

Institutional Support, Research Skills and Online Information Searching Strategy: A Structural Equation Model on Research Motivation of Graduate School Students

Reynato Jr. C. Alpuerto¹, Gina Fe G. Israel²

¹Master Teacher I, Lower Bala National High School

²Dean, University of Mindanao – Tagum College

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ABSTRACT

Research motivation is vital for self-development and influences graduate students' engagement in research and professional growth. It is in this context that this research sought to determine the most suitable model for research motivation. It aimed to determine the significant relationship between the exogenous variables: institutional support, research skills, and online information searching strategy, to the endogenous variable which is research motivation among graduate students. A correlational research design and structural equation modelling (SEM) was used in this study. Data was gathered from 400 graduate students enrolled in Master of Arts in Education (MAEd) programs in Higher Education Institutions (HEIs) in the Region XI, Philippines through adopted survey questionnaires and was treated using mean, Pearson r, regression and SEM. Among the exogenous variables, research skills is very high while institutional support and online information searching strategy were high. Research motivation, the endogenous variable, is likewise high. The exogenous variables have significant relationship to research motivation and model 3 was determined to be the best-fit model, establishing a partial mediation of research skills on the relationship between institutional support and research motivation. Thus, providing institutional support enhances research skills and subsequently boosts research motivation among graduate students. This emphasizes the need for HEIs to prioritize these factors in designing programs and interventions to support graduate research.

Keywords: research management; research skills; research motivation; graduate students; higher education institutions

INTRODUCTION

Research motivation is an important factor in the self-development of students. Both internal and external motives play a significant role, with cognitive interests and aspirations being key internal motivators. Motivation could be regarded as one of the most important factors which energizes and drives teachers, particularly those enrolled in graduate studies, to engage in different professional development activities such as research. Differing levels of motivation for research are believed to impact how much teachers participate in such activities (Umurzakova, 2022; Hosseini & Bahrani, 2022; and Povidaychyk et al., 2022). Lack of motivation in research emerges as a significant challenge, particularly as graduate students transition into phases requiring independent work and creative problem-solving, essential for developing research competencies. This obstacle underscores the multifaceted nature of the progression, as not all graduate students have enough motivation to successfully complete it (Buymov, 2022; and Notchenko & Dyatlov, 2020).

Research consistently shows a strong relationship between institutional support and research motivation. Allocating sufficient financial and technical resources to research significantly improve the quality and volume of research outcomes as highly motivated researchers are compelled to provide innovative solutions that tackle local issues (Faborode, 2016; Falola et al., 2020; and Okiki, 2013). In addition, a postgraduate student who is equipped with research skill or knowledge of research methodology and able to apply it while conducting research should be autonomous in research writing. A student who possesses strong research skills experience

the joy and personal fulfillment in various research activities (Azmi & Daud, 2018; and Akkaş et al., 2022). As individuals hone their research skills, they often experience increased autonomy in their research pursuits, further enhancing intrinsic motivation (D'Arrietta et al., 2022). Further, information searching strategies as an information literacy skill also play an important role on research productivity. Graduate students' perceived capability of constructing effective and efficient strategies for locating, accessing, evaluating, and applying the needed information legally and ethically have a positive on their research productivity. Students with information searching strategies who can synthesize information, may be more motivated to learn disciplinary content and have a greater chance of achieving better performance (Malik et al., 2022; Maybee & Flierl, 2016 and Flierl et al., 2018).

This study is anchored on the Self-Determination Theory (SDT). Relatively, the SDT states that intrinsic motivation when driven by a natural desire for satisfaction and enjoyment, is closely tied to feelings of competence and autonomy (Deci & Ryan, 1985). In the context of this study, the SDT provides a comprehensive framework for understanding how institutional support, research skills, and online information searching strategy influence the research motivation of graduate school students. Moreover, according to SDT, individuals are motivated to pursue activities that satisfy their psychological needs for autonomy, competence, and relatedness. In the same manner, the Cognitive Evaluation Theory (CET) suggests that the desire to participate in an activity for its own sake is influenced by a sense of competence and autonomy. CET supports SDT in the context of this research in the sense that supportive work environment that provides resources, recognition, and opportunities for growth can boost researchers' confidence and validate their skills. (Deci & Ryan, 1985; Reeve, 2023; and Chen et al., 2023). Additionally, the Theory of Self-Efficacy further stipulates that researchers who have strong research skills, including expertise in data collection, analysis, and interpretation, tend to have more confidence in their ability to conduct research successfully. (Bandura, 1977; Schunk & DiBenedetto, 2016; and Lippke, 2020).

In the current higher educational landscape, an emphasis on student academic training has been elevated where research is required to obtain an academic or professional degrees. Thus, studying the factors that influence students' research behavior, such as their motivation for doing so, is indeed necessary (Esteban et al., 2022). It has been established by existing literatures that motivation towards research enhances research productivity among academics including graduate students (Horodnic & Zait, 2015; Li & Zhang, 2022; Peng & Gao, 2019; and, Stupnisky, et al., 2023). It should be emphasized, nevertheless, that these studies focused more on how research motivation influenced another variable—in this example, research productivity—than on research motivation as a distinct behavior that was influenced by other factors. Further, existing literature on research motivation has mainly been focused on scale development to measure such behavior and points out that future studies should investigate the influence of institutional support, research skills, and information seeking abilities on research motivation, in addition to sociodemographic characteristics (Esteban et al., 2022). It is also worth noting that this research has mainly been conducted in the western setting and there is limited to none that has been conducted in the Asian context more so in the Philippines and particularly in the Davao Region.

This study has the capacity to provide insights for educational policies and practices that seek to cultivate a culture of research among graduate students. By exploring factors that influencing research motivation, institutions may encourage participation in research activities and promote a livelier academic atmosphere by implementing specific interventions accordingly. For graduate students, through comprehending the variables that impact their research motivation, they may be making well-informed choices about their academic and career trajectories, eventually resulting in enhanced educational and professional results. Last, by concentrating on research motivation in Asia, especially the Philippines and Davao Region, this study fills a gap in the literature and benefits future researchers. This study will provide the groundwork for future research on research motivation in higher education institutions across varied cultural and educational environments.

Consequently, the main thrust of this study was to determine the best fit model of research motivation of graduate school students among selected colleges and universities in Region XI, Philippines as estimated by institutional support, research skills and online information searching strategy. Specifically, this research intended to describe the level of institutional support of graduate school students in terms of working environment, and mentorship as well as the level of research skills of graduate school students in terms of research methods and data analysis, writing and reporting results, and problem conceptualization. Similarly, this research intended to determine the

level of online information searching strategy of graduate school students in terms of metacognitive, behavioral, and procedural alongside the level of research motivation of graduate school students in terms of will, and interest. Additionally, this research specifically aimed to determine the significance of the relationship between institutional support and research motivation; research skills and research motivation; and online information searching strategy and research motivation. Finally, this research intended to determine the best fit model of research motivation of graduate school students among selected colleges and universities in Region XI, Philippines.

METHODS

Research Respondents

This study included 400 graduate school students selected through stratified random sampling. The respondents were the graduate school students from among colleges and universities across five provinces and one highly urbanized city in Region XI, Philippines. Only those officially enrolled graduate students in colleges and universities who agreed to be part of the survey were included. These students are currently taking Master of Arts in Education programs or its allied programs across various majors for the school year 2024-2025. Those graduate students who voluntarily agreed with the informed consent were included in the survey while the respondents who clearly expressed their intention not to participate or not to finish the survey were excluded.

Materials and Instrument

The questionnaire for institutional support was adapted from Li and Zhang (2022) with the following indicators: working environment and mentorship. The questionnaire for the research skills, on the other hand, was adapted from Lacson and Dejos (2022) with the following indicators: research methods and data analysis, writing and reporting results, and problem conceptualization. Also, the questionnaire for online information searching strategy was adapted from Tsai (2009) with the following indicators: metacognitive, behavioral, and procedural. Lastly, the questionnaire for research motivation was adapted from Esteban et al. (2022) with the following indicators: will and interest.

Design and Procedure

Furthermore, the quantitative, non-experimental design of research using correlational technique was used in this study. Mean was used to describe the level of institutional support, research skills, online information searching strategy, and research motivation of graduate school students. Pearson r was used to determine the significance of the relationship between research motivation of graduate school students and the independent variables (institutional support, research skills, and online information searching strategy). Lastly, Structural Equation Modelling (SEM) was used to test the hypothesized models and determine the best fit model for the research motivation of graduate school students among selected colleges and universities in Region XI.

In the conduct of this study, especially before the data were gathered, ethical issues and considerations were dealt. The researcher underwent evaluation conducted by the members of ethics review committee. Letters seeking for permission to conduct study were sent to the respective heads of the target higher education institutions. Documents were also independently reviewed and approved by all participating institutions prior to the conduct of the survey.

RESULTS AND DISCUSSIONS

Institutional Support of Graduate School Students

The first objective of this study was to determine the level of institutional support of graduate school students. The level of institutional support of graduate school students was measured in terms of *work environment* and *mentorship*. Shown in Table 1 are the data on the level of institutional support of graduate school students. The level of institutional support of graduate school students obtained an overall mean of 3.89 or *high*, with a standard deviation of 0.78. This means that institutional support to graduate school students is often evident.

Table 1 Level of Institutional Support of Graduate School Students

Indicators	SD	Mean	Descriptive Level
Working Environment	0.77	4.02	High
Mentorship	0.90	3.75	High
Overall	0.78	3.89	High

From this result, between the two indicators of institutional support graduate school students, *working environment* has the highest mean score of 4.02 or *high*. The indicator *mentorship*, on the other hand, obtained a mean score of 3.75 which is also described as high. This data suggests that higher educational institutions provided tangible support to graduate students to encourage them to participate in academic scholarship activities, such as conducting research. This aligns with San and Guo (2023) who stated that higher education institutions provide graduate students with substantial resources, promote educational opportunities, deliver efficient academic services, and create a supportive intellectual environment to improve research engagement and performance among graduate students. Further, Hadi and Muhammad (2017) emphasized that it is important for graduate students to choose an institution that provides strong support necessary for a successful and productive research experience.

Between the two indicators of institutional support to graduate school students, *working environment* has the highest mean. This suggest that there is a substantial support offered to graduate students regarding their working environment and indicates that higher education institutions supply crucial resources, space, technical assistance and time, enabling graduate students to conduct efficient and productive research activities. This is consistent with the assertions of Lorenzetti et al. (2023) and Bueno (2023) that higher education institutions offer substantial support to graduate students, particularly in the context of the working environment, thereby facilitating their participation in productive and efficient research projects.

Additionally, a high level of institutional support in terms of *mentorship* is likewise evident. Higher education institutions provided graduate students with guidance and support from established scholars, distinguished researchers, and senior faculty members to enhance their research productivity. This encompasses support in collaborative writing of papers, grant applications, and the promotion of early professional relationships within the academic community. This supports the idea of Nowell (2022) that higher education institutions offer strong mentoring of graduate students. Moreover, Rinfret et al. (2023) highlighted that mentorship from established researchers and senior professors is crucial in many aspects of academic advancement, including collaborative article writing. Also, Tinoco-Giraldo et al. (2020) stated that students get guidance in preparing and submitting grant proposals, which is crucial for obtaining research funding and improving academic careers. Further, Knippelmeyer and Torraco (2007) added that mentorship programs also assist graduate students develop early professional organizations for networking, cooperation, and academic career chances.

Research Skills of Graduate School Students

The second objective of this study is to determine the level of research skills of graduate school students as measured in terms of *research methods and data analysis, writing and reporting results and problem conceptualization*. Shown is Table 2 are the data on the level of research skills of graduate school students. Data revealed that the level of research skills of graduate school students obtained a mean score of 4.21 and a standard deviation 0.52. This signifies that the level of research skills of graduate students is *very high* or always evident.

Table 2 Level of Research Skills of Graduate School Students

Indicators	SD	Mean	Descriptive Level
Research Methods and Data Analysis	0.48	4.32	Very High

Writing and Reporting Results	0.60	4.13	High
Problem Conceptualization	0.57	4.17	High
Overall	0.52	4.21	Very High

From this result, the very high level of research skills of graduate school students was due to *research methods and data analysis* being determined to be the highest indicator among the research skills of graduate school students. This indicator obtained a mean score of 4.32 with a standard deviation of 0.4 described as *very high* or always evident. This was followed by *problem conceptualization* with a mean score of 4.17 and a standard deviation of 0.57 described as *high* or oftentimes evident. Likewise, the indicator *writing and reporting results* has the lowest score of 4.13 and a standard deviation of 0.60 albeit still described as *high* or oftentimes evident. This result suggest that graduate school students possess ability to design, conduct, and interpret studies using appropriate methodologies and statistical tools, as well as proficiency in data analysis and research methods. Furthermore, this result also mean that graduate school students have the capacity to conceptualize research problems by identifying gaps in existing literature and devising appropriate research questions, as well as the capacity to effectively communicate and analyze results. This result supports Agatep and Villalobos (2020) who stated that graduate students see themselves as reasonably proficient in writing research proposals and publishable research articles, reflecting a certain degree of research ability competency. However, it is in contradiction to Wang et al., (2022) who stated that although graduate students are comfortable with qualitative research methods, they lack the proficiency in conducting quantitative research.

Among the indicators of research skills of graduate students, *research methods and data analysis* obtained the highest mean score. This implies that graduate school students exhibit consistently evident proficiency in identifying key variables of a research project, follow ethical standards, access reliable sources, and meticulously organize and cite information. Additionally, this entails they exhibit the capability to develop a conceptual framework, select appropriate statistical methods, and the analyze of data to guarantee the accuracy and utility of research results. This result contradicts Diocos (2022) who stated that methodology and analysis skills are the least exhibited skills by graduate students. However, in support of the results of this study, Agatep and Villalobos (2020) stated that graduate students can identify research methodology and design, crafting appropriate conceptual frameworks as well as in selecting a suitable sampling and statistical techniques.

Among the indicators of research skills among graduate school students, *writing and reporting results* gained the lowest mean score, despite still being described as high. This entails that graduate school students often exhibit the capacity to articulate research results clearly and precisely in both written and spoken formats. This further means that graduate school students often show profound understanding of technical and academic terminology, structure thinking logically, produce grammatically accurate text, formulate a concise thesis statement and conclusions, and articulate research findings clearly. This supports Diocos (2022) who stated that graduate students demonstrate proficiency in writing and communication that is clear, efficient, and effective. This is crucial for presenting their research at national and international conferences and for publication in reputable journals. They possess strong capabilities in articulating thoughts and expressing ideas effectively through both written and oral communication.

Online Information Searching Strategy of Graduate School Students

The third objective of this study is to determine the level of online information searching strategy of graduate school students in terms of *metacognitive*, *behavioral*, and *procedural* indicators. As shown in Table 3, the level of online information searching strategy of graduate school students obtained a mean score of 4.16 with a standard deviation of 0.57, described as *high* or oftentimes evident.

This result was attributed to its indicator, metacognitive, which achieved a mean score of 4.21 with a standard deviation of 0.65, indicating that it was very high or always evident. The procedural indicator came next, achieving a mean score of 4.15, a standard deviation of 0.64, and a descriptive level of high or oftentimes evident. Despite receiving the lowest mean score of 4.11 and a standard deviation of 0.63, the last indicator, behavioral, still achieved a descriptive level of high or oftentimes evident. This supports Hsin et al. (2016) and Zlatkin-

Troitschanskaia et al., (2021) who asserted that graduate students could access literature by altering keywords, doing advanced searches, linking, and networking. They evaluated and selected articles from multiple sources, while also actively monitoring their search process. They also used flexible and simultaneous searching and sourcing strategies to find better sources

Table 3 Level of Online Information Searching Strategy of Graduate School Students

Indicators	SD	Mean	Descriptive Level
Metacognitive	0.65	4.21	Very High
Behavioral	0.63	4.11	High
Procedural	0.64	4.15	High
Overall	0.57	4.16	High

Of the three indicators of graduate school students' online information searching strategy, metacognitive achieved the highest mean score and was described as always evident. This suggests that graduate school students consistently manifested the awareness and regulation of cognitive processes, particularly the assessment and use of information. This implies that graduate school students possess the ability to clearly extract key ideas from each page, swiftly identify pertinent information from titles or hyperlinks, and evaluate the credibility and reference value of a website. A very high metacognitive strategy implies that graduate school students intentionally consider how to utilize information from various sources, aiding in the organization and synthesis of material and enhancing research methods. This supports Catalano (2013) who stated that graduate students access information from online sources but practiced cross-referencing techniques to verify the correctness of an information. Further, Avhad (2023) stated that there is a level of proficiency among graduate students in accessing online information resources for the purpose of enhancing research works.

The indicator of online information searching strategies that obtained the lowest mean score is behavioral although still described as high or oftentimes evident. This result suggests that graduate school students frequently and effectively navigate searches while maintaining focus and direction throughout the process. They are also proficient search functions and demonstrating proficiency in online browsers such as Internet Explorer, Google Chrome, or Netscape. This supports Saidu et al. (2023) who asserted that graduate students are proficient in online information retrieval, including critical thinking prior to searching, site-specific inquiries, author-based searches, and keyword searches, all while keeping the search focused and simple. Additionally, Gyesi (2020) pointed out that these graduate students also employ techniques such as use search engines, file searches, and keyword searches to gain access to online informational resources

Research Motivation of Graduate School Students

The fourth objective of this study is to determine the level of research motivation of graduate school students, data for such objective is shown in Table 4. Data show that *research motivation* among graduate school students gained a mean score of 3.87 with a standard deviation of 0.66 and a descriptive equivalent of *high* or oftentimes evident. This overall stems from the scores of its indicators with *interest*, the highest, with a mean score of 3.99 and a standard deviation of 0.66, described as *high*, and will, the lower of the two, with a mean score of 3.75 and a standard deviation of 0.70, still obtaining a descriptive level of *high*. This supports Chang et al. (2022) who stated that graduate students exhibit considerable motivation and confidence in conducting and completing research. Further, Dunens (2015) pointed out that there is an indication of a strong drive to engage in research activities among graduate school students.

Table 4 Level of Research Motivation of Graduate School Students

Indicators	SD	Mean	Descriptive Level
Will	0.70	3.75	High

Interest	0.74	3.99	High
Overall	0.66	3.87	High

From such data, *interest* was determined to be the highest indicator of research motivation of graduate school students, described as oftentimes evident. This indicates that graduate school students often demonstrate a strong enthusiasm for participating in research activities, a sign of their interest in the field. They possess a strong inclination to acquire additional knowledge and a strong interest in embracing the lifestyle of a researcher. Additionally, they often exhibit a tendency to participate in research groups motivated by a desire to advance science and address societal issues and the prospect of better salary in the future. This result is coherent with Delosa et al. (2021) who states that there is a good level of research interest among graduate school students, including membership in research teams and communicating research projects with colleagues. Additionally, this mirrors Amani (2022) who stated that student enroll in graduate programs and, ultimately, completing their research project is personal development, better salary and career progression.

Furthermore, *will* was determined to be the lower of the two indicators of research motivation of graduate school students although still described as oftentimes evident. This shows that graduate school students frequently exhibit self-motivation and determination to participate in academic research. This encompasses the determination for the acquisition of knowledge of research methodologies, the mastery of information management tools and of a variety of online information databases, as well as the sustained motivation to write, publish, and adhere to the appropriate writing style. This result supports Vinyard et al. (2024) stating that graduate students actively search for information online to complete research tasks. Online information is a standard for graduate students, but they complement information found with library databases. Furthermore, Delosa et al. (2021) indicate that a considerable number of graduate students are determined to write research papers for presentation and publication.

Relationship between Institutional Support and Research Motivation of Graduate School Students

One key objective of this study was to investigate whether institutional support is significantly correlated with the research motivation of graduate school students. Table 5 presents the computed results. As indicated in the table, the overall correlation coefficient (r) between the level of institutional support and the research motivation of graduate school students is 0.374, with a p -value of less than 0.05. This finding demonstrates a significant association between institutional support and research motivation among graduate students, leading to the rejection of the null hypothesis.

Further, when the domains of institutional support such as the *working environment* and *mentorship* were correlated to the overall research motivation among graduate students, results of the computation yielded the r -values of 0.393 and 0.306 with the p -values of less than 0.05, respectively, which can be all interpreted as *significant*. These factors are significantly related to the domains of research motivation among graduate students, such as *will* and *interest*.

Table 5 Significance of the Relationship between Institutional Support and Research Motivation of Graduate School Students

Institutional Support	Research Motivation		
	Will	Interest	Overall
Working Environment	.395** .000	.326** .000	.393** .000
Mentorship	.323** .000	.239** .000	.306** .000

Overall	.385**	.302**	.374**
	.000	.000	.000

Data suggests that supportive academic environment, through a conducive working environment and effective mentorship, significantly enhances graduate students' willingness and interest in research. A well-equipped, supportive and collaborative environment, combined with personalized mentorship that provides guidance and feedback, can collectively drive students' research motivation. This aligns with Faborode (2016), Falola et al. (2020) and Okiki (2013) who highlighted that institutional support, such as research funding and assistance, significantly enhances graduate students' research motivation. The finding further confirms the avowal of Nguyen et al. (2021), emphasizing that institutional support systems, including research funding and collaborative efforts, play a vital role in enhancing research motivation. Providing research funding is crucial for enhancing the motivation of teacher-researchers. Another key aspect of institutional support is collaborative research, which entails establishing connections to address research challenges, fostering professional relationships, and leveraging these networks to achieve research objectives. Collaboration among teachers can take various forms, such as co-authoring publications or working together. Consistent and meaningful collaboration helps sustain teachers' motivation for research.

Relationship Between Research Skills and Research Motivation of Graduate School Students

Another objective of this study was to examine whether research skills have a significant relationship with the research motivation of graduate school students. The results, presented in Table 6, indicate an overall correlation coefficient (r) of 0.522, with a p -value of less than 0.05, signifying a significant association between research skills and research motivation. Consequently, the null hypothesis is rejected. Furthermore, when specific domains of research skills such as *research methods and data analysis*, *writing and reporting results*, and *problem conceptualization* were correlated with overall research motivation, the computed r -values were 0.459, 0.463, 0.546, and 0.522, all with p -values below 0.05. These findings confirm that these skill areas are significantly linked to key aspects of research motivation, including *will* and *interest*.

Data implies that mastery of research methods and data analysis and proficiency in writing and reporting results empower graduate school students to effectively communicate their findings, reinforcing their research motivation. Additionally, strong problem conceptualization skills among graduate school students spark their motivation in completing their research projects. Hence, this finding emphasizes the critical role of comprehensive research skill development in fostering graduate students' research motivation. This is in line with research of D'Arrietta et al. (2022) showing that when individuals feel competent in their research skills, they are more motivated to engage in research tasks. Mastery of these skills fosters a sense of accomplishment, competence, and autonomy, which significantly boosts research motivation.

Table 6 Significance of the Relationship between Research Skills and Research Motivation of Graduate School Students

Institutional Support	Research Motivation		
	Will	Interest	Overall
Research Methods and Data Analysis	.500** .000	.343** .000	.459** .000
Writing and Reporting Results	.475** .000	.376** .000	.463** .000
Problem Conceptualization	.571** .000	.431** .000	.546** .000

Overall	.548**	.410**	.522**
	.000	.000	.000

In a sense, this agrees with the findings of the research conducted by Azmi and Daud (2019), which emphasizes the significance of research skills, especially the understanding of research techniques, in the process of developing independent learning among postgraduate students. Through the acquisition of such information, students can successfully organize, monitor, and assess their research efforts, which in turn helps them maintain their drive to do research. A core component for postgraduate students is the mastery of research methodologies and associated skills. This provides them with the ability to plan and manage the process of producing their study. The fact that students who are well-equipped are more likely to maintain their enthusiasm throughout their academic endeavors is shown by this correlation, this highlights the important relationship that exists between research abilities and research motivation.

Relationship Between Online Information Searching Strategy and Research Motivation of Graduate School Students

This study investigated the potential relationship between online information searching strategies and the research motivation of graduate school students. Table 7 presents the results, showing a significant correlation between the two variables, with an overall r-value of 0.461 and a *p*-value of less than 0.05. This finding indicates that online information searching strategies play a meaningful role in fostering research motivation, leading to the rejection of the null hypothesis. Additionally, the analysis of specific domains of online information searching strategies revealed significant correlations with research motivation. The *metacognitive*, *behavioral*, and *procedural domains* yielded r-values of 0.350, 0.414, and 0.46, respectively, all with *p*-values below 0.05. These results suggest that these strategies are intricately connected to the *will* and *interest* that drive graduate students' motivation in research.

Data indicates that the strategies employed by graduate school students to search for information online whether metacognitive, behavioral, or procedural play a crucial role in enhancing their motivation to engage in research. As students develop effective information searching strategies, they are better equipped to navigate the research process, which in turn strengthens their motivation and sustained interest in completing their research projects. This relationship highlights the importance of mastering online searching techniques to foster a greater level of motivation in academic research. This affirms Naveed (2021) who highlighted the essential role of information searching strategies in enhancing research motivation among academics, including graduate students. Online information searching strategies are pivotal in driving research motivation, providing graduate students with the skills and knowledge needed to effectively navigate the complex information landscape and make meaningful progress in their fields.

Table 7 Significance of the Relationship between Online Information Searching Strategy and Research Motivation of Graduate School Students

Online Information Searching Strategy	Research Motivation		
	Will	Interest	Overall
Metacognitive	.378** .000	.265** .000	.350** .000
Behavioral	.385** .000	.372** .000	.414** .000
Procedural	.434** .000	.409** .000	.461** .000

Overall	.451**	.393**	.461**
	.000	.000	.000

Further, the result indicates that effective online searching strategies enhance students' ability to locate and utilize information efficiently, thereby fostering their motivation to engage in research activities. This affirms Tsai et al. (2012) who stated that university students employ different effective online information searching strategies in both daily life information and academic learning contexts. In fact, the students' proficiency in online searching is associated with their motivation in research tasks.

Influence of Institutional Support, Research Skills and Online Information Searching Strategy on Research Motivation of Graduate School Students

Another objective of this study is to determine the significant influence of institutional support, research skills and online information searching strategy on the research motivation of graduate school students. Table 8 highlights the significant influence of institutional support, research skills, and online information searching strategies on the research motivation of graduate school students. The overall model demonstrates a moderate positive relationship, as reflected by an r -value of 0.569, with the predictors collectively explaining 32.4% of the variance in research motivation ($R^2 = 0.324$). The F -statistic of 63.334 and $p < 0.05$ confirm the model's overall significance. Collectively, the predictors institutional support, research skills and online information searching strategy offer a holistic understanding of the factors driving research motivation among graduate students.

Among the individual predictors, research skills emerge as the most influential factor ($\beta = 0.317$, $t = 5.689$, $p < 0.05$), underscoring the critical role of competencies like data analysis, writing, and methodological expertise in boosting research motivation. This aligns with D'Arrietta et al. (2022), who showed that when individuals feel competent in their research skills, it positively influences their motivation to engage in research tasks. Moreover, online information searching strategies ($\beta = 0.232$, $t = 4.577$, $p < 0.05$) also significantly contribute to research motivation by equipping students with the ability to navigate and utilize online resources effectively. This supports Tsai et al. (2012), who argue that students' online information searching strategies influence their research motivation in academic contexts. Also, institutional support ($\beta = 0.139$, $t = 2.907$, $p < 0.05$), while having a smaller effect, remains a vital component by providing mentorship and conducive environment for research. The findings align with the study of Rahman (2024) which found that research motivation among teacher-researchers is directly influenced by institutional support factors. Institutional support like trainings that are often organized are also likely to contribute to increasing the level of research motivation among teacher-researchers. Also, it corroborates Abdul Raman (2024) who found that institutional support affects the intrinsic and extrinsic research motivation of teacher-researchers in China.

Table 8 Significance on the Influence of Institutional Support, Research Skills and Online Information Searching Strategy on Research Motivation of Graduate School Students

Research Motivation					
(Variables)		<i>B</i>	β	<i>t</i>	<i>Sig.</i>
Constant		.587		2.435	.015
Institutional Support		.119	.139	2.907	.004
Research Skills		.403	.317	5.689	.000
Online Information Searching Strategy		.271	.232	4.577	.000
R	.569				
R^2	.324				

ΔR	.319				
F	63.334				
ρ	.000				

Goodness of Fit Measures of the Three Structural Equation Models

To identify the most suitable model for research motivation among graduate school students, a structural equation model was applied to three hypothesized models. The model fitting values are shown in Table 9. There were three models tested to determine the best fit model. Both models 1 and 2 failed all goodness of fit measures, hence, cannot be considered best fit models.

Model 3, on the other hand, emerged as the best-fitting model, meeting the standard-fit criteria based on the causal model data fitting using Pearson r , which was found to be significant. Additional criteria for a good model fit include a CFI value of 0.95 or higher (Byrne, 1998, as cited in Hooper et al., 2008), an RMSEA value below 0.05 (Taasobshirazi & Wang, 2016), and an NFI value greater than 0.95 (Hu & Bentler, 1999, as cited in Miljko, 2020). Model 3 met all of these conditions, with an NFI of 0.993, a CFI of 0.998, and an RMSEA of 0.028. The SEM graph is displayed in Figure 1.

Regarding the sample size, this study exceeds the minimum requirement of 200 for SEM analysis (Kline 2023). With a total sample size of 400, the study is well-equipped to produce a valid model fit (Wolf et al., 2013). Model 3 reflects a more refined theory, where weakly influencing variables, found to be insignificantly linked to others in other models, were excluded. Additionally, the model in Figure 2 illustrates both the direct and indirect influences of the exogenous variables on the endogenous variable, derived from a range of relevant theories and concepts in the literature.

Table 9 Goodness of Fit Measures of the Three Structural Equation Models

Model	P-value (>0.05)	CMIN/ DF(0<value<2)	GFI (>0.95)	CFI (>0.95)	NFI (>0.95)	TLI (>0.95)	RMSEA (<0.05)	P-close (>0.05)
1	.000	13.264	.829	.855	.846	.796	.175	.000
2	.000	6.534	.915	.939	.929	.908	.118	.000
3	.251	1.305	.993	.998	.993	.996	.028	.732

Legend:

<i>CMIN/DF</i>	-	<i>Chi-Square/Degrees of Freedom</i>
<i>GFI</i>	-	<i>Goodness of Fit Index</i>
<i>CFI</i>	-	<i>Comparative Fit Index</i>
<i>NFI</i>	-	<i>Normed Fit Index</i>
<i>TLI</i>	-	<i>Tucker-Lewis Index</i>
<i>RMSEA</i>	-	<i>Root Means Square of Error Approximation</i>
<i>Pclose</i>	-	<i>P of Close Fit</i>

Figure 2 shows the Model 3 in Standardized Solution. This portion provides analysis on the interrelationships among the variables of the study and assessment of model fit. The results of the structural equation model (SEM)

demonstrate the interrelationships between institutional support, research skills, and research motivation, with a focus on the mediating role of research skills. The findings indicate that institutional support has a significant direct positive effect on research skills ($\beta = 0.39, p < 0.05$) and a moderate direct effect on research motivation ($\beta = 0.15, p < 0.05$). The relationship between research skills and research motivation is substantial ($\beta = 0.72, p < 0.05$), indicating that research skills strongly influence research motivation. Importantly, research skills serve as a mediator in the relationship between institutional support and research motivation. The indirect effect of institutional support on research motivation is mediated by research skills, suggesting that institutional support improves research skills, which in turn enhances research motivation.

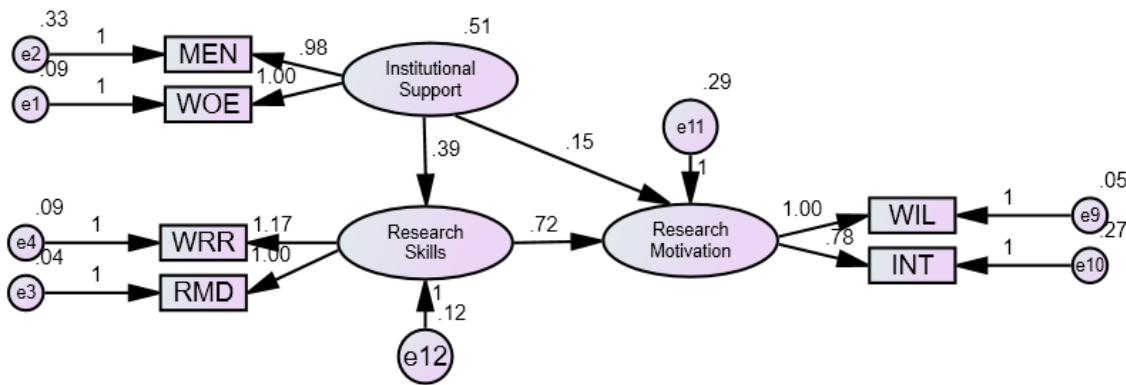


Figure 2. Structural Equation Model 3 in Standardized Solution on Research Motivation of Graduate School Students

Further, the mediating effect of research skills on the relationship between institutional support and research motivation is identified as partial mediation. This determination arises from the result that institutional support has a significant direct effect on research motivation. This indicates that institutional support contributes to research motivation independently of its influence through research skills. Also, institutional support significantly enhances research skills which in turn exerts a strong influence on research motivation. This indirect pathway confirms that research skills mediate the relationship between institutional support and research motivation. Since both the direct and indirect effects are significant, the mediation is partial. This implies that institutional support directly boosts research motivation while also indirectly fostering it by enhancing research skills, highlighting the dual importance of institutional interventions and skill development in cultivating graduate students' research motivation.

This finding of the study further substantiates the proposition of Priyadarshini et al. (2022) which revealed that research skills mediate the relationship between institutional support and postgraduate students' motivation in their graduate studies. It confirms the idea that students rely strongly on institutional support in terms of research resources to enhance their research skills and motivation to complete their thesis on time. Further, this finding indicating the mediating effect of research skills on the relationship between institutional support and research motivation supports the Social Cognitive Theory of Bandura (1986) which emphasizes the interplay between personal and environmental factors in influencing motivation and learning. In the context of result this study, institutional support represents an environmental factor that provides resources, mentorship, and research opportunities. These environmental enablers enhance personal factors, such as research skills, by equipping students with the knowledge and competencies required for academic tasks. Thus, research skills become a mediating factor, translating institutional support into enhanced research motivation.

CONCLUSIONS AND RECOMMENDATION

Based on the findings of the study, conclusions were drawn as follows:

The exogenous variables - institutional support, research skills, and online information searching strategies among graduate school students exhibit high to very high descriptive levels, indicating that these factors are consistently evident and frequently practiced. Similarly, the endogenous variable, research motivation, also shows a high descriptive level, reflecting that graduate students often demonstrate motivation in research.

Mentorship under institutional support was identified as an area needing improvement, suggesting the need for institutions to enhance mentorship offerings. Graduate schools may prioritize personalized guidance, ensuring that faculty members engage more actively with students and provide consistent feedback on their research progress. Additionally, writing and reporting results were highlighted as weak areas under research skills, indicating a need for more focused training in these areas. Institutions may offer workshops and seminars to improve students' academic writing, data analysis, and reporting skills.

Furthermore, the behavioral aspect of online information searching strategies was found to be lacking, hence, higher education institutions may offer training to improve graduate students' behavioral skills in online information searching. This includes workshops on utilizing advanced search functions, staying focused during searches, and effectively using web browsers. By enhancing these skills, students will be better equipped to efficiently find, evaluate, and use online resources for their research. Also, to address lower scores in research motivation, specifically in the "will" aspect, graduate programs may focus on creating more practical engagement opportunities, such as research projects and collaborations. These experiences may help boost students' intrinsic motivation and sense of purpose. In addition, the significant relationships observed between institutional support and research motivation, research skills and research motivation, as well as online information searching strategies and research motivation, suggest that improvements in any of these factors lead to a corresponding increase in graduate students' research motivation. There is also an interplay among institutional support, research skills, and online information searching strategies in shaping graduate students' research motivation. Research skills emerged as the strongest predictor. Online information searching strategies also significantly contribute to research motivation while institutional support has a smaller impact on research motivation. These emphasize the combined importance of institutional support, research skills, and online information searching strategies in fostering research motivation.

The study highlights the significant roles of institutional support, research skills, and online information searching strategies in fostering research motivation among graduate students, with research skills being the strongest predictor. Given these findings, the Commission on Higher Education (CHED) in collaboration with the higher education institutions may enhance mentorship and provide more resources for research, including workshops and training sessions, to improve research skills. As research skills are the strongest predictor of research motivation, specific emphasis may be placed on developing competencies in data analysis, writing, and methodology. Additionally, promoting the use of online information searching strategies can help students better navigate and utilize digital resources, which in turn supports their research efforts. A comprehensive approach that integrates institutional support, skills development, and research strategies is recommended to foster a more motivated and capable graduate research community.

Lastly, the structural model indicates that institutional support significantly enhances research skills, which in turn strongly influences research motivation. Model 3 emerged as the best-fitting structural model, meeting all standard-fit criteria and demonstrating the interrelationships among institutional support, research skills, and research motivation, with a focus on the mediating role of research skills. Institutional support significantly enhances research skills, which, in turn, exerts a strong influence on research motivation. While institutional support also has a direct effect on research motivation, the findings confirm that research skills serve as a partial mediator, amplifying the impact of institutional support on research motivation. This dual pathway underscores the importance of institutional interventions and skill development in fostering research motivation among graduate students. The findings align with Bandura's Social Cognitive Theory, emphasizing the interplay between environmental factors, such as institutional support, and personal factors, like research skills, in driving motivation in research among graduate school students.

Since the best fit model emphasize the interplay between environmental factors, such as institutional support, and personal factors, like research skills, in driving motivation in research among graduate school students, the researcher recommends that CHED and universities/colleges may adopt and implement the RAISE (Research Advancement through Institutional Support and Empowerment) initiative to foster research motivation among graduate students. This program would emphasize enhancing institutional support through mentorship, resources, and training, while prioritizing the development of essential research skills, such as data analysis, writing, and methodology. By addressing both environmental factors and personal competencies, this project

aims to create a well-rounded and sustainable approach to empowering graduate students in their research endeavors.

Future researchers are encouraged to explore other potential factors influencing graduate students' research motivation, such as time management skills, personal attitudes toward research, and external motivational incentives. Additionally, comparative studies across various academic disciplines and institutions can provide deeper insights into how contextual factors shape research motivation. Employing mixed methods approaches to capture both quantitative trends and qualitative experiences will enrich the understanding of this complex interplay and contribute to developing more targeted interventions.

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