THE EFFECT OF INFORMATION TECHNOLOGY USAGE INTENSITY AND TECHNOLOGICAL COMPETENCE ON GENERATION Z LEADERSHIP EFFECTIVENESS THROUGH TEAMWORK
(Evidence from Junior Chamber International Indonesia)

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Abstract

The rapid advancement of information technology has reshaped leadership practices, particularly among Generation Z as digital natives. However, empirical evidence remains inconclusive regarding whether leadership effectiveness is driven by the intensity of technology usage or by technological competence, especially within non-profit youth organizations. This study aims to examine the effect of information technology usage intensity and technological competence on Generation Z leadership effectiveness, with teamwork as a mediating variable. A quantitative approach was employed using Structural Equation Modeling–Partial Least Squares (PLS-SEM). Data were collected from 59 Generation Z members (aged 18–29) of Junior Chamber International (JCI) Indonesia. The results reveal that technology usage intensity does not significantly affect leadership effectiveness or teamwork. In contrast, technological competence has a significant positive effect on teamwork, which in turn significantly influences leadership effectiveness. Teamwork fully mediates the relationship between technological competence and leadership effectiveness. These findings indicate that Generation Z leadership effectiveness is not determined by how frequently technology is used, but by how technological competence is strategically leveraged to foster collaboration and teamwork. This study contributes to digital leadership literature by highlighting teamwork as a critical mechanism linking technological competence to leadership effectiveness in youth-based non-profit organizations.

Keywords: *Information Technology Usage Intensity, Technological Competence, Teamwork, Leadership Effectiveness, Generation Z*

Abstrak

Kemajuan pesat teknologi informasi telah membentuk kembali praktik kepemimpinan, khususnya di kalangan Generasi Z sebagai generasi digital. Namun, bukti empiris masih belum meyakinkan mengenai apakah efektivitas kepemimpinan didorong oleh intensitas penggunaan teknologi atau oleh kompetensi teknologi, terutama dalam organisasi pemuda nirlaba. Studi ini bertujuan untuk menguji pengaruh intensitas penggunaan teknologi informasi dan kompetensi teknologi terhadap efektivitas kepemimpinan Generasi Z, dengan kerja tim sebagai variabel mediasi. Pendekatan kuantitatif digunakan dengan menggunakan Structural Equation Modeling–Partial Least Squares (PLS-SEM). Data dikumpulkan dari 59 anggota Generasi Z (berusia 18–29 tahun) dari Junior Chamber International (JCI) Indonesia. Hasil penelitian menunjukkan bahwa intensitas penggunaan teknologi tidak secara signifikan memengaruhi efektivitas kepemimpinan atau kerja tim. Sebaliknya, kompetensi teknologi memiliki pengaruh positif yang signifikan terhadap kerja

tim, yang pada gilirannya secara signifikan memengaruhi efektivitas kepemimpinan. Kerja tim sepenuhnya memediasi hubungan antara kompetensi teknologi dan efektivitas kepemimpinan. Temuan ini menunjukkan bahwa efektivitas kepemimpinan Generasi Z tidak ditentukan oleh seberapa sering teknologi digunakan, tetapi oleh bagaimana kompetensi teknologi dimanfaatkan secara strategis untuk mendorong kolaborasi dan kerja tim. Studi ini berkontribusi pada literatur kepemimpinan digital dengan menyoroti kerja tim sebagai mekanisme penting yang menghubungkan kompetensi teknologi dengan efektivitas kepemimpinan dalam organisasi nirlaba berbasis pemuda.

Kata kunci: *Intensitas Penggunaan Teknologi Informasi, Kompetensi Teknologi, Kerja Tim, Efektivitas Kepemimpinan, Generasi Z*

INTRODUCTION

The development of information technology has fundamentally transformed organizational leadership practices. Generation Z, commonly identified as digital natives, is characterized by intensive exposure to digital technologies from an early age (Prensky, 2001). As this generation increasingly assumes leadership roles, particularly in youth-based organizations, understanding how technology influences leadership effectiveness becomes critically important.

Previous studies suggest that information technology can enhance communication, coordination, and collaboration within teams (Laudon & Laudon, 2020). Nevertheless, empirical findings remain inconsistent. Some studies emphasize that high intensity of technology usage improves teamwork and performance, while others argue that technological competence—rather than mere frequency of use—is the key determinant of leadership effectiveness. These inconsistencies indicate a conceptual gap concerning whether leadership effectiveness is driven by technology usage intensity or by the ability to strategically master and apply technology.

Moreover, most prior research has focused on corporate or governmental contexts, leaving non- profit youth organizations underexplored. Junior Chamber International (JCI) Indonesia, a non- profit organization emphasizing youth leadership and collaboration, provides a relevant context to investigate this phenomenon. Therefore, this study examines the influence of information technology usage intensity and technological competence on Generation Z leadership effectiveness, with teamwork positioned as a mediating variable.

This study offers a novel contribution by empirically distinguishing between information technology usage intensity and technological competence in explaining Generation Z leadership effectiveness. Unlike prior studies that largely assume technology use directly enhances leadership outcomes, this research demonstrates that technology usage intensity does not have a significant direct effect on either leadership effectiveness or teamwork. Instead, the findings reveal that technological competence influences leadership effectiveness only through teamwork as a full mediating mechanism, indicating that Generation Z digital leadership is fundamentally relational and collaborative rather than activity-driven. Additional novelty lies in the research context— a non-profit youth organization (Junior Chamber International Indonesia)—which remains underrepresented in digital leadership studies, as well as in the application of PLS-SEM with mediation and multi-group analysis to uncover the underlying leadership mechanism.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT
Information Technology Usage Intensity and Leadership Effectiveness

Technology usage intensity refers to the frequency and duration of technology utilization in organizational activities. While intensive technology usage can accelerate communication and task execution, it does not automatically translate into effective leadership. Leadership effectiveness requires direction, influence, and coordination, which may not emerge solely from frequent technology use (Avolio, 2004).

H1: Information technology usage intensity has a significant effect on leadership effectiveness.

H2: Information technology usage intensity has a significant effect on teamwork.

Technological Competence and Leadership Effectiveness

Technological competence reflects an individual's ability to understand, operate, and strategically utilize technology to support organizational objectives. According to digital leadership perspectives, competence in technology enables leaders to facilitate collaboration, manage information, and make informed decisions (Northouse, 2021).

H3: Technological competence has a significant effect on leadership effectiveness.

H4: Technological competence has a significant effect on teamwork.

Teamwork and Leadership Effectiveness

Teamwork represents coordinated efforts among members to achieve shared goals. In leadership theory, effective leaders are those who can foster trust, collaboration, and shared responsibility within teams (Katzenbach & Smith, 1993).

H5: Teamwork has a significant effect on leadership effectiveness.

Mediating Role of Teamwork

Technology-related leadership outcomes are often indirect. Teamwork may function as a mechanism translating technological competence into effective leadership practices.

H6: Teamwork mediates the effect of information technology usage intensity on leadership effectiveness.

H7: Teamwork mediates the effect of technological competence on leadership effectiveness.

RESEARCH METHODS

This study adopts a quantitative explanatory design using PLS-SEM. The population consists of members of JCI Indonesia. After screening based on age criteria (18–29 years), 59 Generation Z respondents were included. Data were collected using a structured questionnaire and analyzed using SmartPLS.

The research model includes four reflective constructs: information technology usage intensity, technological competence, teamwork, and leadership effectiveness. Measurement model evaluation involved reliability and validity testing, followed by structural model assessment using bootstrapping procedures. The use of PLS-SEM is appropriate given the predictive nature of the study and the moderate sample size (Hair et al., 2019).

RESEARCH FINDINGS

The structural model analysis using PLS-SEM reveals several important findings regarding the relationships among information technology usage intensity, technological competence, teamwork, and Generation Z leadership effectiveness within Junior Chamber International (JCI) Indonesia.

First, the results indicate that information technology usage intensity does not have a significant direct effect on leadership effectiveness ($\beta = 0.10$; $p > 0.05$). Similarly, technology usage intensity does not significantly influence teamwork ($\beta = 0.09$; $p > 0.05$). These findings suggest that the frequency or duration of technology use alone is insufficient to enhance either collaborative processes or leadership outcomes among Generation Z members.

Second, the analysis shows that technological competence has a strong and significant positive effect on teamwork ($\beta = 0.71$; $p < 0.01$). This result highlights the importance of individuals' ability to understand, manage, and strategically apply technology in facilitating coordination, communication, and collaboration within teams.

Third, teamwork has a significant positive effect on leadership effectiveness ($\beta = 0.70$; $p < 0.01$). This finding confirms that leadership effectiveness among Generation Z is closely associated with the quality of collaboration, mutual support, and collective commitment within the team.

Regarding mediation effects, the results demonstrate that teamwork fully mediates the relationship between technological competence and leadership effectiveness (indirect effect $\beta = 0.50$; $p < 0.01$), while the indirect effect of technology usage intensity on leadership effectiveness through teamwork is not significant. This indicates that technological competence contributes to leadership effectiveness only when it is translated into collaborative team practices.

DISCUSSION

The results suggest that intensive technology usage alone is insufficient to enhance leadership effectiveness. This finding supports transformational leadership theory, which emphasizes that leadership effectiveness arises from influence and collaboration rather than technical activity alone (Bass, 1985).

Technological competence, however, significantly enhances teamwork, which in turn strengthens leadership effectiveness. This finding highlight teamwork as a critical mechanism translating digital capability into leadership outcomes. In the context of JCI Indonesia, where leadership is voluntary and collaborative, the ability to use technology strategically to foster teamwork becomes particularly essential.

The finding that information technology usage intensity does not significantly affect leadership effectiveness supports the argument that digital activity does not automatically translate into digital leadership. Although Generation Z members are highly familiar with digital tools, intensive technology use may remain at an operational or communicative level rather than functioning as a leadership mechanism. This result aligns with leadership theories emphasizing that effective leadership requires influence, direction, and coordination, not merely high levels of interaction or communication frequency.

The non-significant relationship between technology usage intensity and teamwork further reinforces the notion that high volumes of digital communication do not necessarily foster collaboration. In organizational contexts, excessive reliance on digital communication may even generate information overload, fragmented coordination, or superficial engagement. Therefore, technology usage intensity alone cannot be assumed

to strengthen teamwork without clear structures, shared goals, and coordinated practices.

In contrast, the significant effect of technological competence on teamwork highlights the importance of how technology is used rather than how often it is used. Individuals with higher technological competence are more capable of organizing work digitally, sharing information effectively, and supporting collective problem-solving. This finding supports digital leadership perspectives that view technological competence as an enabling capability that enhances collaborative processes.

Furthermore, the strong relationship between teamwork and leadership effectiveness confirms that Generation Z leadership is fundamentally collaborative in nature. Effective leadership in this context is reflected in the ability to build trust, coordinate tasks, and align team members toward shared objectives. This result is consistent with relational and participative leadership theories, which emphasize that leadership effectiveness emerges from social interactions and collective engagement rather than hierarchical authority.

The full mediating role of teamwork in the relationship between technological competence and leadership effectiveness represents a key theoretical contribution of this study. The findings suggest that technological competence does not directly enhance leadership effectiveness unless it is channeled through teamwork. In other words, leadership effectiveness among Generation Z is not driven by individual digital capability alone, but by the leader's ability to leverage that capability to foster collaboration and collective performance.

Taken together, these findings clarify existing inconsistencies in the digital leadership literature by demonstrating that technological competence, not usage intensity, is the critical antecedent of leadership effectiveness, and that teamwork functions as the central mechanism through which digital capability translates into leadership outcomes. This insight is particularly relevant in non- profit youth organizations such as JCI Indonesia, where leadership is voluntary, collaborative, and less dependent on formal authority.

Theoretical and Contextual Implications

From a theoretical perspective, this study extends digital leadership research by empirically distinguishing between technology usage intensity and technological competence and by positioning teamwork as a full mediator. From a contextual perspective, the findings highlight the unique nature of Generation Z leadership within non-profit youth organizations, where leadership effectiveness is closely tied to collaborative capability rather than technological activity.

RESULTS

The measurement model demonstrates satisfactory reliability and validity, with factor loadings above 0.70, AVE values exceeding 0.50, and composite reliability above 0.70.

Structural model results indicate that:

- Information technology usage intensity does not significantly affect leadership effectiveness or teamwork.
- Technological competence has a significant positive effect on teamwork.
- Teamwork has a significant positive effect on leadership effectiveness.
- Teamwork fully mediates the relationship between technological competence and leadership effectiveness.

These findings confirm that leadership effectiveness among Generation Z is

primarily driven by collaborative capability enabled through technological competence rather than by the sheer frequency of technology use.

CONCLUSION

This study concludes that Generation Z leadership effectiveness is not determined by how frequently technology is used, but by how well technological competence is leveraged to support teamwork. Teamwork fully mediates the relationship between technological competence and leadership effectiveness, while technology usage intensity shows no direct or indirect effect.

These findings contribute to digital leadership literature by clarifying the distinct roles of technology usage intensity and technological competence, particularly within non-profit youth organizations.

Future studies are encouraged to extend this research in several directions. First, subsequent research may employ a larger and more diverse sample, both in terms of organizational context and geographic scope, to enhance statistical power and improve the generalizability of findings beyond non-profit youth organizations. Comparative studies across different types of organizations—such as private firms, public institutions, or start-up environments—would provide deeper insights into whether the observed leadership mechanisms are context-specific or more universal.

Second, future research could adopt a longitudinal design to examine how technological competence, teamwork, and leadership effectiveness evolve over time. A longitudinal approach would allow researchers to capture dynamic changes in leadership development among Generation Z and to assess causal relationships more robustly than cross-sectional designs.

Third, additional studies may explore alternative mediating or moderating variables to enrich the explanatory power of the model. Variables such as digital trust, organizational culture, psychological empowerment, or communication quality may function as complementary mechanisms through which technology-related competencies influence leadership effectiveness. Moderating variables such as organizational structure, leadership tenure, or task complexity may also be examined to identify boundary conditions of the proposed relationships.

Fourth, future research may benefit from integrating mixed-methods approaches, combining quantitative SEM analysis with qualitative techniques such as interviews or focus group discussions. Qualitative insights could deepen understanding of how Generation Z leaders interpret and enact digital leadership practices in daily organizational activities.

Fifth, given the increasing importance of digital transformation, future studies could explicitly incorporate emerging technologies—such as artificial intelligence–supported decision-making, digital collaboration platforms, or data analytics tools—to examine how advanced digital capabilities reshape leadership roles and teamwork processes.

Finally, future research may conduct cross-generational or cross-cultural comparisons to examine whether the leadership patterns observed among Generation Z differ from those of Millennials or Generation X, or across cultural contexts. Such comparative studies would contribute to a more comprehensive understanding of digital leadership across generations and settings.

RECOMMENDATIONS

Based on the findings of this study, several recommendations are proposed for organizations and leadership development practitioners, particularly within youth-based and non-profit organizations.

First, organizations are encouraged to shift the focus of digital initiatives from increasing technology usage intensity to strengthening technological competence. Training programs should emphasize the strategic use of digital tools for coordination, decision-making, and collaboration rather than merely promoting frequent technology use. Developing digital leadership capabilities that support teamwork is likely to yield more substantial leadership outcomes.

Second, organizations should prioritize the institutionalization of teamwork-oriented digital practices. This includes the use of shared digital workspaces, structured project management tools, and clear digital communication protocols to support coordination and transparency. By embedding collaboration into digital workflows, leaders can more effectively translate technological competence into leadership effectiveness.

Third, leadership development programs targeting Generation Z should integrate team-based leadership experiences. Assigning emerging leaders to lead short-term collaborative projects and evaluating their performance based on teamwork quality, coordination, and collective outcomes can foster practical leadership skills that extend beyond technical proficiency.

Fourth, policymakers and organizational leaders should recognize that digital leadership effectiveness is relational rather than activity-driven. Therefore, performance evaluation systems should incorporate indicators related to collaboration, communication clarity, and team engagement, rather than focusing solely on individual digital activity or technology adoption metrics.

Finally, future leadership initiatives should consider aligning digital transformation strategies with organizational culture and values. A supportive culture that promotes trust, shared responsibility, and accountability will strengthen the impact of technological competence on teamwork and leadership effectiveness.

Practical Implications

For organizations such as JCI Indonesia, leadership development programs should prioritize digital leadership competence and collaborative skills rather than focusing solely on increasing technology usage. For individual leaders, developing the ability to use technology strategically to coordinate and empower teams is essential for effective leadership.

Limitations and Future Research

Future studies are encouraged to extend this research in several directions. This study is limited by its sample size and organizational context. Future research should involve larger samples, cross- organizational comparisons, and longitudinal designs to further validate the findings.

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