



COURSEWORK-BASED RESEARCH COMPETENCIES AMONG RESEARCH SCHOLARS IN RELATION TO THEIR GENDER

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Abstract

This research aims to identify Ph.D. scholars' research competencies developed during their coursework and seeks to establish the association between level research competencies and the gender of the Ph.D. scholars. A descriptive survey design was employed for this research. The study involved 100 Ph.D. scholars who completed coursework in Education. They were selected using a purposive-random sampling technique, as reaching a targeted sample size through random sampling was impractical. The data were collected using a closed-ended questionnaire and analysed through descriptive statistics and the chi-square test of independence. The findings revealed that there is a significant association between different levels (Having Minimum Competency [HMC], Having basic competency [HBC], and Having advanced competency [HAC]) of reviewing related literature competencies and the gender of the research scholars (Male and Female). However, no significant association was found between different levels of research competencies (HMC, HBC, and HAC) and the gender of the research scholars (Male and Female) in terms of writing proposal competency, competency of research methodology, competency of using ICT in performing research, and research publication and ethics competency. This indicates that male research scholars are at par with female research scholars in various research competencies. This implies that both male and female research scholars develop similar research competencies during their Ph.D. coursework. The Ph.D. programme, however, has been specifically designed to develop intended research competencies among the research scholars during the coursework.

Keywords: Research Competency, Coursework, Ph.D. Programme

INTRODUCTION

Research is fundamental to Higher Education, as it enhances our understanding of complex concepts. Elevating the knowledge of those complex concepts, competency-driven and well-structured Ph.D. coursework is basic to foster high-quality research output (Pandit & Gupta, 2023). It creates a joyful learning experience and prepares research scholars to contribute meaningfully to their fields (Shukla, Patel & Gadhavi, 2016). A good researcher is required to possess competencies of literature review and research methodology, usage of ICT, mastery over the proposal writing, and research & publication ethics (Creswell & Creswell, 2018; COPE, n.d.; Kothari & Garg, 2019). Research competency is regarded as the basis for the development of intellectual, communicative, design skills, development of critical thinking, and creative abilities in the process of research and publications. A study on research competencies and performance of faculty of Higher Education Institutions found that the competency of faculty is a predictor of research productivity, particularly the number of researches completed by the faculty of HEIs (Roman, 2021). Coursework-based research competencies are crucial which equips students with essential skills in research methodology, data analysis, proposal writing, and ethical practices, effectively bridging theoretical knowledge and practical application (Golde, 2007; Lovitts, 2005). Additionally, training in qualitative and quantitative methods improves the validity and reliability of research outcomes (Creswell & Creswell, 2018; Maxwell, 2012). Furthermore, ethical training promotes academic integrity by helping scholars avoid issues like plagiarism (Resnik, 2011; Shamoo & Resnik, 2015). Structured coursework also enhances academic writing and publishing skills, leading to higher publication rates (Kamler & Thomson, 2014; Belcher, 2019) and prepares scholars for professional careers by developing skills in grant writing and research dissemination (Austin, 2009; Walker et al., 2008). However, in light of these facts, the University Grants Commission (UGC) has set minimum standards and procedures to enhance research skills and competencies and ensure the quality of the Ph.D. (Singh & Desai, 2016). Again, from the reviewed related literature, study regarding coursework- based research competencies among the PhD scholars with regard to gender was found as an unexplored area of study. Therefore, the present study aimed to establish the association between different levels of research competencies and the gender of the research scholars pursuing PhD coursework in Education in terms of different dimensions of research competencies such as reviewing literature competency, writing

proposal competency, competency of research methodology, competency of using ICT in performing research, and research publication ethics competency.

METHODOLOGY OF THE STUDY

Descriptive design was employed to identify the levels of research competencies among research scholars developed during coursework in relation to their gender. Determining the appropriate sample size for true representation of the target population involves various factors, including population size, margin of error, and confidence level. In the context of random sampling, selecting 10 percent of the total population is considered a thumb rule rather than a strict rule. Consequently, many research methodology books suggest that a sample size of 10 percent is generally sufficient to represent a large population (Cochran, 1977; Israel, 1992; Krejcie & Morgan, 1970). Therefore, forty-one universities were selected purposively from 420 central and state universities providing PhD in Education in the country (AISHE report-2020). Furthermore, from the research scholars of those forty- one universities, one hundred education research scholars were selected through random sampling technique. Therefore, purposive- random sampling was used for the present study. Data were collected through questionnaire and analysed by using percentage analysis and chi-square test of independence.

DATA ANALYSIS AND INTERPRETATION

Association between Level of Research Competencies developed during the Ph.D. coursework and Gender of the Research Scholars were identified and are presented under five dimensions (i) competencies related to review of related literature, (ii) Proposal writing, (iii) Research Methodology, (iv) Usage of ICT, and (v) Research Publication and Ethics.

Coursework based Research Competencies among research scholars in relation to their gender

Research competencies among female and male research scholars have been comparatively analysed and interpreted under different levels such as Having Minimum Competency (HMC), Having Basic Competency (HBC), and Having Advance Competency (HAC) respectively and presented in table 1.0.

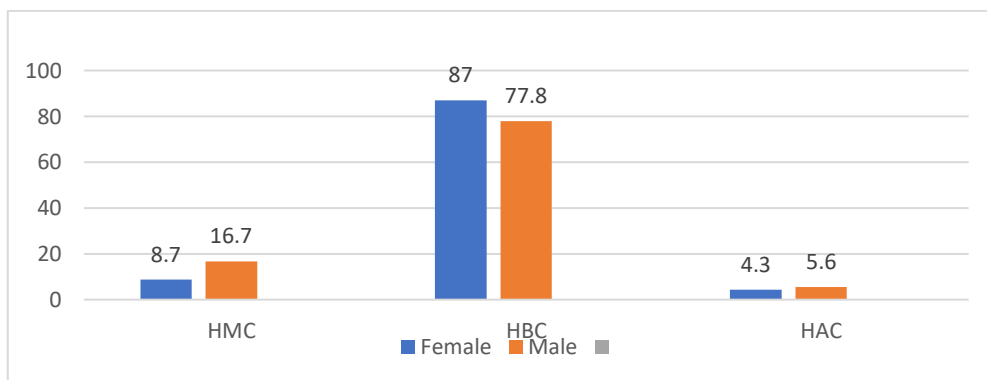
Table1.0

**Chi-square test of Independence between the Level of Research Competencies of
Research Scholars and their Gender**

Overall	Level of competencies			χ^2	df	'P' Value	Remarks
	HMC	HBC	HAC				
Female	04 (8.7)	40 (87.0)	02 (4.3)	1.542	2	.463	NS
Male	09 (16.7)	42 (77.8)	03(5.6)				
Total	13 (13.0)	82 (82.0)	05(5.0)				

N.B.: Not Significant at .05 level, Numbers in the parenthesis indicate percentage

**Fig-1.0: Gender-wise Level of Research Competencies of Research Scholars pursuing
Ph.D. Coursework**



Note: HMC- Having Minimum Competency, HBC: Having Basic Competency, HAC: Having Advance Competency

It is evident from the Table -1.0 and Figure-1.0 that there exists no significant association between gender and research scholar's research competency pursuing PhD coursework in Education in terms of different dimensions of research competencies such as reviewing literature competency, writing proposal competency, competency of research methodology, competency of using ICT in performing research, and research publication ethics competency

It is evident that both the female and male research scholars have shown their minimum level of competency. However, male research scholars have been found higher in number (8.7 percent) as compared to their female counterparts (16.7 percent). It is also observed that the maximum number of female research scholars were having basic competency in terms of different dimensions of research competencies such as reviewing literature competency,

writing proposal competency, competency of research methodology, competency of using ICT in performing research, and research publication ethics competency (87 percent) than their male counterparts (77.8 percent). However, in possession of advance level research competencies, female research scholars were found to have less in number (4.3 percent) in comparison to their male counterparts (5.6 percent) in terms of different dimensions of research competencies such as reviewing literature competency, writing proposal competency, competency of research methodology, competency of using ICT in performing research, and research publication ethics competency. By comparing both the female and male research scholars no significant association was found between levels of research competencies and their gender related to competencies related in terms of different dimensions of research competencies such as reviewing literature competency, writing proposal competency, competency of research methodology, competency of using ICT in performing research, and research publication ethics competency. Moreover, the study reveals that a large number of research scholars (82.0 percent) possess basic competencies of in terms of different dimensions of research competencies such as reviewing literature competency, writing proposal competency, competency of research methodology, competency of using ICT in performing research, and research publication ethics competency than minimum competencies (13.0 percent) and advanced competencies (5.0 percent) (Table-1.0 and Fig-1.0).

Dimension-wise Coursework based Research Competencies among research scholars in relation to their gender

Research competencies among female and male research scholars have been comparatively analysed and interpreted under different levels such as Having Minimum Competency (HMC), Having Basic Competency (HBC), and Having Advance Competency (HAC) with regard to different dimensions and presented from table 2.0 to 6.0.

Competencies related to review of related literature among Research Scholars

The competencies related to review of related literature among the female and male research scholars have been comparatively analysed and interpreted dimension-wise in the following table and graph.

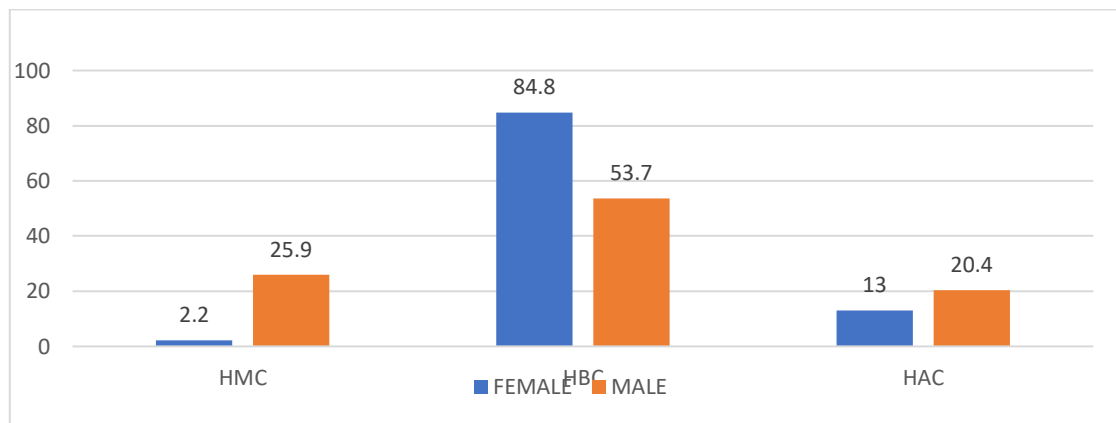
Table 2.0

Chi-square test of Independence between the Level of Research Competencies of Research Scholars related to Review of related literature and Gender

Review of related literature	Level of competencies			χ^2	df	'p' Value	Remarks
	HMC	HBC	HAC				
Female	01 (2.2)	39 (84.8)	06 (13.0)	13.655	2	.001	S
Male	14 (25.9)	29 (53.7)	11 (20.4)				
Total	15 (15.0)	68 (68.0)	17 (17.0)				

N.B.: Significant at .05 level, Numbers in the parenthesis indicate percentage

Fig-2.0: Gender-wise Level of Research Competencies of Research Scholars Related to Review of related Literature



Note: HMC- Having Minimum Competency, HBC: Having Basic Competency, HAC: Having Advance Competency

It is evident from the Table -2.0 and Figure-2.0 that there exists significant association between gender and research scholar's research competency in reviewing related literature.

It is evident that both the female and male research scholars have shown their minimum level of competency. However, male research scholars have been found higher in number (25.9 percent) as compared to their female counterparts (2.2 percent). It is also observed that the maximum number of female research scholars were having basic competency in reviewing the research-related literature (84.8 percent) than their male counterparts (53.7 percent). However, in possession of advance level research competencies, female research scholars were found to have less in number (13 percent) in comparison to their male counterparts (20.4 percent) in reviewing the research-related literature. By comparing both the female and male research scholars a significant association was found between levels of research competencies and their gender related to competencies related to reviewing the literature. Moreover, the study reveals that a large number of research scholars (68 percent) possess basic competencies of reviewing the related literature than minimum competencies (15 percent) and advanced competencies (17 percent) (Table-2.0 and Fig-2.0).

Competencies related to Proposal Writing among Research Scholars

The competencies related to proposal writing among the female and male research scholars have been comparatively analysed and interpreted dimension-wise in the following table and graph.

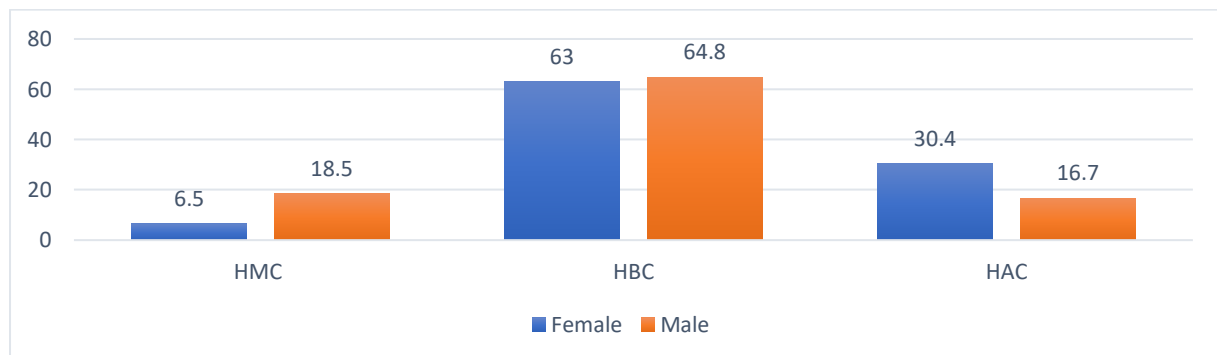
Table 3.0

Chi-square test of Independence between the Level of Research Competencies of Research Scholars related to Proposal Writing and Gender

Proposal writing	Level of competencies			χ^2	df	'p' Value	Remarks
	HMC	HBC	HAC				
Female	03 (6.5)	29(63.0)	14(30.4)	4.809	2	.090	NS
Male	10 (18.5)	35 (64.8)	09 (16.7)				
Total	13 (13.0)	64 (64.0)	23 (23.0)				

NB- Not Significant at .05 level, Numbers in the parenthesis indicate percentage

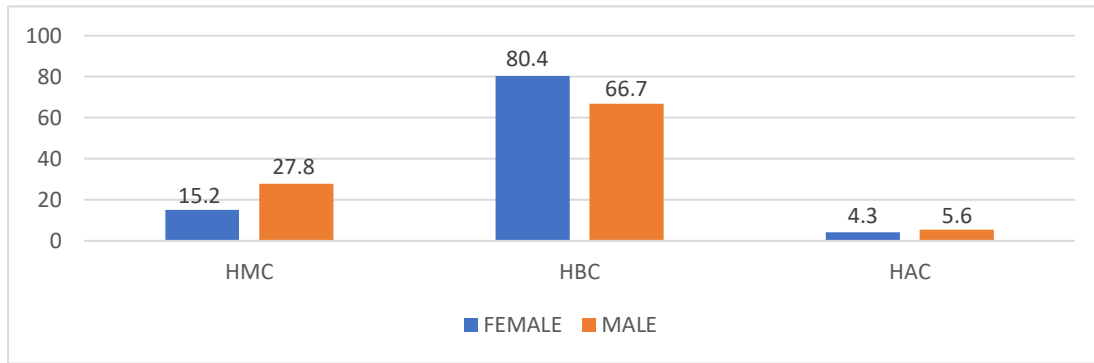
Fig-3.0: Gender-wise Level of research competencies among research scholars on proposal writing



Note: HMC- Having Minimum Competency, HBC: Having Basic Competency, HAC: Having Advance Competency

It is evident from the Table -3.0 and Figure-3.0 that there exists no significant association between gender and research scholar's research competency in proposal writing.

It has been observed that in the proposal writing the male research scholars have been found higher in number (64.8 percent) having basic competencies with respect to female research scholars (63 percent). It is also marked that female research scholars were having advance competencies (30.4) high as compared to male research scholars (16.7 percent). A very smaller number of female research scholars have minimum competencies (6.5 percent)



than male research scholars (18.5 percent). By comparing both male and female, there exists no significant association between the levels of competencies in proposal writing among the research scholars in relation to their gender. Moreover, the study reveals that a large number of research scholars (64 percent) possess basic competencies of proposal writing than minimum competencies (13 percent) and advanced competencies (23 percent) (Table-3.0 and Fig-3.0).

Competencies related to the research methodology among research scholars

The competencies related to research methodology among the female and male research scholars have been comparatively analysed and interpreted dimension wise in the following table and graph.

Table 4.0

Chi-square test of Independence between the Level of Research Competencies of Research Scholars related to Research Methodology and Gender

Research Methodology	Level of competencies			χ^2	df	'P' Value	Remarks
	HMC	HBC	HAC				
Female	7 (15.2)	37 (80.4)	2 (4.3)	2.499	2	.287	NS
Male	15 (27.8)	36 (66.7)	3 (5.6)				
Total	22 (22.0)	73 (73.0)	5 (5.0)				

Note- Not Significant at .05 level, Numbers in the parenthesis indicate the percentage

Fig 4.0 Gender-wise Level of research competencies among research scholars on Research Methodology

Note: HMC- Having Minimum Competency, HBC: Having Basic Competency, HAC: Having Advance Competency

It is evident from the Table -4.0 and Figure-4.0 that there exists no significant association between gender and research scholar's research competency in research methodology.

It is evident from the above Table 4.0 and Fig-4.0 that the majority (73 percent) of the research scholars were having basic competencies as compared to having minimum competencies (22 percent) and having advance competency (5 percent) in competencies related to research methodology. Further, with regard to gender, it shows that more female research scholars (80.4 percent) were having basic competency related to research methodology as compared to their male counter parts (66.7 percent). In contrast to this, more male research scholars were having minimum competencies (27.8 percent) and advance competences (5.6 percent) in research methodology as compared to their female counterparts. Therefore, it is observed that there exist no significant association between the research competency of the research scholars related to research methodology and their gender.

Competencies related to the usage of ICT in Research

The competencies related to the usage of ICT among female and male research scholars have been comparatively analyzed and interpreted dimension-wise in the following table and graph.

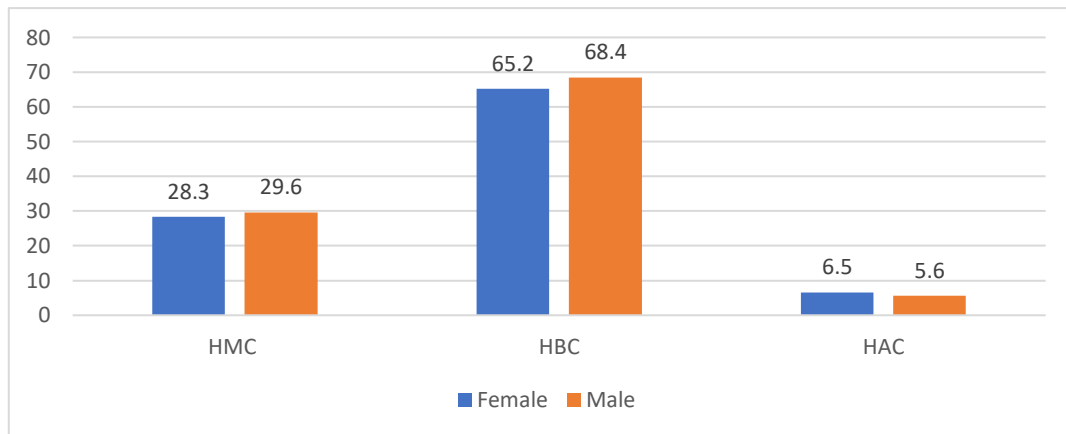
Table-5.0

Chi-square test of Independence between the Level of Research Competencies of Research Scholars related to Usage of ICT and Gender

Usage of ICT	Level of competencies			χ^2	Df	'P' Value	Remarks
	HMC	HBC	HAC				
Female	13 (28.3)	30 (65.2)	3 (6.5)	.055	2	.973	NS
Male	16 (29.6)	35 (64.8)	3 (5.6)				
Total	29 (29.0)	65 (65.0)	6 (6.0)				

NB- Not Significant at .05 level, Numbers in the parenthesis indicate percentage

Fig-5.0 Gender-wise Level of research competency among research scholars on the Usage of ICT in research



Note: HMC- Having Minimum Competency, HBC: Having Basic Competency, HAC: Having Advance Competency

It is evident from the Table -5.0 and Figure-5.0 that there exists no significant association between gender and research scholar's research competency in usage of ICT in research.

It is observed from the above Table-5.0 and Fig-5.0 that the majority (65%) of the research scholars have basic competencies as compared to having minimum competencies (29%) and having advance competencies (6%) in using ICT in research. It is also evident from the table 4, with regard to gender, more male research scholars (68.4%) were having basic competencies in using ICT in research as compared to their female counter parts (65.2%). In contrasts to this more female research scholars were having advance competencies (6.5%) in using ICT in research as compared to their male counterparts (5.6%). Further, table 4 shows that more male research scholars having minimum competency (29.6%) as compared to their female counterparts (28.3%). It is observed that there exists no significant association between the level of research competency of research scholar in using ICT in research and their gender.

Competencies related to research publication ethics

The competencies related to research publication and ethics among the female and male research scholars have been comparatively analysed and interpreted dimension-wise in the following table and graph.

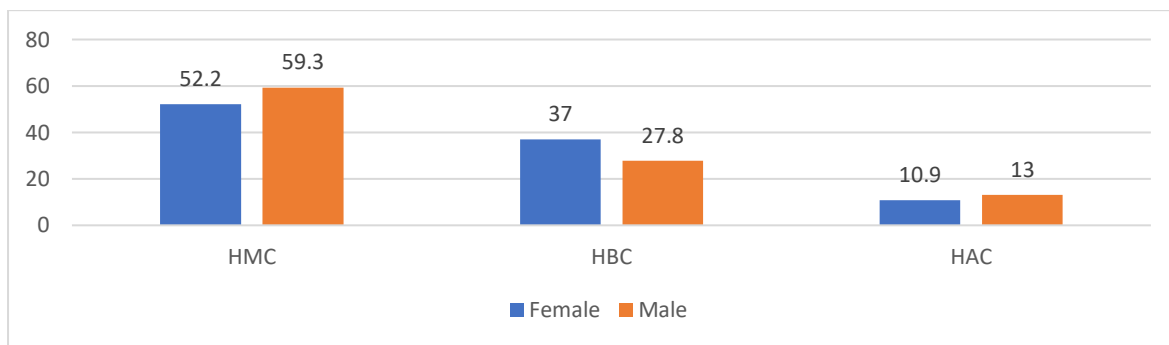
Table-6.0

Chi-square test of Independence between the Level of Research Competencies of Research Scholars related to Research Publication and Ethics and Gender

Research	Level of competencies			χ^2	df	‘P’ Value	Remarks
Publication	HMC	HBC	HAC				
Ethics							
Female	24 (52.2)	17 (37.0)	5 (10.9)	.967	2	.617	NS
Male	32 (59.3)	15 (27.8)	7 (13.0)				
Total	56 (56.0)	32 (32.0)	12(12.0)				

NB- Not Significant at .05 level, Numbers in the parenthesis indicate percentage

Fig-6.0 Gender-wise Level of research competencies among the research scholars in relation to research and publication ethics



Note: HMC- Having Minimum Competency, HBC: Having Basic Competency, HAC: Having Advance Competency

Fig-6.0 Gender-wise Level of research competencies among the research scholars in relation to research and publication ethics

It is evident from the Table -6.0 and Figure-6.0 that there exists no significant association between gender and research scholar's research competency in research and publication ethics.

It is evident from Table 6.0 and Fig-6.0 that the majority (56 percent) of the research scholars were having minimum competencies as compared to having basic competencies (32 percent) and having advanced competencies (12 percent) in research publication ethics. Further, with regard to gender, it shows that more male research scholars (59.3 percent) were having minimum competencies in research and publication ethics as compared to their female counterparts (52.2 percent). In contrast to this, more female research scholars were having basic competencies (37 percent) as compared to their male counterparts (27.8 percent). It is also shows that male research scholars (13 percent) were having advance research competencies as compared to the female counter parts (10.9 percent). It is also observed from the above table-

6.0 that there exist no significant association between level of research competencies among the research scholars in research publication ethics and their gender.

MAJOR FINIDNGS

1. There exists no significant association between different levels of research competencies and the gender of the research scholars pursuing PhD coursework in Education in terms of different dimensions of research competencies such as reviewing literature competency, writing proposal competency, competency of research methodology, competency of using ICT in performing research, and research publication ethics competency
2. There exists significant association between the gender of the research scholars and different levels of research competencies in reviewing the research-related literature.
3. There exists no significant association between the different levels of research competencies in writing proposal with the gender of the research scholars.
4. There exists no significant association between the different levels of research competencies in research methodology with the gender of the research scholars.
5. There exists no significant association between the different levels of research competencies in using ICT in research with the gender of the research scholars.
6. There exists no significant association between the different levels of research competencies in research publication ethics with the gender of the research scholars.

IMPLICATIONS

It has been found from the study that majority of the research scholars possess minimum and basic level competencies in reviewing the research-related literature, proposal writing, research methodology, usage of ICT and research publication ethics. For the advancement in the research competencies among the research scholars and strengthening the coursework delivery processes and enhancing quality of Ph.D. programme, there is need to develop advance level research competencies among male and female research scholars during the PhD coursework. Advance level coursework activities such as participation in research orientation workshops, seminar presentations, article review, mixed- method research, meta-analysis of research reviews, and reflective learning exercises on the presentation of research papers by the peers need to be developed among research scholars.

Ph.D. programme is a well-planned higher education programme and it has been found that very few of the research scholars possess advance level competencies regarding the review

of related literature. Further, it is revealed from the study that majority of the research scholars were having basic competencies in usage of ICT in research. Therefore, higher education institutions need to develop advance level research competencies among the research scholars related to the various aspects such as review of related literature, application of ICT in research including SPSS and qualitative data analysis techniques, use of research and publication ethics including intellectual honesty, research integrity, avoiding scientific misconduct and plagiarism.

CONCLUSION

Research competencies encompass a broad range of knowledge, skills, and practical experiences essential for effective research engagement. Higher education institutions are pivotal in fostering an environment that generates and shares new knowledge. Through rigorous academic programs and hands-on training, these institutions equip research scholars with vital research skills, enabling them to navigate complex inquiries and contribute valuable insights to society. However, the present study reveals that research scholars possess basic and minimum competencies including selecting the research problems, literature review, formulation of hypothesis, research design, and organisation of data, analysis and interpretation of data after completion of their PhD Coursework. It also observed that the research scholars possess the necessary research competencies which help them in order to complete their PhD programme through the coursework.

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