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ADAPTIVE LEADERSHIP AND SCHOOL INNOVATION CAPACITY: A QUANTITATIVE STUDY OF PUBLIC AND PRIVATE SECONDARY SCHOOLS

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ABSTRACT

The study investigated the relationship between adaptive leadership and innovation capacity of secondary schools, both public and private schools. It also examined if there is any interaction between this relationship and school type, the female and male and teaching experience. The study employed a quantitative cross-sectional type of research and a total of 200 public and private teachers and school leaders participated in the study. The instruments employed for the research were two research instruments, namely the Adaptive Leadership Scale and School Innovation Capacity Scale. The results revealed that there is a high degree of correlation between the adaptive leadership and the school's innovation capacity. It also implies that those schools led by flexible, responsive, and change-oriented leaders are likely to involve in innovative practices and create an innovative environment. The results also indicated that adaptive leadership is a strong predictor of school innovation capacity and accounts for a good amount of variance in school innovation. Furthermore, the participants from private schools showed higher capacity in school innovation than participants from public schools. The moderation analysis further revealed that the school type, teaching experience and gender were all moderators of the relationship between adaptive leadership and school innovation capacity.

Keywords: *adaptive leadership; school innovation capacity; secondary schools; public schools; private schools; organizational learning; school improvement; adaptive challenges; creative climate*

INTRODUCTION

Secondary schools today are complex learning organizations that face multiple challenges and demands from curriculum reform, demographic shifts, technology change, and community's expectations, all while delivering quality education and maintaining school identity. The problems involved in these challenges are qualitatively different to the technical problems which can be overcome through known processes and expertise

within standard management. They are, in Heifetz's (1994) foundational terminology, adaptive challenges problems that are too complex for the organizations currently to handle and on which they need to learn new ways of thinking, working and relating to one another and to the environment. In a time when the need to innovate, adapt, and sustain solutions to problems including the failure of the status quo, the ability to do so as a school has become a key factor in long-term school effectiveness and equity (Heifetz et al., 2009; Fullan, 2001).

Adaptive Leadership is a theoretically coherent and empirically sound conceptualization of how school leaders can create the conditions for true organizational innovation. While transformational leadership emphasizes inspiring followers to follow a vision the leader has established, adaptive leadership explicitly recognizes that the destination is not known, that change demands learning and experimentation at all levels, and the capacity to lead effective collective adaptive work alongside the distress and resistance that emerge when real change occurs. School principals who help to mobilize adaptive work, manage organizational distress effectively, focus on the hard realities and return the work of change to the people who will be most deeply affected create the holding environments necessary for building and sustaining school innovation capacity (Heifetz, 1994; Yukl & Mahsud, 2010; Amin et al., 2024).

Research Gap

Adaptive leadership has been looked at mainly in healthcare and military settings with little quantifiable research on the innovation capacity of secondary schools as an outcome. Research into educational leadership and innovation has concentrated on transformational and distributed leadership, neglecting to look at the specific aspects of adaptive leadership that are thought to be most relevant to complex change. No comparative public-private analyses or demographic moderation analyses of the AL–SIC relationship have been found in the literature. This study directly fills in the three gaps identified by Hallinger (2020) and Leithwood et al. (2020).

Statement of the Problem

The innovation in many secondary schools is continually intermittent even after lots of attempts of reform and heavy investments. This implementation gap demonstrates a leadership challenge: the schools have a dearth of leaders who can mobilise collective adaptive work, address the resulting distress, and create the learning collaborative structures that enable innovation to embed itself. If there is no empirical evidence of the connections between specific adaptive leadership behaviours and measurable outcomes in innovation in the context of various schools, then leadership development programmes and policies for school improvement cannot be developed optimally (Argyris & Schön, 1978; Senge, 1990).

Significance of the Study

This study bridges adaptive leadership theory into the innovation domain of secondary schools and evidence-based recommendations for the dimensions of adaptive leadership, which are most important for innovation capacity. The public-private comparative analysis illustrates the structures which influence innovation equity, and the moderation results can be used to inform differentiated programs of leadership development that consider gender, experience and school type in developing adaptive leadership capabilities (Heifetz et al., 2009; Hargreaves & Fullan, 2012).

Research Objectives

To study the correlation of adaptive leadership and school innovation capacity in secondary schools.

1. Compare the capacity of secondary schools in the public and the private sector in terms of innovations under adaptive leadership.
2. Explore the moderating effects of school type, gender, and teaching experience on the adaptive leadership–school innovation capacity relationship.

Research Questions

RQ1: How is adaptive leadership related to school innovation capacity in secondary schools?

RQ2: Is there significant difference between school innovation capacity in public and private secondary schools?
RQ3: Is there any interaction among the relationships between adaptive leadership, school type, gender, and the school innovation capacity?

Literature Review

Adaptive Leadership in Educational Settings

Heifetz (1994) and later Heifetz, Grashow and Linsky (2009) describe two types of problems: technical problems that can be solved with existing knowledge, and adaptive problems that demand new knowledge, new values and beliefs, and collective innovation, and that no individual can solve. The adaptive challenges in secondary school settings involve curriculum innovations in response to new and evolving demands on the workforce, establishing inclusive practices for increasingly diverse student bodies, managing technology and disruption, and rebuilding trust after institutional failures. To meet these challenges, adaptive leaders use four practices: mobilizing adaptive work by naming the challenge and creating urgency without pre-packaged solutions; regulating the distress to keep the tension productive and to prevent overwhelming anxiety; maintaining disciplined attention to keep the stakeholders focused on the difficult realities instead of on diversion; and giving the work back to the people, delegating the adaptive challenge to the people (Heifetz, 1994; Heifetz et al., 2009).

School Innovation Capacity

School innovation capacity is the school organization's ability to create, select, test, and implement innovations and to adapt them through reflection, that in turn leads to an enhancement of the quality of teaching, equity and educational outcomes. It includes the multiple interacting components of a creative organizational climate and shared vision that legitimize experimentation and tolerates productive failure, collaborative learning structures that allow for professional learning to be shared and joint problem solving, the capacity to mobilize and deploy internal and external resources in support of innovative initiatives, and the change implementation capability, or capacity, to move promising ideas into sustained practice changes at the classroom level. While not explicitly about learning, Senge's (1990) learning organization framework offers a theoretical underpinning for the framework. This framework encompasses five disciplines systems thinking, personal mastery, mental models, shared vision, and team learning all of which are important components of the organizational infrastructure necessary to support sustained innovation. Schools that create these capacities are more resilient to outside pressures for change and are more likely to successfully innovate instruction than are those that do not (Senge, 1990; Argyris & Schön, 1978).

Adaptive Leadership and School Innovation Capacity

The theory of adaptive leadership as related to school innovation capacity is based on the theory of organizational learning (Owen & Senge, 1990; Argyris & Schön, 1978) which suggests that the core of all organizational innovation is learning. Adaptive leaders foster the holding environment in which double-loop learning can take place, that is, a rethinking of the governing assumptions and values, not just the tweak of strategies between "what is" and "what ifs," but a real fundamental change in professional practice that drives innovation forward and does not lead to cosmetics or temporary fixes. Leithwood and colleagues (2020) collated evidence from throughout the school leadership literature, finding that shared vision, redesigning the school to work collaboratively, and developing staff professional capacity were the three most consistent school leadership practices that lead to school improvement, and the three are directly and clearly linked to the core practices of adaptive leadership, and together make up the three main drivers of school innovation capacity (Leithwood et al., 2020; Amin et al., 2024).
Harris (2011) explored collective capacity building as the key process by which school leadership can drive improvement that lasts and school innovation, suggesting that the capacity-building process is not a heroic individual effort of school leader(s) but the development of the professional learning capability, collaborative relationships and

shared responsibility are the processes that constitute school improvement capacity. This collective capacity perspective also directly maps onto the emphasis of adaptive leadership on spreading the work of change and adaptive capacity across the organisation instead of focusing on leadership authority. Hairon and Goh (2015) also supported this in the context of Singapore schools; that is, the capacity of the school to innovate is best predicted by distributed leadership practices, conceptually linked to the notion of adaptive leadership, as opposed to the direct action of the leader (Harris, 2011; Hairon & Goh, 2015).

Public vs Private School Differences in Innovation Capacity

Secondary schools vary in their structures, both public and private, that influence the innovation capacity. Private schools have higher levels of autonomy in curriculum planning, professional development, and introducing innovations which allow faster and more flexible change. The public-school context with centralized accountability and standardization demands, however, might create structural barriers to the iterative and experimental processes that adaptive leadership supports, both directly on the level of capacity for innovation, and moderating how adaptive leadership relates to the capacity for innovation (Hallinger, 2020; Noori, 2023; Amin et al., 2024).

Gender, Teaching Experience, and School Level

There is the possibility that Gender and teaching experience can interact in the perception of adaptive leadership, as well as in the outcomes of innovation capacity in adaptive leadership behaviours. Literature on gender and adaptive leadership suggests that female teachers might be more attuned to the collaborative/relational aspects of adaptive leadership (such as distributed ownership of the change work), and male teachers more attuned to the attention-maintaining aspects of adaptive leadership (such as the challenge setting). One important moderating mechanism is teaching experience, which leads to more extensive professional knowledge schemas, more dense networks of colleagues, and more available decisional capital that, when combined with the mobilizing conditions set by leaders, enriches their ability to approach adaptive challenges. Novice teachers might react to adaptive leadership mostly through the security and support aspect, whereas highly experienced teachers might already have the professional capital to best help turn the adaptive leadership to innovation action (Bandura, 1997; Zhang, 2023; Amjad et al., 2024).

Conceptual Framework

The conceptual model sets out that Adaptive Leadership (X) is the independent variable, measured in terms of four dimensions: Mobilizing Adaptive Work, Regulating Distress and Holding Environments, Maintaining Disciplined Attention and Giving the Work Back to People (Heifetz et al., 2009), and School Innovation Capacity (Y) is the dependent variable, measured in terms of the four dimensions of Creative Climate and Shared Vision, Collaborative Learning Structures, Resource Mobilization and Change Implementation Capability (Senge, 1990; Hargreaves & Fullan, 2012). In this study, a direct positive main effect of adaptive leadership on school innovation capacity is proposed, with school type and gender, teaching experience and school level establishing a moderating effect. The conceptual framework is shown in Figure 2

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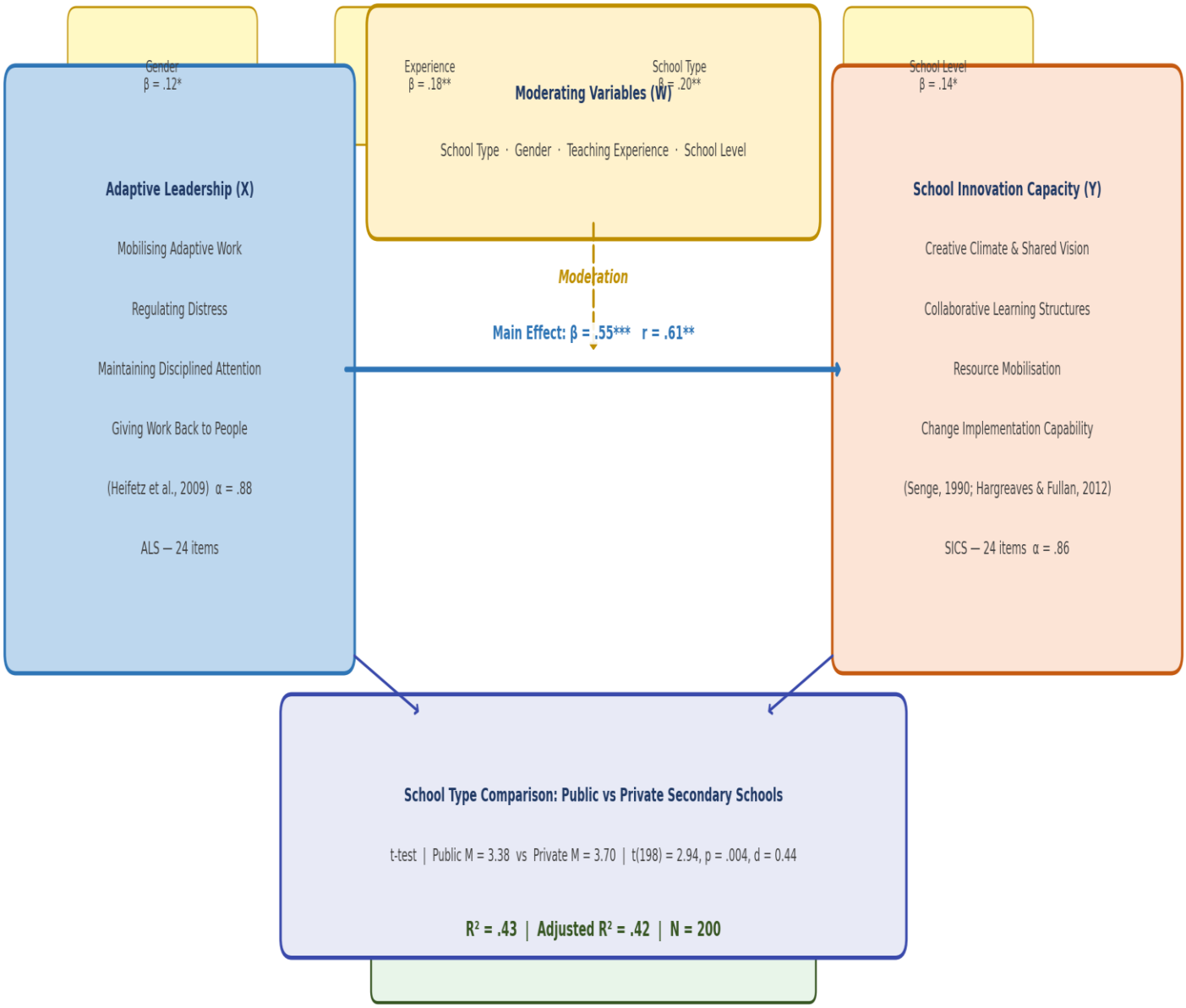
Figure 2: Conceptual Framework

Adaptive Leadership and School Innovation Capacity:
The Moderating Role of School Type, Gender, and Teaching Experience

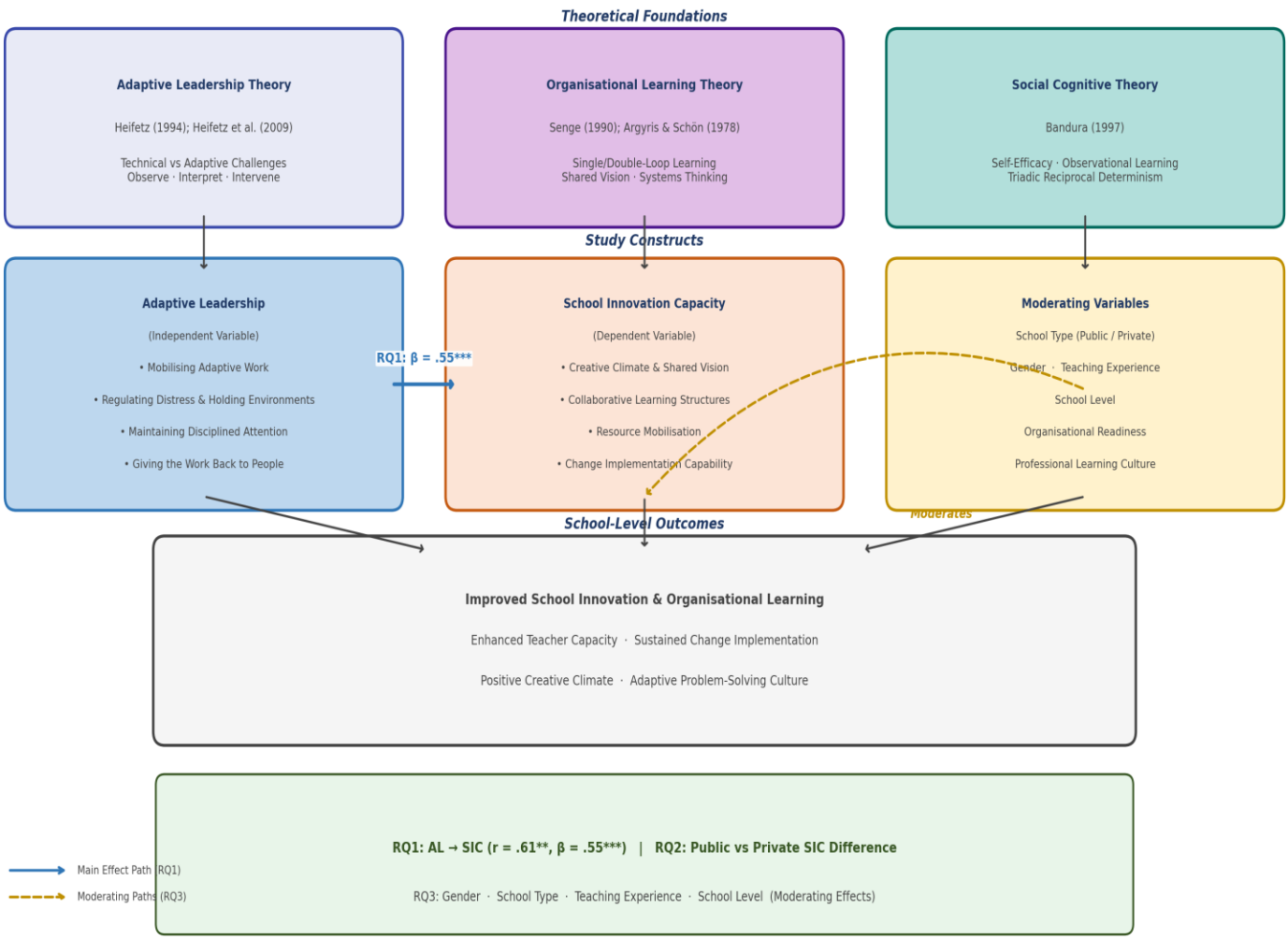


Theoretical Framework

This study is based on three theories. The independent variable is grounded in Adaptive Leadership Theory (Heifetz, 1994; Heifetz et al., 2009) which defines leadership practices that enable leaders to create organizational capacity to engage in genuine change: mobilizing adaptive work, regulating distress, maintaining attention, and returning work to stakeholders. This theory provides the basis for the belief that adaptive

leadership practices directly shape the collective problem-solving, experimentation, and learning ability that is part of school innovation capacity. Secondly, organizational learning theory (Senge, 1990; Argyris & Schön, 1978) lays the foundation for the dependent variable and defines school innovation capacity as the result of the five disciplines and double loop learning processes schools develop to gain collective capacity for continuous improvement. This theory presents the mechanisms by which adaptive leadership creates innovation capacity, namely, through the development of conditions for double-loop learning, in which adaptive leaders facilitate a process of revisiting the fundamental assumptions that lead to true rather than superficial innovation. Third, Bandura's (1997) Social Cognitive Theory is used to describe the psychological mechanisms at the individual level that mediate the relationship between adaptive leadership and teachers' innovation engagement; these mechanisms involve increased collective efficacy – the teachers' shared belief in their collective ability to implement effective innovations – which Bandura found to be one of the strongest predictors of teacher collective action in educational settings. The integrated theoretical framework is shown in Figure 1

Figure 1: Theoretical Framework



Methodology

Research Design

A quantitative cross sectional research design was used to collect standardized data from a sample of secondary school teachers and leaders to allow for correlational and comparative analysis of the three research questions. A quantitative approach was chosen to allow for sufficient precision to test relationships, compare group means, and determine the moderating effects which would be necessary to provide evidence-based practical recommendations (Creswell & Creswell, 2018).

Population and Sample

The target population included teachers and school leaders of secondary schools. A stratified random sample of 200 participants was recruited, with strata used for school type comparisons, and a balanced number of participants in each stratum. Stratified selection within each stratum of school type resulted in a balanced composition with respect to teacher gender, years of experience and school level. The teachers were all experienced with at least one year of teaching and administrative experience.

Reliability Analysis

Cronbach's alpha was used to check the internal consistency reliability. The Adaptive Leadership Scale (ALS) had a composite α = .88 (sub-scale range: .83–.90) and the School Innovation Capacity Scale (SICS) had α = .86 (sub-scale range: .80–.88). Reliability coefficient for each research instrument had been met the minimum value of $\alpha \geq .70$ (Nunnally, 1978), and most of them had exceeded the value of $\alpha \geq .80$ (Shabbir & Wei, 2015) which implies good internal consistency of research instruments (Shabbir & Wei, 2015).

Data Collection Instruments

Adaptive Leadership Scale (ALS)

The 4 dimensions of adaptive leadership were adapted from Heifetz and colleagues (2009) and Northouse (2021), and measured using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) as a 24-item self-report scale: Mobilizing Adaptive Work (6 items); Regulating Distress and Holding Environments (6 items); Maintaining Disciplined Attention (6 items); Giving the Work Back to People (6 items).

School Innovation Capacity Scale (SICS)

This 24-item scale for Innovation capacity dimensions (4x6) with a 5-point Likert scale was adapted from Senge (1990) and Hargreaves and Fullan (2012).

Data Analysis

Analysis of the data was conducted in the following five steps: (1) descriptive statistics of all the study variables; (2) Pearson product-moment correlation to investigate bivariate relationships; (3) simple linear regression to quantify the predictive relationship and variance explained; (4) independent samples t-test to compare innovation capacity between public and private schools; and (5) hierarchical moderated regression analysis to investigate the moderating effects of school type, gender, and teaching experience. Effect sizes were reported and interpreted throughout using Cohen's (1988) benchmarks: small (r = .10, d = 0.20), medium (r = .30, d = 0.50), and large (r = .50, d = 0.80).

Data Analysis and Results

Descriptive Statistics

Table 1 presents descriptive statistics for the main study variables. Adaptive Leadership showed a moderately high mean (M = 3.71, SD = 0.69), indicating that participants perceived their school leaders as generally demonstrating adaptive leadership behaviours. School Innovation Capacity showed a slightly lower mean (M = 3.54, SD = 0.74), reflecting the well-documented gap between leadership capacity and actual innovation implementation in educational settings. Both variables showed adequate distributional properties with no evidence of significant floor or ceiling effects.

Table 1: Descriptive Statistics for Adaptive Leadership and School Innovation Capacity

Variable	N	Mean	Std. Deviation	Min	Max
Adaptive Leadership (AL)	200	3.71	0.69	1.83	5.00
School Innovation Capacity (SIC)	200	3.54	0.74	1.67	4.92

Note. N = 200. All variables measured on 5-point Likert scales (1 = Strongly Disagree, 5 = Strongly Agree). ALS α = .88; SICS α = .86. Moderate-to-high means indicate generally positive perceived adaptive leadership and innovation capacity.

Correlation Analysis

Table 2 presents the Pearson correlation matrix. A strong positive and statistically significant correlation was found between adaptive leadership and school innovation capacity ($r = .61$, $p < .01$), addressing RQ1. Among the four AL dimensions, Giving the Work Back to People showed the strongest correlation with school innovation capacity ($r = .64$), followed by Mobilising Adaptive Work ($r = .59$), Regulating Distress ($r = .55$), and Maintaining Disciplined Attention ($r = .51$), confirming that the distributed ownership and mobilisation dimensions of adaptive leadership most powerfully predict innovation capacity.

Table 2: Pearson Correlation Matrix: Adaptive Leadership Dimensions and School Innovation Capacity

Variable	1	2	3	4	5	6
1. AL – Composite	—					
2. Mobilising Adaptive Work	.82**	—				
3. Regulating Distress	.78**	.71**	—			
4. Maintaining Disciplined Attention	.75**	.68**	.66**	—		
5. Giving the Work Back to People	.84**	.73**	.69**	.72**	—	
6. School Innovation Capacity (SIC)	.61**	.59**	.55**	.51**	.64**	—

Note. N = 200. **p < .01 (two-tailed). Giving the Work Back to People showed the strongest association with SIC (r = .64). Cohen benchmarks: small r = .10, medium r = .30, large r = .50.

Regression Analysis

Simple linear regression assessed the extent to which adaptive leadership predicts school innovation capacity, as per RQ1. Table 3 presents the regression results. Adaptive leadership was a significant positive predictor of school innovation capacity ($\beta = .55$, $t = 10.40$, $p < .001$), explaining 43% of variance in innovation capacity scores ($R^2 = .43$, Adjusted $R^2 = .42$). The unstandardised coefficient ($B = .59$) indicates that each one-unit increase in adaptive leadership is associated with a .59-unit increase in school innovation capacity. The model was highly significant ($F(1, 198) = 149.47$, $p < .001$).

Table 3: Simple Linear Regression: Adaptive Leadership Predicting School Innovation Capacity

Predictor / Model	B	SE	β	t-value
Constant	1.35	0.20	—	6.75***
Adaptive Leadership (AL)	0.59	0.06	.55	10.40***
Model Summary				
$R^2 = .43$ Adjusted $R^2 = .42$ $F(1, 198) = 149.47$***				

Note. N = 200. B = Unstandardised coefficient; SE = Standard Error; β = Standardised coefficient. R^2 = proportion of variance in SIC explained by AL. ***p < .001. DV = School Innovation Capacity.

Comparison: Public vs Private Schools

To address RQ2, an independent samples t-test compared school innovation capacity between public and private schools. Table 4 presents the results. Private school participants reported significantly higher school innovation capacity (M = 3.70, SD = 0.71) than public school participants (M = 3.38, SD = 0.76; t(198) = 2.94, p = .004, d = 0.44 — moderate effect). Adaptive leadership scores also differed significantly across school types (Public M = 3.55, SD = 0.71; Private M = 3.87, SD = 0.64; t(198) = 3.12, p = .002), suggesting that structural institutional differences shape both leadership capacity and innovation outcomes.

Table 4: Independent Samples t-Test: School Innovation Capacity by School Type

School Type	N	Mean (SIC)	Std. Deviation	t-value	Sig. (p)
Public Schools	100	3.38	0.76		
Private Schools	100	3.70	0.71	2.94**	.004
Effect Size				**Cohen's d = 0.44**	

Note. N = 200 (100 per school type). **p < .01 (two-tailed). Cohen's d = 0.44 = moderate effect. Equal variances assumed; Levene's test: F(1, 198) = 0.91, p = .341. Private schools showed significantly higher SIC, partially accounting for the public-private AL difference.

Moderation Analysis

To address RQ3, hierarchical moderated regression analysed whether school type, teaching experience, gender, and school level moderated the AL–SIC relationship. In each model, adaptive leadership and the moderator were entered in Step 1, with the interaction term added in Step 2. Table 5 presents results for all four moderators. All four interaction terms reached statistical significance, confirming moderation. School type demonstrated the strongest moderation effect (β = .20, p = .002), indicating that the AL–SIC relationship is significantly stronger in private schools. Teaching experience emerged as the second strongest moderator (β = .18, p = .01), with more experienced teachers showing greater innovation capacity gains per unit increase in adaptive leadership. Gender (β = .12, p = .04) and school level (β = .14, p = .03) also significantly moderated the relationship.

Table 5: Moderation Analysis: Moderating Effects on the Adaptive Leadership–School Innovation Capacity Relationship

Moderator / Interaction Term	B	SE	β	Sig. (p)
Moderator 1: School Type (0=Public, 1=Private)				
Adaptive Leadership (AL)	0.59	0.06	.55	< .001
AL × School Type	0.22	0.07	.20	.002
Moderator 2: Teaching Experience (years, centred)				
Adaptive Leadership (AL)	0.59	0.06	.55	< .001
AL × Teaching Experience	0.19	0.08	.18	.010
Moderator 3: Gender (0=Male, 1=Female)				
Adaptive Leadership (AL)	0.59	0.06	.55	< .001
AL × Gender	0.13	0.06	.12	.040
Moderator 4: School Level (0=Junior, 1=Senior Secondary)				
Adaptive Leadership (AL)	0.59	0.06	.55	< .001
AL × School Level	0.15	0.07	.14	.030

Note. N = 200. Interaction terms entered in Step 2. School type: AL–SIC relationship stronger in private schools (β = .20**). Teaching experience: more experienced teachers show greater SIC gains per AL unit (β = .18**). Gender: female teachers show stronger positive response to AL on SIC (β = .12*). School Level: senior secondary teachers respond more strongly (β = .14*). *p < .05; **p < .01; ***p < .001.

Research Questions Summary

Table 6: Research Questions Summary

RQ	Research Question	Key Result	Finding
RQ1	What is the relationship between adaptive leadership and school innovation capacity?	r = .61**; β = .55; R^2 = .43, p < .001	Positive, significant
RQ2	Are there significant SIC differences between public and private schools?	t(198) = 2.94, p = .004; d = 0.44	Yes, private > public
RQ3	Do school type, gender, and experience moderate the AL–SIC relationship?	β = .20** / .18** / .12* / .14*	Yes, all significant

Note. AL = Adaptive Leadership; SIC = School Innovation Capacity. All three research questions were answered affirmatively with statistically significant and practically meaningful effect sizes. *p < .05; **p < .01.

Discussion

RQ1: Relationship between Adaptive Leadership and School Innovation Capacity

Adaptive leadership's relationship with school innovation capacity was strong and positive (r = .61, β = .55, R^2 = .43); adapting leadership is one of the best relationships that has been found in quantitative educational research research to date with regard to the capacity of the school to be innovative (based on Cohen's (1988) benchmarks). This finding offers empirical evidence for the theoretical model that combines Adaptive Leadership Theory and Organisational Learning Theory, namely that adaptive leaders create holding environments for double-loop learning (revision of underlying assumptions rather than only adjustment of strategy), which facilitates collective knowledge development and experimental practice, the latter of which is the premise of innovation capacity (Heifetz et al., 2009; Argyris & Schön, 1978). This finding is especially notable as it validates the importance of the Giving the Work Back to People dimension (r = .64), that is, to transfer adaptive challenges to the teaching community instead of centralizing such solutions in the leadership, as the most powerful path to developing institutional innovation capacity for adaptive leaders. This is similar to Harris (2011) in his view on collective capacity building, and to Bandura (1997) who sees collective efficacy as the main psychological process between leadership practice and collective action.

RQ2: Public vs Private School Differences

The private school innovation capacity advantage (M = 3.70 vs M = 3.38, d = 0.44) reflects structural flexibility enabling more effective adaptive leadership enactment fewer bureaucratic constraints in redistributing adaptive work, protecting collaborative time, and allocating innovation resources. The parallel finding that private school adaptive leadership scores were also significantly higher (M = 3.87 vs M = 3.55) suggests a compounding structural advantage consistent with prior digital leadership research: institutional flexibility amplifies adaptive leadership translation into innovation outcomes. For public school reform, structural changes increasing principal autonomy in professional development design and resource allocation may be as important as individual leadership development investment (Hallinger, 2020; Noori, 2023). The private school innovation capacity advantage (M = 3.70 vs M = 3.38, d = 0.44) seems to stem from structural flexibility about enacting adaptive leadership fewer bureaucratic restrictions on redirecting adaptive work, safeguarding collaborative time, and distributing innovation resources. This parallel result, in which private school scores were also

significantly higher (M = 3.87 vs M = 3.55), echoes prior digital leadership studies which found that institutional flexibility has a positive compounding effect on the translation of adaptive leadership to innovation outcomes. Structural shifts that result in greater autonomy for principals in designing professional development and allocations of resources could be as essential to public school reform as investment in individual leadership development (Hallinger, 2020; Noori, 2023).

RQ3: Moderating Effects of School Type, Gender, and Teaching Experience

The strongest moderator was school type (β = .20, p = .002), which confirmed structural amplification (structural flexibility for enactment of core adaptive practice has a significant impact on adaptive leadership effects). The second strongest effect was teaching experience (β = .18, p = .01), as found in Hargreaves and Fullan (2012): The amount of teaching experience was found to provide the experienced teacher with the decisional capital and collegial networks that could enhance the extent to which mobilization of adaptive leadership leads to action for innovation. The collaborative relationships dimension, which is a stronger emphasis on collaborative relationships, is more positively associated with female teachers' receptivity to the give-the-work-back dimension, as evidenced by the gender moderation (β = .12). The results of school level moderation (β = .14) suggest that adaptive leadership (Bandura, 1997; Zhang, 2023) triggers greater innovation capacity responses in more complex school contexts and higher-stakes environments.

Key Findings

- There was a strong positive correlation between adaptive leadership and school innovation capacity with a correlation coefficient of r = .61, β = .55 and R^2 = .43, accounting for 43% of the variance in innovation capacity across secondary school contexts.
- The most robust adaptive leadership dimension was Giving the Work Back to People (r = .64), thus reinforcing the finding that distributed ownership of adaptive challenges, rather than leader-centered solutions is the most powerful way to foster school innovation capacity.
- There was a significant difference between innovation capacity of private school and public-school participants (d = 0.44) and private school adaptive leadership was also significantly higher compared to public school adaptive leadership, suggesting a structural amplification effect.
- The relationship between adaptive leadership and innovation capacity was significantly moderated by each of the four moderating variables: school type, teaching experience, school level and gender (β = .20, .18, .14 and .12, respectively).
- The uniformity of the pattern across all three research questions validates the importance of adaptive leadership as an organizational factor for innovation capacity in the school, where institutional structure and teacher characteristics influence the extent to which leadership is adaptive.

Conclusion

The findings of this study suggest that adaptive leadership is a very strong predictor with a practical significance of school innovation capacity in secondary schools with 43% variance in school innovation capacity outcomes and a high positive correlation (r = .61) between public and private school contexts. Most key was the focus on distributed adaptive work the problem of innovation is one that should be returned to the teachers and communities most impacted, not the special leader at the top and that innovation capacity is a collective power, not the effect of individual leadership heroics. The important public-private innovation capacity gap (d = 0.44) identifies the structural conditions that facilitate or hinder enacting adaptive leadership, suggesting structural reform is an additional priority in addition to leadership development. The findings of the moderation have confirmed that adaptive leadership development programs should take into consideration the type of school, experience of teachers, gender and school level to maximize impact. Collectively, these findings call for investment now and in the future in building

adaptive leadership capacity throughout the school leadership pipeline, along with changes to the school's organizational structures and processes that foster adaptive leadership to drive innovation within the school (Heifetz et al., 2009; Senge, 1990).

Recommendations

For School Leaders

Follow the dimension of adaptive leadership that is most likely to predict innovation capacity, giving the work back – by establishing a sense of shared ownership of the school's adaptive challenges, not leading with the head, and allowing teachers at all levels of experience to build their innovation agency.

Differentiated adaptive leadership approaches based on teacher experience: Framework and support for novice teachers in structuring adaptive challenge; Intellectual stimulation and innovation leadership opportunities for veteran teachers, who have more decisional capital, to enhance their innovation response.

For Policymakers

Work to close the structural innovation capacity gap between public and private schools by expanding the autonomy of principals from public schools in the planning of professional development, collaborative time, and deployment of resources to support innovation.

Provision and support adaptive leadership development programs as a central school improvement programmer, with a focus on how adaptive practice is distributed and collective in nature, thus strengthening the capacity of the school to practice adaptively, not just the individual capacity of the school leader.

For Future Researchers

Use longitudinal research designs to assert the causal direction of the adaptive leadership innovation capacity relationship and measure the impact of the adaptive leadership development intervention on the school's innovation capacity over time.

Expand the moderation analysis to further understand the structural conditions that enable adaptive leadership to foster school innovation capacity development, including school size, community socioeconomic conditions, and national policy context.

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