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Faculty profiles and their influence on research competence and productivity in state universities

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ABSTRACT

This study examines the influence of faculty profile variables on research productivity and competence in state universities in Region III, Philippines. A descriptive-correlational research design was used, involving data from 248 faculty members collected through surveys and analyzed using statistical correlation methods. The results show that married faculty members tend to have higher research productivity, possibly due to family support. Faculty with advanced degrees and higher academic ranks showed greater research competence. In contrast, heavy teaching loads and large class sizes were linked to lower research output. These findings emphasize the importance of implementing balanced workload policies, increasing support for research, and providing faculty development opportunities. Universities are encouraged to adopt strategies that promote research involvement while ensuring effective teaching performance.

1. Introduction

Faculty research productivity is a key measure of institutional excellence, influencing global rankings and funding opportunities (Abramo and D'Angelo, 2014). In Philippine state universities, fostering a strong research culture requires institutional support, workload adjustments, and faculty development programs (Sanmorino and Rini, 2021). However, research productivity is often constrained by faculty workload, motivation, and institutional policies, which vary significantly across academic institutions globally (Quimbo and Sulabo, 2013; Chedid et al., 2019).

The exploration of faculty profile variables such as academic rank, teaching load, educational attainment, and civil status is crucial in understanding their impact on research competence and productivity in state universities. Research indicates that faculty rank significantly influences research output, with higher ranks correlating with increased productivity (Jadhav et al., 2024; Ambong et al., 2022). Moreover, the teaching load can detract from research time, thereby affecting overall productivity (McArthur, 2024). Educational attainment also plays a vital role, as faculty with advanced degrees tend to engage more in research activities (Susanti et al., 2023). Civil status has been shown to influence faculty's time management and emotional well-being, which can indirectly affect their research output (Shetty and Bhat, 2023). This study aims to integrate these variables into a theoretical model, comparing findings with global trends, thereby extending the discourse on faculty productivity beyond local contexts (Doğan and Arslan, 2024).

This study employs Self-Determination Theory (SDT) and Expectancy Theory to analyze how faculty motivation, institutional support, and workload influence research productivity. SDT posits that intrinsic motivations, such as personal growth and intellectual curiosity, alongside extrinsic motivations like promotions and funding, significantly drive faculty engagement in research activities (Stupnisky et al., 2022). Research indicates that faculty members who experience higher autonomy and competence report greater intrinsic motivation, which correlates positively with research productivity (Stupnisky et al., 2022). Additionally, Expectancy Theory suggests that faculty output is contingent upon the perceived balance between effort and expected rewards, including institutional support mechanisms (Muhammad et al., 2023). The alignment of faculty expectations with institutional

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goals can enhance motivation and productivity, as faculty are more likely to engage in research when they perceive that their efforts will be adequately rewarded (Muhammad et al., 2023). Thus, understanding these motivational frameworks can provide insights into enhancing research productivity in higher education institutions.

This study proposes a Faculty Research Competence Model (FRCM) that integrates global faculty development frameworks with localized insights, focusing on the interplay between faculty profile variables, institutional support mechanisms, and research productivity. The model is grounded in the understanding that faculty motivation, influenced by both intrinsic and extrinsic factors, plays a critical role in research engagement. Research indicates that faculty with higher autonomy and competence report greater motivation, which positively impacts their research output (Stupnisky et al., 2022). Furthermore, institutional support, including resources and recognition, is essential for fostering a conducive environment for research (McArthur, 2024). The FRCM also acknowledges the significance of socio-demographic factors, which can affect research productivity differently across disciplines (Ambong et al., 2022). By linking these elements, the model aims to provide a comprehensive framework that can guide institutions in enhancing faculty research capabilities and productivity, ultimately contributing to academic excellence (Susanti et al., 2023). This model aligns with faculty research engagement frameworks observed in Western universities (Wilkesmann and Vorberg, 2021) and Southeast Asia (Sanmorino and Rini, 2021).

Faculty research productivity is shaped by institutional policies, workload, and faculty motivation (Quimbo and Sulabo, 2013; Chedid et al., 2019). In Western universities, research output is often incentivized through grants, tenure-track requirements, and workload adjustments (Abramo and D'Angelo, 2014; Nafukho et al., 2019). Conversely, in Southeast Asia, faculty members face higher teaching loads, fewer research incentives, and limited institutional funding (Sanmorino and Rini, 2021). This study provides a policy-driven analysis of these challenges, offering insights for institutional reforms in Philippine state universities. Institutional policies on research funding and workload allocation significantly impact faculty research output (Fu et al., 2021). In Philippine state universities, research incentives are often limited, and faculty members face high teaching loads that restrict their capacity to conduct research (Sanmorino and Rini, 2021). In contrast, universities in Western countries implement structured grant programs and research incentives (Nafukho et al., 2019), allowing faculty members to dedicate more time to research. To enhance productivity, it is crucial for Philippine universities to adopt policies that prioritize research grants, reduce teaching loads for active researchers, and establish tenure and promotion criteria that incentivize international publications. The literature indicates a multifaceted relationship between demographic factors (age, civil status, academic rank, teaching load, and field of specialization) and research productivity. Younger faculty members often publish more frequently, while senior faculty members tend to produce research with higher citation impact (Rogayan and Corpuz, 2022). Civil status and workload significantly influence research engagement, as faculty with family responsibilities and heavy teaching loads struggle to allocate time for research (Quimbo and Sulabo, 2013).

Research funding and institutional policies play a critical role in shaping faculty research productivity (Fu et al., 2021; Othman et al., 2022). In Western academic systems, faculty receive structured research grants and incentives, whereas Southeast Asian universities often lack institutionalized funding mechanisms (Sanmorino and Rini, 2021). Addressing these gaps requires policy-driven faculty development programs, such as workload reallocation, mentorship, and dedicated research grants. While studies have explored faculty productivity in Western and Southeast Asian contexts, limited research exists on the specific barriers affecting faculty research engagement in Philippine state universities (Roman, 2021; Rogayan and Corpuz, 2022). This study contributes to the literature by analyzing faculty research constraints, proposing a theoretical model, and offering comparative insights for policy enhancement.

2. Methodology

This study employed a descriptive-correlational research design to investigate the association between faculty demographic variables and research competence and productivity within state universities in Region III. While this design enables the identification of patterns and relationships, it does not establish causality. The purposive sampling technique was selected to ensure the inclusion of faculty members actively engaged in both teaching and research, as they are the most relevant participants for this study. However, this approach introduces selection bias, as findings may not fully generalize to all faculty members in the region. Future research should consider randomized sampling techniques to enhance representativeness. The sample consisted of 248 faculty members with varying profiles in terms of age, civil status, academic qualifications, teaching load, and years of service. Data were collected through a structured survey questionnaire, divided into two sections: (1) demographic profile, covering variables such as age, civil status, highest educational attainment, teaching load, student load per semester, and academic rank, and (2) research productivity and competence, including completed research, publications, research presentations, and research-related activities. Descriptive statistics (frequencies, percentages, and means) were used to summarize faculty characteristics. Pearson's correlation coefficient was applied to assess relationships between faculty

profile variables (e.g., age, civil status, teaching hours, and academic rank) and research productivity indicators (e.g., number of publications, citations, and research presentations). The analysis was conducted using IBM SPSS software, version 25.0, with all statistical tests performed at a 0.05 level of significance to ensure rigor and reliability. This study proposes a Faculty Research Competence Model (FRCM), which examines how faculty profile variables (e.g., academic rank, teaching load, and educational attainment) interact with institutional support mechanisms (e.g., research funding, mentoring, and workload policies). This model builds global faculty development frameworks (Wilkesmann and Vorberg, 2021) to ensure international applicability.

3. Results and Discussion

3.1. Profile of the respondents

Age: Determining the age of respondents in this study can provide valuable context for understanding the dynamic of the research landscape and informing strategies for supporting and improving research practices across different age groups. The age distribution of the respondents is shown in Table 1.

Table 1: Age distribution of the faculty researchers

Age	Frequency	%
25-34	73	29.44
35-44	76	30.64
45-54	64	25.80
55-64	35	14.12
Total	248	100.00

The age of the respondents ranges from 25 to 64, with age range of 35 to 44 having the highest number at 30.64% percent of the respondents followed by age range of 25 to 34 at 29.44%, Collectively, data shows that majority of the faculty researcher surveyed belongs to a young age group of 25 to 44 years old. This age group is typically considered the early to mid-career stage for academics and researchers. The high representation of this age group suggests a vibrant and dynamic research environment within the institution. Young researchers often bring fresh perspectives, innovative ideas, and a strong drive to establish themselves in their respective fields. They are typically more open to exploring new research avenues, adopting cutting-edge methodologies, and challenging existing paradigms. This youthful energy can foster a culture of intellectual curiosity, creativity, and risk-taking, which are essential for groundbreaking research. It is observed that a negative monotonic relationship between age and research performance, suggesting that older faculty members tend to have lower research output compared to their younger counterparts (Abramo et. al., 2016). Research productivity among faculty members typically peaks between the ages of 40 and 50, after which it tends to decline. This trend is influenced by individual differences in productivity levels across age groups, as highlighted by various studies. For instance, while some research indicates a decrease in overall productivity with age, other studies suggest that senior faculty members often produce more impactful work, as evidenced by higher citation counts (Savage and Olejniczak, 2021; Abramo et al., 2011). Factors such as administrative workload and institutional support also play critical roles in shaping research output, with increased responsibilities potentially detracting from time available for research (Prager et al., 2014). Furthermore, age-related experience can enhance the quality of research, leading to greater citation rates, despite a general decline in the quantity of publications (Abramo et al., 2011). Thus, while age may correlate with reduced publication rates, it can simultaneously contribute to increased citation impact, reflecting a complex relationship between age, productivity, and academic output.

Civil Status: The Civil Status of a faculty researcher's respondents (Table 2), such as whether they are single, married, widowed, or single parents, may influence their research productivity, competence, and attitude towards research. The majority of the faculty researchers surveyed are married, comprising 62.1% of the total number of respondents, while 32.7% are single. This is like the distribution of faculty in state universities and colleges in CALABARSON, where almost 60% of the faculty are also married. Civil Status may have implications for the research culture of an individual. While married faculty researchers' time to conduct research may be affected by their familial responsibility, family support may give them inspiration and motivation to enhance their competence and possess a positive attitude in conducting research, consequently increasing their research productivity. On the other hand, single faculty researchers may lack the family support that married faculty researchers have, but they may have the time to further their research competence, thereby increasing their research productivity. Moreover, single faculty researchers may have a stronger focus on career advancement.

Table 2: Civil status distribution of the faculty researchers

Civil status	Frequency	%
Single	81	32.7
Married	154	62.1
Widowed	7	2.8
Single parent	6	2.4
Total	248	100.00

Highest Educational Attainment: Educational attainment of faculty researchers may also be a driving force in strengthening research culture, influencing the quality of research produced, and fostering innovation and collaboration. Looking into the profile of the faculty researcher in Region III, the majority a master's degree graduates comprising 50.0% of the respondents, while 37.1% hold doctoral degrees (Table 3). Considering that a master's degree is required to have a permanent teaching

plantilla position in state universities, 12.9 % of the respondents hold a bachelor's degree. However, in a study conducted by Balanquit et al. (2023), results showed that the percentage of faculty members with master's degrees ranged from 16% to 86%, and nearly four-fifths or 78% of SUCs (n = 88) had at least one-fourth to half of their faculty members. This is probably because there are state universities that were allowed to hire faculty on a temporary *plantilla* position due to an inadequate number of graduates in some specialized field. Moreover, the predominance of Master's Degree holders among the respondents over those who hold Doctoral degrees may be expected because they belong to a relatively younger group, probably still building their careers.

Table 3: Distribution of faculty researchers according to highest educational attainment (HEA)

Highest educational attainment	Frequency	%
Bachelor's degree	32	12.9
Master's degree	124	50.0
Doctoral degree	92	37.1
Total	248	100.00

Teaching Hours per Week: The teaching hours per week of faculty researchers vary, as it is determined by their designations and whether they accept overtime load. Table 4 presents the faculty researchers' distribution in terms of their average teaching hours per week.

Table 4: Average teaching hours per week (ATHW) of the faculty researchers

ATHW	Frequency	%
1-10 hrs	41	16.53
11-20 hrs	81	32.66
21-30 hrs	101	40.73
31-40 hrs	23	9.27
Over 40 hrs	2	0.81
Total	248	100.00

About 40.73% of the faculty researcher respondents have an average teaching hour per week ranging from 21-30 hours, and there are a few who even go beyond 40 hours. Such a heavy teaching load can pose challenges related to time management, balancing workload, and even career advancement. Heavy teaching loads can leave faculty members with limited time and energy to devote to research activities, consequently leading to fewer publications and less participation in research-related activities. Multiple studies indicate that heavy teaching loads significantly reduce research productivity. Faculty members with more teaching responsibilities have less time to dedicate to research activities, leading to lower research output (Griffith and Altina, 2020; Nur-tegin et al., 2020). Also, faculty members with heavier teaching loads tend to prioritize the quantity of their research over the quality. This suggests that while they may still produce a significant number of publications, the impact and quality of their research (Nur-tegin et al., 2020).

Number of Teaching Preparations of the Faculty: Having multiple teaching preparations can be challenging for faculty in terms of time and energy allocation; they need to strategically prioritize their efforts to maintain a productive balance between teaching and research activities. Results of the study showed that 51.21% of the faculty respondents have an average teaching preparation ranging from 3 to 4, with a few having more than seven (Table 5). Having such multiple teaching preparations, like having a heavy teaching load, time devoted to lesson preparations can be taxing to faculty, so striking a balance between teaching preparations and research commitments may be challenging. Multiple course preparations and heavy teaching loads were found to have a negative effect on research productivity (Griffith and Altina, 2020). Consequently, this may have implications for strengthening research culture in the academe.

Table 5: Average number of teaching preparations of the faculty researchers per semester (ATPS)

ATPS	Frequency	%
1-2	65	26.21
3-4	127	51.21
5-6	47	18.95
7-8	5	2.02
More than 8	4	1.61
Total	248	100.00

Average number of students per semester: The number of students handled by faculty every semester may have implications for strengthening research culture. Among the respondents, 74.6% responded that they have an average of less than 200 students. However, there is also an appreciable number of faculty respondents having students ranging from 201-400 at 20.16 % (Table 6). It is also interesting to note that there are even faculty members having more than an average of 400 students, to a maximum of 600 students per semester. While having many students may be beneficial for faculty-student collaborative research, it may also have a negative impact on strengthening research culture. Studies suggest that students' enrollment is significantly associated with faculty research productivity. Higher student enrollment can impact the time faculty have for research activities (Nafukho et al., 2019). Handling many students translates to more time devoted to checking and assessing students' output, leaving limited time and energy to engage in research projects and other research-related activities.

Table 6: Average number of students per semester (ATSS) of the faculty researchers

ATSS	Frequency	%
less than 200 students	185	74.6
201-400	50	20.16
401-600	7	2.82
More than 600 students	6	2.42
Total	248	100.00

Overtime Load: Overtime loads are teaching loads given to faculty on top of their regular teaching load. A majority of 59.3% (Table 7) of the surveyed faculty researchers have an overtime load, and 49.66% of them have overtime teaching hours ranging from 6 to 10 hours (Table 8). The impact of

faculty workload, particularly overtime teaching loads, on research productivity is a critical issue in higher education. Bahtiar et al. (2023) said that extra time spent teaching negatively affects research productivity. While it's true that having an overtime teaching load provides additional income to faculty members, however, the time devoted to teaching and ensuring quality instruction may put research activities aside as teaching demands more attention.

Table 7: Presence and absence of overtime load of faculty researchers (OT)

	Frequency	%
Faculty researchers with overtime load	147	59.3
Faculty researchers without overtime load	101	40.7
Total	248	100.00

Table 8: Distribution of the number of hours of overtime of faculty researchers (HOT)

Number of hours	Frequency	%
1-5	36	24.49
6-10	73	49.66
11-15	27	18.37
16-20	7	4.76
More than 20	4	2.72
Total	248	100.00

Academic Ranks of Faculty Researchers: Academic ranks have implications for strengthening research culture in the academe. As Academic ranks rose, the expectations to produce higher quantity and quality of research in state universities also increased. Research performance targets and output of faculty members with higher ranks are higher compared to those of lower academic ranks. Among the faculty respondents, Instructors predominate at 40.73% over all other academic ranks, followed by Associate Professors at 34.27% (Table 9).

Putting together all the ranks of professor from assistant to full professor, these ranks still comprise most of the faculty respondents at 59.27%. Senior faculty in terms of academic ranks are expected to have more experience and can provide mentorship to those in the lower ranks, enabling them to contribute more to cultivating a research culture. However, some studies suggest higher academic ranks are associated with better research productivity, while other studies indicate that research productivity drops off quickly with class rank and that rank alone is a poor predictor of future success. For instance, there are studies that consistently show that higher academic ranks, such as full professors, are associated with higher research productivity metrics, including the number of publications, citations, and indices like the Hirsch index (h-index) and I-10 index (Abramo et al., 2011).

Table 9: Distribution of faculty researchers based on academic ranks (AR)

Rank	Sub rank	Frequency	%	Frequency	%
Instructor	Instructor I	81	32.7	101	40.73
	Instructor II	4	1.6		
	Instructor III	16	6.5		
Assistant professor	Assistant professor I	14	5.6	43	17.34
	Assistant professor II	11	4.4		
	Assistant professor III	7	2.8		
	Assistant professor IV	11	4.4		
Associate professor	Associate professor I	10	4	85	34.27
	Associate professor II	10	4		
	Associate professor III	15	6		
	Associate professor IV	12	4.8		
	Associate professor V	38	15.3		
Professor	Professor I	4	1.6	19	7.66
	Professor III	2	0.8		
	Professor IV	3	1.2		
	Professor V	1	0.4		
	Professor VI	9	3.6		
	Total	248	100	248	100

Years in Teaching in State Universities: Faculty gain experience and expertise during the years of teaching in state universities. The faculty profile showed that the majority, at 56.85%, have teaching experience in the range of 1 to 10 years, followed by those with 11 to 20 years in teaching at 22.98%. (Table 10). This is in contrast with the study of Ambong et al. (2022), which showed that more than half of the University faculty have been part of the institution for more than 10 years. In this study, an appreciable percentage of 20.17% combined proportion of those with 21-30 and 31-40 years in teaching provides an idea of the number of senior faculty in the universities of Region III. Senior faculty in terms of years of experience in the academe can serve as mentors for junior colleagues, which can help cultivate a strong research culture. However, there are faculty members with more years of teaching who may become less inclined to actively participate in research activities. Moreover, as faculty gain more experience and seniority, they may be tapped to assume administrative positions, potentially reducing their direct involvement in research.

Table 10: Distribution of faculty researchers based on the number of years of teaching in state universities (YTSU)

Years in teaching	Frequency	%
1-10	141	56.85
11-20	57	22.98
21-30	33	13.31
31-40	17	6.86
Total	248	100.00

Field of Specialization: The field of specialization of faculty members may have an implication in strengthening research culture, particularly if it aligns with institutional priorities, because they are

likely to receive support, funding, and other resources enabling them to contribute actively to strengthening research culture. In the surveyed universities, most of the faculty are educators or teachers at 51.61%, followed by those in the engineering field at 11.69%, and information technology specialists at 4.44% (Table 11). This can be attributed to the faculty needs of SUCs based on enrollment statistics for the past few years, which leaned towards teacher education, information technology, and business and management education as the disciplines with the highest enrollees.

Table 11: Distribution of faculty researcher based on their field of specialization

Field of specialization	Frequency	%	Rank
Educators/teachers	128	51.61	1
Undetermined	47	18.95	2
Engineer	29	11.69	3
Information technologies	11	4.44	4
Nurse	6	2.42	5
Biologist	4	1.61	6
Business administration	4	1.61	7
Linguistics	3	1.21	8
Accountant	2	0.81	9
Environmental science practitioner	2	0.81	10
Food technologist	2	0.81	11
Architect	1	0.40	12
Agriculturist	1	0.40	13
Chemist	1	0.40	14
Criminologist	1	0.40	15
Data scientist	1	0.40	16
Computer science	1	0.40	17
Fisheries technologist	1	0.40	18
Medical technologist	1	0.40	19
Lawyer	1	0.40	20
Veterinarian	1	0.40	21
Total	248	100.00	

Having an educated graduate who predominates the faculty group of selected universities in Region III may have both positive and negative implications. Faculty with an education background may be more inclined to engage in research related to improving the teaching and learning process, thereby contributing to attaining the university's mission of providing quality education. For instance, there are opportunities for graduates of education to pursue cutting-edge technology research by integrating interdisciplinary skills, innovative design solutions, and advanced educational content. In recent years, faculty are driven to engage in professional development programs related to "cutting-edge" initiatives (Manduca et al., 2017) and pursue research related to the integration of technology in teaching practices. However, with the majority of the students have education as a field of specialization may imply a lack of diversity in research expertise and perspectives, potentially limiting the breadth and depth of research activities. The focus of their research may be more related to improving the teaching and learning process, which could hinder the institution's ability to engage in cutting-edge research across various fields.

Designations of Faculty Researchers: Faculty with one or more designations may have both positive and negative implications in strengthening the research culture of a state university. The majority of the respondents, at 64.92 %, have designations ranging from 1 to 5 concurrent designations (Table 12). Of this majority, 73.91% have only one designation (Table 12). In addition, most of these faculty members, at 76.39% of those who responded, have been given assignments ranging from 1 to 6 years (Table 13). Apparently, most of them have just been designated in recent years, relatively new to assuming leadership roles. Some of the designations given to the faculty respondents, apart from being designated as deans or directors, are those related to the research, extension, and training functions as chairs, coordinators, or unit heads. Such assignments given to faculty may contribute to fostering a research culture as they provide guidance, mentorship, and support to other faculty members. Thus, faculty with an administrative position may lead to higher research productivity (Fu et al., 2020). This can be especially beneficial for junior faculty who are still developing their research skills and networks. Experienced faculty in leadership roles can share best practices, connect colleagues to resources, and foster a supportive environment for research. They can promote and facilitate research activities to foster a robust research culture.

Table 12: Number of designations of faculty researchers

	Frequency	%	Frequency	%
Faculty researchers without designation			87	35.08
Faculty researchers with designation			161	64.92
With only 1 designation at a time	119	73.91		
With 2 concurrent designations	24	14.90		
With 3 concurrent designations	8	4.97		
With 4 concurrent designations	8	4.97		
With 5 concurrent designations	2	1.25		
Total	161	100	248	100

However, additional assignments and responsibilities beyond teaching can lead to increased workload and time constraints, as designations are usually demanding, leaving less time and energy to engage in research activities. This is probably the reason why multiple administrative positions strongly affect academic leaders' research performances (Zhao and Lou, 2018). This can also lead to potential burnout for faculty balancing multiple roles. If designations consistently pull faculty away from their research without sufficient support or recognition, it could undermine morale and research engagement over time. Thus, while faculty designations can certainly contribute positively to a university's research culture, institutions must be proactive in managing the

challenges these roles can present for faculty research productivity.

Table 13: Number of years that faculty researchers have been designated

Number of years	Frequency	%
1-6	55	76.39
7-12	13	18.06
13-18	2	2.78
19-24	2	2.78
Total	248	100.00

3.2. Research productivity

Research productivity may be described in terms of completed research, research publication, research presentation, funded research, and research utilization. In the last three years, analysis of data showed that faculty have a mean number of completed research of 4.18; however, the standard deviation for this group of data is 6.93 (Tables 14 and 15). This number of research outputs could be considered as moderate (Doherty, 2003); however, the high value of standard deviation, which is more than the mean, suggests a wide dispersion or inequality in research productivity. This kind of data, where standard deviation is larger than the mean, is observed in all the parameters used to describe research productivity (Tables 14 and 15). This suggests that the faculty respondents are a mix of highly research-active faculty along with others who are much less productive. As most of the faculty surveyed have designations and are taking overtime loads, the data indicates that faculty may be more focused on teaching and administrative responsibilities, leading to this productivity gap.

Table 14: Research productivity of faculty in terms of completed research and research publications

	Research productivity parameters	Min. value	Max. value	Mean	SD	Mean range
P1	Number of completed research papers	.00	75.00	4.18	6.93	4-5
P2	Number of internationally published research papers	.00	70.00	2.40	6.01	2-3
P3	Number of research articles published in international journal indexed in SCOPUS	.00	9.00	0.59	1.42	0-1
P4	Number of research articles published in international journal indexed in Web of Science only	.00	69.00	0.60	4.50	0-1
P5	Number of nationally published research (in CHED-accredited research journal only)	.00	6.00	0.23	0.72	0-1
P6	Number of published research articles in institutional journals	.00	40.00	1.04	3.15	1-2
P7	Number of published research articles that have been cited	.00	25.00	1.17	2.83	1-2
P8	Total Number of Citations generated from articles published	.00	164.00	5.23	15.40	5-6
P9	Value of h-index	.00	23.00	0.57	1.78	0-1
P10	Value of i10 index	.00	10.00	0.23	0.91	0-1

Table 15: Research productivity of faculty in terms of research utilization, research funding, and research presentation

	Research productivity parameters	Min. value	Max. value	Mean	SD	Mean range
	Research utilization					
P11	Number of research studies utilized in the extension program	.00	8.00	0.47	1.15	0-1
P12	Number of research outputs commercialized	.00	2.00	0.06	0.26	0-1
P13	Number of research outputs registered in the IPO-PHL	.00	9.00	0.24	0.92	0-1
	Research funding					
P14	Number of institutionally funded research conducted from A.Y. 2021 to present	.00	9.00	0.52	1.14	1-2
P15	Number of externally funded research projects conducted from A.Y. 2021 to present	.00	5.00	0.18	0.65	0-1
	Research presentation					
P16	Number of research papers presented in regional fora	.00	10.00	0.58	1.44	0-1
P17	Number of research papers presented in national fora	.00	12.00	0.63	1.41	0-1
P18	Number of research papers presented in international fora	.00	10.00	0.94	1.61	0-1

In addition, the observed average of 2-3 international publications per faculty member over the last 3 years (Table 14) indicates a moderate level of research output (Muller et al., 2023). However, having only one publication on average indexed in major citation databases like Scopus or Web of Science suggests a lower level of visibility and impact for their research (Stupnisky et al., 2023). Looking at the impact of research through citation metrics revealed that an average of 5-6 total citations generated from the 1 indexed publication over 3 years is a relatively low citation impact (Gao et al., 2022). Moreover, an h-index of 1 means that each faculty member has only one paper cited at least once, indicating very limited citation impact so far, and an i10-index of one implies just 1 publication has received at least 10 citations, which is quite low (Stupnisky et al., 2023). Having 1-2 articles on average cited by others over 3 years also points to relatively low research impact and knowledge dissemination (Gao et al., 2022). Research output of faculty members to be relevant and contribute to sustainable development must be utilized either through the extension program of the university or through commercialization mechanisms. Data shows (Table 15) that the average number of research outputs utilized in an extension program, commercialized, or registered for intellectual property protection is only one per faculty member over the last three years. This suggests a low level of research translation, commercialization, and protection of intellectual assets. An average of just one research output being utilized in extension programs indicates weak linkages between the research conducted and addressing the practical needs of the target beneficiaries or communities. Similarly, having only one commercialized research output on average points to missed opportunities in translating research into products, technologies, or services with economic/market value (Van Norman and Eisenkot, 2017). Data also indicates an inadequate intellectual property protection, which

may imply that a significant proportion of research may lack novelty or is not being effectively protected. These findings align with Self-Determination Theory (Deci and Ryan, 1985), which suggests that faculty members with greater institutional support, autonomy, and professional development opportunities are more likely to engage in research. The correlation between academic rank and research output underscores the role of professional incentives in fostering research engagement. However, the negative relationship between heavy teaching loads and productivity indicates that workload adjustments and research incentives are necessary for balancing faculty responsibilities. Compared to Western universities where tenure-track systems provide research incentives (Abramo and D'Angelo, 2014), Philippine state universities lack structured policies that prioritize research output, contributing to lower international publication rates.

3.3. Relationship between profile, research productivity, and research competence

Relationships between Profile Variables and Research Productivity Indicators: Correlation analysis was used to determine the significant relationship between profile variables and research productivity of the respondents. Results show that there is a significant relationship between civil status and *number of published research in institutional journal*, r = .166, p = .009; *number of published research that has been cited*, r = .145, p = .022; *number of research utilized in the extension program*, r = .246, p < .001 interpreted as low positive correlation (Table 16 and 17). This implies that single respondents tend to have lower numbers of published research in institutional journals, number of published research that has been cited, and number of research utilized in the extension *program*, than married or other civil status. The correlation between civil status and research productivity can be attributed to several factors. Firstly, married individuals often benefit from more stable home environments and support systems, which can facilitate greater focus on research activities compared to their single counterparts who may face various distractions or commitments (Jordan and Zitek, 2012; Harris et al., 2010). Additionally, the responsibilities associated with marriage and dependents can enhance motivation and drive, prompting married individuals to strive for higher professional performance, including in research productivity (Harris et al., 2010). Moreover, married individuals tend to be older and more experienced, which may translate into improved time management and research skills, further enhancing their productivity (Harris et al., 2010; He et al., 2016). Lastly, the emotional and practical support provided by a partner can significantly reduce stress and create a conducive environment for research work, ultimately leading to higher productivity levels (Handiyanto et al., 2023; Harris et al., 2010). Thus, the interplay of these factors underscores the complex relationship between civil status and research output.

Another interesting result is the significant relationship between the research productivity indicators and the highest educational attainment. Almost all the research productivity indicators are significantly correlated with highest educational attainment, except only in the number of research articles published in international journals indexed in Web of Science, and the number of research outputs commercialized (Tables 16 and 17).

Table 16: Relationships between profile variables and research productivity indicators (Part 1)

Profile variables		Research productivity indicators								
		P1	P2	P3	P4	P5	P6	P7	P8	P9
Age	r	-0.049	-0.033	0.055	-0.064	0.064	0.066	0.022	0.082	0.039
	p	0.442	0.608	0.386	0.313	0.314	0.303	0.73	0.197	0.539
Civil status	r	0.077	0.123	0.107	0.02	0.072	.166**	.145*	0.102	0.056
	p	0.229	0.054	0.093	0.748	0.261	0.009	0.022	0.108	0.376
HEA	r	.241**	.232**	.178**	0.081	.155*	.188**	.253**	.224**	.132*
	p	0	0	0.005	0.204	0.015	0.003	0	0	0.038
ATHW	r	-.201**	-.162*	-.202**	-0.087	0.031	-0.1	-.172**	-.172**	-.157*
	p	0.002	0.01	0.001	0.171	0.624	0.116	0.007	0.007	0.014
ATPS	r	-0.043	-0.037	-0.044	-0.013	-0.029	-0.034	-0.042	-0.036	-0.037
	p	0.501	0.56	0.488	0.842	0.646	0.594	0.515	0.571	0.557
ATSS	r	-.187**	-.149*	-.156*	-0.07	-0.063	-0.1	-.170**	-.136*	-0.112
	p	0.003	0.019	0.014	0.274	0.325	0.115	0.007	0.032	0.079
OT	r	0.075	0.095	0.015	0.064	0.059	.135*	0.104	0.086	-0.008
	p	0.24	0.135	0.818	0.312	0.355	0.034	0.101	0.177	0.895
HOT	r	-0.094	-0.092	-0.006	-0.052	-0.035	-.129*	-0.082	-0.074	0.017
	p	0.138	0.146	0.922	0.418	0.583	0.043	0.196	0.248	0.789
AR	r	.306**	.306**	.352**	0.114	0.1	.313**	.419**	.409**	.282**
	p	0	0	0	0.074	0.115	0	0	0	0
YTSU	r	0.032	0.066	.178**	-0.017	.164**	.155*	.169**	.201**	.142*
	p	0.62	0.298	0.005	0.786	0.01	0.015	0.008	0.001	0.026

**: Correlation is significant at the 0.01 level (2-tailed); *: Correlation is significant at the 0.05 level (2-tailed); N= 248

The relationship between educational attainment and research productivity indicators is complex. While higher educational levels are generally associated with increased research productivity, they do not significantly influence the number of articles published in high-impact international journals or the commercialization of research outputs. Studies indicate that educational attainment

can enhance research skills and methodologies, leading to improved productivity metrics such as citation counts and overall publication volume (Subramanian and Nammalvar, 2017; Jäncke et al., 2022). However, the impact on high-impact journal publications is less pronounced, suggesting that factors such as institutional support, collaboration networks, and individual motivation may play more critical roles in these specific areas (Mishra, 2023; Othman et al., 2022). Moreover, the commercialization of research outputs appears to be influenced by external factors, including funding availability and market demand, rather than solely by the educational background of the researchers (Baniasadi et al., 2021; Buja et al., 2017). This indicates that while education is a vital component of research capability, it is not the sole determinant of success in high-impact publishing or commercialization endeavors.

Table 17: Relationships between profile variables and research productivity indicators (Part 2)

Profile variables		Research productivity indicators								
		P10	P11	P12	P13	P14	P15	P16	P17	P18
Age	*r*	0.103	0.086	0.036	0.078	0.095	0.078	0.118	0.099	0.027
	p	0.105	0.176	0.571	0.22	0.136	0.224	0.064	0.121	0.675
Civil status	*r*	0.094	.246**	0.012	0.099	0.109	-0.08	0.103	0.087	0.102
	p	0.14	0	0.848	0.12	0.086	0.211	0.104	0.171	0.11
HEA	*r*	.175**	.306**	0.014	.129*	.191**	.134*	.224**	.264**	.283**
	p	0.006	0	0.825	0.042	0.003	0.034	0	0	0
ATHW	*r*	0.069	-.180**	-0.089	-0.076	-0.088	-0.093	-0.122	-0.075	-.194**
	p	0.281	0.005	0.162	0.234	0.168	0.143	0.055	0.24	0.002
ATPS	*r*	-0.013	0.006	-0.03	-0.032	-0.049	0.067	-0.043	-0.048	-0.061
	p	0.841	0.924	0.643	0.616	0.445	0.291	0.497	0.456	0.338
ATSS	*r*	-0.029	-.140*	-0.086	-.142*	-0.032	-0.09	-.182**	-.142*	-.184**
	p	0.649	0.028	0.179	0.026	0.619	0.158	0.004	0.025	0.004
OT	*r*	0.061	0.051	-0.053	-0.058	-0.112	-0.037	0.013	0.038	0.021
	p	0.338	0.42	0.406	0.365	0.079	0.562	0.833	0.555	0.74
HOT	*r*	-0.033	-0.094	0.048	-0.006	0.119	0.018	0	-0.003	0.008
	p	0.61	0.139	0.449	0.926	0.062	0.781	0.999	0.958	0.902
AR	*r*	.262**	.320**	0.074	.257**	.246**	.180**	.308**	.285**	.342**
	p	0	0	0.245	0	0	0.004	0	0	0
YTSU	*r*	.171**	.140*	0.036	0.104	.151*	.136*	.171**	.167**	.185**
	p	0.007	0.028	0.571	0.102	0.017	0.033	0.007	0.008	0.004

**: Correlation is significant at the 0.01 level (2-tailed); *: Correlation is significant at the 0.05 level (2-tailed); N= 248

The lack of correlation between educational attainment and these two specific indicators suggests that publishing in top-tier international journals may depend more on factors like research quality, novelty, and alignment with global research trends, rather than just academic credentials. Moreover, commercializing research outputs requires a different set of skills and support systems beyond traditional academic training, such as market analysis, intellectual property management, and industry connections. Another profile variable that has a significant relationship with research productivity, though the correlation is weak, is the *average teaching hours per week*. Results shows a weak negative correlation of average teaching hours per week with number of completed research, number of internationally published research, number of research articles published in international journal indexed in SCOPUS, number of published research that has been cited, total Number of Citations generated from articles published, value of h-index, number of research utilized in the extension program and number of research presented in international fora, but no significant relationships with the rest of the productivity indicators (Table 16 and 17). The negative correlation aligns with the notion that a higher teaching load leaves less time and energy for research activities, potentially hindering productivity in areas like publishing, citations, and conference participation (Ramirez-Montoya et al., 2023). However, the lack of a significant relationship with other productivity indicators could mean that teaching responsibilities do not necessarily impede activities like publishing in local journals, commercializing research, or presenting at regional and national conferences. Similarly, the average total number of students per semester has weak negative correlation with number of completed research, number of internationally published research, number of research articles published in international journal indexed in SCOPUS, number of published research that has been cited, Total Number of Citations generated from articles published, Number of research utilized in the extension program, Number of research output registered in the IPO-PHL, and the number of research presented in regional, national and international fora (Tables 16 and 17). All other indicators have no significant relationship with the average total number of students per semester. The negative correlation aligns with the notion that a higher teaching load, as represented by a larger number of students per semester, can potentially hinder research productivity in areas like publishing, citations, and conference participation, as it leaves less time and energy for research activities. The lack of correlation with certain indicators could mean that the total number of students per semester does not necessarily impede activities like publishing in local journals, commercializing research, or presenting at national conferences, which may be influenced by other factors. However, the presence or absence of overtime has a significant relationship only with the number of published research articles in institutional journals and no significant

relationship with other research productivity indicators. A weak positive correlation between the absence of overtime and the number of published research in institutional journals at r = 0.135, p = 0.034 (Table 16). The positive correlation aligns with the notion that having less overtime work could provide faculty with more time and energy to focus on research activities, leading to a slight increase in publications in institutional (local) journals. The lack of correlation with other indicators suggests that the absence of overtime may not be as influential for research activities that require additional resources, collaborations, or skills, such as publishing in high-impact international journals, generating citations, or commercializing research outputs. This finding is supported by the observed significant relationship between the number of overtime loads and the number of published research in institutional journals at r = -0.129, p = 0.043 (Table 16). Almost all of the research productivity indicators have significant relationship with the present academic rank, while only Number of research articles published in international journal indexed in Web of Science, Number of nationally published research (in CHED accredited research journal), and Number of research output commercialized has no significant relationship with the same (Tables 16 and 17). The significant relationship between academic rank and most productivity indicators aligns with the notion that higher academic ranks (e.g., associate professor, full professor) are typically associated with more research experience, resources, and opportunities, leading to increased research productivity. However, the lack of a significant relationship with publications in Web of Science-indexed journals suggests that factors beyond academic rank, such as research quality, novelty, and alignment with global research trends, may play a more crucial role in publishing in these prestigious international journals. Similarly, the absence of a significant relationship with nationally published research and research commercialization implies that these activities may be influenced by factors other than academic rank, such as access to industry partnerships, technology transfer support, and entrepreneurial skills. The results further suggest that the significant relationships between academic rank and most productivity indicators highlight the importance of career progression and academic advancement in fostering overall research productivity. Finally, the years of teaching was found to have no significant relationship with number of completed research, number of internationally published research, number of research articles published in international journal indexed in Web of Science, Number of research output commercialized, and Number of research output registered in the IPO-PHL, while the rest of the research productivity indicators have weak positive correlation with years of teaching. The lack of significant correlation between years of teaching and certain indicators, such as publications in prestigious international journals (Web of Science), research commercialization, and IPO-PHL registrations, suggests that these activities may be influenced by factors other than teaching experience alone. The absence of a significant relationship between years of teaching and specific indicators like Web of Science publications, commercialization, and IPO-PHL registrations highlights the need for targeted support and training programs to help faculty members achieve success in these areas, regardless of their teaching experience. The weak positive correlation with other productivity indicators implies that as faculty members gain more teaching experience over the years, their research productivity in areas like completed projects, national publications, citations, and conference presentations tends to slightly increase. The weak positive correlation with other indicators suggests that teaching experience can contribute to overall research productivity to some extent, possibly due to the development of skills, knowledge, and networks over time.

Relationships between profile Variables and Level of Research Competence: The relationship between profile variables and the level of research competence of faculty was described, and the result is presented in Table 18. Correlation analysis showed that the level of research competence in the research process, technical aspect of research and the skills in writing the research paper is has a low positive correlation with highest educational attainment at r = 0.280, p <0.001; r = 0.211, p = 0.001; and r = 0.254, p < 0.001, respectively. Overall, research competence level has a low positive correlation with the highest educational attainment at r = 0.254, p < 0.001 (Table 18). Results suggest that as educational attainment increases, competence in the research process also increases, tend to have slightly better technical skills, and somewhat better research writing skills, though the relationship is weak. Further, a positive correlation between the highest educational attainment and research competence suggests that individuals with higher levels of formal education tend to have better research skills and competencies.

According to Van Hootegem et al. (2023), formal education provides training and exposure to research methods, processes, and technical aspects. Higher education programs, especially at the graduate level, often have dedicated coursework and requirements focused on developing research capabilities. The pursuit of higher education requires research skills, and completing such a degree hones research competencies through practice and application. Another profile variable that has low positive correlation with research competence is the present academic rank at r = 0.253, p < 0.001 with research process, technical aspect of research and skills in writing research paper at r = 0.271, p <0.001; r = 0.189, p = 0.003 and r =0.262, p < 0.001, respectively (Table 18).

Table 18: Relationships between profile variables and level of research competence

Profile variables		Research process	Technical aspect of research	Writing research paper	Research competence level
Age	*r*	-0.028	-0.011	0.027	-0.003
	p	0.662	0.868	0.668	0.959
Civil status	*r*	0.028	0.055	0.006	0.031
	p	0.663	0.389	0.92	0.632
HEA	*r*	.280**	.211**	.235**	.254**
	p	0	0.001	0	0
ATHW	*r*	-.187**	-.140*	-.206**	-.187**
	p	0.003	0.028	0.001	0.003
ATPS	*r*	-0.09	-0.072	-0.098	-0.091
	p	0.158	0.261	0.125	0.154
ATSS	*r*	-.195**	-.166**	-.198**	-.196**
	p	0.002	0.009	0.002	0.002
OT	*r*	-0.075	-0.046	-0.071	-0.067
	p	0.239	0.469	0.267	0.291
HOT	*r*	0.039	-0.01	0.018	0.017
	p	0.541	0.873	0.776	0.795
AR	*r*	.271**	.189**	.262**	.253**
	p	0	0.003	0	0
YTSU	*r*	0.063	0.006	0.058	0.045
	p	0.321	0.921	0.365	0.48

**: Correlation is significant at the 0.01 level (2-tailed); *: Correlation is significant at the 0.05 level (2-tailed); N= 248

The low positive correlations suggest that higher academic rank is associated with slightly better research competence on average. Similar findings were observed by Abramo et. al. (2011) that higher academic ranks positively correlate with academic rank due to their direct impact on research performance and productivity. Higher ranks often reflect greater experience and accumulated advantage, which contributes to a faculty's reputation and promotion in academia (Abramo et al., 2016). However, the number of average teaching hours per week has a low negative correlation with research competence in general at r= - 0.187, p = 0.003 and in the competence in the research process technical aspect of research and in the skills in writing the research paper at r= -0.187, p= 0.003; r= -0.140, p= 0.0028; and r=- 0.206, p= 0.001, respectively (Table 18). Faculty who have higher teaching loads and more classroom hours may have less available time to dedicate to research activities and developing their research skills. Teaching responsibilities can consume a significant portion of the weekly workload, leaving less time for pursuing professional development opportunities related to research to hone their research competencies. In addition, higher teaching hours per week can be mentally and physically demanding, potentially leaving faculty with less cognitive capacity and energy to devote to research and hone their competencies in the process. Looking at the data in Table 18, the level of research competence also has a low negative correlation with the average number of total students per semester (ATSS). Correlation analysis showed that the level of research competence is negatively correlated with average number of total students per semester (ATSS), at r= - 0.196, p= 0.002, while the research process, technical aspect of research and writing research paper has r= - 0.195, p= 0.002; r= - 0.166, p = 0.009; and r= -0.198, p= 0.002, in that order. Handling a larger number of students per semester can increase the overall teaching workload, including tasks like preparing materials, grading students' output, and providing feedback. Faculty research competence may suffer due to high teaching loads, as a study suggests that high teaching workload can deprive faculty members of time for research responsibilities, leading to only a fair level of competence and interest in research activities. The positive correlation between faculty educational attainment and research productivity supports previous findings (Jadhav et al., 2024) that higher qualifications lead to greater research engagement. However, the lack of a significant relationship between years in teaching and international research output suggests that experience alone does not equate to productivity; rather, access to research funding, collaboration opportunities, and mentorship play a greater role (Sanmorino and Rini, 2021). This highlights the need for structured research capacity-building programs to ensure sustained productivity regardless of faculty tenure

4. Limitations

This study has several limitations that should be acknowledged. First, the use of a descriptive-correlational design prevents causal conclusions, as only associations between variables were examined. Future research should consider longitudinal or experimental designs to establish causality. Second, the purposive sampling method introduces selection bias, as the study focused on faculty members already engaged in teaching and research. This may exclude perspectives from faculty with limited research involvement. Random or stratified sampling in future studies would improve generalizability. Third, while the study analyzes faculty research productivity and competence, it does not account for institutional factors such as research funding, administrative support, and access to research resources, which may also influence faculty output. A more comprehensive model integrating these elements could provide deeper insights. Lastly, the study does not differentiate between disciplines, which may affect research engagement due to varying publication norms.

Future studies should consider disciplinary differences in research productivity.

5. Conclusions

This study examined how faculty profile variables influence research productivity and competence within state universities in Region III, Philippines. The findings indicate significant relationships between civil status, educational attainment, teaching load, academic rank, and research productivity indicators. Married faculty members demonstrated higher institutional research output, likely benefiting from family support, while faculty with advanced degrees and higher academic ranks exhibited greater research competence. Conversely, heavy teaching loads and large student numbers were negatively correlated with research productivity, emphasizing the need for a balanced workload policy. The study acknowledges methodological limitations, particularly the use of purposive sampling, which introduces selection bias and limits generalizability. Future research should explore random sampling methods to validate findings across a broader faculty population. Findings suggest that faculty research engagement can be enhanced through strategic support mechanisms, including adjustments in teaching load, research mentorship programs, and faculty development initiatives. University administrators and policymakers should consider these factors when designing institutional policies to cultivate a strong research culture. Future studies should further investigate institutional support mechanisms, funding opportunities, and interdisciplinary collaboration to develop a holistic strategy for improving research productivity in Philippine state universities.

List of abbreviations

A.Y.	Academic year
AR	Academic rank
ATHW	Average teaching hours per week
ATPS	Average number of teaching preparations per semester
ATSS	Average number of students per semester
CALABARZON	Region in the Philippines (Cavite, Laguna, Batangas, Rizal, Quezon)
CHED	Commission on Higher Education (Philippines)
FRCM	Faculty research competence model
HEA	Highest educational attainment
HOT	Number of hours of overtime
IPO-PHL	Intellectual Property Office of the Philippines
OT	Overtime load
P1–P18	Research productivity indicators (e.g., P1: Number of completed research papers, P2: Number of internationally published research papers, etc.)
SD	Standard deviation
SDT	Self-determination theory
SPSS	Statistical Package for the Social Sciences
SUCs	State universities and colleges
YTSU	Years of teaching in state universities
h-index	Hirsch index (measure of research impact)
i10 index	Number of publications with at least 10 citations
p	Significance level (p-value)
r	Pearson correlation coefficient

Compliance with ethical standards

Ethical considerations

Ethical approval was obtained from the appropriate institutional review board. Informed consent was secured from all participants prior to data collection.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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