication-in-agile-transformations>.
85. Hartung, P. (2020). The impact of self-awareness on leadership behavior. *Journal of Applied Leadership and Management*, 8, 1–21.
86. Heathfield, S.M. (2019). *How to Provide Recognition That Motivates Your Employees*. Liveabout.com. Retrieved December 2020 from <https://www.liveabout.com/how-to-provide-recognition-that-motivates-employees-1919056>
87. Heller, J. & Peterson, C. (n.d.). *"Valley of Death" in Nanotechnology Investing*. Foresight Institute. Retrieved November 2020 from <https://foresight.org/policy/brief8.html>.
88. Hoberg, P., Krcmar, H. & Welz, B. (2017). *Skills for Digital Transformation*. Corporate Leaders, Research Report. Retrieved November 2020 from <http://www.corporate-leaders.com/sitescene/custom/userfiles/file/Research/sapskillsfordigitaltransformation.pdf>.

89. House, R.J. (1996). Path-goal theory of Leadership: Lessons, legacy, and a reformulated theory. *The Leadership Quarterly*, 7(3), 323–352. DOI: 10.1016/S1048-9843(96)90024-7.
90. House, R.J., Spangler, W.D. & Woycke, J. (2017). Personality and Charisma in the U.S. Presidency: A Psychological Theory of Leadership Effectiveness. *Academy of Management Journal*, 36, 364–396. DOI: 10.2307/2393201
91. Hoyt, C. L., Goethals, G. R., & Riggio, R. E. (2006). Leader-follower relations: Group dynamics and the role of leadership. *The quest for a general theory of leadership*, 1(1), 96-122.
92. Hu, J. & Dutta, T. (2022). What’s charisma got to do with it? Three faces of charismatic leadership and corporate social responsibility engagement. *Frontiers in Psychology*, 13, 829584. DOI: 10.3389/fpsyg.2022.829584.
93. Hua, Y., Cheng, X., Hou, T. & Luo, R. (2020). Monetary Rewards, Intrinsic Motivators, and Work Engagement in the IT-Enabled Sharing Economy: A Mixed-Methods Investigation of Internet Taxi Drivers. *Decision Sciences*, 51(3), 755–785. DOI: 10.1111/deci.12372.
94. Ibarra, H. & Hunter, M.L. (2007, January). How Leaders Create and Use Networks. Harvard Business Review. Retrieved November 2020 from <https://hbr.org/2007/01/how-leaders-create-and-use-networks>.
95. Jackson, T. (2017, September 21). 8 Core Competencies Leaders Need to Sustain Performance. About Leaders. Retrieved November 2020 from <https://aboutleaders.com/8-core-competencies-leaders-need-to-sustain-performance/#gs.m3suky>.
96. Jamkhande, P.G., Ghante, M.H. & Ajgunde, B.R. (2017). Software based approaches for drug designing and development: A systematic review on commonly used software and its applications. *Bulletin of Faculty of Pharmacy, Cairo University*, 55(2), 203–201.. DOI: 10.1016/j.bfopcu.2017.10.001.
97. Jeppesen, B.G. (2015). *Realizing the Fourth Industrial Revolution*. Mjølner Informatics. Retrieved December 2020 from <https://mjolner.dk/2015/01/14/realizing-the-fourth-industrial-revolution/>.
98. Jung, D.I. (2001). Transformational and transactional leadership and their effects on creativity in groups. *Creativity Research Journal*, 13, 185–195. DOI: 10.1207/S15326934CRJ1302\_6.
99. Jung, D.I., Chow, C., & Wu, A. (2003). The role of transformational leadership in enhancing organizational innovation: Hypotheses and some preliminary findings. *Leadership Quarterly*, 14(4-5), 525–544. DOI: 10.1016/S1048-9843(03)00050-X.
100. Jung, D.I., Wu, A., & Chow, C. (2008). Towards understanding the direct and indirect effects of CEOs’ transformational leadership on firm innovation. *Leadership Quarterly*, 19, 582–594. DOI: 10.2139/ssrn.921300.
101. Karanika-Murray, M. & Michaelides, G. (2015). Workplace design: Conceptualizing and measuring workplace characteristics for motivation. *Journal of Organizational*



- Effectiveness: People and Performance*, 2(3), 224–243. DOI: 10.1108/JOEPP-08-2014-0048.
102. Kelemen, T.K., Matthews, S.H., Matthews, M.J. & Henry, S.E. Humble leadership: A review and synthesis of leader expressed humility. *Journal of Organizational Behavior*, 44(2), 202–224. DOI: 10.1002/job.2608
  103. Khan, M.S., Khan, I. & Qureshi, Q.A. (2015). The Styles of Leadership: A Critical Review. *IISTE*, 5(3), 87–92. Retrieved December 2022 from <https://www.iiste.org/Journals/index.php/PPAR/article/viewFile/20878/21131>.
  104. Khan, N.A. & Khan, A.N. (2019). What followers are saying about transformational leaders fostering employee innovation via organisational learning, knowledge sharing and social media use in public organisations? *Government Information Quarterly*, 36(4), 101391. DOI: 10.1016/j.giq.2019.07.003.
  105. Khan, R. (2022, October 11). *What is Laissez Faire Leadership and Why You Need It in Today's World*. Allnewbusiness.com. Retrieved December 2022 from <https://www.allnewbusiness.com/laissez-faire-leadership/>.
  106. Kilani, Y.M., Mahayreh, M., & Harahsheh, F.A. (2016, December 31). The Influence of the Leadership Style on Managerial Creativeness from the Perspective of Employees within Jordanian Industrial Corporations. *International Business and Management*, 13(3), 27–39. DOI: 10.3968/8951.
  107. Kiley, J. (2017, October 23). *In polarized era, fewer Americans hold a mix of conservative and liberal views*. Pew Research Center. Retrieved November 2020 from <https://www.pewresearch.org/fact-tank/2017/10/23/in-polarized-era-fewer-americans-hold-a-mix-of-conservative-and-liberal-views/>.
  108. Kim, J.-S., & Choi, H. J. (2018). Effects of Capstone Design Program on Creative Leadership, Problem Solving Ability and Critical Thinking. *The Journal of the Korea Contents Association*, 18(4), 406–415. DOI: 10.5392/JKCA.2018.18.04.406.
  109. Kluger, A.N., & Itzchakov, G. (2022). The Power of Listening at Work. *Annual Review of Organizational Psychology and Organizational Behavior*, 9, 121–146. DOI: 10.1146/annurev-orgpsych-012420-091013.
  110. Kos, B. (2020). *Valley of Death – where your dreams go to die*. AgileLeanLife.com. Available (December 18, 2020) at: <https://agileleanlife.com/valley-of-death/>.
  111. Kozinets, R. (2017, November 16). *Americans are more divided than ever before - and social media is to blame for 'extremist divisions', warn experts*. Retrieved November 2020 from MailOnline. <https://www.dailymail.co.uk/sciencetech/article-5089893/How-social-media-builds-extremist-partisan-divisions.html>.
  112. Krikpatrick, S.A. & Locke, E.A. (1991). Leadership: Do traits matter? *Academy of Management Perspectives*, 5(2), 48–60. DOI: 10.5465/ame.1991.4274679.
  113. Kruse, K. (2013). *What is Leadership?* Forbes. Retrieved November 2020 from <https://www.forbes.com/sites/kevinkruse/2013/04/09/what-is-leadership/#186b4c8e5b90>.

114. Landry, L. (2018, October 4). *6 Characteristics of an Effective Leader*. Harvard Business School Online. Retrieved November 2020 from <https://online.hbs.edu/blog/post/characteristics-of-an-effective-leader>.
115. Landry, L. (2019, November 18). *8 Essential Leadership Communication Skills*. Harvard Business School Online. Retrieved November 2020 from <https://online.hbs.edu/blog/post/leadership-communication>.
116. Landry, L. (2020, March 5). *Why Managers Should Involve Their Team in the Decision-Making Process*. Harvard Business School Online. Retrieved December 2022 from <https://online.hbs.edu/blog/post/team-decision-making>.
117. Lawrence, F. (2007). *I am Legend*. Village Roadshow Pictured, Warner Bros. Pictures.
118. Leblanc, P.-M., Rousseau, V. & Harvey, J.-F. (2022). Leader humility and team innovation: The role of team reflexivity and team proactive personality. *Journal of Organizational Behavior*, 43(8), 1396–1409. DOI: 10.1002/job.2648.
119. Lerner, J. (1998) Angel Financing and Public Policy: An Overview, *Journal of Banking & Finance*, 22(6–8), 773–783. DOI: 10.1016/S0378-4266(98)00043-0.
120. Lights OnData. (2020, July 2). *The Difference Between Digitization, Digitalization, and Digital Transformation*. Retrieved November 2020 from <https://www.youtube.com/watch?v=jU9br5C-wqI&t=119s>.
121. Limsila, K. & Ogunlana, S.O. (2008). Performance and leadership outcome correlates of leadership styles and subordinate commitment. *Engineering, Construction and Architectural Management*, 15(2), 164–184. DOI: 10.1108/09699980810852682.
122. Linjuan, R. M. (2014). Why Leadership Matters to Internal Communication: Linking Transformational Leadership, Symmetrical Communication, and Employee Outcomes. *Journal of Public Relations Research*, 26(3), 256–279. DOI: 10.1080/1062726X.2014.908719.
123. Lipman, V. (2014). *Want Motivated Employees? Offer Ample Opportunities For Growth*. Forbes. Retrieved December 2022 from <https://www.forbes.com/sites/victorlipman/2014/01/24/want-motivated-employees-offer-ample-opportunities-for-growth/?sh=7cc6932152c6>.
124. Lips-Wiersma, M., Haar, J. & Wright, S. (2020). The Effect of Fairness, Responsible Leadership and Worthy Work on Multiple Dimensions of Meaningful Work. *Journal of Business Ethics*, 116, 35–52. DOI: 10.1007/s10551-018-3967-2.
125. Liu, S., Liu, X.L., Wang, H. & Wang, Y. (2022). Humble Leader Behavior and Its Effects on Performance at the Team and Individual Level: A Multi-Perspective Study. *Group & Organization Management*, 47(5) 1008–104. DOI: 10.1177/105960112111024429.
126. Lord, R. G., Day, D. V., Zaccaro, S. J., Avolio, B. J., & Eagly, A. H. (2017). Leadership in applied psychology: Three waves of theory and research. *Journal of Applied Psychology*, 102(3), 434–451. DOI: 10.1037/apl0000089.
127. Majumdar, B. & Ray, A. (2011). Transformational leadership and innovative work behavior. *Journal of the Indian Academy of Applied Psychology*, 37(1), 140–148.

128. Markham, S.K., Ward, S.J., Aiman-Smith, L. & Kingon, A.I. (2010). The Valley of Death as Context for Role Theory in Product Innovation. *Journal of Product Innovation Management*, 27(3), 402–417. DOI:10.1111/j.1540-5885.2010.00724.x.
129. Matt, C., Hess, T. & Benlian, A. (2015). Digital Transformation Strategies. *Business & Information Systems Engineering*, 57, 339–343. DOI: 10.1007/s12599-015-0401-5.
130. Maxwell, J. C. (1999). *The 21 indispensable qualities of a leader: Becoming the person that people will want to follow*. Nashville, TN: T. Nelson.
131. McCauley, C. (2006). *Developmental assignments: Creating learning experiences without changing jobs*. Greensboro, NC: Center For Creative Leadership Press.
132. Miles, J. (2022). *Instill Meaning & Value in Employee's Goals: How HR can Help*. Platinum Group. Retrieved December 2022 from <https://www.platinum-grp.com/blog/instill-meaning-value-in-employees-goals-how-hr-can-help>.
133. Miles, M. (2022). *Take the initiative: A how-to guide in 10 steps*. BetterUp.com. Retrieved December 2022 from <https://www.betterup.com/blog/taking-initiative>.
134. Mind Garden, Inc. (2022). *Multifactor Leadership Questionnaire™*. Retrieved September 2022 from <https://www.mindgarden.com/16-multifactor-leadership-questionnaire>.
135. Moore, M. (2019, November 5). *What is Industry 4.0? Everything you need to know*. TechRadar. Retrieved November 2020 from <https://www.techradar.com/news/what-is-industry-40-everything-you-need-to-know>
136. Možina, S. (2002). Odnosi, nasprotja v organizaciji. In Možina, S., Rozman., R., Glas, M., Tavčar, M., Pučko, D., Kralj, J., Ivanko., Š., Lipičnik, B., Gričar, J., Tekavčič, M., Dimovski, V., & Kovač, B. (2002). *Management, nova znanja za uspeh*. Radovljica: Didakta.
137. Muhuri, P.K., Shukla, A.K. & Abraham, A. (2019, February). Industry 4.0: A bibliometric analysis and detailed overview. *Engineering Applications of Artificial Intelligence*, 78, 218–235. DOI: 10.1016/j.engappai.2018.11.007.
138. Nagy, J., Oláh, J., Erdei, E., Mate, D. & Popp, J. (2018, September 29). The Role and Impact of Industry 4.0 and the Internet of Things on the Business Strategy of the Value Chain—The Case of Hungary. *Sustainability*, 10(10), 3491. DOI: 10.3390/su10103491.
139. Nemet, G.F., Zipperer, V. & Kraus, M. (2018). The valley of death, the technology pork barrel, and public support for large demonstrate on projects. *Energy Policy*, 119, 154–167. DOI: 10.1016/j.enpol.2018.04.008.
140. Northouse, P.G. (2007). *Leadership Theory and Practice*, 4<sup>th</sup> ed., Sage Publications, Thousand Oaks, CA.
141. Novartis. (2020). *Associates*. Retrieved November 2020 from <https://www.novartis.com/news/novartis-corporate-fact-sheet/associates>.
142. Nulty, P. (1994, April 4). *The National Business Hall of Fame*. Fortune Magazine. Retrieved November 2020 from [https://money.cnn.com/magazines/fortune/fortune\\_archive/1994/04/04/79125/index.htm](https://money.cnn.com/magazines/fortune/fortune_archive/1994/04/04/79125/index.htm).

143. Oberer, B. & Erkollar, A. (2018, November). Leadership 4.0: Digital Leaders in the Age of Industry 4.0. *International Journal of Organizational Leadership*. Retrieved December 2022 from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3337644](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3337644).
144. Ozaralli, N. (2003). Effects on transformational leadership on empowerment and team effectiveness. *Leadership & Organization Development Journal*, 24(6), 335–344. DOI: 10.1108/01437730310494301.
145. Paais, M. & Pattiruhu, J.R. (2020). Effect of Motivation, Leadership, and Organizational Culture on Satisfaction and Employee Performance. *The Journal of Asian Finance, Economics and Business*, 7(8), 577–588. DOI: 10.13106/JAFEB.2020.VOL7.NO8.577.
146. Pagon., M, Banutai., E & Bizjak., U. (2008). *Leadership competencies for successful change management, a preliminary study report*, University of Maribor, Slovenia, 1–25.
147. Pak, K., Polikoff, M. S., Desimone, L. M., & Saldívar García, E. (2020). The Adaptive Challenges of Curriculum Implementation: Insights for Educational Leaders Driving Standards-Based Reform. *AERA Open*, 6(2). DOI: 10.1177/2332858420932828.
148. Palanski, M.E. & Yammarino, F.J. (2017, May 2). Integrity and Leadership: Clearing the Conceptual Confusion. *European Management Journal*, 25(3), 171–184.
149. Pattnaik, S.C. & Sahoo, R. (2021). Transformational leadership and organizational citizenship behaviour: the role of job autonomy and supportive management. *Management Research Review*, 44(10), 1409–1426. DOI: 10.1108/MRR-06-2020-0371.
150. Patton, M. Q. (1990). *Qualitative Evaluation and Research Methods*, 2<sup>nd</sup> ed., Newbury Park, CA: Sage.
151. Pearce, C.L., & Ensley, M.D. (2004). A reciprocal and longitudinal investigation of the innovation process: the central role of shared vision in product and process innovation teams(PPITs). *Journal of Organizational Behavior*, 25(2), 259–278. DOI: 10.1002/job.235.
152. Petrilli, A. (2022, February 24). *7 Habits to Make You a Better Leader and Give You an Edge on Competition*. Entrepreneur. Retrieved December 2022 from <https://www.entrepreneur.com/leadership/7-habits-to-make-you-a-better-leader-and-give-you-an-edge/418196>.
153. Price-Dowd, C.F.J. (2020). Your leadership style: why understanding yourself matters. *BMJ Leader*, 4, 165–167. DOI: 10.1136/leader-2020-000218.
154. Podsakoff, P.M., MacKenzie, S.B., Moorman, R.H. & Fetter, R. (1990). Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviours. *Leadership Quarterly*, 1(2), 107–142. DOI: 10.1016/1048-9843(90)90009-7.
155. Reed, K.M. & Allen, J.A. (2021). *Suddenly Virtual: Making Remote Meetings Work*, 1<sup>st</sup> ed., Jonh Wiley & Sons, Hoboken, New Jersey, US.
156. Reiter-Palmon, R. (2003). Predicting Leadership Activities: The Role of Flexibility. *Psychology Faculty Publications*, 1(2), 124–136.
157. Riggio, R.E. (2014, April 27). *The Top 10 Leadership Competencies*. Psychology Today. Retrieved November 2020 from

- <https://www.psychologytoday.com/intl/blog/cutting-edge-leadership/201404/the-top-10-leadership-competencies?tr=HomeEssentials>.
158. Rizvi, H. (2022, September 21). *Authentic Leadership Vs Transformational Leadership, Difference, Pros And Cons*. Hidayat Rizvi. Retrieved December 2022 from <https://hidayatrizvi.com/authentic-leadership-vs-transformational-leadership/>.
  159. Rotemberg, J.J. & Saloner, G. (1993, November 1). Leadership Style and Incentives. *Management Science*, 39(11), 1299–1318. DOI: 10.1287/mnsc.39.11.1299.
  160. Sadler, P. (2003). *Leadership*. 2nd ed., Kogan Page, London.
  161. Sahoo, A. (2016). *What Does It Take To Convert An Innovative Idea Into A Scalable Product?*. Entrepreneur India. Retrieved December 2022 from <https://www.entrepreneur.com/en-in/technology/what-does-it-take-to-convert-an-innovative-idea-into-a/274454>.
  162. Sarros, J.C., Cooper, B.K. & Santora, J.C. (2008). Building a Climate for Innovation Through Transformational Leadership and Organizational Culture. *Journal of Leadership & Organizational Studies*, 15(2), 145–158. DOI:10.1177/1548051808324100.
  163. Santoso, H., Elidjen, E., Abdinagoro, S & Arief, M. (2019). The role of creative self-efficacy, transformational leadership, and digital literacy in supporting performance through innovative work behavior: Evidence from telecommunications industry. *Management Science Letters*, 9(13), 2305–2314. DOI: 10.5267/j.msl.2019.7.024.
  164. Schmid Mast, M., Jonas, K., Cronauer, C. K., & Darioly, A. (2012). On the importance of the superior's interpersonal sensitivity for good leadership. *Journal of Applied Social Psychology*, 42, 1043–1068. DOI:10.1111/j.1559-1816.2011.00852.x.
  165. Schriesheim, C.A., Castro, S.L., Zhou, X.(T.), & DeChurch, L.A. (2006). An investigation of path-goal and transformational leadership theory predictions at the individual level of analysis. *The Leadership Quarterly*, 17(1), 21–38. DOI:10.1016/j.leaqua.2005.10.008
  166. Schwab, K. (2016, January 14). *The Fourth Industrial Revolution: what it means, how to respond*. World Economic Forum. Retrieved November 2020 from <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>.
  167. Shafee, T., & Buttery, H. (2020). *Research Data Management at La Trobe* (Version 8). La Trobe. Presentation. DOI: 10.26181/5e5c41c9f1dde.
  168. Shafique, I., & Kalyar, M. (2018). Linking Transformational Leadership, Absorptive Capacity, and Corporate Entrepreneurship. *Administrative Sciences*, 8(2), 9. DOI: 10.3390/admsci8020009.
  169. Shahzad, F., Luqman, R. A., Khan, A. R., & Shabbir, L. (2012). Impact of organizational culture on organizational performance: An overview. *Interdisciplinary Journal of Contemporary Research in Business*, 3(9), 975–985.
  170. Sosik, J.J., Avolio, B.J., & Kahai, S.S. (1997). Effects of leadership style and anonymity on group potency and effectiveness in a group decision support system

- environment. *Journal of Applied Psychology*, 82, 89–103. DOI: 10.1037/0021-9010.82.1.89.
171. Sousa, M.J. & Rocha, Á. (2019). Leadership styles and skills developed through game-based learning. *Journal of Business Research*, 94, 360–366. DOI: 10.1016/j.jbusres.2018.01.057.
172. StartUps.com. (2019, March 29). *Angel Investors vs. Venture Capitalists*. Retrieved November 2020 from <https://www.startups.com/library/expert-advice/angel-investors-vs-venture-capitalists>
173. Stone, A.G., Russell, R.F. & Patterson, K. (2004). Transformational versus servant leadership: a difference in leader focus. *The Leadership & Organizational Development Journal*, 25(4), 349–361. DOI: 10.1108/01437730410538671.
174. Stupple, L. (2022, May 30). *4 Reasons Intuition is an Essential Leadership Skill*. Entrepreneur. Retrieved December 2022 from <https://www.entrepreneur.com/leadership/4-reasons-intuition-is-an-essential-leadership-skill/426726>.
175. Svetlik, I. (2009). *Oblikovanje dela in kakovost delovnega življenja*. V Svetlik, I., Zupan, N., Stanojević, M., Možina, S., Kohont, A., & Kaše, R. (2009). Menedžment človeških virov. Ljubljana: Fakulteta za družbene vede.
176. Škerlavaj, M., Černe, M., & Dysvik, A. (2014). I get by with a little help from my supervisor: Creative-idea generation, idea implementation, and perceived supervisor support. *The Leadership Quarterly*, 25(5), 987–1000. DOI: 10.1016/j.leaqua.2014.05.003.
177. Škerlavaj, M., Černe, M., Dysvik, A., Nerstad, C. G. L., & Su, C. (2017). Riding two Horses at Once: The Combined Roles of Mastery and Performance Climates in Implementing Creative Ideas. *European Management Review*, 16(2), 285–302. DOI:10.1111/emre.12151.
178. Tarver, E. (2020). *Research and Development (R&D) vs. Product Development*. Investopedia. Retrieved December 2022 from <https://www.investopedia.com/ask/answers/042815/what-difference-between-research-and-development-and-product-development.asp>.
179. Tekleab, A.G. Sims, H.P.Jr., Yun, S., Tesluk, P.E. & Cox, J. (2007, December 18). Are We On the Same Page? Effects of Self-Awareness of Empowering and Transformational Leadership. *Journal of Leadership & Organizational Studies*, 14(3), 185–201. DOI: 10.1177/1071791907311069.
180. Thach, E. & Thompson, K. J. (2007). Trading places – Examining leadership competencies between forprofit vs. Public and non-profit leaders. *Leadership & Organization Development Journal*, 28(4), 356–375. DOI: 10.1108/01437730710752229.
181. The Institute of Leadership & Management. (2017). *Leadership Essentials: Taking initiative*. Retrieved February 2021 from <https://www.abdo.org.uk/wp-content/uploads/2018/01/Leadership-Essential-27-Taking-Initiative.pdf>.

182. The Verge. (2015, January 22). *Bill Gates interview: How the world will change by 2030*. Retrieved November 2020 from [https://www.youtube.com/watch?v=8RETFyDKcw0&feature=emb\\_title](https://www.youtube.com/watch?v=8RETFyDKcw0&feature=emb_title).
183. The World Bank. (2020). *Research and development expenditure (% of GDP) - China, World, United States, Germany, Slovenia*. Retrieved December 2020 from <https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?end=2018&locations=CN-1W-US-DE-SI&start=2000>
184. Tsai, Y.-S., Poquet, O., Gašević, D., Dawson, S. & Pardo, A. (2019, July). Complexity leadership in learning analytics: Drivers, challenges and opportunities. *British Journal of Educational Technology*, 50(6), 2839–2854. DOI: 10.1111/bjet.12846.
185. Tse, H., & Mitchell, R. (2010). A theoretical model of transformational leadership and knowledge creation: The role of open-mindedness norms and leader–member exchange. *Journal of Management & Organization*, 16(1), 83–99. DOI:10.5172/jmo.16.1.83.
186. Van de Ven, A.H. & Grazman, D.N. (1985). *Technical Innovation, Learning, and Leadership*. Technological Oversights and Foresight, Cambridge, UK: Cambridge University Press.
187. Vey, K., Fandel-Meyer, T., Zipp, J. & Schneider, C. (2017). Learning & Development in Times of Digital Transformation: Facilitating a Culture of Change and Innovation. *International Journal of Advanced Corporate Learning*, 10(1), 22–32. DOI: 10.22.10.3991/ijac.v10i1.6334.
188. Vecchio, R. P., Justin, J. E., & Pearce, C. L. (2008). The utility of transactional and transformational leadership for predicting performance and satisfaction within a path-goal theory framework. *Journal of Occupational and Organizational Psychology*, 81(1), 71–82. DOI:10.1348/096317907x202482.
189. Villaluz, V.C. & Hechanova, M.R.M. (2019). Ownership and leadership in building an innovation culture. *Leadership & Organization Development Journal*, 40(2), 138–150. DOI: 10.1108/LODJ-05-2018-0184.
190. Vinnakota, R. (2017, January 24). *How Social Media Divides Us*. Aspen Institute. Retrieved November 2020 from <https://www.aspeninstitute.org/blog-posts/social-media-divides-us/>
191. Waldman, D.A., & Yammarino, F.J. (1999). CEO charismatic leadership: Levels-of-management and levels-of-analysis effects. *Academy of Management Review*, 24, 266–285. DOI: 10.2307/259082.
192. Wang, G., Oh, I.-S., Courtright, S.H. & Colbert, A.E. (2011). Transformational Leadership and Performance Across Criteria and Levels: A Meta-Analytic Review of 25 Years of Research. *Group & Organization Management*, 36(2), 223–270. DOI:10.1177/1059601111401017.
193. Westerman, G., Bonnet, D. & McAfee, A. (2014). *The Nine Elements of Digital Transformation*. MIT Sloan, Management Review. Retrieved December 2020 from <https://dixital.cec.es/wp-content/uploads/presentacions/presentacion08.pdf>.

194. Wilkinson, D., & Birmingham, P (2003). *Using Research Instruments: A Guide for Researchers*. London: Routledge Falmer.
195. World Bank. (2020). *Research and development expenditure (% of GDP)*. Retrieved December 2020 from <https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?end=2018&locations=CN-1W-US-DE-SI&start=2000>.
196. Wu, F.Y. (2009). The relationship between leadership styles and foreign English teacher's job satisfaction in adult English cram schools: evidences in Taiwan. *The Journal of American Academy of Business*, 14(2), 75–82.
197. Wu, W., Liu, Y., Song, L.J. & Liu, J. (2006). Effects of organizational leadership on employee commitment: the moderating role of emotional intelligence. *Journal of Psychology in Chinese Societies*, 7(2), 283–306.
198. Yulk, G.A. (2010). *Leadership in Organizations*. 7th ed, Prentice Hall, Upper Saddle River, NJ.
199. Yulk, G.A. & Van Fleet, D. (1982). Cross-situational, multi method research on military leader effectiveness. *Organizational Behaviour and Human Performance*, 30(4), 87–108. DOI: 10.1016/0030-5073(82)90235-5.
200. Yahaya, R. & Ebrahim, F. (2016). Leadership styles and organizational commitment: literature review. *Journal of Management Development*, 35(2), 190–216. DOI: 10.1108/JMD-01-2015-0004.
201. Yang, I. (2015). Positive effects of laissez-faire leadership: conceptual exploration. *The Journal of Management Development*, 34(10), 1246–1261. DOI: 10.1108/JMD-02-2015-0016.
202. Yorges, S. L., Weiss, H. M., & Strickland, O. J. (1999). The effect of leader outcomes on influence, attributions, and perceptions of charisma. *Journal of Applied Psychology*, 84(3), 428–436. DOI: 10.1037/0021-9010.84.3.428.
203. Zaccaro, S.J., Gilbert, J.A., Thor, K.K. & Mumford, M.D. (1991). Leadership and social intelligence: Linking social perceptiveness and behavioral flexibility to leader effectiveness. *The Leadership Quarterly*, 2(4), 317–342. DOI: 10.1016/1048-9843(91)90018-W.
204. Zhu, W., Avolio, B. J., & Walumbwa, F. O. (2009). Moderating role of follower characteristics with transformational leadership and follower work engagement. *Group & Organization Management*, 34, 590–619. DOI: 10.1177/1059601108331242.
205. Zuraik, A. & Kelly, L. (2019). The role of CEO transformational leadership and innovation climate in exploration and exploitation. *European Journal of Innovation Management*, 22(1), 84–104. DOI: 10.1108/EJIM-10-2017-0142.
206. Zwilling, M. (2013, February 18). *10 Ways For Startups To Survive The Valley Of Death*. Forbes. Retrieved December 2020 from <https://www.forbes.com/sites/martinzwilling/2013/02/18/10-ways-for-startups-to-survive-the-valley-of-death/?sh=3ea6a24369ef>







## **APPENDICES**



## **Appendix 1: Povzetek (Summary in Slovene language)**

Med pripravo magistrskega dela smo skušali prepoznati najprimernejše in ključne dejavnike, koncepte ter večšine uspešnega vodenja razvojno–raziskovalnih organizacij v času uvajanja velikih sprememb.

Naše raziskovalno delo smo začeli s pregledom obstoječe literature in predhodnih raziskav o *transformacijskem vodenju*, procesu *digitalne preobrazbe* in prehodu »*doline smrti*«. Pregled literature smo opravili z deskriptivno metodo in sintezo.

Za empirični del naše raziskave smo izvedli poglobljene nestrukturirane intervjuje s štirimi vodjami razvojno–raziskovalnih oddelkov organizacij, ki se razlikujejo po velikosti in delujejo v različnih poslovnih sektorjih. Intervjuje smo izvedli v:

- zagonskem podjetju: raziskovalno in razvojno podjetje, ki deluje na področju podatkovne znanosti za farmacevtska podjetja;
- dveh manjših proizvodnih podjetjih: v oddelkih za raziskave in razvoj podjetij, ki se ukvarjata z materiali na osnovi polimerov;
- globalnem podjetju: v oddelku za raziskave in razvoj farmacevtskega podjetja.

Opravili smo poglobljene intervjuje z vodjami in iskali specifične informacije ter poglobljene vpoglede. Za ugotavljanje stopnje transformacijskega stila vodenja smo uporabili MLQ vprašalnik, ki sta ga izpolnila vodja in eden od njegovih podrejenih.

Na podlagi informaciji pridobljenih iz intervjujev in ankete smo opisali, kako se transformacijsko vodenje razlikuje v oddelkih za raziskave in razvoj različnih organizacij, kako digitalna implementacija in transformacija vplivata na delovne procese organizacij, kaj je pomembno, da se organizacija uspešno spopade z »*dolino smrti*« in raziskali, ali obstaja povezava med transformacijskim stilom vodenja in uspešnostjo v procesu digitalne transformacije oziroma prehodom čez »*dolino*«.

S pregledom znanstvenih in poljudnih virov na temo transformacijskega vodenja in digitalne transformacije ter izvedbo multi-metodološke raziskave smo prišli do naslednjih zaključkov. Prvi konstrukt, ki smo ga proučevali, je stopnja transformacijskega vodenja. Elementi transformacijskega vodenja so bili močno zaznani v dveh organizacijah (1 in 4). Transformacijsko vodenje je eden najnovejših konceptov vodenja, ki je primeren za vodenje razvojno–raziskovalnih oddelkov. Ta vrsta vodenja je povezana z opolnomočenjem, motivacijo in napredkom. Drugi konstrukt, ki smo ga proučevali, je stopnja digitalne transformacije, ki je prisotna v podjetjih. Vse štiri organizacije in njihovi oddelki za raziskave in razvoj se zavedajo pomena sprejemanja digitalnih iniciativ. Na podlagi informacij, zbranih v intervjujih, sta organizaciji 1 in 4 v procesu digitalne transformacije. Po drugi strani pa sta organizaciji 2 in 3 trenutno v procesu digitalizacije. S pomočjo

primarnih podatkov in analize odgovorov sklepamo, da vodja 1 in 4 uporabljata transformacijski slog vodenja na poti digitalne transformacije organizacij, v katerih delujeta. Opazili smo povezanost med transformacijskim stilom vodenja in iniciativami za digitalno transformacijo.

## Appendix 2: MLQ Survey

Question Number	Question
1	Zaposlenim zagotavljam pomoč v zameno za njihova prizadevanja
2	Ponovno preučim kritične predpostavke, da vprašam, ali so ustrezne
3	Če ne pride do resnih težav ne posredujem
4	Osredotočam se na nepravilnosti, napake, izjeme in odstopanja od standardov
5	Ko se pojavijo težave se jih izogibam
6	Govorim o zame najpomembnejših vrednotah in prepričanjih
7	Po potrebi sem odsoten
8	Pri reševanju problemov iščem različne perspektive
9	Optimistično govorim o prihodnosti
10	V zaposlenih vzbujam ponos, da sodelujejo z mano
11	Natančno razložim, kdo je odgovoren za doseganje ciljev uspešnosti
12	Čakam, da gre kaj narobe, preden ukrepam
13	Navdušeno govorim o tem, kaj je treba doseči
14	Sem specifičen glede pomembnosti poslanstva organizacije
15	Čas posvečam poučevanju in treniranju zaposlenih
16	Jasno povem, kaj lahko zaposleni pričakujejo, ko so cilji uspešnosti doseženi
17	Moj moto je "Če se ne pokvari, ne popravljam." - ne spreminjam stvari, če jih ni potrebno
18	Presegam lastne interese za dobro skupine
19	Vsakega zaposlenega obravnavam kot posameznika in ne le kot člana skupine
20	S svojim delovanjem dokazujem, da morajo težave postati kronične pred ukrepanjem
21	Delujem na način, ki gradi moje spoštovanje
22	Vso svojo pozornost posvečam obravnavanju napak, pritožb
23	Upoštevam moralne in etične posledice mojih odločitev
24	Spremljam vse napake
25	Prikazujem občutek moči in samozavesti
26	Artikuliram prepričljivo vizijo prihodnosti
27	Usmerjam pozornost zaposlenih k neizpolnjenim standardom
28	Izogibam se sprejemanju odločitev
29	Obravnavam individualno: zavedam se, da imam drugačne potrebe, sposobnosti in želje od drugih
30	Zaposlene pripravim, da na probleme gledajo z različnih zornih kotov
31	Zaposlenim pomagam razviti individualne veščine
32	Predlagam nove načine, kako dokončati naloge
33	Zamujam z odgovori na nujna vprašanja
34	Poudarjam pomen občutka skupnega poslanstva
35	Izražam zadovoljstvo nad zaposlenimi, ko ti izpolnijo pričakovanja
36	Izražam prepričanje, da bodo cilji doseženi
37	Sem učinkovit pri izpolnjevanju potreb zaposlenih, povezanih z delom
38	Uporabljam metode vodenja, ki zadovoljujejo
39	Pripravim in motiviram zaposlene na način, da naredijo več, kot so sami pričakovali
40	Učinkovito zastopam zaposlene pri višji avtoriteti
41	Moje delo zaposlene zadovoljuje
42	Povečujem željo zaposlenih po uspehu
43	Sem učinkovit pri izpolnjevanju organizacijskih zahtev
44	Povečujem pripravljenost zaposlenih, da se bolj potrudijo
45	Vodim skupino, ki je učinkovita





## MLQ Survey Results and Analysis

Question Number	Leader 1	Average	Transformational leadership	Passive avoidant leadership	Transactional leadership	Inspirational motivation	Idealized Influence (behaviours)	Idealized Influence (Attributes)	Management by exception (active)	Contingent reward	Leissez-Faire	Management by exception (passive)	Effectiveness	Extra effort	Satisfaction												
1	5	5	0	0	1	5	0	0	0	1	5	0	0	0	0												
2	4	4	0	0	1	0	0	0	0	0	0	0	0	0	0												
3	4	3,5	0	1	3,5	0	0	0	0	0	0	1	3,5	0	0												
4	2	4	0	0	1	3	0	0	1	3	0	0	0	0	0												
5	1	1	0	1	1	0	0	0	0	0	1	1	0	0	0												
6	4	4	1	4	0	0	1	4	0	0	0	0	0	0	0												
7	5	5	0	1	5	0	0	0	0	0	1	5	0	0	0												
8	5	3	1	4	0	0	0	0	0	0	0	0	0	0	0												
9	5	4	1	4,5	0	0	1	4,5	0	0	0	0	0	0	0												
10	5	5	1	5	0	0	0	0	1	5	0	0	0	0	0												
11	4	5	0	0	1	4,5	0	0	0	1	4,5	0	0	0	0												
12	4	3	0	1	3,5	0	0	0	0	0	0	1	3,5	0	0												
13	5	5	1	5	0	1	5	0	0	0	0	0	0	0	0												
14	4	4	1	4	0	0	1	4	0	0	0	0	0	0	0												
15	4	5	1	4,5	0	0	0	0	0	0	0	0	0	0	0												
16	5	3	0	0	1	4	0	0	0	1	4	0	0	0	0												
17	3	2	0	1	2,5	0	0	0	0	0	0	0	0	0	0												
18	5	4	1	4,5	0	0	0	0	0	0	0	0	0	0	0												
19	5	4	1	4,5	0	0	0	0	0	0	0	0	0	0	0												
20	1	1	0	1	1	0	0	0	0	0	0	1	1	0	0												
21	5	5	1	5	0	0	0	1	5	0	0	0	0	0	0												
22	2	3	0	0	1	2,5	0	0	1	2,5	0	0	0	0	0												
23	5	5	1	5	0	0	0	0	0	0	0	0	0	0	0												
24	2	5	0	0	1	3,5	0	0	1	3,5	0	0	0	0	0												
25	4	5	1	4,5	0	0	0	1	4,5	0	0	0	0	0	0												
26	5	5	1	5	0	0	1	5	0	0	0	0	0	0	0												
27	3	2	0	0	1	2,5	0	0	1	2,5	0	0	0	0	0												
28	1	1	0	1	1	0	0	0	0	0	1	1	0	0	0												
29	5	5	1	5	0	0	0	0	0	0	0	0	0	0	0												
30	5	3	1	4	0	0	0	0	0	0	0	0	0	0	0												
31	5	5	1	5	0	0	0	0	0	0	0	0	0	0	0												
32	4	5	1	4,5	0	0	0	0	0	0	0	0	0	0	0												
33	2	1	0	1	1,5	0	0	0	0	0	0	1	1,5	0	0												
34	5	3	1	4	0	0	1	4	0	0	0	0	0	0	0												
35	5	5	0	0	1	5	0	0	0	1	5	0	0	0	0												
36	5	5	1	5	0	0	1	5	0	0	0	0	0	0	0												
37	4	5	0	0	0	0	0	0	0	0	0	0	1	4,5	0												
38	4	5	0	0	0	0	0	0	0	0	0	0	0	1	4,5												
39	5	3	0	0	0	0	0	0	0	0	0	0	0	1	4												
40	4	5	0	0	0	0	0	0	0	0	0	0	1	4,5	0												
41	4	5	0	0	0	0	0	0	0	0	0	0	0	0	1												
42	5	5	0	0	0	0	0	0	0	0	0	0	0	1	5												
43	4	3	0	0	0	0	0	0	0	0	0	0	1	3,5	0												
44	5	4	0	0	0	0	0	0	0	0	0	0	0	1	4,5												
45	5	4	0	0	0	0	0	0	0	0	0	0	1	4,5	0												
SUM		19	87	8	19	8	30	4	19,5	3	12	3	14,5	4	11,5	4	18,5	3	7	4	9,5	4	17	3	13,5	2	9
Average		4,579		2,375	3,750	4,875	4,000	4,833	2,875	4,625	2,333	2,375	4,250	4,500	4,500												
Coefficient		0,916		0,475	0,750	0,975	0,800	0,967	0,575	0,925	0,467	0,475	0,850	0,900	0,900												

Question Number	Leader 2	Average	Transformational leadership	Passive avoidant leadership	Transactional leadership	Inspirational motivation	Idealized Influence (behaviours)	Idealized Influence (Attributes)	Management by exception (active)	Contingent reward	Leissez-Faire	Management by exception (passive)	Effectiveness	Extra effort	Satisfaction													
1	4,3	3,5	0	0	1	3,5	0	0	0	1	3,5	0	0	0	0													
2	3,5	4	0	0	0	0	0	0	0	0	0	0	0	0	0													
3	3,4	3,5	0	1	3,5	0	0	0	0	0	0	1	3,5	0	0													
4	5	5	0	0	1	5	0	0	0	1	5	0	0	0	0													
5	1,1	1	0	1	1	0	0	0	1	0	0	1	1	0	0													
6	2,4	3	1	3	0	0	0	1	3	0	0	0	0	0	0													
7	3,2	2,5	0	1	2,5	0	0	0	0	0	1	2,5	0	0	0													
8	4,5	4,5	1	4,5	0	0	0	0	0	0	0	0	0	0	0													
9	3,5	4	1	4	0	0	1	4	0	0	0	0	0	0	0													
10	3,5	4	1	4	0	0	0	0	1	4	0	0	0	0	0													
11	4,5	4,5	0	0	1	4,5	0	0	0	0	1	4,5	0	0	0													
12	2,1	1,5	0	1	1,5	0	0	0	0	0	0	1	1,5	0	0													
13	4,5	4,5	1	4,5	0	0	1	4,5	0	0	0	0	0	0	0													
14	1,5	3	1	3	0	0	0	0	1	3	0	0	0	0	0													
15	3,5	4	1	4	0	0	0	0	0	0	0	0	0	0	0													
16	2,5	3,5	0	0	1	3,5	0	0	0	1	3,5	0	0	0	0													
17	3,1	2	0	1	2	0	0	0	0	0	0	0	0	0	0													
18	1,1	1	1	1	0	0	0	0	0	0	0	0	0	0	0													
19	5,4	4,5	1	4,5	0	0	0	0	0	0	0	0	0	0	0													
20	2,1	1,5	0	1	1,5	0	0	0	0	0	0	1	1,5	0	0													
21	5,3	4	1	4	0	0	0	0	1	4	0	0	0	0	0													
22	4,3	3,5	0	0	1	3,5	0	0	1	3,5	0	0	0	0	0													
23	5,5	5	1	5	0	0	0	0	0	0	0	0	0	0	0													
24	5,5	5	0	0	1	5	0	0	1	5	0	0	0	0	0													
25	4,3	3,5	1	3,5	0	0	0	0	1	3,5	0	0	0	0	0													
26	3,5	4	1	4	0	0	1	4	0	0	0	0	0	0	0													
27	1,3	2	0	0	1	2	0	0	1	2	0	0	0	0	0													
28	1,1	1	0	1	1	0	0	0	0	0	1	1	0	0	0													
29	5,3	4	1	4	0	0	0	0	0	0	0	0	0	0	0													
30	3,5	4	1	4	0	0	0	0	0	0	0	0	0	0	0													
31	4,4	4	1	4	0	0	0	0	0	0	0	0	0	0	0													
32	5,5	5	1	5	0	0	0	0	0	0	0	0	0	0	0													
33	3,2	2,5	0	1	2,5	0	0	0	0	0	1	2,5	0	0	0													
34	2,5	3,5	1	3,5	0	0	0	1	3,5	0	0	0	0	0	0													
35	5,5	5	0	0	1	5	0	0	0	1	5	0	0	0	0													
36	3,5	4	1	4	0	0	1	4	0	0	0	0	0	0	0													
37	5,4	4,5	0	0	0	0	0	0	0	0	0	0	1	4,5	0													
38	3,4	3,5	0	0	0	0	0	0	0	0	0	0	0	0	1													
39	2,4	3	0	0	0	0	0	0	0	0	0	0	0	1	3													
40	4,5	4,5	0	0	0	0	0	0	0	0	0	0	1	4,5	0													
41	4,4	4	0	0	0	0	0	0	0	0	0	0	0	0	1													
42	3,5	4	0	0	0	0	0	0	0	0	0	0	0	1	4													
43	4,5	4,5	0	0	0	0	0	0	0	0	0	0	1	4,5	0													
44	3,4	3,5	0	0	0	0	0	0	0	0	0	0	0	1	3,5													
45	2,4	3	0	0	0	0	0	0	0	0	0	0	1	3	0													
SUM		19 73,5	8	15,5	8	32	4	16,5	3	9,5	3	11,5	4	15,5	4	16,5	3	4,5	4	9	4	16,5	3	10,5	2	7,5		
Average		3,868		1,938		4,000		4,125		3,167		3,833		3,875		4,125		1,500		2,250		4,125		3,500		3,750		
Coeficient		0,774		0,388		0,800		0,825		0,633		0,767		0,775		0,825		0,300		0,450		0,825		0,700		0,750		

### Appendix 3: Questionnaire

Št.	Sklop vprašanj	Primerjava	Vprašanje	Podvprašanja	Tema	Vir
1	Leadership	The Role of a Leader	Kakšno vlogo pričakujete, da ima vodja v organizaciji?			Bass et al. (2003); Penger & Dimovski (2006)
2	Leadership	Leader Characteristics	Kakšen vodja si prizadevate biti? Katere lastnosti in menit, da so ključne za uspešno vodenje?	Zakaj se vam to zdi pomembno?		
				Ali opažate, da ima karizma velik vpliv na zaposlene in uspešnost vodenja? Ali občutite spremembo percepcija vas spremeni ob izkazani skromnosti? Kakšen vpliv ima tako skromnost in karizma na sodelovanje s poslovnimi partnerji?	Charisma, Self-awareness, Partnership skills,	Esimai (2018); Business News Daily (2020); Darino (2018)
				Kako pomembna se vam zdi računalniška pismenost vodje - na katerem nivoju jo pričakujete pri uspešnem vodji?	Tech Savviness	Darino (2018)
				Kakšen pomen pri uspešnem vodenju imata po vašem mnenju odkritost in feedback? Imate morda zadržke do tega? Ali je za vas pomembna motivacija pri delu? Kaj se vam zdi da je najboljši motivator na delovnem mestu - denar, plača, nagrada, napredovanje, pohvala, odnos z vodjo? Kako pomemben je za vas osebni in strokoven razvoj na delovnem mestu??	Komunikacija, Feedback, Motivacija	Aas, et al. (2008); Bower (1997); Linjuan (2004); Dewan & Myatt (2008); Flauto, (1999); Gardner (1987)
			Se vam zdi pomembno, da ste kot vodja dosegljiv za zaposlene kadarkoli vas potrebujejo in da se z njim pogovorite tako glede službenih kot tudi osebnih problemov? Kako pomembno je za vas aktivno poslušanje? Zavestno pristopate k le temu? Odprtost za nove predloge/ideje, fleksibilnost in prilagodljivost,	Dostopnost, Aktivno poslušanje, odprtost	Bower (1997); Nulty (1994); Grashov et al. (2009)	

				Kaj vam pomaga pri razumevanju zaposlenih? Se vam zdi pomembno, da se vodja zna postaviti v kožo zaposlenega in videti položaj v katerem se je znašel?	Empatija	Pagon et.al. (2008); Grashov et al. (2009); Schwab (2016); McCauley (2006)
3	Leadership	Leader Characteristics	Kakšnega odnosa z zaposlenimi si želite? Kako komunicirate z njimi?	Zgolj profesionalni ali tudi prijateljski? Koliko je pri delu z ljudmi pomembno zaupanje? Vam je pomembno, da vam zaposleni zaupajo? Vam je pomembno, da vi zaupate njim? Si želite striktno komunikacijo ali raje bolj svobodno? Formalni ali neformalni način? Osebno ali preko posrednih medijev? Želite biti vključeni na sestanke in vedeti za dogajanje v celotni organizaciji ali se raje osredotočate lena svoje naloge in cilje?	Odnos, komunikacija	Maxwell (1999); Hoyt et al. (2006);
4	Leadership	Leader Characteristics	Katerih značilnosti/lastnosti se kot vodja zavestno izogibate?	Zakaj? Kakšen vpliv le te pričakujete?		
6	Digital Transformation	Areas of digitalization, Perception of its importance	Na katerih področjih vašega delovanja se poslužujete tehnologije? Kakšen pomen za vas predstavlja uporaba tehnologijo na delovnem mestu?	Se vam zdi, da je ta ključna? Kako vam pomaga pri vašem delu? Kje iščete rešitve oz možnosti za izboljšanje (so to priporočila zaposlenih, pogovor z drugimi vodjami, splet..)?	Impact, Source of information	Schwab (2016)
7	Digital Transformation	Level of digitalization	Kako bi ocenili stopnjo tehnološke razvitosti vaše organizacije?	Kako se je ta spremenila v zadnjem letu? Ali vidite prednosti digitalizacije in možnosti za nadaljevanje procesa?	Digitizirano, digitalizirano, digitalna transformacija	Gartner (2020)
8	Digital Transformation	Driver for digital transformation	Kaj vas je privedlo do trenutnega stanja digitaliziranosti?	Konkurenca, optimizacija procesa, posodabljanje celotnega sistema organizacije..?	Konkurenca	Matt et al. (2015); Hoberg et al., (2017)

9	Digital Transformation	4	Kakšne priložnosti vam ponuja oziroma odpira digitalizacija? Kakšne izzive prinaša s seboj? Kakšen vpliv ima na vaše delovanje?		Izzivi, vpliv, priložnosti	Schwab (2016); Bernstein and Raman (2015); Deloitte Insights (2018); Nagy (2018).
10	Digital Transformation	Areas for further digital transformation	Na katerih področjih vašega delovanja načrtujete digitalno transformacijo organizacije/ nadaljnjo digitalizacijo?	Imate načrt za nadaljnji digitalni razvoj? Delate na tem razvoju aktivno ali je le ta bolj naključen in po potrebi? Če ga imate- kakšen je vaš cilj? Kako se ta strategija razlikuje od ostalih katere imate načrtovane?	Strategija digitalne transformacije	Matt et al. (2015)
11	Digital Transformation	Key factors for success	Kateri so po vašem mnenju ključni faktorji za uspeh pri digitalni transformaciji?		Ključni faktorji uspeha	Forth et al. BCG (2020)
12	Valley of Death	Realization and perception	Ste se kot mlado podjetje zavedali faze 'valley of death'? Kako dojemate (ste dojemali) to fazo? Kakšna je (bila) za vaše podjetje?			Barron & Amorós (2020)
13	Valley of Death	What was <i>the valley crossing</i> like	Kaj je najbolj ogrozilo 'prehod doline'?	iskanje strank, poznavanje trga, razlaga vašega delovanja in prednosti, finančni resurci, scale?		Ford et al. (2007)
14	Valley of Death	<i>Bridges</i>	Kako ste se lotili reševanja? Kje ste iskali informacije?	Ste se poslužili kakšne pomoči - če, katere (finančne, strokovne..)? Kaj bi bilo v kolikor te nebi dobili?		Frank et al. (1996); Nemet et al. (2018)

			Kaj vam je pri prehodu pomagalo?			
15	Valley of Death	Importance of <i>the valley</i>	Se vam je zdelo to obdobje pomembno za organizacijo? Kaj pa za vas osebno? Kaj ste se v njem naučili?	Ste samo podjetje na kakršen koli način v tem obdobju prilagodili potrebam trga? Če bi bili ponovno na takem mestu, bi se česa lotili drugače?		Markham et.al. (2010); Barron & Amorós (2020)

## **Appendix 4: Transcript of Interview with Leader 1 from Organization 1**

*Kakšno vlogo pričakujete, da ima vodja v organizaciji?*

Na kratko in v enem stavku - da je sposoben voditi svojo ekipo do željenega cilja. Po mojem mnenju ima vodja več vlog, dela več stvari. Minimum je, da z razpoložljivimi sredstvi in ljudmi pride do cilja, da so stvari narejene. Druga stopnja je, da cilj presežeš. Tretja stopnja je, da so ljudje zraven še srečni in v četrti, da jih obenem inspiriraš, da hočejo še in želijo sodelovat tudi v prihodnje.

*Kakšen vodja si prizadevate biti? Katere lastnosti menite, da so ključne za uspešno vodenje?*

Biti sposoben z zaposlenimi in strankami vzpostaviti pristen stik, jih razumeti in jim naslikati njihovo vlogo v podjetju/projektu, da se lahko z njo poistovetijo. Povezati njihove želje in vlogo/delo. Na način, da zaposleni delo vidijo tudi kot izpolnjevanje njihove vizije.

Ker delam z visoko izobraženimi ljudmi, ki jim delo ne predstavlja le preživetja in si želijo več, izpopolnitev, izziv. Preprosto želijo več. V delu s takimi ljudmi se mi zdi izjemno, izjemno pomembno razumeti kaj tak zaposleni hoče in mu pomagati povezati njegovo službo skozi te njegove oči.

Pri tem, ko razmišljam kam in kako usmerjati razvoj posameznika, želim imeti dober odnos in stik z zaposlenim, da ga vedno lahko vprašam kaj si želi v naslednji fazi in z razumevanjem njegovih želj. Te želje si zapisujem. Le tako imam pregled nad vsemi, jih ne zamešam in ne pozabim. Pri nadaljnjem planiranju poskušam te želje kar se da najbolje upoštevati. In ta personalizacija je izjemno pomembna. Znotraj tega se poskušam prilagajati kolikor se le lahko. Ta prilagodljivost ni ravno neskončna, ampak da se pa veliko.

Komunikacija je orodje za vzdrževanje stika – zelo težko se uskladiš z zaposlenim, če ne znaš vprašati, poslušati, razumeti kar se pove. Pri tem je komunikacija ključna.

*Zgolj profesionalni odnos ali tudi prijateljski? Si želite striktno komunikacijo ali raje bolj svobodno? Formalni ali neformalni način? Osebno ali preko posrednih medijev?*

Želim si, da je tudi prijateljski. Svobodno komunikacijo in neformalni način. Raje osebno, gre pa tudi preko Slack kanala, maila ipd.

*Koliko je pri delu z ljudmi pomembno zaupanje? Vam je pomembno, da vam zaposleni zaupajo?*

Na profesionalnem nivoju je ključno. Kako ga gradiš je spet več možnosti. Razvoj, osebno. Takrat, ko imaš profesionalno zaupanje se že lahko dela. V kolikor je še osebno zaupanje je to še bistveno lažje delati. Če imaš stike tudi izven delovnega okolja pomaga, če poznaš s čim se kdo ukvarja se lahko tvorijo tudi dolgotrajne prijateljske vezi, tudi po tem ko se že dolgo ne dela več skupaj v isti službi.

*Vam je pomembno, da vi zaupate njim?*

Seveda. Če ne bi zaupal bi res težko delal oziroma bi imel preveč dela, saj bi pregledoval njihovo delo, kar pa ne vodi nikamor.

*Kaj vam pomaga pri razumevanju zaposlenih? Se vam zdi pomembno, da se vodja zna postaviti v kožo zaposlenega in videti položaj v katerem se je znašel?*

Seveda je pomembno. Najbolj mi pomaga, da poslušam. Da res dovolim, da jim pridem blizu, da jim pridem blizu je res pomembno, da sprašujem in zaznam miselni vzorec. To se zelo čuti, kdaj je sogovornik res zainteresiran in kdaj ne.

*Katere značilnosti/lastnosti se kot vodja zavestno izogibate?*

V svojem »privat« življenju želim velik del svojega časa preživeti izven neke strukture, uživam, če je bolj »free flowing«. No tega se v poslu močno izogibam. Gibljam se bolj znotraj meja dogovorjenega in dovoljenega. »Privat« pa jih rad odmislim in grem preko njih.

*Želite biti vključeni na sestanke in vedeti za dogajanje v celotni organizaciji ali se raje osredotočate le na svoje naloge in cilje?*

Ključne stvari kako projekti potekajo želim vedeti. Trenutno sem še precej vpleten v vse skupaj. S časoma bom verjetno čedalje manj.

*Na katerih področjih vašega delovanja se poslužujete tehnologije? Kakšen pomen za vas predstavlja uporaba tehnologijo na delovnem mestu?*

Digitalizacija in digitalna orodja so za nas zelo pomembna. Naš posel je, da strankam pomagamo izboljšati organizacijsko učinkovitost z uporabo digitalnih orodij. Pomagamo jim analizirati podatke. Meni je pomembno, da ne delamo na papirju ampak »interconnected«. Ključne stvari tudi na sestankih zapisujem v Dynalist. Ključnega pomena s mi zdi, da potrebuješ samo en »laptop« ali telefon, se priključiš in lahko delaš/preveriš/svetuješ, karkoli je že treba. Stremim k temu, da bomo lahko delali od kjerkoli, vedno povezani.

*Kako bi ocenili stopnjo tehnološke razvitosti vaše organizacije?*

Rekel bi da je sedaj 2, ampak bomo kmalu pripeljali na 4.

*Kaj vas je privedlo do trenutnega stanja digitaliziranosti?*

Ker smo mlado podjetje, smo celoten proces že začeli zastavljati na ta močno neodvisen sistem.

*Imate načrt za nadaljnji digitalni razvoj? Delate na tem razvoju aktivno ali je le ta bolj naključen in po potrebi? Če ga imate- kakšen je vaš cilj? Kako se ta strategija razlikuje od ostalih katere imate načrtovane?*



En od naših »service-ov« je analitika podatkov. Naredili bomo en odličen interaktiven »tool« za vizualizacijo. Ko bomo oddali stranki analitsko poročilo, jim bomo podali podatke interaktivno in si lahko stranka sama »poklika« in vidi odvisnost.

Drugo orodje katerega načrtujemo pa je, da si bomo zgradili neko platformo, v kateri si bomo lahko gradili modele za stranke in jih vstavljali v aplikacije. Stranka bo v njih imela verzije njihovih modelov in se bo lahko sledilo kdaj se kaj uporablja. Kar delamo so »decision making« sisteme in tu je pomembno »traceability« kako si se prišel do te odločitve. V bodoče so plani še zelo veliki.

*Ste se kot mlado podjetje zavedali faze 'valley o death'? Kako dojemate (ste dojemali) to fazo? Kakšna je (bila) za vaše podjetje?*

To je ena zelo težka faza, ker postavljaš 4 vogale hkrati. Prideš iz tega, da nimaš nič in postavljaš osnovno strukturo. Vsaj za mene je to najbolj zanimiv del ustanavljanja podjetja. Vedno sem delal na rasti in transformaciji tako, da mi je všeč to delo in sem ga že navajen

*Kaj je najbolj ogrožalo 'prehod doline'?*

Vzpostaviti ustrezno kulturo. Kultura je nadpomenka načina dela, orodij. Ljudje, ki so vzgojeni v tej kulturi bodo želeli ostati z nami zaradi te – ne zaradi plače, ker ta bo zagotovo višja drugje. Ne samo, da jih tu drži, ampak da jih razvija in »pusha« naprej. Za »service« podjetja je najbolj pomembno, da se njihov glavni produkt, torej človek, dobro počuti. Ko vprašam zaposlene kaj jim je najbolj pomembno, ni odgovor najlepši »office«, denar ali kaj materialnega, ampak hočejo imet dobro okolje v katerem se bodo učili, rastli in se dobro počutili. Glavnina pride pa pod to lepilo; med ljudmi. Kulturo vidim kot enega najpomembnejših »assetov«.

Da bomo to dosegli, mislim, da je ključno da bomo znali ljudi vključevati. Imam vizijo o tem kako naj bi to bilo. Nisem samo jaz ključen, ampak da ima vsak posamezni zaposleni prispevek pri tem. Ko bomo imeli tako inkluzivno kulturo, ki bo sprejemala vse barve kože, vse spolne usmerjenosti, vsakega ne glede na njegove interese (pa če je to alternativna matematika če hočeš) in ne iskala različnosti ampak bo sprejemala in vlekla notri. To se vidi tudi navzven in tudi stranke bodo prepoznale. Če bomo sami mojstri transformacije, bo tudi stranka to opazila. Vsak bo lahko nekaj dodal pri tem. Če hočeš biti tisti ki promovira spremembo, moraš biti tisti ki jo zna sprejeti.

*Kako ste se lotili reševanja? Kje ste iskali informacije? Kaj vam je pri prehodu pomagalo? Se vam je zdelo to obdobje pomembno za organizacijo?*

Ja. Vsaka firma ima na vsake toliko neko nestabilno fazo. Model dela ni več možen in ga je potrebno prilagoditi. Firme se spreminjajo in neizogibno pridejo v taka negativna obdobja. In vsako tako negativno obdobje, ki za premagaš in zmagaš ti da energijo, da se odbiješ,

drugače samo stagniraš ali pa celo padaš. Ta negativna obdobja niso najbolj prijetna, ampak te pa ojačajo, so koristna.

*Kaj pa za vas osebno? Kaj ste se v njem naučili?*

Takrat, ko je negotovost velika, zelo pomaga, če močno verjameš.

*Ste samo podjetje na kakršen koli način v tem obdobju prilagodili potrebam trga? Če bi bili ponovno na takem mestu, bi se česa lotili drugače?*

Sigurno. Veliko stvari bi. Koncept isti, izvedbo pa boljšo. Operativno bi dosti stvari spremenil, ampak jih v naprej ne moreš vedeti. Vedno te sproti preseneti.

## **Appendix 5: Transcript of Interview with Leader 2 from Organization 2**

*Kakšen je za vas uspešen vodja? Kakšno vlogo pričakujete, da ima vodja v organizaciji?*

Ne samo, da poda jasna navodila, da pozna tudi osebnost delavca, da ve kaj mu je všeč, da zna prepoznati razpoloženje, če je recimo slabe volje, če ima osebne/zdravstvene težave, da se mu zna prilagoditi. Te stvari predstavljajo tudi tveganje pri delu, ker če počuti slabo, svojega dela ne bo opravil dobro ali pa ga sploh ne bo opravil. Če pa se z njim pogovoriš, mu pomagaš, mu omogočiš nek čas, da si mogoče tudi tekom delovnega časa kaj uredi, pa je dejansko na koncu veliko bolj efektiven, kot pa če veš dan premlava svojo težavo.

*Torej, da zna prepoznati potrebo zaposlenega, se mu lahko prilagodi, poleg tega pa jasno podaja pričakovanja in navodila.*

Tako ja. Celoten komplet.

*Kakšna vodja si prizadevate biti? Na katera orodja vodenja ste pozorna, da jih uporabljate?*

Gledam, da podajam res jasna in natančna navodila. Z zaposlenimi se želim pogovoriti in podružiti. Zaposleni so si različni. Enim več pomeni finančna spodbuda, drugim pa več pomeni, da se lahko prilagaja delovni čas. Pozorna sem, da imam posluh za to. Tudi, če je delo izven delovnega časa oz. če je v stiski s časom, gledam, da mu pridem pomagat.

Če naredi napako, če vidim, da mu je žal, ga ne kaznujem – zato ni ob stimulacijo. V primeru malomarnosti pa se poslužujem tega ukrepa.

*Kako pomembna se vam zdi karizma pri vodenju in izražanje moči?*

Je pomembna. Karizma v smislu izkazovanja neke energije in navdušenja nad delom, če k delu ne pristopiš pozitivno, tudi od zaposlenih ne moreš pričakovati, da bodo z veseljem delali svoje delo. Tudi včasih, ko sam narediš neko stvar (mu daš neko recepturo) in delavec le izvede recepturo mu daš petko in rečeš "pa nam je uspelo". Mislim, da jim to veliko pomeni in imajo veliko več motivacije in energije za delo. In naslednjič, ko prideš v laboratorij reče kaj pa če bi še tole probali. S tem tudi sam osebno raste. In ta predlog se lahko izkaže kot prava pot.

*Kaj pa izkazovanje skromnosti?*

Vsaka stvar ima svoje prednosti in slabosti. Če želiš na preveč avtoritativen način uveljavljati svojo voljo, se lahko oddaljiš in privede do tega, da naslednjič ne bo posluha. Če pa si preblizu in preveč prijateljski, pa se lahko to začne močno izkoriščati. Tukaj je zelo tanka linija.

*Kaj pa pri dajanju povratne informacije, glede samega dela?*

To, da povem kako sem zadovoljna z njegovim delom, je pomembno. Vsak mesec vodje ocenjujemo zaposlenega. In od tega je odvisna tudi njegova stimulacija. Torej nagrada. In se mi zdi prav, da se z zaposlenim pogovorim in objasnim zakaj je en mesec nižja, en mesec višja stimulacija zaposlenega. Ter seveda, da ve kaj mora narediti, da doseže najvišjo stimulacijo.

*Ti razgovori so z zaposlenim mesečno?*

Tako je, ja. Pred vsako plačo. Da tudi predhodno ve kaj lahko pričakuje. Pa tako kot sem rekla, stimulacija se zaradi izrednih dogodkov ne oz. če jim je žal, da je šla neka stvar narobe – za to še nikoli nisem in tudi nikoli ne bom znižala stimulacije. Če pa se neke napake ponavljajo oz., se dogajajo iz malomarnosti, potem pa ja.

*Kaj je po vašem mnenju najboljši motivator pri vaših podrejenih? Denar, nagrade, pohvala, napredovanje, odnos, izobraževanje..*

Pri nas veliko pomeni denar. Večinoma je trenutno moški kolektiv in se mi zdi, da jim je ključno koliko dobijo na bančni račun.

*Se vam zdi, da je moškim bolj pomembno finančno izplačilo, ženskam pa..*

...ženskam pa odnos.

*Kaj pa za oseben/karierni razvoj, izobraževanja – je kaj zanimanja?*

Ne toliko. Perspektivnim je vedno ponujeno. Podjetje bi krilo vse stroške, pa ni bilo interesa. Z pridobljeno izobrazbo bi lahko napredoval tudi o plačilnem razredu. Samo z osebnim razvojem, torej »soft skills«, to pa načeloma ne. Ampak če ne rasteš osebno, ne moreš dat več od sebe dati. Prideš do enega nivoja, ki pa ga ne presežeš več. V drugem oddelku pa je primer, ki mu nek tečaj/izobraževanje/gradivo zelo veliko pomeni. Že piknik ali pa prisotnost na sestanku, da se počuti vključenega. Ljudje zelo različni.

*A pri tem igra kakšno vlogo tudi starost?*

Če čisto povežem konkretna primera – razlika je v stopnji izobrazbe. Bolj izobražen izkaže več želje in zanimanja, tudi na primer za sejme itd. Manj izobražen pa želi »odpikat« osem ur in čao.

*Kako pomembno se vam zdi, da se z zaposlenimi pogovarjate tudi o privatnem življenju?*

Mislím, da je pomembno. S tem bolje poznaš njegove potrebe. Lahko mu prilagodiš delo, poznaš njegove cilje v življenju, lažje iz njega izvlečeš najbolje kar ti lahko da. Vidiš tudi glede napredovanja in koliko je pripravljen prilagodit tudi čas izven delavnika.

*Se pravi, aktivno poslušanje njegovih želj se vam zdi pomembno?*

Vsekakor. Če veš kaj želi doseči, torej če želi kupit avto ali pa stanovanje, da mu prisluhneš in mu omogočiš, da se bolje izkaže, da ga lahko nagradiš, to ogromno pomeni.

*Če ostaneva še malo pri odnosih – se vam zdi, da mora biti odnos zgolj profesionalni ali tudi prijateljski?*

Zdaj tako. V službo hodimo zato, da opravimo svoje delo. Čustva, prijateljska ali kakršna koli druga, na rezultate in na delo ne bi smela vplivati. Glede tega se striktno držim. Na koncu so zame pravila za vse enaka. Ni važno moški/ženska. Mogoče se v pogovoru z nekom bolje ujamem, ampak pri ocenjevanju želim ostati objektivna.

*Ko na primer pride do napake – se vam zaupanje v zaposlenega kaj zamaje?*

Pri prvi napaki ne. Ker se jaz prav tako zmotim. Če se stvari ponavljajo, oz. vidim, da mu neka stvar ni pomembna se z njim poskušam pogovoriti in poiskati drugo delo. So ljudje, ki so zelo natančni in se jim da ustrezno delo imaš pa ljudi, ki se zelo na hitro znajdejo. Samo iniciativni si še nagrajujejo svoje znanje, drugi pa se usedejo in čakajo na uro.

*Koliko vam je pomembno zaupanje do zaposlenih?*

Največ. Jaz se moram na zaposlene zanest.

*Kako pomembno vam je, da zaupajo vam?*

Prav tako zelo.

*Kaj pa glede komunikacije – vam je bližja bolj sproščena ali bolj striktna?*

Načeloma imam raje sproščeno. Če pa ni narejeno v času, potem pa zahtevam določene stvari – takrat je bolj striktna. Vsekakor pa raje F2F.

*Katere lastnosti pri sebi se ob delu s podrejenimi želiš oz. se jo zavestno izogibaš?*

Včasih precej ukazovalno izpadem. Zelo sem pozorna, da uporabljam besedo *prosim*. Se mi pa vseeno zgodi, da jo izpustim, predvsem, če imam slab dan.

*Če sedaj preseliva na to digitalno področje: Na katerih področjih dela se v podjetju poslužujete tehnologije?*

Razvoj in tehnologija sta povsem elektronsko dostopna. Tudi zaradi odsotnosti iz delovnega mesta (bolezen, obisk sejma, službena pot) ti lahko nekoga vodiš kje lahko nekdo dostopa do podatkov. Veliko manjša je možnost, da pride do napake. Ne glede na to ali govorimo o laboratorijskih dnevnikih ali pa o sami tehnologiji v proizvodnji. Če imam zapisano v digitalni obliki in je ta posodobljena, imajo vsi ves čas enaka navodila. Če pa imamo lastne zapise pa si vsak zapisuje po svoje, kot drugo pa ti težko skrbiš če je na primer isti SOP na petih delovnih mestih, da jih ne boš izpustil za zamenjavo.

Kar se tega tiče je tudi iniciativa, da poleg tega da bodo in time zapisi in podatki delavcem o izmetu, da bodo dostopna tudi zadnje verzije SOP.

*Informacije o izmetu, to so KPI-ji?*

Tako je. Videli bojo svojo učinkovitost. Glede na podatke, bodo takoj dobili povratno informacijo o njihovem uspehu, glede na katerega pa je vezana tudi stimulacija.

*Kje pa iščete oz vidite možnosti izboljšave?*

Letos, ker so bili zelo krizni časi, smo morali narediti in smo jih naredili kar nekaj. Veliko je bilo zaradi zmanjševanja dela. Nekatera delovna mesta smo morali preurediti, zmanjšati smo morali število zaposlenih. Začeli smo optimizacijo tudi pri materialih. Ogromno smo prihranili, ko smo gledali, če nek standard predpisuje minimalno debelino izdelka, smo se nanjo osredotočili. Z olajšanjem dela delavcem - s pripomočki ali pa z ureditvijo po 5S, so se skrajšali časi, s tempa smo dosegli tudi večjo produktivnost. Zaradi tega pa smo dosegli večjo produktivnost, nižjo ceno izdelka in tako ostali ali pa postali bolj konkurenčni.

*Kako pa se starejša generacija vklaplja v delo s tehnologijo?*

Določeni se lepo prilagodijo, pri nekaterih pa nastopijo težave. Gleda se, da tisti ki so tik pred upokojitvijo, se jim omogoči, da gre predčasno. Največkrat je prišlo do poškodbe panela, ravno zaradi nerazumevanja tehnologije.

*Ali vidite možnost, da se s pomočjo tehnologije in digitalizacijo, proces posodobi do te mere, da prinese konkurenčno prednostna trgu?*

Je. Vendar pa je to povezano s finančnimi sredstvi. Vemo v kakšnih časih smo. Zdaj se poslužujemo posodobitev, ki so finančno niso prezahtevne. V večje investicije trenutno ne gremo. Manjše izboljšave, namestitvev senzorjev, premik, pohitritev linije. Po pomeni toliko več »batchev« na dan.

*Kako bi ocenili tehnološko razvitost podjetja od 1-5?*

3

*Kaj se je v zadnjih 3 letih spremenilo glede tehnologije?*

Zadnji del na Nanoglasu je avtomatiziran, na Aglasu linija je prav tako avtomatizirana. Alux je bil deležen večje investicije, ki omogoča večje serije in manjše cikle. V planu pa so še manjše investicije za pohitritev linije Aglassa, ter posodobitev Nanoglassa.

*Kaj pa v primerjavi z konkurenco?*

Za nas referenca, tisto k čemer stremimo, je XY – po tehnologiji in urejenosti smo v prednosti, gre pa tu za gigantsko firmo. Medtem, ko AB je pred nami. CD pa je kar se tiče

tehnologije pred nami. Proizvajalci naše velikosti, imajo predvsem slabše stanje kar se tiče varovanja okolja (tudi Italija, Nemčija na primer).

*Kaj opazate, da je ključno pri vpeljavi nove tehnologije?*

Vpeljava in prenos na zaposlene. Vedno, ko vpelješ nekaj novega, se bojijo, je odpor, vedno pade produktivnost, ker jim je neznano in čutijo odpor in jih je strah. Ko pa se seznanijo, jim pomagaš, da jim pokažeš, ko osvojijo pa lahko dosegaš boljše rezultate. Ne smeš jih a pustit same.

*Končni cilj posodobitve je avtomatska proizvodnja?*

Pri nas popolnoma avtomatizirana proizvodnja ni cilj. Cilj trenutno je iskanje izboljšav, kako več naredit v istem času z enakim številom ljudi. Kombinacija stroji-človek, s tem, da se ljudi lahko po liniji premešča.

## **Appendix 6: Transcript of Interview with Leader 3 from Organization 3**

*Kakšen je za vas uspešen vodja? Kakšno vlogo pričakujete, da ima vodja v organizaciji?*

Kar se mene najbolj dotakne je to, da se še vedno zna postaviti v vlogo tistega, komur mu je nadrejen. Ker smo majhen tim, se hitro vidi kdo dela in kdo manj dela. Važno je, da vodja zna to prepoznati in spremeniti. Spremeniš lahko pa to samo na način, da ga motiviraš. Pri tem denar sploh ni več motivacija. Pri nas je tamle ena sobica v kateri se pol stvari reši. Ni več tega kot je bilo včasih, ko si nekaj prinesel in zahteval, ampak se skupaj pogovarjamo in na koncu rešitev ven pade. Ni več rigidnega dela ampak precej bolj agilno. Hitro se usedemo in preverimo, uskladimo in je to to. Kot bi se na hitro dobili v gostilni in se zmenil. Formalnega »reportanja« ni več. Veliko več je svobode in ta svoboda, mislim, da prinaša tudi rezultate.

*Če probam povzeti – poskušate biti dovolj odprti do idej drugih in da jim pustite maneverski prostor, da delajo po svoje.*

Sam pri sebi sem videl. Čez ta proces ko greš sam in si poiščeš svoj način dela, ne pa da te nekdo želi »ukalupirati«. Daš usmeritve, se pogovorim in pustim, da si vsak zase zamisli kako bo izvedel. Dam navodila, ne pa tudi kako to narediti (ni »mikro menedžiranja«).

*Kaj se vam zdi, da je pri vodji najbolj važno?*

Karizma je pomembna; pa pomembno je širjenje optimizma. Mislim, da bi bil vedno treba oponašati glasbenike na Titaniku. Včasih, že če se samo usede in pogledaš kako rešiti, prideš do rešitve. Vse se da, če se hoče. Letošnje leto nas je močno preizkušalo in nam naložilo kar nekaj izzivov, pa smo vse nekako prebrodili in na koncu sploh ne s tako slabim rezultatom.

*Kaj pa komunikacija z zaposlenimi – vam je pomembno, da ste tudi privat v prijateljskih odnosih ali da je potrebno ločevanje med službo in družbo?*

Nisem pristaša služba je služba, družba je družba. Morda je to tudi odvisno od velikosti podjetja. Nas ni veliko in smo vsi lokalni. Če je več tisoč zaposlenih, se tega ne moreš it. V režiji nas je približno 20 in se nas vsaj polovica družijo tudi v prostem času. Velikokrat/največkrat se takrat tudi pogovarjamo od firme, pa tudi kaj rešimo, pa tudi v službi o privatnih stvareh. Povemo drug drugemu, kaj nas muči. Zato sem v taki firmi, v velikih sistemih se jaz ne vidim.

Moj predhodnik, lastnik firme, ima tudi zelo odprto komunikacijo in kulturo. Odgovornost sem si pri njem že sam naložil. S tem ko sem izkazal zanimanje mi je omogočil, da sem dobil priložnost.

Zelo prijetno je gledati razvoj kadra, kako se razvija in koliko se razvije v zelo kratkem času. Rataš radoveden kaj bo čez 2 leti...



*Kako pomembna se vam zdi empatija pri vašem delu?*

Kot strojnik se tega nikoli nisem učil. S prakso in primeri se naučiš, da je tudi ta del zelo pomemben. Naučiš se ljudi poslušati in slišati. Če jim prisluhneš v njihovih težkih trenutkih, s tem ustvariš posebno vez, ki je nekaj več. To se mi zdi zelo pomembno za pripadnost firmi in pripravljenost,

*Kako pa dajanje povratne informacije vpliva na ljudi?*

Sem tak, da stvari rešujem sproti. Zdi se mi, da je najpomembnejši način dajanja »feedbacka«. Probam se kontrolirati, da povem na lep način in tudi večkrat, če je to pomembno. Zavedam se, da neumnih vprašanj ni. Se mi zdi, da ta sistem »supporta«, da ga vodiš čez proces, pa da človek sam pride do tega, da ti to največ da.

*Kaj pa kakšno lastnost, ki jo moraš zavestno obvladovati?*

Mogoče se včasih postavim v tako vlogo, da se dvignem nad problem in pogledam širšo sliko. Čustveno odreagiram na to, da pride problem in začnem preveč vrtati vanj. To, da ne skočim na prvo žogo. To probam obvladovati. Včasih si želim vse sam narediti in ne delegiram tega naprej. Ampak tukaj je tudi malo zaradi kadrovske podhranjenosti.

*»Tech savyness« – kako ti je važno, da so sodelavci podkrepljeni v digitalnem svetu?*

Kar pomembno ampak ne bi rekel, da najpomembnejše. Važno je, da so pripravljeni osvojiti nova znanja, ki so potrebna za nova znanja

*Kako zbirate nove ideje? Imate za to kakšen sistem?*

Dostikrat je tako, da se o pomembnih stvareh pogovarjam s čim širšim krogom ljudi/zaposlenih. Kadar vključim več ljudi, da se jih več s problemom/izzivom ukvarja, več jih o tem razmišlja, vsak poda svoj pogled, svojo potrebo, na ta način lahko pridemo do najboljših rešitev. Potrebno je, da damo neke usmeritve, potem pa skupaj pridemo do neke rešitve.

*Vem, da so plani glede digitalizacije veliki.*

Mi smo v taki branži, kjer je v sami proizvodnji težko kaj po digitalizirati. Proizvodnja je vseeno fizični del. Da pa se lepo v podpornih procesih. Na primer pri nas s skladiščem. Trenutno precej »šepamo«, ampak je pa plan, da zares zagrizemo v to. Najprej, da začnemo poslovati brez papirjev. Čitalci črtnih kod, po digitalnem tlorisu razporejeno skladišče, digitalni fascikli se bodo začeli uvajati. Izbrali smo dokumentacijski sistem, ki ima nekaj AI-ja vključenega. V tej fazi smo.

*Je to vaša osebna želja?*

Ja. Alergičen sem na papirje. Tega se bi rad znebil. Pa ozaveščanje, za elektronsko zapisovanje SOP-jev. S prehodom generacije mislim, da se bodo tudi te stvari izboljšale.

*Kakšna je vaša ocena tehnološke in digitalne razvitosti?*

Tehnološko mislim, da smo trenutno med top 5, glede na tehnologijo. Imamo zadnjo možno tehnologijo. Kar se pa digitaliziranosti tiče pa imamo na pol. Mi vnašamo podatke v sistem, nimamo pa BI-ja, ki bi te podatke kvalitetno obdelal. Obdelal na ta način, da bi predlagal izboljšave. Da se ponavljajoči procesi skrajšajo. Tukaj vidim ogromno nekega potenciala in tu vidim fokus za prihodnja leta. Do sedaj je bil fokus, da se opremimo z najboljšo možno opremo, zdaj bo pa fokus na digitalizaciji. Vsi stroji, celotna proizvodnja je primerna za najemanje podatkov, le da mi nimamo Sistema kako te podatke obdelovat. To se mi zdi pomembno.

Zamenjali bomo tudi informacijski sistem – ta je na »browserju« in lahko dodajaš »appe« za poslovno in finančno analitiko. Primorani smo zamenjati sistem, da lahko uporabljamo dodatne »featurje« in nadgrajujemo z kakšnim umetnim vidom itd.

*Je cilj proizvodnja 4.0?*

Cilj je, da so »just-in-time« informacije. Prave informacije, ob pravem času, na pravem mestu. Te informacije so potrebne za navzgor in navzdol – do kupca, dobavitelja, zaposlenih znotraj firme. Danes je ključna hitrost informacij in mislim, da smo tukaj prepočasni. Kalkulacije smo včasih delali na začetku leta in smo se je nato držali celo leto. Zdaj jo popravljamo dnevno. Na to hitrost informacij bi se radi malo bolj pripravili. To pa ne gre drugače kot z digitalizacijo in orodji, AI.

*Kaj je gonilo za to odločitev? Konkurenca, optimizacija procesa, posodabljanje celotnega sistema organizacije..*

Konkurenca še nima tega. Se pa to lepo kaže v drugih sektorjih. Prej kot slej bomo primorani, da gremo v to. V določenih industrijah je to že »must«. Prej kot se tega lotimo, bolje je. Nekateri imajo že zelo razvite sisteme, da se že avtomatsko dogajajo stvari. Trgovci štejejo obiske in vrednost košarice, turizem ima in time informacijski sistem. V drugih branžah vidim »value«, ki pa bo tudi v naši postal »must«.

*A ste že razmišljali kaj o izzivih, ki jih to prinaša? Se vam zdi, da bo lahek buy in?*

Ne. Mislim, da bo treba zelo delat na tem. Tudi izkušnje od drugih, s katerimi sem se pogovarjal, pa so podobno uvajali novosti, so povedali, da je kar težko. Ampak mislim, da z delavnicami in vključevanjem čim več deležnikov v to mislim, da bo s trenutno ekipo to izvedljivo. »Benefiti« se pa vidijo, kar hitro.

*Kaj se ti zdi, da bo ključni faktor za uspešno transformacijo?*

Da, bo ožji tim, ki bo vlekel naprej, da prepozna dodano vrednost v tem. Mislim, da ko pride v to fazo se bo zgodil efekt snežne kepe in se bo začelo nekam premikat. Je pa zelo težko – na začetku je veliko obljub, ko pa pride do nekega problema začne zunanji izvajalec organizacijo spreminjat. Tukaj vidim, da bi znalo priti do nekega odpora. Težave zagotovo bodo. Ampak najlepše je, ko jih lahko rešiš.

Pomembno je, da ostane čim bolj enostavne. Tam kjer mora bit »input«, da je »input«, ter da je potem primeren »output«. Ne pa, da se preobsežno zbira podatke, ki verjetno niso relevantni.

## **Appendix 7: Transcript of Interview with Leader 4 from Organization 4**

*Kakšen je dober vodja? Kaj pričakujete, da je vloga vodje v organizaciji in skupini?*

Najprej, da zagotovi »business continuity« – to je »core«. Vodja je zadolžen za neko aktivnost in je njegova naloga, da zbere okoli sebe nek ekipo, da se te aktivnosti izvajajo. Zagotoviti mora, da se te aktivnosti nemoteno izvajajo na daljši rok. To je osnova. Potem pa se mi zdi, da je vloga vodje tudi ta, da zna izbrat ekipo in jo povezat, da bo leta, to aktivnost razvijala, nadgrajevala skozi čas. Za svoj tim mora vodja odpravljati ovire.

*Kakšne pa mora imeti lastnosti, da to vse izvaja?*

Mislim, da je pomembno kako tvori medosebne odnose, znotraj in zunaj ekipe, da se dobro povezuje. Mora bit tudi zelo bister, da hitro izlušči bistvo in da zna ukrepat. Meni je to zelo pomembno, da vidi kje je problem in da zna to z ekipo tudi rešit.

*Torej »problem-solving«?*

Tako ja. Mislim, da pri meni to relativno dobro pride v ospredje. Potem tudi motivacija time. Pomembno je tudi potrditev, da sem na pravi poti in da mi daje »feedback«. Pa pomemben mi je občutek, da imam dobre odnose. Je pa nemogoče, da si vedno vsem vseč v vseh časovnih točkah. Lahko tudi zaradi njegovih osebnih stvari, ki jih prinese s seboj pride do razhajanja kako vodja vidi in kako on sam vidi svoj »performance«. Odvisno je kako smo močni karakterji, kako individualistični/timski smo, kako smo odprti za »feedback«, spremembe. Ves ta miks je težko uravnavat. Dober vodja zna vse to »managerirat«.

*Vam je pomemben, da je vodja »tech savy«?*

Meni je pomembno, da če že ni vodja, ima nekoga v ekipi, ki je. Je pa pomembno (zelo pomembno), da je sposoben dojet kaj te digitalne novosti prinašajo in da jih je sposoben sprejet. Tudi če sam ni najbolj digitalno spreten, da spodbuja znotraj ekipe da se ta digitalin napredek zgodi.

*Malo ste že omenila dostopnost in aktivnem poslušanju začela govorit.. kako pomembna je pa empatija pri vodji?*

Zelo pomembno je, da ko se nekdo znajde v težki situaciji, da se ga razume, prisluhne in pomaga pri njegovih okoliščinah. Ampak do neke meje, ker potem ti pa izkušnje prinesejo, da lahko kdo to začne tudi izrabljat. Zaupanje je ključno. Če imamo zaupanje in smo odprti in iskreni drug do drugega, tudi če včasih povemo kaj kar komu ni všeč, da znamo skozi pogovor čez to it, potem vse štima. Če sodelujemo, smo odprti in se poslušamo in na tem tudi nekaj naredimo, to je zame zdrava dinamika v timu. Če se pa to kakorkoli in kjerkoli zalomi (če se začne obrekovanje, govornice, da se nekdo umakne in se ustvarja proti klan znotraj ekipe) začne zlorabljat zaupanje pri vodji, to je pa potem recept za katastrofo, slabo timsko kulturo in nejevoljo.

*Kaj pa vam najbolj pomaga pri razumevanju članov tima?*

Z direktnim vprašanjem. Poslušam in iz tega probam izluščiti »point«. Hitro vidim kaj koga muči in hitro predlagam rešitev. Včasih te rešitve niti noče sprejeti. To mi včasih predstavlja tudi frustracijo, ko vidim priložnost pa je ne izkoristi in se ne premakne. Tu je tudi moja priložnost zame za rast, da bi bolj skozi »coaching« ga vodila do rešitve, ne pa da mu jo polagam.

Želim, da je vsak svoj šef. Da prevzame vsak svoj »lead«. Jaz pa pomagam kjer me rabijo.

Res se najdem v vrednotah forme: »unbossed«, »curiosity«, napredek in »teamspirit«. S temi se res poenotim.

*Za »coaching« uporabljate prav kakšno metodo za katero ste izvedeli?*

To je znana metoda. Imela sem že več izobraževanj na to temo. Ampak imam pa problem z implementacijo tega, ker to vzame zelo veliko časa. Realnost je, da so naši delavniki nabiti s sestanki in jaz nisem samo vodja, ampak delam tudi na projektih. Da bi to učinkovito izvajala, bi rabila eno do dve uri na teden, da bi se z vsakim pogovarjala. Tega časa pa nimam, ali pa ko bi ga imela, drugemu ne paše. Zato imam rada okoli sebe agilne ljudi, da se z njimi odkrito pogovorim in da ves čas rastemo. Rada imam okoli sebe ljudi, ki so proaktivni. Všeč mi je pri ljudeh, da ko pride do problema, da ne ostane v tisti stopnji pritoževanja, ampak da hoče to tudi popraviti in ne obupati ob prvem »slamu«, ki ga doživi. Ta kultura »can do« – vse je možno, najt je potrebno samo kako, pa 'do it smart' – vsako stvar, ki jo delamo, da se kritično sprašujemo kako bi jo lahko v prihodnje delali bolje. Da imam v ekipi proaktivne ljudi in vodje same po sebi, da te probleme sami po sebi začnejo proaktivno reševati. Da ne čakajo na vodjo, da bo vodja to rešil, ampak, da se sam loti reševanja in mene kot vodjo uporabi za podporo.

*Prej ste se že malo dotaknili pričakovanj – kako pomembno vam je, da so pričakovanja jasna? Je pomembno, da so zaposlenim vaša pričakovanja jasna in kako pomembno je da so vam jasna pričakovanja zaposlenih do tebe?*

Pomembno je, da je na spoštljiv način vzpostavljeno v obe smeri.

*Si ta pričakovanja kje beležite?*

Ne. Zapisujem si še, ne. Lahko si pa tudi to začnem. Vsak ima svoje sive cone in dela na način, ki ni najboljši za sodelavca pa se ta počuti neprijetno, prizadeto in ogroženega. Zato je važno, da se znamo o tem pogovoriti in da so informacije podane iz obeh smeri. Pa da je toliko odprtosti, da to lahko izražamo. Ko dobim jaz »feedback« včasih se takoj odzovem, včasih pa potrebujem dan ali dva, da se odzovem na to in ugotovim kakšne spremembe moram implementirati. In je ključno tudi za moj razvoj, da konstantno dobivam povratne informacije od zaposlenih. Zato imam tedenske sestanke z zaposlenimi v timu 1:1. Tam

pričakujem, da si podamo »feedback« in odkrito pogovorimo. Povratne informacije, ki si jih dajemo se je treba zavedat, da so vezane na službo in ne na osebo kot tako. Velikokrat stvari vzamemo zelo osebno, v resnici gre pa za komentar, ki je vezan na »performance«. Določene stvari so tudi ne prijetne za slišat.

*Malo ste se že dotaknila te tematike odnosa med vodjo in zaposlenim – kaj se vam zdi, da je boljše, da je odnos zgolj profesionalen ali tudi prijateljski?*

Malo je odvisno s kom in kako. Moje osebne izkušnje so, da prijateljstvo in služba gre težko skupaj. Še posebej vodja-zaposleni. Zaposleni so mi lahko zelo všeč in smo stkali preveč prijateljski odnos in je bilo to na koncu preveč. Ko prideš do trenutka, ko je potrebno dati nekemu povratno informacijo, ki pa morda ni najbolj prijetna, je pa prijateljska raven zelo moteča. Služba je služba, družba je pa družba. Mi je pomembno, da se razumemo. Družinska druženja pa mislim, da niso OK, ker lahko vplivana moja pristranskost do sodelavca – se mogoče nekdo počuti bolj zaščitene ali pa favoriziranega, drugi pa manj – tako, da to ni OK. »Fajn« mi je, da imamo korektne in odprte odnose, ampak to ne sme vplivat na mojo pristranskost do podrejenih.

*Glede komunikacije vam je pa vseeno zelo pomembna, da je sporočena in odprta z zdravo stopnjo spoštovanja do sodelavca?*

Vse naštetu mi je izjemno pomembno. Zelo trpim, kadar je vse zelo formalno. Nisem taka, da bi vse v naprej planirala. Plan je potreben ampak poleg tega potrebujem nekaj ne planiranega manevrskega prostora, da se lahko z njim neformalno povežem in pogovorim. Je pa to kar zelo težko v tem virtualnem času.

*Kaj je pa lastnost, ki ste jo pri sebi prepoznali, da se je želite izogibat ali pa jo potlačiti, ker vas na nek način omejuje?*

»People pleasing« – meni se že od nekdaj zdi, da moram bit vsem všeč. Oz. če nekemu nisem všeč, da nekaj ni v redu z mano. In to zavestno tlačim. S tem se mi mela res težave. Da se me je opravljal in da je imel kdo probleme z mano, sem zelo trpela. To sedaj sprejemam. Če sem s kom prišla v konflikt, sem se s tem zelo obremenjevala. Sedaj nič več. Pogovorim se in to sprejemam. Pomembno je, da vzpostavim nek standard znotraj ekipe in da sem »demanding«. Sem zelo »demanding« vodja. Vse kar pričakujem ni nič kaj takšnega kar ne bi bilo možno. Želim, da smo profesionalen team. Tako v odnosih kot pri delu. Želim odprtega pogovora o problemih in skupnega iskanja rešitev.

Brzdat se moram tudi svojih reakcijah. Če pride do verbalnega konflikta, preidem »self-defence mode« in grem z isto silo nazaj. Še vedno ne vem kaj je boljše. Bila sem na izobraževanju - tega ne bom nikoli pozabila – rekla je, da moramo zrcaliti, da ko bo dobil zrcalno sliko se bo začel zavedat kaj dela narobe, kaj počne. To je v resnici to. Ko nekdo ves nasršen pride do mene, jaz »bum« nazaj. Zdaj o tem malo drugače razmišljam. V konfliktih

situacij vdihnem, se malo umaknem nazaj in se nato v miru pogovorim. Jaz kujem železo, ko je vroče. Zdaj pa delam na tem, da ga takrat, ko se malce ohladi.

Sama sem tudi zelo »passionate«. Imam »drive« in energijo. Za koga zna biti to malo »too much«. Ko se za nekaj zapalim, bi to »ful drivala«, da se bi to zgodilo čimprej.

Frustracija je tudi to, ko drugi ne vidijo isto kot jaz, da bodo sodelovali. Ta gnila jabolka – destruktivno delovanje v timu. Ko pride do tega, je treba to čim prej rešit.

*Kako bi ocenila stopnjo razvitosti organizacije?*

R&D – kot organizacija pa mislim da 6/7. Mogoče sem preveč kritična. Sourcing oddelek – zelo nizko na 4, imamo potencial da pridemo na 7/8.

Digitalna revolucija Sourcing oddelka se začinja pri nas, drugje globalno niso naredili še nič. Določene stvari so super, druge potrebujejo še optimizacijo. Zastavljeno je dobro ampak določene stvari potekajo zelo počasi. V zadnjem letu se ni spremenilo nič. Koncept smo razvili. Eksekucija pa sedaj stoji.

V našem oddelku je koncept zastavljen v tej meri, da namesto pošiljanja pdf oblik po mailu preidemo na dejansko zbiranje podatkov. Stvar je razvita, praktično pred »roll outom«. S tem bomo lahko začeli dejansko merjenje KPI-je »cycle tima«, prihrankov, glede na dobavitelje, njihovo odzivnost, »support«, »lead time-i«, odstopanja od metrik, s temi podatki lahko zasnujemo boljšo strategijo itd. Potencial je ogromen. Je pa velik riziko.

*Kakšna se vam zdi, da bo prednost digitalizacije tega procesa?*

Transparentnost podatkov navznoter in navzven, prihranek v času, ker je vse avtomatizirano. Intime KPI-ji. Končni cilj je boljši pregled »supporta« dobaviteljev za potrebe razvojnih projektov in boljši pregled nad našo uspešnostjo in uspešnostjo naših partnerjev. Upamo, da se bodo problemi bolj pokazali in imeli bomo za tem konkretne številke. S tem pa se bomo lahko bolj ciljno fokusirali na reševanje.

*Kakšne izzive prinaša digitalizacija kot taka s seboj?*

Bojim se, da se bo, ko bomo spravili izdelek v življenje, izkazalo polno nekih po-porodnih težav, ker izdelek ni bil dobro po testiran. Da bodo ljudje nezadovoljni ob tem z nami, ker ne vem ali stvar deluje ali ne. Na kratko, da bomo lansiral, pa da stvar ne bo delovala.

Plus tega, ljudje se bodo morali na to spremembo navadit. Ta »people buy« in je zelo pomemben. Pri nas mislim, da še ne bo tako problem. Ko se bo to uvajalo globalno – takrat bo šele problem. Za njih, ker bodo to samo implementirali, ko niti ne bo več možnosti, da bi kaj spreminjali in prilagajali, tam zna bit zelo problem. Prilagodit bodo morali celoten svoj »work flow« na našega. Tu vidim veliko tveganje.

*Kateri mislite, da so glavni faktorji za uspešno digitalno transformacijo?*

Rešitve morajo biti smart. Če ni »user friendly«, potem pozabi. Škoda našega časa in časa vseh, ki so bili vpleteni. Videla sem že projekte, ki so bili dragi in veliko ljudi vpletenih, pa so žalostno propadli. Vse kar delam, mora biti »simple-as-possible«, da bo direktno takoj uporabno. Če bo več dela kot korist, ljudje ne bodo uporabljali. Taki projekti so bili že znotraj organizacije izvedeni, vanje vložena ogromno denarja in sredstev, pa so na koncu žalostno propadli. Projekt ne služi svojemu namenu. Delo je obsežnejše, dodane vrednosti pa ne da.