

Evolution of the Classical Leadership Styles in a Digital Environment

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Abstract. *This study explores the evolution and the applicability of the classical leadership theories in the context of digital and virtual environments, focusing on six prominent frameworks: Trait, Behavioural, Situational, Transactional, Transformational, and Charismatic leadership theories. The current literature indicates that traditional leadership models, characterized by hierarchical structures and top-down communication, are evolving in response to the digital environment. This shift emphasizes agile, inclusive, and collaborative leadership styles, where leaders engage teams democratically, fostering participation and valuing diverse perspectives. The digital era necessitates that leaders not only manage change but actively drive it, promoting a culture of continuous innovation and adaptability. Consequently, the leadership approaches are transitioning from authoritative to more responsive and participative models, aligning with the dynamic demands of the digital landscape. Through a mixed-methods approach, combining a quantitative survey of 381 employees across multinational organizations, and qualitative interviews with 22 team members, the research examines how these styles influence employee engagement and effectiveness. The findings reveal that Transactional leadership is the most effective in enhancing both engagement and effectiveness, particularly when paired with relationship-oriented Behavioural styles. Conversely, Trait and Transformational leadership exhibit negative correlations with performance metrics, while Situational and Charismatic styles show minimal impact. The analysis also highlights the potential of multi-theory approaches, with combinations like "Behavioural and Transactional", and "Behavioural, Transactional, and Transformational", emerging as particularly impactful. Qualitative insights further underscore the value of integrating contemporary paradigms, such as Emotional Intelligence-based, Authentic, Servant, and Distributed leadership, to address the unique challenges of virtual teams. These styles enhance morale, trust-building, and shared responsibility, offering a nuanced and adaptive framework for leadership in digital workplaces. The study concludes by emphasizing the need for further exploration into hybrid leadership models to better align with the complexities of the modern organizational dynamics in the digital era.*

Keywords: leadership styles, virtual teams, multi-theory leadership, engagement, effectiveness.

Introduction

The expression "evolution of the leadership" could be evaluated in two aspects. On one hand, there is the development of the leadership as a science, with its inherent theories and research, and on the other hand is the observation of the changing characteristics of the leader under the influence of the surrounding environment, social specifics and currents, personal growth and change in views. The complexity of the leadership phenomenon illustrates the intertwined nature of these two entities – the leadership science and the leader, as they invariably influence each other. There is a continuous cycle through which documented scientific theories develop the reading leader, who in turn, through their own growth, activities, and gained experience, are a source of new scientific observations and progress.

Most of the scientific papers, and theories in the field of leadership, are observational and descriptive in their origin, rather than foundational and defining. Historically, and in the present, the formation, definition, and formalization of theories follows events, conditions, and phenomena

which have already occurred, have been observed, and many of them have also been documented. In accordance with this, the purpose of the study is to evaluate the characteristics of the successful leadership styles in virtual environments, and to provide a clearer picture of the set of qualities that define the successful digital leader. To achieve this goal, the research focuses on six of the classic leadership theories: Trait Theory, Behavioural, Situational, Transactional, Transformational, and Charismatic Leadership theories.

The study hypothesizes that in a digital environment, effective leadership requires the adaptation and integration of elements from both classical and contemporary theories, tailored to the specific context and technologies. Such an approach enables leaders to maintain engagement and efficiency through flexible and innovative methods.

In the research, the author aims: 1) to evaluate the applicability of the classical leadership theories in a digital environment; 2) to show if styles based on combination of classical, or on classical and contemporary theories, lead to higher employee engagement and effectiveness; 3) to identify specific high-performing combinations; 4) to determine if, and how, leadership styles, based on classical theories, change in a digital environment.

Literature review

Benmira and Agboola, in “Evolution of leadership theory” (Benmira & Agboola, 2021), provide a good summary of the development of the leadership theories. As they describe, the early research, spanning from the 19th century to the 1930s, is focused predominantly on innate traits, leading to the "Great Man" theory. Later studies acknowledged both inherent and learned leadership qualities. In the late 1930s, Lewin et al. (Lewin et al., 1939) identified three behavioural leadership styles: authoritarian, democratic, and “laissez-faire”, or delegative. Further studies refined these into task-oriented and relationship-oriented leadership (Halpin & Winer, 1957).

Situational theories emerged next, challenging the idea of a singular best leadership style. Fiedler’s model (Fiedler, 1967) emphasized that leadership effectiveness depends on environmental factors. Transactional leadership, as described by Riggio (Riggio, 2013), revolves around exchanges of rewards for performance, whereas transformational leadership, popularized since the 1980s, focuses on inspiring and motivating followers to achieve results beyond expectations (Northouse, 2021). While the transactional leadership focuses on exchanging tangible, or intangible rewards of a more pragmatic nature, the transformational leadership elevates this exchange to a higher value, and to higher motivational and moral levels (Petkova-Gourbalova, 2019). Charismatic leadership, as outlined by (Weber, 1978), relies on personal magnetism and social skills.

Contemporary leadership theories, in the scope of this study, include Authentic Leadership, which emphasizes self-awareness and alignment with core values (Petkova-Gourbalova, 2019); Servant Leadership, which prioritizes ethical and collective well-being (Northouse, 2021); and Emotional Intelligence (EQ)-Based Leadership, which highlights emotional awareness and interpersonal skills (Goleman, 1995). Distributed Leadership frames the leadership as a shared responsibility (Spillane, 2006), while the Leader-Member Exchange (LMX) Theory examines the leader-follower relationships, arguing that high-quality interactions foster better outcomes (Graen & Uhl-Bien, 1995).

Methodology

The research is built upon a quantitative study, based on tailored questionnaire, distributed in early 2023 among 381 employees of international companies in the business domains of TELCO, FinTech,

Finance, E-commerce & Marketing. The chosen companies, in the field of the research, have predominantly virtual, multicultural teams with members from tens of countries across the globe.

The questionnaire is designed to discover leadership style characteristics, present in the respondent's leader, according to the Traits, Behavioural, Situational, Transactional, Transformational and Charismatic leadership theories. Mean values from 1 to 5 indicate level of presence of the specific theory in the leader's style, where 1 is "no presence" and 5 is "strong presence". In the context of the study, 3 is considered a threshold value, i.e. result above 3 signals that the leader's style is influenced by the respective theory.

A secondary set of data was provided to the author by the respective departments. It represents their formal levels of "engagement" and "effectiveness" for the whole year of 2022. The information is based on internal company processes for periodical assessments. As the evaluation methodologies vary significantly between the companies, and sometimes between departments in the same company, the data was normalised to fit in the range of 1 to 5, before being handed over to the author. I.e., if the measured values of the dependent variables ("engagement" or "effectiveness") were covering the range between 0% to 20% on the company specific scale, the value provided for the research is "1". Values between 20% and 40% are denoted as "2", between 40% and 60% – "3", between 60% and 80% – "4", above 80% – "5".

The combined dataset ensures that the study's independent variables (leadership style/theory, or a combination of two, or more) and the dependent ones have different sources – questionnaire vs. formal company data.

The analyses were conducted in IBM's "Statistical Package for the Social Sciences". Where needed, the data was normalised and enriched in MS Excel or using the LibreOffice suite.

Correlation analysis is used to measure the strength, and direction of the relationships between the leadership styles, "engagement" and "effectiveness". As it only shows association (Rohrer, 2018), but does not imply causation, regression analysis is further employed to suggest causation, if certain assumptions are met. It also outlines how much variation in the dependent variables ("engagement" and "effectiveness") is explained by the independent variables (leadership styles) (Mohr et al., 2022).

Using ANOVA (Analysis of Variance), the author studies if there is a difference in "engagement" and "effectiveness" in teams led by leaders, employing single-theory vs. multi-theory leadership styles. ANOVA is a statistical analysis used to compare the means of multiple groups simultaneously, assessing whether the observed differences are the result of random variation, or represent true distinctions (Mohr et al., 2022).

Further, with MANOVA (Multivariate Analysis of Variance), the author explores how combinations of characteristics from different theories, within the leader's style, affect the teams' effectiveness and engagement. MANOVA is a statistical technique that extends ANOVA by assessing whether there are significant differences in the mean vectors of multiple dependent variables across levels of one or more independent variables (Rencher, 2002).

Subsequently to the quantitative analysis, the author conducted 22 interviews with members of the examined departments. The main objectives were: to add more nuances, and more context, to the empirical results; to try to explain certain aspects of these results; and to attempt to identify influence of some modern leadership theories on the leaders' styles. Before the interviews were conducted, the interviewees received a brief introduction of each of the classical and contemporary leadership theories and styles. In addition to that, they obtained a short summary of the empirical study results.

Using the described methodology, the author aims to challenge, or confirm, the main hypotheses that: 1) in a digital environment, effective leadership requires the adaptation and integration of elements from both classical and contemporary theories, tailored to the specific context and technologies; 2) the leaders having a style, oriented more towards the people, and towards maintaining good relationships, achieve higher levels of engagement and effectiveness, than the ones who put more emphasis on the tasks.

Results and discussions

The questionnaire validation is done by calculating the Cronbach's Alpha for the six groups of questions, determining the presence of specific theory characteristics. The values between 0.730 and 0.905 show good reliability.

Correlation analysis

The correlation analysis provides an interesting starting point for the overall study. It represents how characteristics, specific for each leadership theory impact the departments' performance indicators – *Engagement* and *Effectiveness*. Figure 1 provides a visual representation of the results. Higher values of the correlation coefficient represent higher likelihood for positive contribution to the *Engagement* and *Effectiveness* levels. The negative coefficients display that even if the leader in question expresses the corresponding qualities, it is unlikely that they would lead to improvement of the performance scores.

The most prominent on the positive side are styles that employ characteristics of the *Transactional* theory. The correlation coefficients are 0.431 for *Engagement* and 0.511 for *Effectiveness*. Both are statistically significant.

Behavioural theory-based style, more specifically relationships oriented, has lesser, but also positive and statistically significant effect. The corresponding coefficients are 0.143 and 0.163 for the *Engagement* and *Effectiveness* respectively.

Styles, based on the *Traits* and *Charismatic* theories potentially have a non-favourable impact on the performance indicators, having values for *Engagement* and *Effectiveness* of -0.402, -0.460 (*Traits*), and -0.241, -0.219 (*Charismatic*).

Situational and *Transformational* styles have little to no meaningful impact on engagement and a small negative effect on effectiveness.

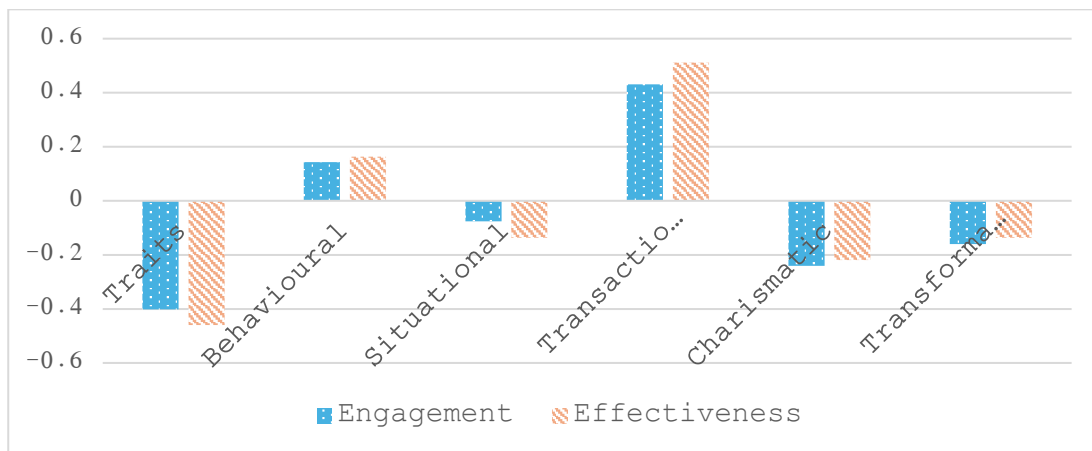


Figure 1. Correlation "engagement" and "effectiveness" per leadership style

Source: Author's own research

Regression analysis

Two separate regression analyses are done to assess the theories' characteristics impact separately on the *Engagement*, and on the *Effectiveness*.

The R value of 0.634 indicates a moderately strong correlation between the predictors and *Engagement*. R^2 of 0.402 signals that about 40.2% of the variance in engagement is explained by the independent variables (leadership styles). The adjusted R^2 for the number of the predictors is slightly lower, but still substantial. According to the ANOVA results, as part of the regression, the model is statistically significant, meaning the predictors collectively explain a significant amount of variance in *Engagement*. Multicollinearity checks Tolerance (>0.4) and VIF (<3) for all predictors indicate no multicollinearity issues. Residuals are symmetrically distributed, suggesting the model assumptions are met.

Table 1. Regression coefficients for Engagement

Predictor (theory)	Unstandardized Coefficient (B)	Standardized Coefficient (Beta)	t	p-value	Significance
Traits	-0.180	-0.232	-4.381	<.001	Significant
Behavioural	0.171	0.319	5.517	<.001	Significant
Situational	-0.054	-0.085	-1.728	.085	Not Significant
Transactional	0.250	0.461	10.172	<.001	Significant
Charismatic	0.011	0.012	0.230	.819	Not Significant
Transformational	-0.211	-0.385	-8.139	<.001	Significant

Source: Author's own research

Table 1 lists the regression coefficients for *Engagement*. Styles incorporating *Transactional* leadership are the most effective for increasing *Engagement*. *Behavioural* leadership contributes positively, but is less impactful than the *Transactional*. *Traits*-based and *Transformational* leadership negatively affect *Engagement*. *Situational* and *Charismatic* – minimal or no significant effects.

For *Effectiveness* – $R = 0.725$, $R^2 = 0.526$, i.e. about 52.6% of the variance in effectiveness is explained by the predictors (leadership styles). Adjusted $R^2 = 0.518$. The embedded ANOVA analysis proves a statistically significant model, indicating that the predictors collectively explain a significant proportion of the variance in the *Effectiveness*. Multicollinearity checks Tolerance (>0.4) and VIF (<3) for all predictors indicate no multicollinearity issues. Residuals are symmetrically distributed.

Table 2. Regression coefficients for Effectiveness

Predictor (theory)	Unstandardized Coefficient (B)	Standardized Coefficient (Beta)	t	p-value	Significance
Traits	-0.183	-0.305	-6.469	<.001	Significant
Behavioural	0.135	0.327	6.351	<.001	Significant
Situational	-0.067	-0.136	-3.126	.002	Significant
Transactional	0.231	0.554	13.736	<.001	Significant
Charismatic	0.069	0.098	2.118	.035	Significant
Transformational	-0.161	-0.380	-9.021	<.001	Significant

Source: Author's own research.

Overall, as the regression coefficients in Table 2 signal, the strongest driver of *Effectiveness* is the *Transactional* style, emphasizing the importance of structured and goal-oriented leadership practices. The *Behavioural* style contributes positively, complementing the transactional styles. *Traits*-based and *Transformational* leadership are negative predictors of *Effectiveness*, suggesting these styles may not align with the organizational context, or expectations. The *Situational* style has a small but statistically significant negative impact, possibly due to inconsistency, or adaptability challenges. The *Charismatic* leadership adds a modest positive effect but is not a major determinant of *Effectiveness*.

ANOVA analysis

The descriptive statistics for the ANOVA analysis show mean values for *Engagement* of 4.49 for “One theory” leadership styles and 4.08 for “Multi-theory.” For *Effectiveness*, the corresponding averages are 4.76 and 4.46. While the “One theory” approach shows slightly higher mean scores, the effect sizes of 7% and 7.1% indicate that the differences are relatively small, suggesting limited practical significance.

Homogeneity of variances tests reveal no significant differences in variances across groups for *Engagement*, while significance for *Effectiveness* violated the assumption of homogeneity. A Welch ANOVA was conducted to address this issue, and the conclusion was validated despite the variance inequality.

The ANOVA results confirm that *Engagement* and *Effectiveness* ratings differ with statistical significance based on whether a single-theory or multi-theory approach is employed. Although the “One theory” styles achieve slightly higher results, it must be taken into consideration that almost 2/3 of the respondents identify characteristics of more than one theory in their leader. Additionally, the “Multi-theory” leadership provides richer and diverse strategies, potentially making it more adaptable and robust in varied contexts.

MANOVA analysis

The descriptive results of the MANOVA analysis are presented in Table 3. Some style combinations, having less than 5 respondents are excluded. As seen in the table, hybrid styles, containing *Transactional* characteristics, consistently score high on *Engagement* and *Effectiveness*. Among these are: “*Situational, Transactional*”; “*Behavioural, Transactional*”; “*Behavioural, Transactional, Transformational*”. At the same time, *Traits*-containing combinations score the lowest – “*Traits, Charismatic*” and “*Traits, Situational*”. The *Behavioural* style, wherever present acts as a catalyst. These results confirm the outcome of the Correlation and Regression analyses.

Table 3: Combinations of leadership styles and their effect on Engagement and Effectiveness

Combined Styles	Engagement	Effectiveness	Respondents
Situational, Transactional	4.47	4.84	45
Behavioural, Transformational	3.50	4.00	62
Behavioural, Transactional	4.56	4.94	18
Behavioural, Transactional, Transformational	4.62	4.89	66
Traits, Charismatic	3.43	4.00	28
Traits, Situational	3.21	3.21	14

Source: Author's own research.

The MANOVA's "Box's Test of Equality of Covariance Matrices" indicates that the covariance matrices of the dependent variables (*Engagement* and *Effectiveness*) are equal across groups. The low Wilks' Lambda and significant p-value (<.001) indicate that the dependent variables (*Engagement* and *Effectiveness*) are significantly affected by the independent variable (*Styles Combination*). Partial Eta Squared of .669 suggests a strong effect size. In Levene's Test of Equality of Error Variances, the assumption of equal variances is violated for both dependent variables. However, MANOVA is robust to moderate violations (Rencher, 2002), particularly when group sizes are similar.

Qualitative analysis

Almost half of the interviewed people have been working in the studied organizations before, and after the digitalization took place. They were asked to describe and compare how did the leadership change in that process. From their responses it stood out that during the transition from traditional to digital environments, there has been a noticeable shift toward formalized relationships, characterized by a drastic reduction of the casual, informal meetings, i.e. the ones bringing social value and strengthening the interpersonal relationships. Fragmented communication flow, and the drastically reduced non-verbal communication, resulted in even more challenges for the leadership when it comes to keeping teams' cohesion. It has also negatively impacted employees' sense of belonging to the organization and their appreciation of the company goals. The routine work-related communication became excessive, multidirectional, and significantly more pragmatic. The lack of physical leadership presence led to decreased power distance, at the expense of increased psychological one.

The majority of the interviewees (17 out of 22) stated that in a digital environment, it is of utmost importance for the leader to be able to specify tasks, and expected results, as clearly as possible. Along with this, it is essential for them to be able to set and consistently follow a clear, pragmatic, and objective methodology for evaluation of results and personal effectiveness of the employees. Due to the inherent expectations for much greater autonomy in tasks execution, the need for clear work planning, scoping and tracking is distinctly noticeable. This feedback aligns well to the empirical study, which relates Transactional leadership styles to higher levels of performance and engagement.

When discussing the influence of leaders' personal traits and charisma, the most common opinion was that the significance of these characteristics is minimal as the digital communication limits the means of conveying them, and consequently, their influence in most situations is negligible.

Transformational leadership in a digital environment is highly valued only when it is combined with strong practical organizational skills. This once more confirms the importance of the presence of Transactional leadership traits. The Transformational leadership can be seen as successful, if it evidently contributes to better work organization and high objective results. In the meantime, it must be considered that the transformational leader suffers from the same communication channels' limitations as the traits-based and charismatic leaders.

Discussing the interviewees perception on what are the other characteristics of the successful leader, quite common was the understanding that in such an environment as the digital one, given the lack of a live social engagement, and the "by default" impaired capabilities to build strong relationships, it is crucial to have a self-aware leader with strong ethical core. It also of high importance for them to be transparent, to demonstrate authentic empathy and genuine concern for the well-being of the employees, as well as for their interpersonal relationships. Such genuine care for the followers is a characteristic of the Behavioral theory.

According to the respondents' experience, it must be particularly difficult to demonstrate strong EQ leadership qualities, as the digital communication significantly limits the emotional expression. However, the leaders express noticeable aspirations for a more individualized approach in understanding and servicing the individual needs of each team member, considering that they routinely operate out of a non-work-focused environments with more distractors, when compared to a corporate office. Such empathetic attitude of taking into account the follower's personal needs, and managing their coexistence with the work goals, builds trust, mutual respect, loyalty and also increases the employee's commitment to the business goals. Such leadership behavior is well fitting the LMX theory.

Some of the respondents state that their leader acts not only as a visionary, but also as a "servant leader", recognizing their role in facilitating the effective execution of the day-to-day tasks, and focusing on creating an environment, where their followers could thrive and be efficient.

The feedback on the Situational leadership is mixed with that on EQ, Servant, and LMX leadership. On one hand, constantly adapting to the current situation is fundamental for the leader's relevancy to the business environment, on the other – it is important for them to adjust their behavior to match the specifics of working with each individual follower. This is perceived more as a core leadership quality of the successful leaders in general and is not specific to the digital environment. Operating in a virtual team is simply thought of as one of the "situations" in which the leader must succeed.

In the provided feedback, there is some evidence of shared leadership, but it is not particularly related to the digital environment. It pertains more to the way of how the work is organized and distributed.

All interviewees shared that they observe traits of more than one leadership theory in the leaders they have had interactions with. This finding confirmed the initial assumptions of the study that the digital environment stimulates the leaders to employ toolsets from multiple leadership theories at once.

Conclusions

The evolution of the leadership styles in the digital era underscores the necessity of adapting classical leadership theories to the unique demands of virtual and multicultural team environments. This study's analysis of six classical leadership theories – Trait, Behavioural, Situational, Transactional, Transformational, and Charismatic, reveals that the effectiveness of these approaches varies significantly in digital contexts. The findings highlight that Transactional leadership consistently yields the highest levels of employee engagement and effectiveness, emphasizing structured, goal-oriented practices and clear reward systems. This compensates the lack of frequent physical oversight in a remote-work setup. Behavioural leadership, particularly relationship-focused styles, complements Transactional leadership by fostering interpersonal trust and collaboration. By putting extra effort to maintain healthy culture, the leaders aim to reinvent the same social "glue" that in traditional environment fosters natural motivation, a sense of belonging, and higher levels of focus.

Conversely, leadership styles based on Trait and Transformational theories show a tendency to negatively influence performance metrics, potentially due to the mismatch between their inherent characteristics and the operational demands of the virtual teams. Charismatic leadership, while positively associated with effectiveness, played a relatively minor role in overall impact. The efficiency of these three styles is diminished by the same major limitation of the virtual environments – the lack of fully-featured communication channel, capable to convey their full

plethora of means to influence. Moreover, the fragmented nature of the information exchange, in terms of many short, task-focused meetings, or prevailing text-based communication, prevents the transformational leader to build up inspiration by consistently using their main “weapon” – persuasive storytelling.

Situational leadership, despite its theoretical flexibility, exhibited minimal negative effects, suggesting challenges in its practical identification in the dynamic digital settings. During the interviews it was often interpreted as a characteristic of other contemporary styles like LMX, Servant or EQ-based leadership, potentially due to its generally broader definition.

The study also explored the efficacy of single-theory versus multi-theory leadership approaches. While single-theory styles showed slightly higher mean scores, multi-theory approaches demonstrated comparable outcomes, offering a more adaptable and nuanced framework for navigating the complexities of digital environments. Combinations such as "Behavioural and Transactional", or "Behavioural, Transactional, and Transformational", emerged as particularly effective hybrids, leveraging the strengths of each constituent theory.

During the interviews, the respondents spoke about spotting certain characteristics of EQ-based leadership in their leaders and expressed its importance when applied together with relationships oriented Behavioural style, as well as with certain aspects of the Leader-Member Exchange style. Common understanding is that an Authentic leader strongly and positively affects the team morale and trust-building processes. The interviewees related the Servant leadership to the Transactional leadership, elevating the leader’s ability to facilitate focused and predictable environments and workflows. When discussing the virtual teams’ segmentation, they claimed traces of Distributed leadership as well, stating that their leader promotes and encourages shared responsibility and collaboration, as well as better leadership coverage.

The outcomes of the qualitative study shed more light on specific sentiment spread throughout the organisations that hints on why the Transactional style is more prevalent, and why the Transformational style has a negligible impact on the teams’ engagement and effectiveness. The interviewees shared that historically, in the recent two to three years, their top leadership did not truly keep to their promises and vision. Thus, their leaders’ transformational behaviour is not considered credible and trustworthy, pushing the followers’ expectations for a more pragmatic, value-exchange based relationships, i.e. inclined towards the Transactional style.

These findings provide valuable insights for organizations, striving to optimize leadership strategies in the increasingly virtual and globalized workplaces. The strong positive results of leaders, employing transactional and relationships-oriented styles, should be a signal to the companies to invest more in planting, strengthening and promoting related capabilities among their leaders and managers. Additionally, trainings in some of the contemporary people-oriented theories, like LMX, Authentic and Servant leadership, could allow the leaders to conscientiously utilize the positives they bring for improving retention, motivation, cohesion, and to further boost the productivity.

A serious concern, outlined by the research results, is the lower impact of the Transformational style, impeded by two factors: 1) accumulated distrust due to inconsistent leadership behaviour and messaging; and 2) intrinsic limitations of the digital communication channels. Transformational leaders are critically important for a thriving organisation. They conceptualise and convey the company vision, aligning it not only to the company goals, but also to a broader, morally higher purpose, inspiring the followers and bringing up the motivation to a qualitatively different level. They develop the future leaders. They are also among the main drivers of innovation. Thus, for every ambitious organization, it is crucial to maintain sufficient levels of qualitative transformational leadership capabilities. It is highly recommended for the companies to

implement proper monitoring, and corrective frameworks, that would steer and maintain a healthy transformational capacity. In parallel to that, practical measures must be taken to ensure that the transformational leaders have the proper medium to systematically convey their vision and messaging. Depending on the specific situations, it may be by dedicated, longer, interactive remote sessions, or by organising regular physical attendance events, focused on building of transformative energy, reflection, vision, motivation.

Future research could delve deeper into the dynamics of the multi-theory leadership styles and could investigate further the role of the contemporary leadership paradigms, such as LMX, Authentic and Servant Leadership, in enhancing team performance and cohesion.

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