Probing faculty researchers' competencies: Evidence from a cross-sectional survey in a Philippine University

Ines Gimota Falcon[1*]

[1]Southern Leyte State University, Southern Leyte, Philippines
[*]Corresponding author: ifalcon@southernleytestateu.edu.ph

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ABSTRACT

Understanding the unique challenges and opportunities facing university faculty researchers is essential as it can significantly impact their research abilities and effectiveness. This paper investigated the research competencies of faculty researchers in the context of a Philippine state university using a cross-sectional survey design. The researcher assessed the educational qualifications, research experience, academic rank, field of specialization, and research competencies in practical skills, problem-solving, thinking, communication skills, personal and professional ethics, dissemination skills, and roles and functions as a researcher among the 133 permanent and temporary faculty members using an adopted survey instrument. Findings revealed that while faculty members demonstrated reasonable competency in most research domains, their problem-solving, thinking, and communication skills fell below expectations. Educational qualifications significantly influenced practical skills, while research experience impacted dissemination skills. Findings further revealed a direct relationship between practical skills and academic qualifications. These findings highlight the need for the university to strengthen capacity-building initiatives to enhance faculty members' research competencies, particularly in problem-solving, thinking, and communication skills, thereby contributing to their professional development and ultimately improving the quality of education the university offers.

1. Introduction

Countries worldwide have realized the importance of research because the planning and implementation of programs and projects depend on it in any discipline (Wong, 2019). An underdeveloped and under-productive research environment potentially prevents a developing country from enhancing its competitiveness in global knowledge (Heng et al., 2023). While in education, research productivity and competence of teachers play a critical role in promoting evidence-based teaching practices and enhancing the quality of education (Cortidor et al., 2023). Thus, integrating research to inform practice enhances teacher professionalism (Flores, 2018), a crucial determinant of academic productivity (Albert et al., 2018; Lunag et al., 2024). Thereby, research output is the best indicator and the most concrete manifestation that the teachers are capable and competent in writing and conducting academic research (Cortidor et al., 2023). Moreover, despite its importance in determining university rankings, it remains an underexploited aspect of some HEI service quality (Padlee et al., 2020).

Research is another primary function of Higher Education Institutions (HEIs), where faculty members must produce knowledge beneficial to the institution and national development (Quitoras & Abuso, 2021). This role has shifted toward a competency-based teaching model that encourages incorporating research (Obedkova et al., 2020). Consequently, it is one of the most important quality characteristics of modern universities and is essential for faculty members as a predictor of research productivity, particularly in the number of research completed by the faculty (Popoca & Gastelú, 2015; Roman, 2021). In addition, many people regard research as scary, but its importance can consistently be recognized since, due to research, society attains significant accelerating progress (Wong, 2019). However, teachers ignore the research's positive effect because they perceive it as an additional workload (Abelardo et al., 2019). So, research work-related seminars, training, experiences, development, and accomplishments of the teachers should be included as criteria in the selection and hiring of teaching personnel (Cortidor et al., 2023).

With the changing demands of the faculty in HEIs, this study aimed to investigate the competency level of the faculty researchers on various dimensions. Only a few faculty members undertake research, although it is one of the Commission on Higher Education (CHED) mandates. Moreover, it is always one of the recommendations of the accrediting agencies for chartered colleges and state universities in the Philippines. It remains relevant, especially since HEIs have to deal with government and accreditation bodies (Alcaide-Pulido et al., 2017). Thus, the university must give the research competencies importance because focusing on the right human capital competencies will undoubtedly impact its performance and profitability.

Furthermore, CHED's faculty development program emphasizes the importance of research in competing with neighboring countries, which are now moving toward offering cutting-edge programs and technologies to invest in a pool of experts in our academic institution. Consequently, the HEI faculty's research performance is realized by providing research training and mentoring programs. On the other hand, research competencies are an attitudinal alternative that implies the understanding and transfer of knowledge and emotional values oriented to stimulate the research potential of a university teaching personnel significantly (Mendoza et al., 2018). It indicates difficulties in acquiring research skills, referring to the knowledge, skills, behaviors, and values teachers should use to face their daily academic lives.

In this light, this study sought to determine the research competencies of state university faculty members. Specifically, it aimed to (a) describe the profile of faculty researchers, (b) determine the level of research competencies of the faculty, (c) examine the profile differences in the level of the research competencies of the faculty and (d) investigate the predictive relationship of the research experience and the competency level of the faculty researchers.

This paper concentrated on a Philippine state university committed to delivering high-quality education, research, community engagement, and production. The university is a vital contributor to regional and national development, playing a crucial role in advancing intellectual growth and fostering economic progress throughout the country. A contextual approach is essential for comprehending the distinctive challenges and opportunities confronting faculty researchers in a Philippine university, as these factors significantly shape their research capabilities and practices. Moreover, the university's specific policies and

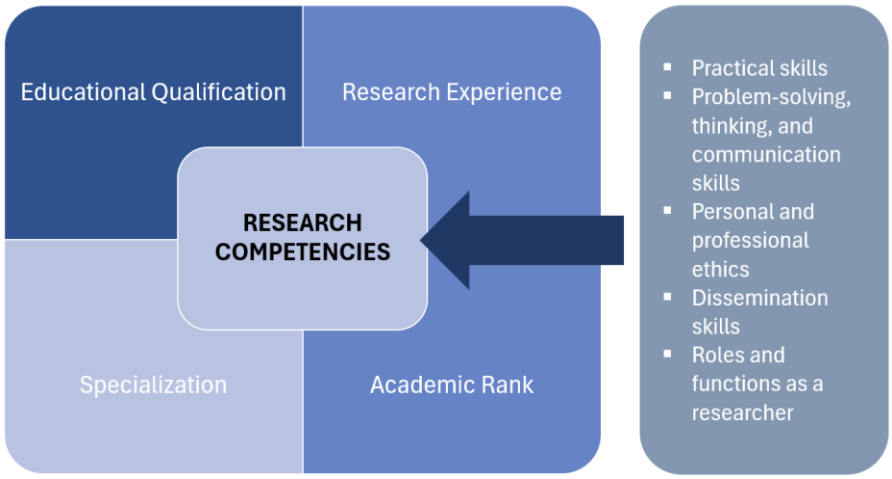
practices, such as promotion criteria and research support, can profoundly influence faculty researchers' motivation, resources, and overall research effectiveness.

2. Conceptual framework

Research-oriented universities have higher efficiency scores than teaching-oriented universities because they focus on research outputs that improve university performance (Shamohammadi & Oh, 2019). Scientific investment is steadily growing (Zhang & Jiang, 2017). This development emphasizes the increasing importance of research among universities. In realizing the research aspirations of the university, faculty researchers have to stay on the frontline of advancing the research interests that are beneficial to the institution and national development (Quitoras & Abuso, 2021). Correspondingly, faculty members should strive to be research-competent and undertake research to promote national development. Henceforth, it is necessary to evaluate the research competence of the faculty members to determine appropriate strategies that will enhance the research outputs of universities (Albert et al., 2018).

Figure 1

The Conceptual Framework



Note. The Author

In this paper, the author assessed faculty members' research competence using Fraenkel and Wallen's (2009) five measurement domains: practical skills, problem-solving, thinking and communication skills, personal and professional ethics, dissemination skills, and roles and functions of a researcher. Practical skills include research methodologies, statistical analysis, laboratory techniques, and fieldwork procedures. Problem-solving, thinking, and communication skills involve recognizing research issues, evaluating data, and conveying results accurately and clearly. Personal and professional ethics demonstrate the faculty researcher's grasp of ethical concerns and consistent application in research endeavors. Dissemination skills refer to sharing research results with interested individuals and communities. Recognizing the roles and functions of a researcher includes understanding the roles and tasks that come with the role, which include guiding students, overseeing research endeavors, participating in the academic community, and being part of committees.

This research also considered how the faculty member's profile factors, such as level of education, research background, area of expertise, and academic position, impact their research skills. Educational qualification refers to the most advanced level of formal education teachers complete, varying from Bachelor's to doctoral degrees. The extent and intensity of participation in research tasks define research experience. Specialization refers to the academic

field or study area where a professor conducts research. Various professions require different levels of specific skills. Academic rank denotes the level faculty members hold, including instructor, assistant professor, associate professor, or professor.

In summary, this paper explores the interconnectedness of profile variables, demonstrating how factors such as educational qualification, research experience, specialization, and academic rank collectively influence faculty members' research competencies. Understanding these relationships offers insights into the factors that contribute to effective research practices and identifies areas for professional development and institutional support.

3. Methodology

3.1. Research design, context, and respondents

The study utilized a cross-sectional survey research design to investigate the competencies of faculty researchers in a Philippine state university. This university is one of the emerging universities in the Eastern Visayas region, comprising five satellite campuses. It offers engineering, agriculture and fisheries, information technology, teacher education, criminology, and entrepreneurship programs. Similar to many state universities and colleges in the country, research is one of the primary functions of the faculty members. As a public institution committed to academic excellence and addressing local needs, this university provides a valuable setting for exploring the competencies of faculty researchers. The university's unique geographical location, socio-economic conditions, and institutional policies can significantly influence the research activities and challenges its faculty members face. Meanwhile, the respondents were permanent and temporary faculty members of the university. Only 67% (133/198) of the target respondents participated in the study.

3.2. Instrument

The researcher adopted a modified educational management assessment survey instrument (Fraenkel & Wallen, 2009) to assess the research competencies of the faculty researchers. This instrument has two parts. The first part describes personal information such as academic rank, specialization field, teaching years, and research experience. The second part contains the five research competency categories with 37 indicators: practical skills, problem-solving, thinking and communication skills, personal and professional ethics, dissemination of research findings, and roles and functions of a researcher. The faculty members rated their competencies as 1-incompetent, 2-reasonably competent, 3-competent, and 4-highly competent.

3.3. Data collection and analysis techniques

Before administering the instrument, the researcher sought authority from the president and the campus directors. Each questionnaire has a letter from the researcher explaining the nature and purpose of each set of questions. The researcher answered whenever there were queries and clarified some terms in the instruments whenever needed. The researcher used frequency analysis to describe the faculty members' profile variables. The researcher used the weighted means to describe the level of research competencies of the faculty researchers along the enumerated dimensions and interpreted them as highly competent (μ = 80 - 90), competent (μ = 60 - 79), fairly competent (μ = 40 - 59), incompetent (μ = below 40). The researcher also used the ANOVA test to determine the profile differences and relationships between the profile variables and the competency level of faculty researchers. Moreover, the researcher ensures compliance with ethical standards when conducting this study.

4. Results and discussion

4.1. Result

4.1.1. Descriptive profile of the faculty researchers

The profile of the faculty researchers in this study reveals diverse educational qualifications, research experience, fields of specialization, and academic ranks. The majority of the researchers hold master's degrees (32%) or are pursuing further studies with master's (30%) and doctoral units (22%). Only a small proportion have attained a doctorate (9%) or hold only a bachelor's degree (7%).

Most faculty members (74%) possess research experience, suggesting a generally research-active community, while 26% are without such knowledge. The distribution of expertise areas was diverse, with other specializations accounted for 41%, followed by industrial and information technology (17%). The academic rank distribution shows that the majority of faculty members are at the instructor level (64%), with a smaller proportion as assistant professors (24%), associate professors (10%), and a minimal number as full professors (2%). It suggests a predominantly early-career faculty demographic, with fewer senior researchers holding higher academic positions. The diversity in educational qualifications, research experience, and fields of specialization, combined with the concentration of faculty at the instructor and assistant professor levels, reflects the varied backgrounds and stages of career development among the researchers.

Table 1

Descriptive Profile of the Faculty Researchers

Profile variables		Frequency (n = 133)	Percentage (%)
Educational qualification	Doctorate	13	9
	Masters with doctoral units	29	22
	Masters	42	32
	Bachelors with master units	40	30
	Bachelors	9	7
Research experience	With research experience	98	74
	Without research experience	35	26
Field of specialization	Economics/business administration	7	5
	Language	12	9
	Science/agriculture	21	16
	Engineering and mathematics	17	12
	Industrial and information technology	22	17
	Other specialization	54	41
Academic rank	Professor	3	2
	Associate professor	13	10
	Assistant professor	32	24
	Instructor	85	64

Note. Author's preparation

4.1.2. Research competency levels of the faculty researchers

The research competencies of faculty researchers, as assessed in this study, reveal a mixed level of proficiency across various areas. The mean scores suggest that the faculty are generally "fairly competent" in most competencies, such as practical skills ($\mu = 50.80$, $\sigma = 6.30$), personal and professional ethics ($\mu = 53.00$, $\sigma = 5.15$), dissemination skills ($\mu = 50.60$, $\sigma = 9.84$), and understanding their roles and functions as researchers ($\mu = 49.40$, $\sigma = 8.88$). These competencies indicate that the faculty possesses a moderate ability to apply practical research techniques, adhere to ethical standards, share research findings, and fulfill their expected duties as researchers.

However, there is a notable deficiency in problem-solving, thinking, and communication skills ($\mu = 26.80$, $\sigma = 9.52$), categorized at the "incompetent" level. It suggests that there need to be more critical research competencies essential for effective research activities, such as formulating research questions, analyzing data, and presenting findings. The overall average score across all competencies is 46.12, classified as "fairly competent," highlighting that while the faculty demonstrates a basic competence level in most areas, there is considerable room for improvement, particularly in enhancing critical thinking and communication skills to support stronger research performance.

Table 2

Level of Research Competencies of Faculty Researchers

Research competencies	Mean	Std. dev.	Competency level	Description
Practical skills	50.80	6.30	2	Fairly competent
Problem-solving, thinking, and communication skills	26.80	9.52	1	Incompetent
Personal and professional ethics	53.00	5.15	2	Fairly competent
Dissemination skills	50.60	9.84	2	Fairly competent
Roles and functions as a researcher	49.40	8.88	2	Fairly competent
Average	46.12		2	Fairly competent

Note. Author's preparation

4.1.3. Profile differences in the level of research competencies of the faculty researchers

The research competencies across various profile variables reveal significant differences based on educational qualifications and research experience, while other variables show no significant impact. Among the academic qualifications, there is a substantial difference in practical skills ($F = 2.581$, $p < 0.05$) associated with having a doctorate, indicating that faculty with a doctoral degree tend to have higher practical skills than those with lower qualifications. However, no significant differences were found in other competencies such as problem-solving, thinking and communication skills, personal and professional ethics, dissemination skills, or roles and functions as a researcher, suggesting that the level of educational qualification does not substantially affect these competencies.

Table 3

Profile Differences in the Level of Research Competencies Among Faculty Researchers

Research competencies	Profile variables (*F*-value)			
	EQ	**RE**	**FS**	**AR**
Practical skills	2.581^{*}	1.940^{ns}	1.183^{ns}	1.164^{ns}
Problem-solving, thinking, and communication skills	$.209^{ns}$	$.122^{ns}$	$.685^{ns}$	$.511^{ns}$
Personal and professional ethics	$.443^{ns}$	$.089^{ns}$	$.823^{ns}$	$.553^{ns}$
Dissemination skills	$.564^{ns}$	4.934^{*}	$.578^{ns}$	1.032^{ns}
Roles and functions as a researcher	$.043^{ns}$	$.137^{ns}$	$.933^{ns}$	$.647^{ns}$

Note. EQ-Educational Qualification; RE-Research Experience; FS-Field of Specialization; AR-Academic Rank; ns-not significant; *-significant; **-highly significant. Author's preparation

Research experience, on the other hand, has a positive impact on dissemination skills. Faculty with prior research experience demonstrated significantly better dissemination skills ($F = 4.934$, $p < 0.05$) compared to those without such experience. This finding is encouraging, as it suggests that engaging in research activities can enhance the ability to share and communicate research findings effectively. However, for other competencies, including practical skills, problem-solving, personal and professional ethics, and understanding of roles and functions as a researcher, no significant differences were observed based on research experience. Furthermore, there were no significant differences in research competencies across the fields of specialization or academic ranks, indicating that these variables do not substantially influence the research competencies among the faculty members in this study.

4.1.4. Predictive relationship of the research experience and the competency level of faculty researchers

The study reveals notable differences in faculty members' ability to share their research findings, specifically in dissemination skills, where statistically significant variations were observed. It indicates that some faculty members are better equipped or more effective in communicating their research to a broader audience through publications, presentations, or other forms of scholarly communication. This variation could be attributed to factors such as experience, specific training in communication, or access to networks and resources that enhance the dissemination of research. In contrast, other competencies, including practical research skills, problem-solving abilities, adherence to ethical standards, and understanding of their roles as researchers, show a relatively consistent level across the faculty group. Research experience, while often valuable, may not be directly correlated with these specific competencies. While research can hone problem-solving and critical thinking skills, practical skills, such as technical proficiency or hands-on experience, may be acquired through other avenues. Personal and professional ethics are more closely tied to individual values and character development than research experience alone. Also, the roles and functions of a researcher can vary widely depending on the field and project, making it difficult to generalize the impact of research experience on these specific aspects of a researcher's competencies. This consistency suggests that these skills are either more universally developed or are less dependent on external factors such as additional experience or advanced education.

Table 4

Predictive Relationship of Research Experience and Research Competencies

Research competencies	*F*-value	*P*-value	Description
Practical skills	1.940	.166	Not significant
Problem-solving, thinking, and communication skills	.122	.727	Not significant
Personal and professional ethics	.089	.766	Not significant
Dissemination skills	4.934	.028	Significant
Roles and functions as a researcher	.137	.712	Not significant

Note. Author's preparation

4.2. Discussion

Building on the results of this inquiry, we highlight key areas concerning research competencies that can significantly contribute to the research productivity of academic institutions.

First, the faculty researchers exhibit diverse profiles, strongly emphasizing academic advancement. Most researchers hold master's degrees or are pursuing higher education. On the contrary, some still need to meet the minimum standard to become a faculty member in an HEI since teachers must have a graduate degree in their specialization or related fields (Tupas & Matsuura, 2019). While research experience is prevalent, expertise areas vary widely, including non-core disciplines. However, despite the mandate to conduct research, not all faculty members in HEIs are engaged in doing research (Quitoras & Abuso, 2021). Data mining and meta-analysis, which can be used for quantitative and qualitative purposes, are the weakest areas learned from a class/training or self-study (Bantugan et al., 2023).

On the other hand, most faculty members have different specializations since the university has different curricular offerings requiring different disciplines, but most have instructor positions. It implies the slow promotion some faculty members encounter in state universities and colleges (Cenas et al., 2020). However, faculty members must have appropriate educational qualifications, research engagement, and extension involvement for the promotion. Most faculty members are in the early-career stages, suggesting a need for professional development and mentorship to support their growth. This diversity in qualifications, experience, and career stages reflects the dynamic nature of the research community at the university. Thus, the university must continue to encourage faculty members to upgrade themselves in these areas to get ready for any advancement of personal opportunities.

Second, faculty researchers demonstrate a range of research competencies, with a moderate level of proficiency in most areas. However, there is a clear need for more problem-solving, critical thinking, and communication skills, which are crucial for effective research. Communication, as the most prominent digital literacy skill, is followed by problem-solving and collaboration, which both instructors and learners need in the 21st century (Silber-Varod et al., 2019). Moreover, achievement assessment is mainly associated with communication, critical thinking, and problem-solving, including the fundamental foundational skills of written and spoken communication (Oliver & Jorre de St Jorre, 2018). Therefore, universities' capacity-building programs should be geared towards developing faculty researchers, specifically in problem-solving and communication skills.

Moreover, the number of research completed, presentations, publications, and citations are usually the indicators that measure the research competencies and performance in higher education institutions (Roman, 2021). Meanwhile, the faculty researchers' fair competence in the rest of the dimensions implies that the university's capacity training on these dimensions contributed to this result. Faculty participation depends on the institution's commitment to prioritizing research (Dacles et al., 2016). Policies may be revisited to provide the authority responsible for managing research to achieve the university's vision (Alemu, 2023). The presence of a research unit, a financial reward and merit system, expertise, research capability programs, and institutional policies all aided the university's research performance significantly. To strengthen their research performance, the university should consider implementing targeted interventions to enhance these vital competencies. These efforts could involve professional development programs, workshops, or mentorship opportunities designed to cultivate and advance these essential skills among faculty members.

Third, the research competencies across various profile variables reveal significant differences based on educational qualifications and research experience. While other variables, such as fields of specialization and academic ranks, do not significantly impact research competencies, educational qualification and research experience play a crucial role. Faculty with doctoral degrees tend to possess higher practical skills than those with lower qualifications, suggesting that advanced education can enhance practical research abilities. Educational qualification causes a significant difference in the practical skills of the faculty members. It shows that finding library resources, distinguishing between primary and secondary resources, and efficiently using information technology are skills that educationally qualified faculty members excel in. There must be integration and alignment between research competence and the intended outcomes of academic qualifications (Bravenboer & Lester, 2016). As more teachers obtain graduate degrees for various purposes, including monetary incentives, there is a growing interest in whether these degrees are positively associated with student achievement (Lee, 2018). In this study, earning advanced degrees posed a significant difference in the practical skills in research among the faculty members.

Moreover, the positive correlation between research experience and dissemination skills is encouraging. Faculty with prior research experience demonstrate a significantly higher ability to effectively share and communicate research findings. Faculty members with enough exposure to research tend to have better dissemination skills than those who do not. Faculty members with previous experience dedicated more weekly hours to dissemination than those without such experience (Koriakin, 2019). Moreover, the main difference between the beginning and more experienced teachers lies not in the type of learning activities they undertake but in their attitudes toward learning, learning outcomes, and how their context influences them (Kyndt et al., 2016). In higher education, research should no longer be a desirable value but a mandate and a culture (Nguyen, 2020). This finding underscores the importance of engaging in research activities to develop effective communication skills. It means that individuals with rewarding research experience have more significant development in their skills and higher satisfaction levels (Wang et al., 2023). However, it is important to note that research experience does not significantly influence other competencies, such as practical skills, problem-solving, personal and professional ethics, or understanding of roles and functions as a researcher.

Lastly, while some faculty members excel at dissemination, others may need help communicating their research effectively to a broader audience. However, this variation is not

a barrier but an opportunity for growth, as it can be attributed to factors such as experience, specific training, or access to networks and resources. In contrast, other competencies, like practical skills, problem-solving, ethics, and understanding roles, demonstrate a consistent level across the faculty group, suggesting they are either more universally developed or less dependent on external factors. While practical skills, problem-solving, ethics, and role comprehension are essential for research, dissemination skills are crucial for ensuring research impact (Minogue et al., 2022). Institutions may prioritize targeted interventions to enhance dissemination capabilities among faculty members. Moreover, institutions may strengthen their academic and community impact by fostering a culture of knowledge-sharing and scholarly engagement.

5. Conclusions and recommendations

This paper highlights that the faculty exhibited capability in all research competencies, except problem-solving, thinking, and communication skills, for which the study identified a notable need for improvement in this area. This paper also highlights the significant influence of educational qualifications on practical skills like writing proposals, progress reports, and research outputs of faculty members. Also, research experience can significantly influence the dissemination skills of faculty researchers. Moreover, the field of specialization and academic rank were found to be less significant regarding the research competence of the faculty members. With these findings, the university may strategize to implement targeted training programs that will improve the faculty's problem-solving, thinking, and communication skills. Also, the university may strengthen its faculty development program, especially in raising the educational qualifications of the faculty members, as they can influence their research competencies. Moreover, the university strengthens its research culture, encouraging all faculty members to research, especially since research experience might influence some research competencies.

Meanwhile, this study used a cross-sectional survey design that limits the ability to establish causal relationships between variables. The study also focused on a single university and may not generalize to other institutions or regions. This study also used self-rating of the faculty members on their research abilities. While self-assessment can be helpful, it may only sometimes be accurate. Future research could use external evaluations or peer reviews to understand faculty research skills better. Future studies could investigate how research skills evolve by conducting longitudinal research. Moreover, exploring how institutional factors like research culture, funding, and support systems affect faculty research skills would offer a deeper insight into the influences on research outcomes and help develop research capacity in universities.

SCIENTIFIC CONTRIBUTION

The manuscript clearly identifies a research gap; the manuscript opens new directions for further research.

AUTHOR CONTRIBUTIONS

CRediT: **Ines G. Falcon**: Conceptualization, Methodology, Writing - Original Draft; **Ines G. Falcon**: Writing - Review & Editing; **Ines G. Falcon**: Investigation, Formal Analysis; **Ines G. Falcon**: Supervision, Validation, Visualization.

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NO CONFLICT OF INTEREST STATEMENT

All authors declare that they have no conflict of interest.

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