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A Study On Research Competency Of Teachers Working In Higher Education Institutions Of Odisha

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Abstract

The objective of the study is to compare the research competency of teachers working in higher education institutions with reference to gender, qualification, experience, age, and stream. The investigator used a quantitative research design with the survey method to collect data. The sample consisted of 150 higher education teachers from the state of Odisha, selected using a stratified random sampling technique. A self-developed 54-item rating scale was used to assess research competency across five components: Planning, Designing, Conducting Field Work, Data Analysis and Interpretation, and Reporting and Sharing Research Findings. The scale employed a three-point Likert format—high competency (HC = 3), moderate competency (MC = 2), and low competency (LC = 1). Content validity was ensured through expert review, and reliability was confirmed with Cronbach's Alpha = 0.83. Data were analysed using descriptive and inferential statistics in SPSS. The study revealed that research competency showed no significant difference with gender, but significant differences were found with respect to qualification, experience, age, and stream, with Ph.D. holders, teachers with 11–20 years of experience, those aged 41 and above, and Arts teachers demonstrating higher competency at the 0.05 level of significance. The educational implication is that authorities should provide opportunities for all teachers to participate in research methodology training, workshops, and professional development programs to enhance overall research competency in higher education.

Keywords: - Research Competency, Higher Education Institutes, Higher Education Teachers, Research Competency Framework

Introduction:

Research competency is vital for higher education teachers as it significantly enhances their teaching, professional development, and the overall academic environment. Teachers with strong research skills can integrate the latest findings and methodologies into their courses, fostering a dynamic learning experience that keeps students engaged with current trends and challenges in the field. Through continuous professional development, research enables teachers to stay intellectually sharp, adopt new teaching techniques, and refine their pedagogical approaches. Engaging in action research allows teachers to evaluate and improve their own teaching practices, identify strengths and weaknesses, and make data-driven decisions to enhance student outcomes. Moreover, research helps in the extraction of knowledge, both from academic literature and practical experiences, enabling teachers to offer students a deeper, evidence-based understanding of the subject matter while also contributing to the broader academic community.

Research competence is the capacity to carry out independent, high-quality research, applying both methodological expertise and critical reasoning to address research questions and contribute to knowledge creation (Holliday, 2016). It involves designing, conducting, analysing, and communicating research, including the ability to interpret data, apply appropriate methodologies, and produce clear, well-referenced reports (Lambrechts & Van Petegem, 2016). Research competence enables one to conduct research that is logically structured, uses appropriate methodologies, and produces clear, valid, and reliable findings that contribute to the knowledge base of a field (Roman,2021). It also entails critically engaging with research processes, using appropriate research methodologies, analysing complex data, and effectively communicating findings while ensuring academic rigor and ethical integrity (Rodriguez et al.2021). Furthermore, research competence involves the ability to design, conduct, analyse, and communicate research, utilizing appropriate methods, skills, and ethical considerations to contribute to the advancement of knowledge (Ugwu, Ifeaniyieze, & Agbo, 2015). It is the capacity to conduct systematic investigations, employ critical thinking, analyze data, and communicate findings in a way that is methodologically sound and ethically responsible Pedrajas, & Bito-onon2022). In the context of higher education, research competence refers to the components of research skills and knowledge as the integral ability to perform quality research (Burke et al., 2005). It also refers to the ability to search for, locate, extract, organize, evaluate, and use or present information that is relevant to a particular topic (Yerzhanova & Nursultanova, 2024). Furthermore, research competence encompasses a combination of knowledge, skills, attitudes, and learning strategies that allow a person to conduct research efficiently (Lambrechts & Van Petegem, 2016). It refers to a set of abilities that allow individuals to find and gather reliable information and then evaluate the information to find answers to questions (Gay, Mills, & Airasian, 2012). Research competence also involves the capacity to employ systematic research approaches, critically evaluate data, and effectively communicate research outcomes through well-structured reports and publications (Boote & Beile, 2005). It also refers to the mastery of disciplinary knowledge and research methodologies, enabling the researcher to identify problems, collect data, and interpret findings in a manner that advances understanding and

solves real-world problems (Ramirez-Montoya, 2017). Research is defined as a process of collecting, analysing, interpreting, and evaluating data in a planned and systematic way with the aim of seeking reliable solutions for problems (Mallari et al.2023). Research skills refer to a collection of several methods and abilities that help an individual to find information, review it, and arrive at a decision (Arasaratnam, 2007). Hence, Research competence can be defined as the ability to effectively design, conduct, analyse, and communicate research using appropriate methodologies, critical thinking, and ethical considerations to contribute to knowledge and solve real-world problems.

The investigator used various models of research competency to incorporate the dimensions of research competency, which are presented as follows.

RMRC-K Model of Research Competence: The research competence model was developed by Thiel and Bottcher in 2018. The RMRC-K model stands for a competence model that assesses research abilities, focusing on five key dimensions: Reviewing the state of research (R), Methodological competences (M), Reflecting on research findings (R), Communication skills (C), and content Knowledge (K). It includes four "dimensions of skill" and one "dimension of content knowledge." The skill dimensions are: reviewing the state of research, methodological skills, reflecting on research findings, and communication skills. (Thiel & Bottcher,2018)**.**

European Competence Framework (Research Comp): The European Research Competence Framework was developed by Muldur in 2006. According to the European competence framework, research competence has three main dimensions along with seven competence areas, which are cognitive abilities, doing research, managing research, managing research tools, making an impact, working with others, and self-management (Muldur et al.,2006).

Dione Research Competence Framework: The Dione Research Competence Framework was developed by Weijenberg in 1993.The Dione Research Competence Framework is based on the research cycle, which is divided into four stages: find, plan, implement**,** and share, each with specific sub-steps. In the Find stage, researchers engage in general research, read relevant materials, and identify a research topic. The plan stage focuses on conducting focused research, reviewing sources and literature, formulating a research question, selecting appropriate methods, and designing the study. During the Implement stage, researchers gather data (including digitally), analyse the data, relativize and synthesize findings, and address ethical considerations. Finally, in the Share stage, researchers present their work, write up their findings, engage in discussions, and ensure the research has a meaningful impact (Weijenberg et al.,1993).

The investigator developed a research competency framework by integrating insights from RMRC-K Model of Research Competence, European Competence Framework (Research Comp), DIONE Research Competence Framework. This framework of research competency consists of five key dimensions: Planning, designing, conducting field work, data analyzing and interpretation, and reporting and sharing research findings. The detailed framework is presented in figure 1.

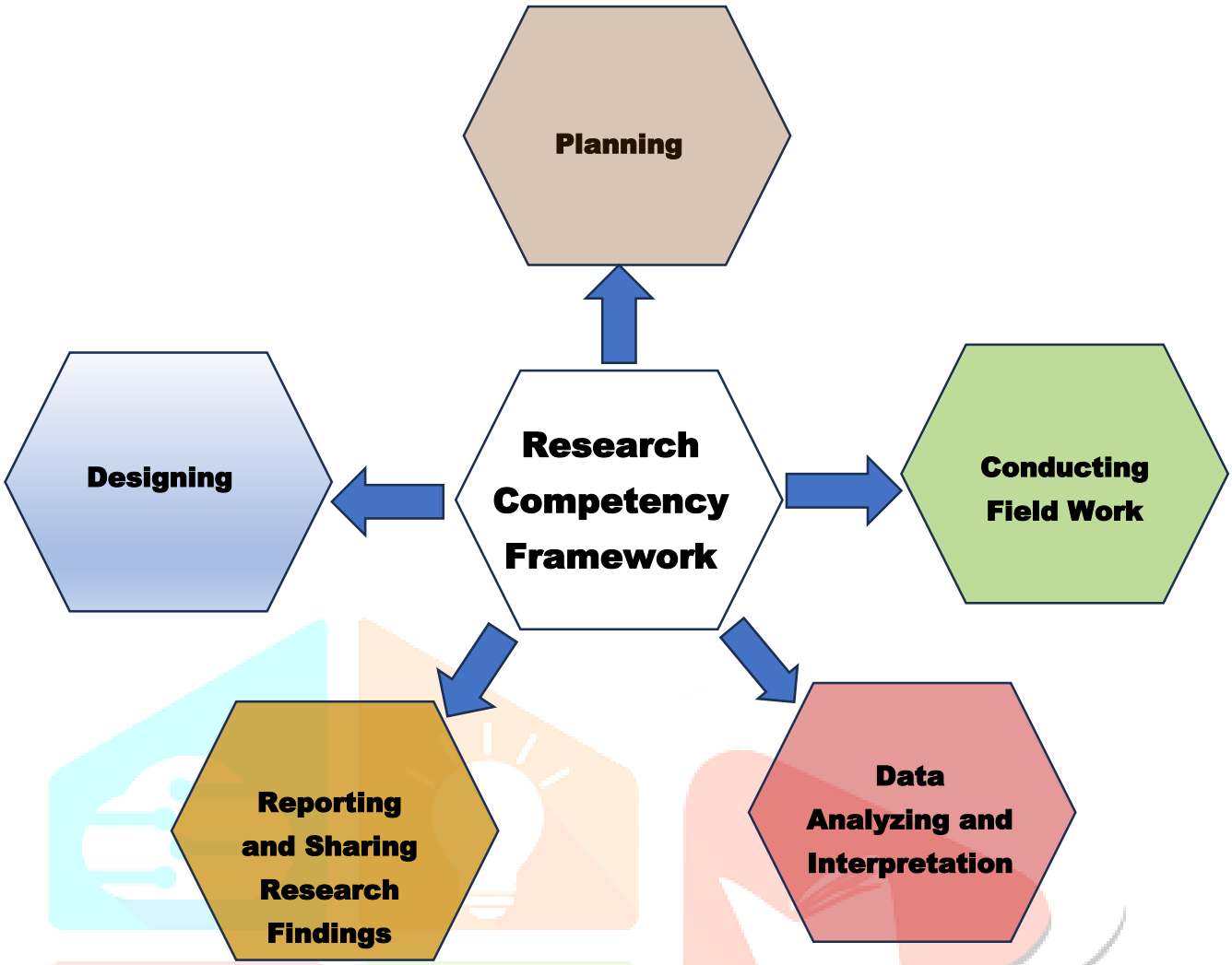

Figure. 1.: Dimensions of research competency framework

(Thiel & Bottcher,2018; Muldur Et Al.,2006; Weijenberg Et Al.,1993).

The dimensions of research competency are discussed in the following section

Planning: Planning as a research competency involves identifying emerging research trends, analysing previous findings, and locating relevant literature. It includes stating clear objectives, formulating research questions, and developing hypotheses based on the research problem. The competency also covers defining variables operationally, creating independent research proposals, and understanding the budgeting aspects. Familiarity with the UGC proposal format and awareness of different funding agencies for research grants are also essential for effective research planning.

Designing: Designing as a research competency involves planning the research process, preparing a sampling frame, and selecting a representative sample using suitable methods. It includes developing research tools, ensuring their reliability and validity, and understanding the data collection process. Familiarity with sources of standardized tools, the piloting process for tool standardization, and selecting appropriate tools are essential for effective research design.

Conducting Field Work: Conducting fieldwork as a research competency involves obtaining permission for data collection, writing consent letters, and establishing rapport with participants. It includes convincing the sample to participate, conducting fieldwork with flexibility, and ensuring data confidentiality. Familiarity with in-depth interviews and proper data storage are also key aspects of effectively conducting research in the field.

Data Analyzing and Interpretation: Data analysing and interpretation as a research competency involves scoring data, entering it into computers, and creating tables and graphs. Teachers select and calculate statistical measures using SPSS, interpret results, test hypotheses, and understand statistical limitations. They are also skilled in analysing qualitative data with software and creating network diagrams.

Reporting And Sharing Research Findings: Reporting and sharing research findings as a research competency involves writing abstracts, seminar papers, and plagiarism-free reports. Teachers are familiar with CARE-listed journals, research platforms, and APA referencing. They use figures and tables appropriately, manage references with software, and correctly cite sources, ensuring professional and ethical presentation of research.

Rationale of the Study:

Research competency is a critical requirement for higher education teachers, as it enables them to engage in knowledge creation, guide student research, and implement evidence-based teaching practices. It plays a central role in enhancing the quality of higher education institutions by fostering innovation, critical thinking, and academic excellence. Despite its importance, there is often a need to assess and strengthen the research competency of teachers to ensure they can meet evolving academic, technological, and societal demands. Therefore, the present study aims to evaluate the research competency of higher education teachers, providing insights that can inform professional development programs, institutional policies, and strategies to improve the overall effectiveness of higher education. The National Education Policy (NEP) 2020 envisions a transformative shift in Indian higher education, moving from a teaching-centric model to one that integrates high-quality research, innovation, and multidisciplinary approaches. For higher education teachers, this requires a significant enhancement of research competencies, transforming them into "teacher-researchers" who can foster critical thinking and produce knowledge relevant to societal needs. According to UNESCO (2025), the research competence of teachers is intrinsically linked to their roles as reflective practitioners and lifelong learners, who actively contribute to improving educational quality, adapting to new technologies, and promoting student development. It emphasizes that in the modern and rapidly evolving educational landscape, teachers should move beyond the mere transmission of knowledge and become researchers of their own practice.

In India, few research studies have been conducted on research competency of teachers in higher education. Panigrahi and Behera (2021) found that teacher-researchers are proficient in identifying

research problems, gathering and interpreting data, and appropriately using data collection tools; however, they lack competency in data analysis, application of technology, and adherence to research ethics. The studies revealed that male teachers possess higher research competencies than female teachers (Rodriguez et al., 2021), while others found no gender differences (Cortés et al., 2021). Regarding academic qualifications, Ph.D. holders are often reported to have stronger research skills (Manila et al., 2022), though some studies found no significant difference based on qualifications (Tindowen & Baquiaran, 2024). The research studies indicated that more experienced teachers have higher research competencies (Rodriguez et al., 2021), while others found no significant correlation (Comon & Corpuz, 2024). The study also found that older teachers were more research-competent (Tahsildar & Hasani, 2021), though other studies suggested medium-aged teachers has less research competencies (Katayev et al., 2023). Finally, while some studies found science teachers to have more research competencies (Tahsildar & Hasani, 2021), others suggested arts teachers were more research-competent (Maniam & Razak, 2023). The studies reveal that male teachers have higher professional growth as compared to female counterparts (Saleem et al., 2021). Qualifications, particularly Ph.D. degrees, are often associated with higher competencies (Sywelem & Witte, 2023).

Review of related literature found that few comprehensive studies have been conducted on research competency of teachers working in higher education institutes of Odisha**.** Hence, study on research competency of teachers at the higher education level is relevant. Hence, the investigator raises the following research question for investigation.

- Is there any difference in research competency of teachers working in higher education institution with respect to gender, qualification, experience and stream?

Statement Of the Study:

The present study can be stated as **"**A Study of Research Competency of Teachers Working in Higher Education Institutes of Odisha".

Operational Definition of Key Terms:

Research competency- It refers to the set of knowledge and skills necessary for a teacher in a higher education institution to conduct research, including developing proposals, formulating tools, selecting samples, collecting data, analysing and interpreting data, and reporting findings in a plagiarism-free format with proper citations.

Higher education institution- It refers to institutions and colleges offering bachelor's and postgraduate degrees in various subjects. Furthermore, these institutions are granted autonomy by the UGC.

Teacher- It refers to faculty working in autonomous colleges and teaching subjects at the bachelor's and postgraduate levels.

Gender- It refers to male and female teachers working in higher education institutions.

Age- Age is categorized into three groups: up to 40 years, 41-50 years, and 51 years and above.

Qualifications- Qualifications are categorized into three groups: PG with NET, M.Phil. with NET, and Ph.D.

Experience- Experience is categorized into three groups: up to 10 years, 11-20 years, and 21 years and above.

Streams- Streams are categorized into three groups: Arts, Commerce, and Science.

Objectives of the Study:

To compare the research competency of teachers working in higher education institutions with reference to gender, qualification, experience, age, and stream.

Hypotheses of the Study:

H_{01}: There is no significant difference in research competency of teachers working in higher education institutions with reference to gender.

H_{02}: There is no significant difference in research competency of teachers working in higher education institutions with reference to qualification.

H_{03}: There is no significant difference in research competency of teachers working in higher education institutions with reference to experience.

H_{04}: There is no significant difference in research competency of teachers working in higher education institutions with reference to age.

H_{05}: There is no significant difference in research competency of teachers working in higher education institutions with reference to stream.

Delimitation of the Study:

The study was delimited to 150 teachers from 10 autonomous colleges in Odisha. The same questionnaire was used for teachers in Science, Arts, and Commerce streams, and the research was confined to a quantitative design using the survey method.

Methodology:

The investigator used a quantitative research design for the present study to compare the research competency of teachers working in higher education institutions with reference to gender, qualification, experience, age, and stream. The survey method was employed to gather quantitative data on the research competency of teachers working in higher education institutions. The sample for the present study consists of 150 higher education teachers in the state of Odisha. This sample was selected from higher education

institutions by using a stratified random sampling technique. The investigator used a self-developed rating scale consisting of 54 items intended to assess the level of research competency of higher education teachers. These items are based on five components of research competency: Planning, Designing, Conducting Field Work, Data Analysing and Interpretation, and Reporting and Sharing Research Findings. A Likert-type scale with three options, namely high competency (HC) (3 points), moderate competency (MC) (2 points), and low competency (LC) (1 point), was used. The content validity of the rating scale was ensured by taking experts' opinions on the items. On the basis of the comments and suggestions, the tool was finalized. The Cronbach Alpha reliability (0.83) was estimated and found to be significant. The collected data was coded numerically and entered in MS Excel for analysis. The researcher used descriptive statistics (Mean, Median, SD, Skewness, Kurtosis, SEM) and inferential statistics (Mann-Whitney U and Kruskal-Wallis tests) for data analysis and interpretation in SPSS software**.**

Data analysis & interpretation:

The objective of the study is to compare the research competency of teachers working in higher education institutions with reference to gender, qualification, experience, age, and stream. In this section, the investigator used descriptive statistics followed by inferential statistics to compare the research competency of teachers working in higher education institutions with respect to gender, qualification, experience, age, and stream. The results are presented in table 1 and table 2.

Table 1: Descriptive statistics for comparing research competency of teachers working in higher education institutions with reference to gender, qualification, experience, age, and stream

Categories	Mean	Median	SD	Skewness	Kurtosis	SEM
Gender						
Male	131.58	137	20.724	1.163	1.915	2.083
Female	131.16	134	18.298	0.504	2.115	2.424
Qualification						
PG with NET	102.19	93.2	30.88	1.391	1.787	6.739
M.Phil. with NET	124.27	125	9.745	0.269	1.614	1.453
Ph. D	141.82	141	9.249	1.127	3.823	0.975
Experience						
Up to 10 years	126.47	129	21.079	0.56	1.029	2.45
11-20 years	137.08	139	13.315	0.735	2.502	1.733
21-above years	132.83	139	25.566	1.316	2.187	5.331
Age						
Up to 40 years	125.14	128	19.725	0.932	0.494	2.293
41-50 years	137.24	139	16.029	1.205	6.692	2.105
51 and above years	136.75	140.5	23.058	1.11	2.957	4.707
Stream						
Arts	135.87	139	16.686	0.621	3.561	2.292
Science	126.23	130	22.387	0.883	1.018	3.075

Commerce	132.22	135	19.058	1.053	1.838	2.695

The table 1 revealed that the mean research competency score of male teachers is 131.58 and that of female teachers is 131.16, indicating a very small difference between genders. With respect to qualification, the mean score of teachers with a Ph.D. is 141.82, followed by teachers with M.Phil. with NET (124.27) and PG with NET (102.19), indicating variation across qualification categories. With respect to experience, the mean score of teachers with 11–20 years of experience is 137.08, followed by teachers with 21 years and above (132.83) and up to 10 years (126.47), indicating differences across experience groups. With respect to age, the mean score of teachers aged 41–50 years is 137.24, followed by teachers aged 51 years and above (136.75) and up to 40 years (125.14), indicating variation across age groups. With respect to stream, the mean score of teachers from the Arts stream is 135.87, followed by Commerce (132.22) and Science (126.23), indicating differences across academic streams. Hence, it can be concluded that research competency is similar among male and female teachers but varies with qualification, experience, age, and stream.

Table 2: Inferential statistics for comparing research competency of teachers working in higher education institutions with reference to gender, qualification, experience, age, and stream

Categories	Mean Rank	Mann Whitney U/ Kruskal-Wallis Test	z-value	Sig.	Remarks
Gender					
Male	80.95	2579	0.893	0.372	Not significant at the 0.05 level
Female	74.25				
Qualification					
PG with NET	31.4	77.524	2	0	Significant at the 0.05 level
M. Phil with NET	46.52				
Ph. D	105.48				
Teaching Experience					
Up to 10 Years	65.28	12.15	2	0.002	Significant at the 0.05 level
11-20 Years	91.31				
21-above Years	88.17				
Age					
Up to 40 years	62.36	17.995	2	0	Significant at the 0.05 level
41-50 years	92.78				
51 and above years	93.75				
Stream					
Arts	88.74	6.661	2	0.036	Significant at the 0.05 level
Science	66.35				
Commerce	80.53				

The table 2 revealed that there is no significant difference in research competency between male and female teachers, as the difference is not significant at the 0.05 level (p = 0.372). With respect to qualification, a significant difference in research competency is found at the 0.05 level (p = 0.000), which indicates that research competency differs among teachers with PG with NET, M.Phil. with NET, and Ph.D. qualifications. With respect to teaching experience, a significant difference is found at the 0.05 level (p = 0.002), indicating that research competency differs among teachers with up to 10 years, 11–20 years, and 21 years and above experience. With respect to age, a significant difference is found at the 0.05 level (p = 0.000), which indicates that research competency differs among teachers aged up to 40 years, 41–50 years, and 51 years and above. With respect to stream, a significant difference in research competency is found at the 0.05 level (p = 0.036), indicating that research competency differs among teachers from the Arts, Science, and Commerce streams. Hence, it can be concluded that research competency does not differ with gender but differs significantly with qualification, teaching experience, age, and stream.

Major Findings of the Study

1. There is no significant difference in research competency with respect to gender at the 0.05 level of significance between male and female teachers.
2. There is significant difference in research competency with respect to qualification at the 0.05 level of significance, with teachers holding a Ph.D. demonstrating higher competency than those with M.Phil. with NET and PG with NET.
3. There is significant difference in research competency with respect to teaching experience at the 0.05 level of significance, with teachers having 11–20 years of experience demonstrating higher competency than other experience groups.
4. There is significant difference in research competency with respect to age at the 0.05 level of significance, with teachers aged 41–50 years and 51 years and above demonstrating higher competency than teachers aged up to 40 years.
5. There is significant difference in research competency with respect to stream at the 0.05 level of significance, with Arts teachers demonstrating higher competency than Commerce and Science teachers.

Discussion of Results:

The present study revealed that there is a significant difference in the research competency of teachers working in higher education institutions with reference to gender at the 0.05 level. This result is supported by previous research studies (Lagrio et al.2022). This is in contrast with the studies conducted by (Begunova & Qingyu, 2021) who indicated that male teachers have more research competency compared to female teachers due to greater opportunities for research projects, mentorship, and access to funding. The present study found that there is a significant difference in the research competency of teachers working in higher education institutions with reference to qualification at the 0.05 level. This result is supported by previous research studies (Wong, 2019). The findings were not supported by (Cabero-

Almenara et al., 2023), who revealed that Teachers with Ph.D., PG, and M.Phil. qualifications in higher education institutions possess similar levels of research competency, as per higher education notifications, which mandate teachers to conduct action research and provide comprehensive training, including exposure to advanced research methodologies. The present study indicated that there is a significant difference in the research competency of teachers working in higher education institutions with reference to experience at the 0.05 level. This result is supported by previous research studies (Matus et al., 2019). This is in contrast with the studies conducted by (Dignos, 2021) who indicated there is a similar level of research competency among all categories of teachers in higher education institutions, as research training and the use of advanced methodologies are mandatory across all qualification levels. The present study indicated that there is a significant difference in the research competency of teachers working in higher education institutions with reference to age at the 0.05 level. This is in accordance with the research studies conducted by (Dailo, 2024). This is in contrast with the studies conducted by (Pera et al., 2022) who indicated that there is a similar level of research competency among all categories of experienced teachers because the research opportunities, training, and resources available to teachers at different experience levels are similar, providing equal support for developing research skills. The present study revealed that at a significance level of 0.05, the post-hoc test results reveal that there is a significant difference in research competency between teachers up to 40 years old and teachers 41–50 years old. Additionally, there is a significant difference in research competency between teachers up to 40 years old and teachers 51 years and older. However, there is no significant difference in research competency between teachers aged 41–50 and teachers aged 51 and older. This result is supported by previous research studies (Bonganciso, 2024). This is in contrast with the studies conducted by (Tahir et al., 2024) who indicated that there is no significant difference in research competency between teachers with less and more experience because both groups have access to similar training, resources, and opportunities, along with equal institutional support for research development. However, a significant difference is found between teachers in the moderate and higher age groups, as those in the higher age group, as compared to those in the moderate age group, likely had more opportunities for research involvement, mentorship, and resources, as well as developed stronger professional networks, gained more experience with research methods, and participated in more academic projects, enhancing their research competency. The present study found that there is a significant difference in the research competency of teachers working in higher education institutions with reference to the stream at the 0.05 level. This result is supported by previous research studies (Mallari & Santiago, 2023). The findings were not supported by (Siregar & Soni Mirizon, 2021), who revealed that there is a similar level of research competency among teachers of arts, science, and Commerce streams in HEIs, as all have access to similar research training, resources, and professional development.

Educational Implications and Conclusion:

The present study on research competency of teachers in higher education suggests several implications. Since teachers with Ph.D. degrees demonstrate higher research competency than those with M.Phil. with NET and PG with NET, institutions should encourage and support teachers to pursue higher qualifications to strengthen their research skills. Teachers with 11–20 years of experience and those aged 41–50 years and 51 years and above demonstrate higher research competency, highlighting the need for mentorship and professional development programs to support less experienced and younger teachers. As Arts teachers demonstrate higher research competency than those in Commerce and Science, targeted training programs should be organized to bridge stream-specific gaps. Additionally, authorities should provide opportunities for all teachers to attend research methodology training, workshops, and professional development programs to enhance overall research competency across higher education.

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