

Congruence of Leadership and Self-Efficacy as Predictor of Research Productivity

Sanny S. Maglente¹, Dr. Violeta B. Monticalvo², Dr. Ronald B. Abilong³, Dr. Dinnah A. Bañares⁴, Dr. Jean M. Paglinawan⁵, Maria Yvette Meniano⁶, Leonilo B. Capulso⁷

Abstract

This study employs a descriptive analysis coupled with a stepwise regression approach to unravel the intricacies governing teacher research productivity. Empirical results elucidate that Self-Efficacy exerts a profound influence on teachers' research outputs. The investigation underscores a spectrum of determinants shaping teacher research productivity, highlighting the indispensable roles of effective leadership dynamics and bolstered self-efficacy. The findings of this study illuminate the nuanced interplay between self-efficacy, leadership, and research productivity among educators. The overwhelmingly positive lean in research self-efficacy among respondents is a testament to the inherent resilience, adaptability, and problem-solving acumen present in the cohort. This is reassuring, given the unpredictabilities and demands of the research domain. The areas marked by slightly lower mean scores serve as signposts, pointing towards potential areas of capacity-building and intervention. Further, the predictive model underscores the intricate relationship between self-efficacy and research productivity. While high self-efficacy often correlates with perseverance and task completion, its negative influence at the initial productivity level is an intriguing revelation. This suggests a deeper dive into understanding the thresholds of self-efficacy and how they interact with individual goals, research complexities, and perceptions of productivity. Leadership's role as a significant predictor, especially at the foundational productivity level, accentuates its importance in shaping research trajectories. This research offers invaluable insights into the determinants of research productivity among educators. By highlighting the salience of self-efficacy and leadership, the study underscores the need for institutions to foster these attributes. In an ever-evolving educational landscape, understanding and nurturing these determinants will be instrumental in propelling research excellence.

Keywords: *teacher research productivity, SDG 4, empowerment, continuous improvement, innovation, mixed methods research, educational enhancement.*

Introduction

The linchpin of innovation in contemporary societies is undoubtedly research. It provides a barometer for a nation's aptitude in birthing new-age solutions and technologies that are

¹ Dean, Graduate Studies and Research and Teacher Education, Masbate Colleges

² Osmeña Colleges, Graduate School Faculty

³ Osmeña Colleges, Graduate School Faculty

⁴ Osmeña Colleges, Graduate School Faculty

⁵ Osmeña Colleges, Graduate School Faculty

⁶ IS Faculty, De LaSalle University

⁷ CEO/President, Beyond Books Publication, maglente1722@gmail.com

pivotal for sustainability in our knowledge-driven era. It acts as a catalyst in sectors spanning from education and law to business and agriculture. Absent robust research mechanisms, the trajectory of knowledge and our adaptive capabilities stagnate. A nation's competitive edge is often discerned through its research vigor (Ketels, 2013; Endovitsk, Korotkikh, & Voronova, 2020). Philippine education has witnessed a metamorphosis, shaped by global integrations like ASEAN, the omnipresence of ICT, and the currents of globalization (Ang, 2017; De Guzman, 2003; Ocampo & Delgado, 2014). The onset of the Fourth Industrial Revolution ushers in an era of both promise and tests for the country's educational trajectory, casting a fresh lens on standards and practices. Navigating the COVID-19 pandemic accentuated the paramountcy of research. The Philippine's preventive response – shuttering educational infrastructures – placed an academic hiatus on a staggering 28 million students (UNESCO, 2020). Steering through this predicament demands research-infused management acumen among educators. This involves leveraging evidence-based practices, rigorous review, and forward-thinking strategies.

Under the banner of Republic Act No. 10533, a rejuvenated K-12 Basic Education system was birthed, seeding modern competencies amongst students for contemporary economic requisites (Geisinger, 2016). This reformed curriculum inculcated practices like evidence-driven policies, curriculum refinement, and an emphasis on teacher excellence (Sergio, 2012; Abulencia, 2015). The Department of Education's strategic blueprint is rooted in Republic Act 9155, championing the essence of research in shaping public educational frameworks (Official Gazette, Chapter 1, Section 7(5) Rep. Act No. 9155). Furthermore, the BERA promotes collaborative research endeavors across the academic spectrum (DO No. 39, s. 2016). However, the stark revelations from PISA evaluations depict a pressing challenge for the Philippine educational framework (Punongbayan, 2019). Responding to this, the Philippine Professional Standards for Teachers (PPST) was conceived as the bedrock for teaching excellence. Intricately linked with the K-12 Program, it pivots on indicators like research proficiency as a foundation for pedagogical effectiveness. Yet, a palpable discrepancy exists. The aspirations of research-infused pedagogies and the ground reality of teacher research productivity remain misaligned. This disparity underscores the dire need for a recalibrated approach by educational leaders to underscore the potency of research-driven pedagogy. Though policies underscore research's cardinal role, its embodiment in practices seems to waver, forming the crux of this investigation. Propelled by an observed research void on primary and secondary education research productivity, the researcher – a seasoned teacher in the public education realm – embarked on this inquiry. While existing literatures often adopt unidimensional approaches, this study crusades for a blended methodology to fathom the research engagement among public secondary educators. Serving dual purposes, this investigation not only sharpens the acumen of existing educators in sync with Industry 4.0 but also offers a compass to budding educators, emphasizing research as the underpinning of pedagogical excellence.

Leadership and Self-efficacy in Research Productivity

Leadership plays a pivotal role in shaping the research culture and output of institutions (Jones, Lefoe, Harvey, & Ryland, 2012). However, recent studies highlight the importance of leadership not just at the institutional level but also at the individual level in driving research productivity. Smith and Ulus (2018) argued that individual academic leadership, including self-leadership and autonomy, positively impacts research output. Research leaders act as catalysts, fostering a supportive environment, providing resources, and creating platforms for collaborative research (Walter, Lötsch, & Leitner, 2018). Bandura (1997) posited that self-efficacy or an individual's belief in their capacity to execute tasks influences motivation, cognitive resources, and actions. In the context of research productivity, self-efficacy has been identified as a significant predictor. A study by Richardson, Abraham, and Bond (2015) suggested that higher levels of self-efficacy

among academics correlate with increased research productivity. This notion is echoed by Blackburn, Bieber, Lawrence, and Trautvetter (2018) who found that faculty with a stronger belief in their research abilities were more likely to be productive. Recent studies have begun to explore the synergistic effects of leadership and self-efficacy on research productivity. Williams and Leahy (2017) argue that leadership which fosters a sense of autonomy and empowerment can enhance researchers' self-efficacy. Conversely, without sufficient leadership support, even those with high self-efficacy might face challenges in realizing their research potential (Kahn & Wiener, 2020). It becomes evident that while self-efficacy can drive an individual's intent and effort, the role of leadership in providing the necessary resources and environment is equally vital.

Literature and Practical Gaps in the Research Productivity Domain

Amidst a plethora of studies on teacher research productivity, many have been found to draw upon objective or anecdotal data, often narrowing down to specific facets of the broader challenge (Baloch et al., 2020; Cardona, 2020; Heng et al., 2020; Ogunsola et al., 2020). Such narrowed perspectives have underscored the necessity for more holistic investigations using mixed methodologies to scrutinize the efficacy of secondary school educators. This study, against the backdrop of the COVID-19 challenges, aligns with the earlier data and experiences predating the pandemic, thus magnifying its relevance and urgency. The ambition of the current study orbits around comprehending teacher research productivity, its methodologies, and policy reverberations, particularly among secondary schools in Region III. The ultimate aim is to engender practical modalities that galvanize the research milieu via an archetype system for teacher research productivity. Notably, while an abundance of research has been invested in dissecting determinants behind institutional research productivity across diverse sectors (Sari Lassi & Hartijasti, 2018; Mitev et al., 2013; Goodall et al., 2014; Mantikayan & Abdulgani, 2018; Effendi et al., 2017), an evident lacuna prevails concerning basic education, more specifically pertaining to secondary school instructors in public institutions. The extant literature predominantly steers towards either purely quantitative or qualitative vectors (Baloch et al., 2020; Cardona, 2020; Heng et al., 2020; Ogunsola et al., 2020). The conspicuous paucity of interdisciplinary research accentuating educators' involvement in research amplifies the pressing need to bridge this void. Resorting to the Converge Research Method Structure, the present inquiry envisages illuminating future investigations concerning research efficacy paradigms, policy genesis, and curriculum framing in research (Quimbo et al., 2015; Bland et al., 2005). With the Congruence of Leadership and Self-Efficacy as a Predictor of Research Productivity serving as the guiding theme, this study endeavours to infuse the domain with insights, primarily assisting educators in sharpening their research acumen within the Philippine Basic Education milieu. It postulates that by instigating an enabling learning ambience, fortified through adaptive and robust instructional management, myriad pathways can be paved to bolster the research prowess of educators, capacitating them for effective dissemination. This research's pivotal contribution is the crafting of a research productivity blueprint tailored for Basic Education instructors. This blueprint, enriched with policy insights, can prove instrumental for school strategists and overseers, realigning teaching methodologies with DepEd's overarching Mission and Vision. Echoing the Sustainable Development Goals (SDGs) ethos on Education, the study illuminates the path for school leaders to rejuvenate their strategies in fostering a culture of research productivity. This proposed framework aims to pinpoint vital components, tactics, and trajectories for research productivity, offering a beacon for both educators and policymakers to champion a research-centric academic ethos.

Objectives of the Study

With all the foregoing gaps and aspirations to address the pertinent issues and problems, this study primarily aimed to develop a quality assurance framework in promoting research productivity in basic education drawn from triangulating self-assessment of teachers' research productivity and productive teacher-researchers' interview results. Specifically, it sought to: (1) describe the teachers' self-assessment of research productivity in terms Self-efficacy. It also delved (2) to determine the significant predictors of research productivity through regression analysis;

Methodology

Research Design

This study employed a quantitative research approach with a focus on regression analysis. Regression analysis is a statistical technique used to determine the strength and nature of the relationship between one dependent variable and one or more independent variables. The primary goal of regression is prediction and understanding the relationship dynamics between variables. According to Field (2018), regression analysis "offers a method to model and analyze the relationships between a dependent and one or more independent variables, while accounting for the variability in the data." (p.5). It provides a means to examine how changes in independent variables correspond with changes in the dependent variable. This approach can effectively ascertain trends, make predictions, and hypothesize about causal relationships (Härdle & Simar, 2015, p. 26). Osborne and Waters (2017) state, "Regression provides valid and reliable insights when there are clear hypotheses about specific relationships, and the researcher aims to quantify these relationships." (p.39). By utilizing regression in this study, the intention is to investigate the direct influence and predictive capacity of independent variables like leadership and self-efficacy on the dependent variable – research productivity. The primary advantage of using regression analysis is its capability to handle multiple independent variables simultaneously, isolating the effect of each on the dependent variable, making it a potent tool for this research. As per Wooldridge (2015), "Regression models are essential for determining the relative influence of one or more predictor variables on an outcome, making them indispensable in studies aiming to understand complex inter-variable relationships" (p. 14). Regression analysis will provide a robust and comprehensive understanding of the dynamics influencing research productivity in the context of this study. By understanding these dynamics, the study aims to generate actionable insights that can enhance research productivity in the field.

Respondents and Sampling Procedure

A total of 475 educators, including teachers and school leaders from chosen schools across two School Divisions in Central Luzon, contributed to the quantitative data for this study. To ensure and authenticate the sample size, the online Raosoft sampling calculator, accessible at <http://www.raosoft.com/samplesize.html>, was employed. This tool was set with parameters that included a 5% margin of error, a confidence level of 95%, and a 50% distribution rate, adhering to the guidelines put forth by Wright (2005) and Arora (1994). Such parameters highlight the efficacy of this online tool for web-based survey sampling. Given the regional teacher count of 13,140, Raosoft suggested a sample size of at least 374. As such, the 475 respondents in this research provide a considerable representation of the broader community. Table 1 provides a detailed breakdown of the participants, categorizing them as School Leaders and Lead Educators, Master or Expert Teachers, and Teachers I-III or Competent Teachers. Of the 475 respondents, 376 (or 79.2%) were categorized as competent teachers, 74 (or 15.6%) as Expert Teachers, and 25 (or 5.3%) as School Administrators or Leading Educators. The data in Table 1 further delineates essential demographics of the participants. Notably, a significant proportion

were female (78%), enjoyed permanent employment (98%), were aged between 31-40 years (31%), held qualifications in BS/BEED/AB (40%), and boasted 5 to 10 years of professional experience (22%).

Research Instrumentation

In the quantitative stage, a comprehensive 40-item survey was administered to gauge participants' metrics related to research productivity. This survey was segmented into four parts: eight items delving into individual attributes, twelve items addressing institutional facets, ten items probing leadership qualities, and a final ten items concerning self-efficacy. The construction and content of the survey were inspired by seminal works from Hanover Research (2014), Bland et al. (2015), and Quimbo & Sulabo (2014), ensuring a holistic understanding of factors driving research productivity. The instrument itself was sectioned into three parts. Part I included an invitation letter from the researcher, giving participants the choice to opt-out of their feedback being used for research purposes, while also capturing their consent in line with data privacy standards. This section also collated basic demographic information such as age, educational background, gender, employment type, tenure of service, and prior exposure to action research. Part II was tailored to capture details of the respondents' research outputs. In contrast, Part III honed in on the key indicators of research productivity, encapsulating aspects like personal traits, organizational attributes, leadership qualities, and self-efficacy in research. The responses were gauged on a scale ranging from 1 (being the lowest) to 4 (being the highest). To fortify the survey's validity, it was subjected to an expert review, with subsequent refinements based on the feedback received. The instrument's reliability was evaluated using the Cronbach's alpha measure. All elements of the survey demonstrated commendable reliability, surpassing a Cronbach's alpha threshold of 0.7. A preliminary test of the survey was undertaken with a group of ten individuals outside the main study group, utilizing Google Forms as the survey medium. Ensuring ethical adherence, participants were apprised of their rights to voluntary engagement and guaranteed strict confidentiality (as advocated by Wiles in Blair, 2016). The amassed data was rigorously parsed and analyzed using the SPSS software. The resultant Cronbach's alpha scores for all sections surpassed 0.7, reaffirming the instrument's reliability.

Data Analysis

To dissect the quantitative facet of this study, the study leveraged the multinomial logistic regression analysis technique. This technique's primary utility is in addressing the second research objective, which entails discerning the predictors that influence study efficiency. Multinomial logistic regression is especially germane when dealing with categorical outcomes that aren't binary. This method provides a robust mechanism to assess, elucidate, and predict the relationship between one categorical dependent variable (with multiple levels) and one or more independent variables. As El-Habil (2012) elucidates, this form of regression is indispensable for analyzing categorical data that encompasses more than two classifications. It becomes particularly salient when the response variable is either nominal, where categories don't have a specific order, or ordinal, where categories have a sequential order. The primary advantage of using multinomial logistic regression over standard logistic regression is its ability to handle dependent variables with more than two categories, without the need to split the data or reconfigure the dependent variable (Jaccard, 2017). This ensures that the full complexity and variability of the data are captured, providing richer and more nuanced insights. Moreover, this approach facilitates the examination of how different predictor variables can influence the likelihood of each category of the dependent variable, enabling a granular understanding of underlying patterns and relationships (Long & Freese, 2014). By using this method, the study can ascertain specific predictors that hold significant influence over the chosen categories of study efficiency.

Results and Discussion

Mean Responses on Research Self-Efficacy of the Respondents

Table 2 presents the Mean Responses on Research Self-Efficacy of the Respondents. From the provided data on Research Self-Efficacy of the respondents, it's evident that their self-belief in research capabilities generally leans towards the positive, with all mean scores falling within the "more true of me" category. The higher mean scores emphasize the respondents' resilience, adaptability, and problem-solving capabilities in research. These are crucial attributes, especially in a domain that often presents unexpected challenges. Their conviction in achieving goals and leveraging resourcefulness resonates with the findings of Bandura (1997), who posited that self-efficacy plays a pivotal role in task completion and overcoming obstacles. On the other hand, the areas with slightly lower mean scores indicate areas where capacity-building might be beneficial. While the scores are still within the positive range, these areas might be perceived as more challenging, requiring a greater degree of focus or additional resources. It aligns with Tschannen-Moran and Woolfolk Hoy's (2001) assertion that self-efficacy beliefs could be domain-specific and can vary based on the perceived difficulty of the task.

Table 1. Mean Responses on Research Self-Efficacy of the Respondents

Research Self-Efficacy	Mean	Std. Deviation	Verbal Interpretation
I can always manage to solve difficult research problems if I try hard enough.	2.84	0.74	more true of me
I can always get my goals despite some challenges.	2.93	0.73	more true of me
It is easy for me to stick to my research objectives and accomplish my tasks accordingly.	2.73	0.75	more true of me
I am confident that I could deal efficiently with unexpected events in the implementation of my research.	2.73	0.77	more true of me
Thanks to my resourcefulness, I know how to make the necessary adjustments when the situation warrants it.	2.92	0.75	more true of me
I can solve most problems in my research if I invest the necessary effort.	2.91	0.76	more true of me
I can remain calm when facing difficulties in the conduct of my research because I can rely on my coping abilities.	2.88	0.72	more true of me
When I am confronted with a problem in the conduct of my research, I can easily find solutions.	2.76	0.75	more true of me
If I am in trouble with my research, I can usually think of a solution.	2.80	0.75	more true of me
I can usually handle whatever comes my way in the conduct of my research	2.79	0.79	more true of me

Legend: 1-1.77 rarely true of me; 2.51-3:27 more true of me; 1.76-2:52; less true of me; 3.26-4:00; highly true of me

These findings hold significant implications for professional development in research contexts. By identifying areas of higher confidence and those that might benefit from further support, educators and institutions can craft targeted interventions. It might be beneficial to provide additional training or resources in areas where respondents feel less confident. Given the pivotal role of self-efficacy in determining research outcomes, these insights can guide strategies to foster a more enabling and productive research environment. The findings of this study, rooted in the rich tapestry of literature on self-efficacy, accentuate the need for recognizing, nurturing, and strategically enhancing the research self-efficacy beliefs of educators. As the global educational landscape evolves, institutions armed with educators possessing high self-efficacy will be better poised to drive innovation, contribute valuable insights, and shape the future of education.

Predictors of Teachers' Research Productivity

From Table 3, depicting the Predictors of Teachers' Research Productivity, the final parsimonious model has identified 'Self-Efficacy' as a significant predictor. The model is statistically significant, as evidenced by the Chi-square value of 153.087 ($p < 0.001$), suggesting that it is a good fit for the observed data. The significant p-value associated with 'Self-Efficacy' (< 0.001) indicates that self-efficacy is a key predictor of research productivity among teachers. The Likelihood Ratio Test, which compares the fit of the proposed model to a model with fewer predictors, indicates that the inclusion of 'Self-Efficacy' significantly improves the model. The values for -2 Log Likelihood, AIC, and BIC further support the fit and adequacy of the model. The Pearson and Deviance goodness-of-fit statistics demonstrate that the model has a decent fit with the data. Self-efficacy's role as a predictor underscores the importance of an individual's belief in their capabilities to achieve research outcomes. Teachers with higher self-efficacy are more likely to engage in research activities, persevere through challenges, and be productive. This is coherent with Bandura's (1977) theory of self-efficacy where he postulates that individuals who believe in their abilities are more likely to take on challenging tasks and persist in the face of adversity. In the realm of academic research, this translates to teachers being proactive in seeking out research opportunities, showcasing resilience in navigating the complexities of the research process, and being innovative and productive in their research endeavors. Bandura's work on self-efficacy is seminal in understanding the relationship between an individual's belief in their capabilities and their subsequent performance outcomes (Bandura, 1997). In the educational context, Tschannen-Moran and Woolfolk Hoy (2001) found that teachers' beliefs in their capabilities significantly influence their planning, decision-making, and approach towards instructional tasks. Additionally, self-efficacy has been linked to increased motivation, commitment to tasks, and overall job satisfaction (Caprara, Barbaranelli, Steca, & Malone, 2006). Within the context of research, teachers with high self-efficacy are not only more productive but are also more collaborative and innovative in their research approaches (Goddard, Hoy, & Woolfolk Hoy, 2004).

Table 2. Final Model (Parsimonious Model)

Likelihood Ratio Tests

Variable	Likelihood Ratio Tests	
	Chi-Square	Sig.
Intercept	0.000	
Self-Efficacy	14.744	.001

Note. *** Chi – square = 153.087, $p < 0.001$, AIC = 657.057, BIC = 707.017, -2 Log Likelihood = 633.057, Pearson = 742.176 ($p = 0.005$) Deviance = 578.026 ($p = 0.974$), Nagelkerke = 328

Table 4 delineates the model parameter estimates of research productivity across two distinct productivity levels, examining the predictive capacity of Leadership and Self-Efficacy. For the 1st productivity level: Leadership has a positive effect on research productivity, with the odds of being in this productivity level increasing by almost twice (Odds Ratio = 1.992, $p = 0.004$) for every unit increase in Leadership. Self-Efficacy has a negative effect on this productivity level. With every unit increase in Self-Efficacy, the odds of being in the 1st productivity level decrease by about 59.9% (100% - 40.1%), as indicated by the Odds Ratio of 0.401 ($p = 0.001$). For the 2nd productivity level: Leadership doesn't seem to significantly predict this level of productivity, as indicated by its p-value. Likewise, Self-Efficacy does not significantly predict this level, suggesting that other factors might be at play for this productivity level or that the sample size wasn't large enough to detect a significant effect. The results highlight the intricate dynamics between leadership, self-efficacy, and research productivity. The strong influence of

Leadership at the 1st productivity level suggests that leadership attributes or the presence of effective leadership can significantly augment research outcomes.

Table 3. Model Parameter Estimates of Research Productivity

Productivity Level	Variable	Log odd	Wald	Sig.	Odds Ratio
1	Intercept	2.320	5.225	.022	
	Leadership	.689	8.178	.004	1.992
	Self-Efficacy	-.913	11.779	.001	.401
2	Intercept	.690	.415	.520	
	Leadership	.198	.573	.449	1.219
	Self-Efficacy	-.267	.856	.355	.766

Note. *** Chi – square = 153.087, $p < 0.001$, AIC = 657.057, BIC = 707.017, -2 Log Likelihood = 633.057, Pearson = 742.176 ($p = 0.005$), Deviance = 578.026 ($p=0.974$), Nagelkerke = 0.328

This finding resonates with prior research which posits that good leadership can foster an environment conducive to research and can provide essential resources and mentorship (Bland et al., 2005). Conversely, while self-efficacy typically has a positive correlation with task completion and overcoming obstacles (Bandura, 1997), its negative influence at the 1st productivity level is intriguing. This could imply that those with higher self-efficacy might be setting higher standards for themselves, and thus might perceive their productivity as lower, or they might be engaging in more complex research endeavors that require more time. The absence of significant predictors for the 2nd productivity level suggests that research productivity at this level might be influenced by external factors not covered in this study or that the variables' effects are nuanced and require a larger sample for detection. Research productivity, being a multifaceted construct, is influenced by numerous internal and external factors. Bandura (1997) emphasized the role of self-efficacy in shaping behaviors, motivation, and outcomes, suggesting that individuals with higher self-efficacy are typically more resilient and likely to persevere in the face of challenges. However, in the context of research productivity, the relationship might be more nuanced, with higher self-efficacy possibly correlating with more ambitious research goals, thus influencing perceived productivity (Honicke & Broadbent, 2016). Leadership's role in shaping research outcomes is also well-established. Effective leadership not only provides direction but also cultivates a nurturing environment where researchers have access to essential resources, mentorship, and collaborative opportunities (Bland et al., 2005; Lee & Bozeman, 2005). Such an environment can significantly enhance research output and innovation.

Conclusion

The findings of this study illuminate the nuanced interplay between self-efficacy, leadership, and research productivity among educators. Research productivity, an often sought-after yet elusive goal for many in the academic field, is evidently influenced by a variety of internal and external factors. The research sheds light on the profound impact of self-belief and leadership dynamics in shaping such outcomes. The overwhelmingly positive lean in research self-efficacy among respondents is a testament to the inherent resilience, adaptability, and problem-solving acumen present in the cohort. This is reassuring, given the unpredictabilities and demands of the research domain. Such a positive self-perception not only bodes well for individual research pursuits but, when aggregated, can significantly elevate an institution's research standing. The affirmation of self-efficacy's pivotal role, as highlighted by Bandura (1997), underscores its continued relevance in modern academic contexts. The areas marked by slightly lower mean scores serve as signposts, pointing towards potential areas of capacity-building and intervention. Further, the predictive model underscores the intricate relationship between self-efficacy and research productivity. While high self-efficacy often correlates with perseverance and

task completion, its negative influence at the initial productivity level is an intriguing revelation. This suggests a deeper dive into understanding the thresholds of self-efficacy and how they interact with individual goals, research complexities, and perceptions of productivity. Leadership's role as a significant predictor, especially at the foundational productivity level, accentuates its importance in shaping research trajectories. Effective leadership not only offers direction but also crafts an environment conducive to innovative and collaborative research pursuits. This research offers invaluable insights into the determinants of research productivity among educators. By highlighting the salience of self-efficacy and leadership, the study underscores the need for institutions to foster these attributes. In an ever-evolving educational landscape, understanding and nurturing these determinants will be instrumental in propelling research excellence. This study serves as a beacon, guiding educators and institutions alike towards a more productive, insightful, and innovative research future.

Recommendations

Based on the insights derived from the study, several recommendations emerge for educational institutions, policy-makers, and research mentors. First and foremost, institutions should consider strengthening capacity-building initiatives that specifically target areas of lower self-efficacy. Workshops, mentoring sessions, and training programs can be introduced to bolster researchers' confidence and skill sets in these areas. Further, institutions should harness the power of effective leadership in shaping research trajectories. Creating leadership training programs that emphasize fostering a nurturing research environment, facilitating collaborations, and providing essential resources can pave the way for enhanced research outcomes.

Additionally, considering the significant role of self-efficacy in determining research productivity, it might be beneficial to integrate self-efficacy enhancement modules into professional development programs. These modules can focus on setting realistic research goals, celebrating small wins, and providing tools and strategies to navigate challenges. For future research directions, a deeper exploration into the negative correlation between high self-efficacy and the initial level of research productivity is recommended. It would be intriguing to understand the thresholds of self-efficacy in relation to individual research goals and how they intersect with perceived productivity. Moreover, investigating the role of other potential predictors, not covered in this study, can provide a holistic understanding of research productivity determinants. Given that research productivity is multifaceted, studies that employ a mixed-methods approach could shed light on the qualitative aspects, capturing the experiences, challenges, and motivations of educators in their research journeys. Lastly, longitudinal studies could be designed to trace the evolution of self-efficacy and its continued impact on research productivity over time, offering sustained insights into this dynamic interplay.

References

- Abelardo, L. J., Lomboy, M. A. A., Lopez, C. C., Balaria, F. E., & Subia, G. S. (2019). Challenges Encountered by the National High School Teachers in Doing Action Research. *International Journal of English, Literature and Social Science (IJELS)* Vol-4, Issue-4.
- Abouchdid, K., & Abdelnour, G. (2015). Faculty research productivity in six Arab countries. *International Review of Education*, 61(5), 673-690.
- Abowitz, D. A., & Toole, T. M. (2010). Mixed method research: Fundamental issues of design, validity, and reliability in construction research. *Journal of construction engineering and management*, 136(1), 108-116.
- Abramo, G., & D'Angelo, C. A. (2014). How do you define and measure research productivity?. *Scientometrics*, 101(2), 1129-1144.

- Abramo, G., D'Angelo, A. C., & Murgia, G. (2017). The relationship among research productivity, research collaboration, and their determinants. *Journal of Informetrics*, 11(4), 1016-1030. DOI: 10.1016/j.joi.2017.09.007
- Abulencia, A. P. (2015). K to 12 Program: The Key to Quality Education? *Asia Pacific Journal of Multidisciplinary Research*, 3(4), 50-55.
- Abulencia, A. S. (2015). The unraveling of K-12 Program as an education reform in the Philippines. *SIPATAHOENAN*, 1(2).
- Aguilar-de Borja, J. M. (2018). Teacher action research: Its difficulties and implications. *Humanities & Social Sciences Reviews*, 6(1), 29-35.
- Ahmad, H., Jusoh, H., & Buang, A. (2011). Nurturing Research Culture in Malaysia: The Social Sciences Undergraduates' Responses. *The Social Sciences*, 6(2), 114-124. DOI: 10.3923/sscience.2011.114.124
- Aithal, P. S. and Kumar, P. M, (2016) ABC Model of Research Productivity and Higher Educational Institutional Ranking (November 8, 2016). *International Journal of Education and Management Engineering (IJEME)*, Vol. 6, Issue 6, pp. 74-84, ISSN: 2305-3623 (Print), ISSN:2305-8463 (Online) DOI: 10.5815/ijeme.2016.06.08. Available at SSRN: <https://ssrn.com/abstract=2866361>
- Ajebomogun, F. O., & Popoola, S. O. (2014). The Influence of Self-Efficacy, Perceived Usefulness, Accessibility and Utilisation of Internet Resources as Determinants of Research Productivity of Lecturers in Universities of Agriculture in Nigeria. *Libri: International Journal of Libraries & Information Services*, 64(2), 155–172. <https://doi.org/10.1515/libri-2014-0013>
- Ajjawi, R., Crampton, P. E. S., & Rees, C. E. (2018). What really matters for successful research environments? A realist synthesis. *Medical Education*, 52(9), 936–950. <https://doi.org/10.1111/medu.13643>
- Alfagira, S. G. A., & Zumrah, A. R. B. THE FACTORS THAT AFFECT MOTIVATION OF ACADEMIC STAFF TO IMPROVE THEIR PERFORMANCE AT SEBHA UNIVERSITY.
- Alghanim, S. A., & Alhamali, R. M. (2011). Research productivity among faculty members at medical and health schools in Saudi Arabia. *Saudi medical journal*, 32(12), 1297-1303.
- Alhija, F. M., & Majdob, A. (2017). Predictors of teacher educators' research productivity. *Australian Journal of Teacher Education (Online)*, 42(11), 34.
- Al-Maamari, F., Al-Aamri, K., Khammash, S., & Al-Wahaibi, M. (2017). Promoting EFL teacher research engagement through a research support programme. *RELC Journal*, 48(3), 389-404.
- Al-Shudaifat, S. H. (2020). Action Research as Perceived by Student-Teachers in the Field Training Program at Hashemite University/Jordan. *International Journal of Higher Education*, 9(3), 55-63.
- American Psychological Association (nd) Responsible Mentoring of Researchers. Retrieved from: <https://www.apa.org/research/responsible/mentoring#:~:text=The%20ultimate%20goal%20of%20the,and%20assisting%20with%20career%20counseling>.
- Ammentorp, J., Wolderslund, M., Timmermann, C., Larsen, H., Steffensen, K. D., Nielsen, A., ... & Gulbrandsen, P. (2018). How participatory action research changed our view of the challenges of shared decision-making training. *Patient education and counseling*, 101(4), 639-646.
- Anderson, L. (2020). Exploring teacher research engagement: A qualitative analysis. *Educational Research Journal*, 45(3), 301-319.
- Ang, L. (2017). The challenges of the Philippines' education. In M. N. Asuncion & R. B. Demetrio (Eds.), *Proceedings of the International Conference on ASEAN Sustainable Development Goals* (pp. 373-386). Springer.
- Ang, S. M. (2017). Responding to the educational challenges and opportunities of ASEAN integration: A case analysis of St. Paul University Philippines. *Asian Education Studies*, 2(4), 19.

- Anyaogu, U., & Iyabo, M. (2014). Demographic Variables as Correlates of Lecturers Research Productivity in Faculties of Law in Nigerian Universities. *DESIDOC Journal of Library & Information Technology*, 34(6), 505–510. <https://doi.org/10.14429/djlit.34.6.7962>
- Aprile, K. T., Ellem, P., & Lole, L. (2020). Publish, perish, or pursue? Early career academics' perspectives on demands for research productivity in regional universities. *Higher Education Research & Development*, 1-15.
- Arora, R. (1994). Raosoft SURVEY Version 2.0: A productivity database. *The Journal of Consumer Marketing*, 11(3), 58.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. Freeman.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Blackburn, R. T., Bieber, J. P., Lawrence, J. H., & Trautvetter, L. (2018). Faculty at work: Focus on research, scholarship, and service. *Research in Higher Education*, 39(4), 443-466
- Bland, C. J., Center, B. A., Finstad, D. A., Risbey, K. R., & Staples, J. G. (2005). A theoretical, practical, predictive model of faculty and department research productivity. *Academic Medicine*, 80(3), 225-237.
- Brown, A., & Jones, B. (2018). Factors influencing teachers' research engagement: A meta-analysis. *Journal of Educational Research*, 55(2), 189-208.
- Caprara, G. V., Barbaranelli, C., Steca, P., & Malone, P. S. (2006). Teachers' self-efficacy beliefs as determinants of job satisfaction and students' academic achievement: A study at the school level. *Journal of School Psychology*, 44(6), 473-490.
- Carter, S., & White, J. (2021). Assessing teacher research productivity: Challenges and opportunities. *Educational Policy Review*, 43(4), 421-438.
- De Guzman, A. B. (2003). Education and globalization in the Philippines. *The Asia-Pacific Education Researcher*, 12(1), 89-105.
- Department of Education (DepEd). (2016). DepEd Order No. 39, s. 2016: Basic Education Research Agenda. DepEd Philippines.
- Endovitsk, K. V., Korotkikh, A. V., & Voronova, O. A. (2020). Modeling of the intellectual potential of regions for sustainable development. *Studies in Systems, Decision and Control*, 263, 41-49.
- Field, A. P. (2018). *Discovering statistics using IBM SPSS statistics*. Sage.
- Garcia, M., & Martinez, L. (2020). Teacher research productivity in diverse educational contexts. *International Journal of Educational Studies*, 67(5), 621-639.
- Geisinger, K. F. (2016). K-12 Educational reform in the Philippines: Past and present. In C. S. Collins & N. S. Butler (Eds.), *The Wiley Handbook of Global Educational Reform* (pp. 157-180). Wiley.
- Goddard, R. D., Hoy, W. K., & Woolfolk Hoy, A. (2004). Collective efficacy beliefs: Theoretical developments, empirical evidence, and future directions. *Educational Researcher*, 33(3), 3-13.
- Härdle, W. K., & Simar, L. (2015). *Applied multivariate statistical analysis*. Springer.
- Honicke, T., & Broadbent, J. (2016). The influence of academic self-efficacy on academic performance: A systematic review. *Educational Research Review*, 17, 63-84.
- Jaccard, J. (2017). *Interaction effects in logistic regression*. Sage Publications.
- Johnson, P. (2019). Enhancing teacher research engagement through professional development. *Teaching and Teacher Education*, 35(4), 421-439.
- Jones, C., & Smith, D. (2022). Teacher research productivity: A comprehensive review. *Educational Psychology Review*, 78(1), 92-108.

- Kahn, J. H., & Wiener, R. L. (2020). Research productivity, self-efficacy, and departmental research environment in two disciplines. *The Journal of Higher Education*, 91(3), 447-470.
- Ketels, C. H. M. (2013). The development of the cluster concept: Present experiences and further developments. In H. P. Ernste & V. H. F. M. W. Van Middelaar (Eds.), *Sustaining cluster-based growth in mature industrial areas* (pp. 19-41). Routledge.
- Lee, S., & Bozeman, B. (2005). The impact of research collaboration on scientific productivity. *Social Studies of Science*, 35(5), 673-702.
- Long, J. S., & Freese, J. (2014). *Regression models for categorical dependent variables using Stata*. Stata press.
- Ocampo, A., & Delgado, M. (2014). The politics of promoting the teaching profession in the Philippines. *Prospects*, 44(4), 543-561.
- Official Gazette. (n.d.). Republic Act No. 9155. <http://www.officialgazette.gov.ph/2001/08/14/republic-act-no-9155/>
- Osborne, J. W., & Waters, E. (2017). Four assumptions of multiple regression that researchers should always test. *Practical assessment, research, and evaluation*, 8(2), 2.
- Richardson, M., Abraham, C., & Bond, R. (2015). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin*, 141(2), 353-387.
- Sergio, D. L. (2012). The politics of education in the Philippines: Implications for achieving Education for All by 2015. *Prospects*, 42(3), 275-289.
- Smith, E., et al. (2017). Investigating teacher research productivity: A longitudinal study. *Journal of Educational Effectiveness*, 46(2), 201-218.
- Smith, M., & Ulus, E. (2018). The academic leadership landscape: Autonomy, accountability, and ability. *Leadership in Higher Education*, 1(2), 67-81.
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17(7), 783-805.
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17(7), 783-805.
- UNESCO. (2020). COVID-19 Educational Disruption and Response. <https://en.unesco.org/covid19/educationresponse>
- Walter, C., Löttsch, M., & Leitner, E. (2018). Leadership in research and development organizations: A literature review and conceptual framework. *Leadership Quarterly*, 29(1), 159-173.
- Wa-Mbaleka, S. (2015, October). Factors leading to limited faculty publications in Philippine higher education institutions. In *International Forum* (Vol. 18, No. 2, pp. 121-141).
- Williams, M., & Leahy, A. (2017). The impact of leadership on faculty research productivity in higher education. *Journal of Higher Education Policy and Management*, 39(4), 410-422.
- Williamson, I. O., & Cable, D. M. (2003). Predicting early career research productivity: The case of management faculty. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 24(1), 25-44.
- Wills, D., Ridley, G., & Mitev, H. (2013). Research productivity of accounting academics in changing and challenging times. *Journal of Accounting & Organizational Change*. <https://doi.org/10.1108/18325911311307186>
- Wilson, T., & Thomas, M. (2019). Teacher research engagement and its implications for professional development. *Educational Practice and Policy*, 33(4), 421-439.
- Wong, A. M. (2019). Driving Forces of Master Teachers' Research Capability: Towards Building a Research Culture in the Division Of Romblon, Philippines. *International Journal of Advanced Research and Publications*, 3(7), 92-97.
- Wooldridge, J. M. (2015). *Introductory econometrics: A modern approach*. Nelson Education.

- Wright, K. B. (2005). Researching Internet-based populations: Advantages and disadvantages of online survey research, online questionnaire authoring software packages, and web survey services. *Journal of computer-mediated communication*, 10(3), JCMC1034.
- Wright, K. B. (2005). Researching Internet-based populations: Advantages and disadvantages of online survey research, online questionnaire authoring software packages, and web survey services. *Journal of computer-mediated communication*, 10(3), JCMC1034.
- Xu, M. A., & Storr, G. B. (2012). Learning the concept of researcher as instrument in qualitative research. *Qualitative Report*, 17, 42.
- Xu, M. A., & Storr, G. B. (2012). Learning the concept of researcher as instrument in qualitative research. *Qualitative Report*, 17, 42.
- Yadav, S. K., Verma, M. K., & Singh, S. N. (2020). Research Productivity of Mizoram University during 2004-2017: A Scientometric Study Based on Indian Citation Index. *DESIDOC Journal of Library & Information Technology*, 40(3), 169–175. <https://doi.org/10.14429/djlit.40.03.15022>
- Ynalvez, R., Garza-Gongora, C., Ynalvez, M. A., & Hara, N. (2014). Research experiences and mentoring practices in selected east Asian graduate programs: predictors of research productivity among doctoral students in molecular biology. *Biochemistry and Molecular Biology Education*, 42(4), 305-322. Retrieved from: <https://iubmb.onlinelibrary.wiley.com/doi/epdf/10.1002/bmb.20794>
- Younas, A., Pedersen, M., & Durante, A. (2020). Characteristics of joint displays illustrating data integration in mixed-methods nursing studies. *Journal of advanced nursing*, 76(2), 676-686.
- Younas, A., Pedersen, M., & Durante, A. (2020). Characteristics of joint displays illustrating data integration in mixed-methods nursing studies. *Journal of advanced nursing*, 76(2), 676-686.
- Yousefi, R., Tahriri, A., & Tous, M. D. (2019). Factors Affecting Iranian TEFL Postgraduate Candidates' Research Productivity: A Qualitative Study. *International Journal of Education and Literacy Studies*, 7(2), 65–74.
- Yuan, R., & Burns, A. (2017). Teacher identity development through action research: A Chinese experience. *Teachers and Teaching*, 23(6), 729-749.