



The Relationship Between Principals' Leaderships Towards TVET Teachers' Motivation in Implementing ICT

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Abstract: The leadership role in a school organisation is crucial for long-term success, particularly in relation to teachers' motivation, especially in the implementation of ICT. School leaders possess the opportunity to employ diverse leadership styles that can influence teachers' motivation, specifically in integrating ICT into teaching and learning. Technical and vocational education is an area where ICT integration holds significant potential for productivity enhancement, given its pivotal role in developing students' college-ready skills. However, previous studies have shown uncertainties in the relationship between principals' leadership styles and teachers' motivation in certain schools. Therefore, this study aims to examine the relationship between principals' leadership styles and TVET teachers' motivation in implementing ICT. A correlational study was conducted, employing survey methods, and utilizing the Principal Instructional Management Rating Scale (PIMRS) for instructional leadership styles and the Multifactor Leadership Questionnaire (MLQ) for transformational leadership styles. The instruments used to measure teachers' motivation were adapted from the instruments aligning with the TAM model. Data analysis included percentage, mean, standard deviation, frequency, regression, and Pearson's correlation analysis, with a significance level set at $p = 0.05$. The results revealed that TVET teachers' responses to the leadership styles of school principals in Malaysia are satisfactory. Furthermore, a significant correlation exists between the principal's leadership styles and TVET teachers' motivation. In addition, regression analysis demonstrates that transformational and instructional leaderships influence TVET teachers' motivation in implementing ICT. These findings provide support for previous research indicating that the principal's leadership styles indeed influence teachers' motivation.

Keywords: Transformational leadership, instructional leadership, TVET teachers, motivation, ICT

1. Introduction

Developing high motivation and determination is a crucial quality that educators should possess, particularly when establishing a proactive environment that fosters optimal productivity in teaching and learning in schools. This is vital to amplify in the face of the challenges presented by the 21st century, where highly motivated educators play a pivotal role in facilitating successful growth and adaptation within the educational system. As it happens, recent changes in the education system have led to the evolution of teaching methods, evident through the impact of digital learning environments and network information on learning outcomes and the enhancement of teaching quality, as supported by various teaching theories and research (Rumeli & Rami, 2023). Consequently, Tier 7 of the Malaysia Education Blueprint 2013-2025 emphasises the significance of implementing ICT in education to foster effective learning in schools (Ministry of Education, 2019).

To provide students with the necessary skills in the quickly changing educational environment, Technical and Vocational Education and Training (TVET) schools must now integrate Information and Communication Technology (ICT) (Ghavifekr & Yulin, 2021). Thus, integrating ICT into the TVET education system empowers teachers to access a vast array of resources beyond the confines of the classroom, enabling them to design proactive learning environments that reflect real-world situations. To ensure this, teachers should be highly motivated to integrate ICT into their teaching and learning processes, and school principals' leadership plays a crucial role. Furthermore, leadership serves as a mechanism for exhibiting control over behaviour, planning work and activities, and inspiring team members (Tahir et al., 2018). Consequently, the effectiveness of school principals' leadership directly impacts the school's overall spirit, motivation, and student learning environment. There are several research indicate that there is a relationship between principals' leadership styles towards teachers' motivation (Sandar et al., 2018; Nara & Mansor, 2021; Mahdi & Wahab, 2022). Besides, there is a strong relationship between teachers and school administrators that indirectly influences job satisfaction and motivation to fulfil their responsibilities (Kark et al., 2018). Hence, through the Malaysia Education Blueprint 2013-2025, the Malaysian Ministry of Education emphasises leadership roles. The fifth shift of the Malaysia education blueprint fifth shift focuses on ensuring leadership in every school (Ministry of Education Malaysia, 2019). In this regard, the ministry highlights two essential leadership philosophies: transformational leadership and instructional leadership. Both philosophies are crucial in facilitating effective organisational management. School leaders must exhibit responsible leadership to ensure successful teaching, school administration, and teaching procedures, thereby bringing the school's vision and goals to fruition.

Principals' leadership styles significantly impact teachers' motivation and enthusiasm to enhance the teaching and learning methodology in schools. The leadership styles employed by principals are crucial factors that influence and enhance teachers' inspiration and motivation to teach, as well as improve their professional commitment by allowing them to utilise different skills and approaches to achieve the goals outlined in the nation's educational philosophy (Munian & Hasan, 2020). However, recent research indicates that teachers implement ICT into their teaching and learning practices less frequently than expected, despite government policies mandating its use (Leong et al., 2015). Additionally, studies conducted by Lai and Han (2017), Mahzan and Nordin (2021), and Nik Badrul Hisham, Ismail, and Mastura Mahfar (2015) demonstrate a moderate to weak relationship between principals' leadership styles and teachers' motivation. Therefore, further research is required to fully comprehend the relationship between principals' leadership styles and teachers' motivation, particularly in implementing ICT in schools.

1.1 Transformational Leadership

Transformational leadership is characterised by charisma and genuine concern for one's team (Bass & Ruth, 2008). Charismatic leaders possess remarkable personal characteristics that influencing organisational change (Tahir et al., 2018). As a result, charismatic leaders are able to alter the structure of their organisations and distinguish themselves as a leader, who demonstrate attentive consideration towards their subordinates, articulates the significance of achieving organisational goals in the future while also exchanging ideas, serves as inspirational role model, display a willingness to take risks for the future, display a willingness to make personal sacrifices for the organisation, and is consistently regarded as a dedicated and innovative leader. Bass and Ruth (2008) indicate that transformative leadership has four components: charismatic influence, intellectual stimulation, inspirational motivation, and personal consideration. According to Bass & Ruth (2008), charismatic leaders are those who consistently advocate for their team members at work and demonstrate devotion in all circumstances. The leader does this inadvertently, making himself a "role model" and an idol for his followers. Transformational leaders demonstrate commitment to their superiors in addition to being productive and successful in their work for the organisation. Additionally, transformational leaders have the capacity to enhance the intelligence of the members of the organisation, as such, to raise the zeal and creativity of subordinates, as well as assess and enhance the management techniques used. Transformational leaders inspire their teams to think critically and decide while executing tasks (Avolio et al., 2004). This provides the organisation's members a chance to collaborate as a team to carry out the vision and mission of the company successfully. At the same time, transformational leaders often inspire and motivate team members by providing briefings, counsel, and encouragement that outline the objectives and desired outcomes (Avolio et al., 2004). Individuals may be inspired to put in extra effort to achieve organisational performance that meets and surpasses expectations. By emphasising each individual member of the organisation, highlighting the resources that are required, and being aware of the abilities that will satisfy organisational members, transformational leaders must likewise value individuals (Avolio et al., 2004). In this situation, leaders who possess this quality can treat each person in their organisation fairly and respect one another's abilities. Such leaders also have a strong sense of responsibility for the individuals who work for them. Discussions can also be used to solve personal issues. The leader is shown as a mentor who exhorts his followers to earn respect through their actions, exhibiting his compassion for every organisation member. (Saffiee et al., 2018).

However, compared to other leadership styles, this transformational leadership style is neither better nor more efficient. This is so that other leadership styles can be employed exclusively with this transformational leadership style (Talib et al.,

2019). This aspect of transformational leadership leads to the conclusion that those who practise it display extraordinary talents and personalities that inspire organisational members' intelligence, motivation, and personal consideration. Members of top organisations who use this transformational leadership style, therefore, experience greater motivation, engagement, and fulfilment.

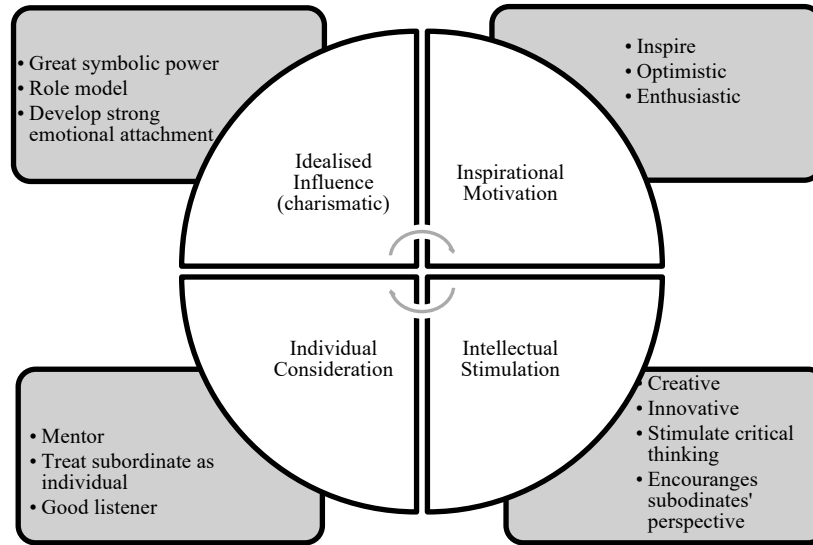


Fig. 1 - Transformational leadership model by Burns (1978) and Bass (1985)

1.2 Instructional Leadership

Leaders who share the objectives of increasing staff engagement and trust while managing the teaching and facilitation process are known as instructional leaders (Diyana et al., 2021). School administrators will be able to raise and develop the professionalism of the teachers based on their instructional leadership style. Additionally, instructional leadership has a direct effect on the outcomes of student achievement. This can be accomplished by improving the conditions that support teachers' potential, such as student accomplishment, attendance, participation, academic activity, etc. (Malloy & Leithwood, 2017). To provide high-quality and innovative teaching strategies that promote successful learning, teachers must improve the quality of their instruction, according to Shabani (2016). This occurs when school administrators and teachers seek to plan, carry out, and integrate all significant programmes to fulfil the educational vision and mission objectives. Consequently, this underscores the prominent role of school leaders in developing high-performing schools' teaching and learning approaches. As leadership styles enhance and progress students' teaching process, teaching, and learning styles are key areas of concentration in school leadership.

Hallinger (2013) divides this type of instructional leadership into three categories: defining the school's mission, managing an instructional programme, and promoting the school climate. The task or role of the leader in implementing the instructional leadership style into practice in an organisation or school is explained in terms of these three dimensions as well. These factors lead to the conclusion that this instructional leadership style is more concerned with the development of the student teacher, emphasises teaching, and supports developing a school with potential in all areas, particularly the curriculum. Consequently, according to prior research, this pedagogical leadership style is one of the higher-average leadership types adopted by school principals (Saat & Zain, 2016; Farah Naz & Surryia Rashid, 2021; Nasreen & Shah, 2019). The only other leadership type that sticks out is not this instructional leadership style, though. Because the didactic leadership style is mostly used in the classroom for monitoring, caring for, and consideration (Glickman et al., 2017). However, those who use this form of instructional leadership are responsible for enhancing the calibre of instruction and supporting it in classrooms (Farah Naz & Surryia Rashid, 2021). The Malaysia Education Blueprint 2013–2025, therefore, underlines the significance of this instructional leadership style in reshaping the educational system.

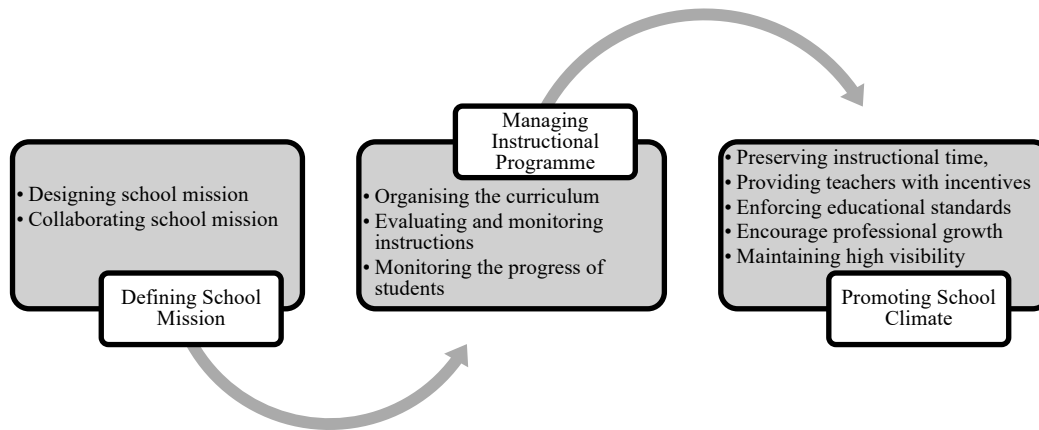


Fig. 2 - Instructional leadership model by Hallinger (2011)

1.3 Motivation in Implementing ICT via the Technology Acceptance Model (TAM)

Motivation is a process where a person will exert all their determination to accomplish their ambition to the fullest if specific conditions are met (Mohd Ariffin & Rami, 2023). Thus, to increase the efficacy of learning through the full use of ICT, teachers should be motivated and encouraged to develop technology-use skills and include them in TnL activities. This is because motivation should be acquired and earned throughout the transformation process, particularly when incorporating ICT into learning. Additionally, teachers' motivation levels will rise when technology improves students' pleasure and comprehension of their education (Schulz et al., 2015). The Technology Acceptance Model (TAM), which is depicted in Figure 1, was used in this study to gauge instructors' motivation and acceptance for utilising technology in the instructional process. The model, according to Davis (1989), presupposes that perceived usefulness, perceived utility (PU), and perceived ease of use (PEOU) are variables that forecast instructors' attitudes and intentions toward integrating technology into the instructional process. Previous studies have shown that teachers are willing to incorporate technology into daily duties and teaching and learning. (Siti Aminah & Fazlinda, 2018; Shah Rulbani, Mohd Isa, & Khadijah, 2017) However, several external factors, such as infrastructure, time, and other constraints, may have an impact on teachers' motivation to integrate ICT into TnL activities. Principal leadership and preparation impact teachers (Prasad et al., 2015; Siti Hajar & Suguneswary, 2016). The Analysis of results from earlier studies revealed that instructors' attitudes were a significant motivator for teachers to try using ICT in the TnL process. The absence of ICT skills that impede or decelerate the progress of technology integration among teachers in the instructional process is also considered as requiring ICT training or courses for educators.

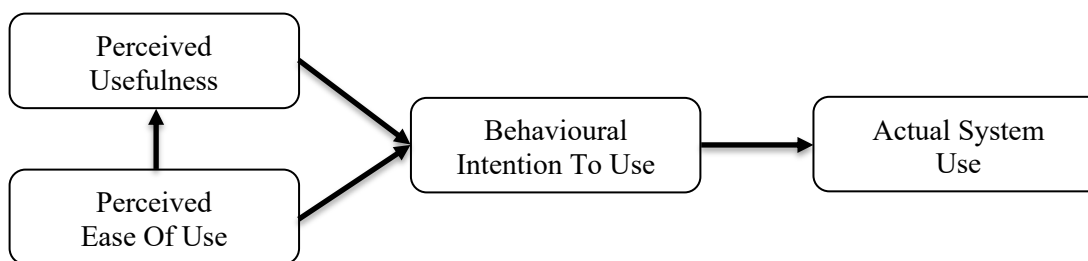


Fig. 3 - Technology Acceptance Model (TAM) (Davis et al., 1989)

1.4 Conceptual Framework

This framework provides a graphic overview of the research that is being conducted. The study's main objective is to identify the relationship between the transformational and instructional leadership variables and the teachers' motivation to use ICT. Figure 2 portrays the study's conceptual framework in analysing the relationship between variables. The transformational leadership of Burns (1978) and Bass (1985) and the instructional leadership of Hallinger (2013) are the leadership styles of principals. Both transformational and instructional leadership styles are two different independent variables. This is because both have different dimensions, whereas transformational leadership has four dimensions which are idealised influence,

inspirational motivation, individual consideration, and intellectual stimulation. At the same time, instructional leadership has three dimensions: defining the school mission, managing the instructional programmes, and promoting the school climate. Bennett and Robinson (2000) state that independent variables influence or stimulate dependent variables. However, the dependent variable is the teachers' motivation in implementing ICT, which is based on the theories of Maslow's hierarchy of requirements for motivation (1954) and Davis' Technology Acceptance Model (TAM) (1989).

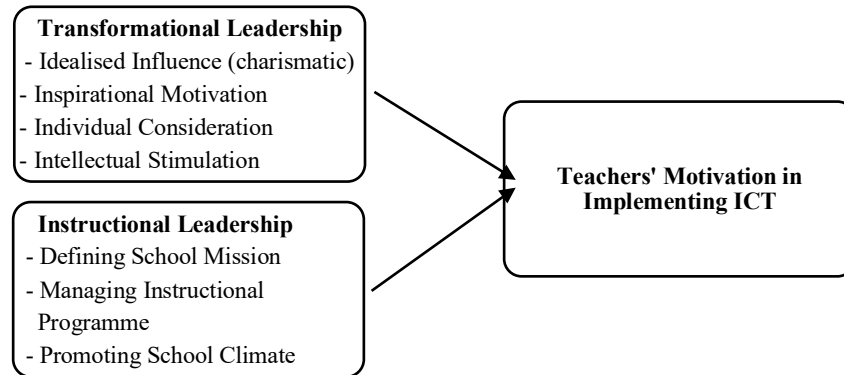


Fig. 4 - The relationship between transformational and instructional leadership style toward teacher's motivation in implementing ICT

2. Research Objectives

Based on the discussion and statement of the problem as stated, the following are the study's objectives:

- a) To determine the level of motivation of TVET teachers in implementing ICT.
- b) To determine whether there is a significant correlation between the transformational and instructional leadership of the principals towards the motivation of the TVET teachers in implementing ICT.
- c) To determine the influence of transformational and instructional leadership on the motivation of the TVET teachers in implementing ICT.

3. Research Hypothesis

Two null hypotheses can be developed based on the available facts and the literature research to explore the relationship between principals' leadership styles and TVET teachers' motivation to implement ICT. The following are the null hypotheses:

- H₀ 1: There is no significant correlation between the transformational leadership styles of the principals and the motivation of TVET teachers in implementing ICT.
- H₀ 2: There is no significant correlation between the instructional leadership styles of the principals and the motivation of TVET teachers in implementing ICT.
- H₀ 3: There is no significant influence of transformational and instructional leadership on the motivation of the TVET teachers in implementing ICT.

4. Methodology

A correlational research technique is applied in this study. The relationship between the research's factors is explained using descriptive research (Zainudin Awang, 2021). Teachers' motivation to implement ICT is the dependent variable, while the independent variables are the principals' transformational and instructional leadership. The primary aim and central hypothesis of the study were to examine the correlation between these factors. The study also employed a cluster random sampling technique, in which the researcher used a basic computer random number generator to choose 350 TVET teachers at random schools in Malaysia.

There are three sections to the research questionnaire. The demography of a teacher is in Part A. For Part B, which adapted the Multifactor Leadership Questionnaire (MLQ) from Bass and Avolio (2004) for transformational leadership and the Primary Instructional Management Rating Scale (PIMRS) from Hallinger's (2013) for instructional leadership, that to examine how teachers perceive the leadership styles of school principals. Teachers are requested to score the frequency of

each action of the principals' behaviour using a Likert scale for 50 questions, enabling the determination of their leadership style: never, rarely, sometimes, regularly, and always. The items used in Part C, which measures how motivated teachers are to use ICT, were modified from those developed by Talirkodi (2017) and Weng, Yang, Ho, and Su (2018) in accordance with the TAM model. 18 questions are included in this part to determine how motivated teachers are to use ICT. A Likert scale is used to demonstrate how strongly respondents agreed with each of the five answer choices for each question: strongly disagree, disagree, uncertain, agree, and strongly agree.

Conducting a thorough check and confirmation process is imperative before distributing the adopted and updated questionnaires to the teachers. This is done to validate the instruments' legitimacy. University experts and English teachers confirmed and examined the language's mechanics and the veracity of the information in the instruments in order to make them understandable and verifiable. After receiving their feedback, the instruments have been improved. In response to criticism, adjustments are made to the grammar, punctuation, and word choice. Additionally, Sections B and C have been restructured. After editing and rewriting, the surveys are validated. Following this, pilot research was conducted with 30 TVET teachers who were not a part of the primary study. To assess the instrument's dependability, pilot tests were also done. When Cronbach's Alpha coefficient is determined using data from the pilot test, the findings indicated that all three variables have acceptable reliability values.

Table 1 - Cronbach's Alpha pilot test result

Items	No of Items	Cronbach's Alpha
Transformational Leadership	20	0.986
Instructional Leadership	22	0.984
TVET Teachers' Motivation In Implementing ICT	18	0.979

In addition, a clear explanation of the correlation coefficient value (r) and the corresponding strength of the association between the two variables is given in Table 2. The correlation coefficient values are divided into five categories of relationship strength in the table below. A very weak relationship is one with a correlation coefficient of less than 0.20, which denotes a minimum or insignificant relationship between the variables. Values between 0.20 to 0.40 indicate a modest relationship, indicating a tenuous but discernible relationship. A moderate relationship is suggested for correlation coefficients between 0.40 and 0.70, signifying a significant and perceptible relationship. The range of coefficients between 0.70 and 0.90 denotes a robust and substantial relationship, indicating a strong relationship. In addition, correlation coefficients between 0.90 and 1.00 show a very strong relationship, showing a nearly perfect and very significant connection between the variables.

Table 2 - Correlation coefficient value interpretation table

Correlation Coefficient Value (r)	Interpretation
Less than 0.20	Very weak relationship
0.20 - 0.40	Low relationship
0.40 - 0.70	Moderate relationship
0.70 - 0.90	Strong relationship
0.90 - 1.00	Very Strong relationship

Source: Cohen (1988)

5. Results

5.1 Demographics of Respondents

Based on Table 3, there were 96 male teachers, which accounts for 27.4% of the total respondents. On the other hand, there were 254 female teachers, representing a significant majority of 72.6% of the respondents. This distribution indicates a higher proportion of female teachers in the surveyed population. Moving on to Teaching Experiences, the table presents the frequencies and percentages of teachers based on their years of experience. Among the respondents, 107 teachers reported having less than 5 years of teaching experience, making up 30.6% of the total. The largest group consists of teachers with 5-10 years of experience, with 120 individuals accounting for 34.3%. The next category, with 52 teachers (14.9%), represents those who have been teaching for 11-15 years. In comparison, 36 teachers (10.3%) have 16-20 years of experience, and a slightly smaller group of 35 teachers (10.0%) have been a teacher for more than 20 years. This distribution indicates a diverse range of teaching experience levels among the respondents. Finally, the Academic Background variable highlights the educational qualifications of the teachers. The majority, with 350 teachers (98.6%), reported having a graduate academic background. On the other hand, 5 teachers (1.43%) stated that they did not possess a graduate degree. This distribution

indicates that most of the surveyed teachers hold a graduate degree, while a smaller proportion does not. In conclusion, the table provides valuable insights into the gender composition, teaching experience levels, and academic backgrounds of the teachers included in the study. It reveals a higher proportion of female teachers, a diverse range of teaching experience levels, and most teachers with a graduate academic background. These results help to comprehend the population that was surveyed and serve as a foundation for additional analysis and study in education.

Table 3 - Respondent’s demography

Variables	Frequency (n)	Percentage (%)
<u>Gender</u>		
Male	96	27.4
Female	254	72.6
<u>Teaching Experiences</u>		
Less than 5 years	107	30.6
5 - 10 years	120	34.3
11 - 15 years	52	14.9
16 - 20 years	36	10.3
More than 20 years	35	10.0
<u>Academic Background</u>		
Graduate Teachers	345	98.6
Non-graduate Teachers	5	1.43

5.2 Descriptive Analysis of Leadership Styles

Table 4 presents the descriptive analysis of two leadership styles: Transformational Leadership and Instructional Leadership. As indicated in Table 4, respondents ranked principals’ leadership styles practised in schools. For each leadership style, the values for the mean and standard deviation are provided. These statistics offer insights into the central tendency and variability of responses related to leadership styles. For Transformational Leadership, the mean score is 3.54, indicating a relatively high average rating for this leadership style. The standard deviation value of 0.912 suggests that the responses for Transformational Leadership are clustered closely around the mean, indicating a lower degree of variability. Similarly, for Instructional Leadership, the mean score is 3.77, also indicating a high average rating for this leadership style. The standard deviation value of 0.820 suggests that the responses for Instructional Leadership are also closely clustered around the mean, indicating a relatively lower degree of variability. According to the analysis, principals in TVET schools employ both transformational and instructional leadership styles.

Table 4 - Leadership styles descriptive analysis

Leadership	Mean	Sd.
Transformational Leadership	3.54	0.912
Instructional Leadership	3.77	0.820

5.3 Descriptive Analysis of TVET Teachers’ Motivation

Table 5 presents the descriptive analysis of TVET teachers' motivation in implementing ICT. The table provides information on the minimum value and standard deviation for TVET teachers' motivation scores. According to the data presented, the minimum value for teachers' motivation in implementing ICT is 3.64. This indicates that teachers generally demonstrate a favourable level of motivation in integrating ICT into their instructional practices. The standard deviation value of 0.702 indicates the degree of variability in the responses related to teachers' motivation. A lower standard deviation suggests that the responses are closely clustered around the mean, indicating a relatively lower degree of variability among teachers' motivation scores. Furthermore, the descriptive analysis in Table 5 provides valuable insights into the level and variability of teachers' motivation in implementing ICT. The high minimum value suggests a positive trend in terms of teachers' motivation, indicating a generally favourable attitude towards incorporating ICT in their teaching practices. Additionally, the low standard deviation suggests that there is consistency among teachers in terms of their motivation levels, indicating a relatively homogeneous response pattern.

Table 5 - Teachers’ motivation descriptive analysis

Teachers’ Motivation	Min	Sd.
Teachers’ Motivation in Implementing ICT	3.64	0.702

5.4 Hypothesis Analysis

Ho 1: There is no significant correlation between the principals’ transformational leadership styles towards the TVET teachers’ motivation in implementing ICT.

The provided table, Table 6, presents a correlation coefficient matrix analysis between the transformational leadership styles of principals and the motivation of TVET (Technical and Vocational Education and Training) teachers in implementing ICT (Information and Communication Technology). According to the correlation coefficient values in table 6, the correlation coefficient between transformational leadership and teachers' motivation to implement ICT is 0.813. This value indicates a strong positive relationship between these two variables. A correlation coefficient of 0.813 falls within the range of 0.70 – 0.90 in the provided correlation coefficient interpretation table (Table 6). The significance level (Sig. 2-tailed) associated with the correlation coefficient is 0.000, suggesting that the relationship between transformational leadership and teachers' motivation to implement ICT is statistically significant. A significance level of 0.000 means the probability of obtaining such a strong relationship by chance is extremely low. The table also indicates that the analysis was based on a sample size of 350 observations (N), which provides some confidence in the generalisability of the findings to the broader population. Overall, the findings from this correlation coefficient matrix analysis suggest that there is a strong and statistically significant positive relationship between the transformational leadership styles of principals and the motivation of TVET teachers in implementing ICT. This information can be valuable for understanding the impact of leadership on teachers' motivation and the successful implementation of ICT in TVET schools. Therefore, from the analysis indicates that the null hypothesis is rejected.

Table 6 - Pearson correlation coefficient matrix analysis between the transformational leadership style of the principals towards the motivation of the TVET teachers in implementing ICT

		Teachers’ Motivation In Implementing ICT
Transformational Leadership	Pearson Correlation	0.813**
	Sig. (2-tailed)	0.000
	N	350

Ho 2: There is no significant correlation between the instructional leadership styles towards the TVET teachers’ motivation in implementing ICT.

Table 7 presents a Pearson correlation coefficient matrix analysis between the instructional leadership styles of principals and the motivation of TVET teachers in implementing ICT. According to the provided table, the correlation coefficient between instructional leadership and teachers' motivation in implementing ICT is 0.763. This value suggests a strong positive relationship between these two variables. The correlation coefficient of 0.763 falls within the range of 0.70 – 0.90 in the correlation coefficient interpretation table (Table 6) provided. The significance level (Sig. 2-tailed) associated with the correlation coefficient is 0.000, indicating that the relationship between instructional leadership and teachers' motivation in implementing ICT is statistically significant. A significance level of 0.000 means the probability of obtaining such a strong relationship by chance is extremely low. The table also mentions that the analysis was based on a sample size of 350 observations (N), indicating a substantial amount of data and increasing the confidence in the generalizability of the findings to the broader population. In conclusion, the findings presented in Table 8 suggest a very strong and statistically significant positive relationship between the instructional leadership styles of principals and the motivation of TVET teachers in implementing ICT. This information can provide valuable insights into the influence of instructional leadership on teachers' motivation and the successful implementation of ICT in TVET settings. Therefore, from the analysis indicates that the null hypothesis is rejected.

Table 7 - Pearson correlation coefficient matrix table between instructional leadership style of the principals towards the motivation of the TVET teachers in implementing ICT

		Teachers' Motivation in Implementing ICT
Instructional Leadership	Pearson Correlation	0.763**
	Sig. (2-tailed)	0.000
	N	350

H₀3: There is no significant influence of transformational and instructional leadership on the motivation of the TVET teachers in implementing ICT.

Table 8 – Regression model analysis for transformational and instructional leadership styles of the principals towards the motivation of the TVET teachers in implementing ICT

Model	B	Std. Error	β	t	R	R Square	p
Transformational	0.420	0.029	0.546	14.294	0.813 ^a	0.660	0.000
Instructional	0.329	0.033	0.385	10.071	0.859 ^b	0.737	0.000

Table 8 presented a regression analysis that offers valuable insights into the relationship between leadership styles and TVET teachers' motivation in implementing ICT in the classroom. Two regression models, namely Transformational Leadership (Model A) and Instructional Leadership (Model B), are utilised to examine the influence of different leadership styles on TVET teachers' motivation. In the Model A for transformational leadership, the R Square value of 0.660 indicates that approximately 66% of the variation in TVET teachers' motivation can be attributed to transformational leadership. This strong positive correlation implies that principals who exhibit transformational leadership qualities, such as idealised influence, inspirational motivation, individual consideration, and intellectual stimulation, significantly influence TVET teachers' motivation to implement ICT in their classrooms. The adjusted R square value of 0.659, being nearly identical to the R Square, suggests that the model is well-fitted and not overly complex. Moreover, the β-value of 0.546 and p-value of 0.000 demonstrates that the overall model is statistically significant, reinforcing the meaningfulness of the relationship between transformational leadership and TVET teachers' motivation. In the Model B for instructional leadership, the R Square value of 0.737 reveals that approximately 73.7% of the variation in TVET teachers' motivation can be attributed to instructional leadership. This finding indicates a strong positive correlation between instructional leadership practices, such as defining school mission, managing instructional programme, and promoting school climates influence TVET teachers' motivation to integrate ICT effectively. The Adjusted R Square value of 0.736 closely mirrors the R Square, indicating that the model is not excessively complex and remains well-fitted. The β-value of 0.385 and p-value of 0.000 emphasises that highlights the model's statistical significance and shows the important influence of instructional leadership on the motivation of TVET teachers. The regression table's analysis demonstrates that both transformational leadership and instructional leadership significantly influence TVET teachers' motivation in implementing ICT. Therefore, the null hypothesis is rejected.

6. Discussions and Conclusions

The results of the descriptive analysis show that teachers are extremely motivated to employ ICT in the T&L process, which is demonstrated by the high mean score for their motivation. As a result, our investigation suggests that teachers use ICT as a pedagogical tool in the classroom to improve efficient learning. This is due to the interactive nature of ICT's teaching and learning processes, which promote successful learning (Hamid et al., 2021). Furthermore, the result of the analysis also shows that both transformational and instructional leaderships have high mean scores. This is shown that the majority of TVET teachers in Malaysia discovered that their principals primarily exhibited transformational and instructional leadership styles. Thus, principals will be able to develop a strong and effective leadership strategy that benefits their schools and educational communities by combining both transformational and instructional leadership styles (Bellibaş et al., 2021). Through this, the combination of these leadership styles allows principals to inspire and motivate teachers through a compelling vision for change while supplying the equipment and resources needed to put new teaching methods into practice, especially the integration of technology. Despite that, principals also can enhance teachers' motivation and professional development, which will improve student outcomes through building a culture of collaboration, ongoing learning, and empowerment. However, implementing both leadership styles concurrently require a delicate balance and may present challenges in terms of time management and potential resistance to change (Holm & Fairhurst, 2018). Nonetheless, by being thoughtful and flexible, principals may foster a vibrant and encouraging environment that promotes constructive educational change in the digital era.

In addition, the correlation analysis from the provided table demonstrates a significant positive relationship between both transformational leadership and instructional leadership with teachers' motivation in implementing ICT. These findings indicate a strong and positive association between the two leadership styles and teachers' motivation to integrate ICT in their teaching practices. Principals who exhibit transformational leadership qualities, such as inspiring a shared vision and providing support and empowerment to their subordinates, are more likely to foster a culture of motivation and enthusiasm for technology integration (Yamamoto & Yamaguchi, 2019). Besides that, instructional leadership practices that offer tailored training and resources to teachers can further enhance their confidence and proficiency in using ICT (Berkovich & Hassan, 2022). Therefore, these findings emphasize the critical role of school leaders in driving technology integration in the classroom. Principals who adopt a balanced approach to leadership by combining both transformational and instructional strategies can create an environment that inspires and empowers teachers to integrate technology into their instructional strategies. With this, in turn, contributes to improved student learning outcomes in the digital age.

Additionally, from the regression analysis, demonstrates that both transformational and instructional leadership styles of principals are strongly and significantly correlated with TVET teachers' motivation in implementing ICT. These findings highlight the critical role of the principals in inspiring and supporting teachers' motivation and commitment to technology integration. The high R Square values in both models indicate that a substantial portion of the variance in teachers' motivation can be attributed to the leadership styles of principals. In fact, these findings highlight the importance of fostering leadership practices that inspire and support teachers' engagement with technology, ultimately leading to enhanced learning experiences and improved student outcomes (Almandeel et al., 2020 & Noceto, 2022). By recognizing the significance of school leadership in promoting technology integration, educational institutions can create a positive and technology-driven learning environment that prepares students for the challenges of the digital age.

Overall, the findings of this study are consistent with those of earlier research, such as those by Lokman and Anuar (2011), Tahir et al. (2018), and Talib et al. (2019), which showed that school administrators must raise teacher motivation in order to create successful learning environments. In addition, the findings from this research proved that both transformational and instructional leadership have the potential to influence teachers' motivation in implementing ICT. In fact, Malaysia Education Blueprint in tier 5 also indicates that both transformational and instructional leaders are high-performing leaders who have the capability to produce better quality and effective management, which brings benefits to academic achievement, teachers, and students (Ministry of Education, 2019). Therefore, the results of the study analysis show that some of the data satisfactorily responds to the objectives, hypothesis, and research questions. The research's findings also provide credence to the idea that principals' leadership and teachers' motivation are significantly correlated.

However, this study's focus was limited to Malaysian schools, despite other researchers supporting research involving schools in different nations. To promote leadership, particularly among school administrators, the educational system has also undergone certain alterations and enhancements. As a result, school leaders must use strong leadership philosophies and methods to increase teachers' motivation, contentment, and enthusiasm for the curriculum. This will assist schools in achieving their vision and objectives and, inadvertently, raise the standard and morale of the educational system.

7. Suggestions

Based on the findings, some recommendations can be applied to enhance the Malaysian education system for mutual benefit. Findings from descriptive research mostly show that school management's methods for motivating staff are of a high standard. This enables the Department of Education, State Department of Education, and District Department of Education to fulfil their responsibilities and further enhance the leadership of lower-level school principals through performance evaluations, counselling services, and leadership and professionalism training programs. To assess their leadership, the board must constantly monitor the principals, especially those correlated to Malaysia's educational quality standards. The results show that school leaders' leadership styles significantly impact TVET teachers' motivation to implement ICT in schools. School leaders must undergo professional development to motivate teachers, students, and schools to succeed effectively. This requires specific research and follow-up.

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