Unveiling the Confidence: Exploring Research Self-Efficacy Among Ph.D. Scholars

Abstract

The present investigation aimed at measuring the research self-efficacy of Ph.D. research scholars. The term research self-efficacy means a person's belief that they can perform the research activity with some proficiency. The present study consists of ninety-two participants from different universities and research institutes in West Bengal. The researchers employed a cross-sectional survey method for the present study. A self-constructed, close-ended questionnaire was constructed and administered to collect the data. During data analysis, the researchers utilised t-test, ANOVA, mean, S.D., correlation, skewness, and kurtosis with the help of SPSS-22 software. The findings of the investigation are that the research scholars have a high level of research self-efficacy. Male participants obtain slightly higher research efficacy than female scholars. Also, research scholars from science backgrounds have better research self-efficacy than those from the arts, commerce, etc. Further, the results show no significant distinction in research self-efficacy concerning their gender, faculty, type of researcher, and years of research involvement.

Keywords: Research Self-efficacy, Ph.D. Research Scholar, Survey

1.0 Introduction

Conducting research is an essential prerequisite for any nation or racial group. The attainment of successful research outcomes has the potential to contribute significantly to the overall development of any given nation. Consequently, it represents a crucial aspect in the pursuit of national progress. Self-efficacy in research is a prominent determinant that significantly impacts the effective execution of research endeavours (Tiyuri, et al., 2018). National Education Policy- 2020 has given special importance to research. The establishment of the National Research Foundation (NRF) is a significant sign in this regard. Research can be carried out in a variety of ways. In the Indian context, there exist various institutions and universities that engage in active research endeavours. A significant number of academic researchers are active in these institutes. It is the competence of the researchers in the field as well as their self-efficacy in research that determines the quality of the research. Hemmings and Kay (2010) mentioned that high research self-efficacy correlates with excellent academic results, while low self-efficacy is linked to lower productivity. Forester, et al., (2004) gave importance to research self-efficacy as a significant factor for a career in the science-related fields. So, research self-efficacy is very important for any researcher. It is important to know what level of research self-efficacy exists among the researcher. In the present study, the investigators have aimed to find out the extent of self-efficacy in research among current research scholars of different institutions in West Bengal.

2.0 Research Self-efficacy

Self-efficacy is a theoretical construct that is firmly rooted in the framework of social cognition theory(Hemmings and Kay, 2010; Bandura, 2001). Bandura defined "self-efficacy as the belief in one's ability to complete tasks successfully, encompassing competence, efficiency, and life-coping abilities" (Tiyuri, et al., 2018; Bandura, 1977). Bandura also thought that self-efficacy beliefs are the most important factor in getting people to start and keep doing things (Bieschke et al., 1996).Research self-efficacy is one of the important aspects of self-efficacy. Various researchers have tried to define the concept. "The extent to which students are confident about carrying out different research tasks, from library research to designing and implementing practice research projects" (Holden et al., 1999, p. 464)

"Research self-efficacy may be defined as one's confidence in successfully performing tasks associated with conducting research (e.g., performing a literature review or analyzing data)" (Forester, et al., 2004)

"Research self-efficacy is defined as an individual's belief in his/her ability to carry out and complete tasks associated with research" (Bishop & Bieschke, 1998).

The concept of self-efficacy in research holds significant importance as it serves as a key element in comprehending educational approaches aimed at enhancing students' motivation and productivity in research activities (Forester, et al., 2004).

Students with poor research self-efficacy exhibit uncertainty over their capacity to engage in research activities and lack confidence in their ability to achieve successful outcomes. Consequently, they often experience anxiety, particularly when their performance is being evaluated, and see a deficiency in their competence. On the contrary, students with elevated levels of self-efficacy, characterized by a strong belief in their competency and capacity for inquiry, tend to exhibit greater proficiency and achievement in the realm of research (Tiyuri, et al., 2018).

3.0 Research Objectives

The present study has focused on research self-efficacy among Ph.D. research scholars. The researchers are trying to measure the level of research self-efficacy and any significant difference concerning their demographic variables. Specific research objectives are

RO1: To measure the level of research self-efficacy among Ph.D. research scholars.

RO2: To find out whether any significant difference in research self-efficacy among Ph.D. research scholars concerning their gender, stream of study, researcher type, and years of research involvement.

4.0 Research Hypotheses

For the present study, the researchers formulated four null hypotheses. The null hypotheses are

H_{01}: There is nodistinctionbetween male and female researcher scholars in research self-efficacy.

H_{02}: There is no distinction among research scholars concerning their stream of study in research self-efficacy.

H_{03}: There is no distinction between full-time and part-time research scholars in research self-efficacy.

H_{04}: There is no distinction among research scholars concerning their years of research involvement in research self-efficacy.

5.0 Operational Definition of Key Terms

5.1Research Self-efficacy: Research self-efficacy is defined as individual's belief or confidence in performing research activities successfully.

5.2 Full-time Researcher: Full-time researchers are those researchers who are only engage in research, not engage any job and receive fellowship from different authority.

5.3 Part-time Researcher: Part-time researchers are those researchers who are engage in research, besides they are doing job and not receive fellowship.

6.0 Research Method

This research follows a quantitative research approach specifically a cross-sectional survey method. "A research study that used a survey to obtain a description of a particular group of individuals is called a survey research design" (Gravetter& Forzano, 2012).

According to Creswell (2012),"cross-sectional survey design is a design in which the researcher collects data at one point in time".

6.1 Instrument

Any empirical research depends upon data, and a research instrument is necessary for the collection of data. In the present study, the researchers constructed a close-ended questionnaire, which is based on the Likert scale. This is a five-point Likert-type scale ranging from never to always. The research tool is closely inspired by the research self-efficacy scale of Bieschke et al. (1996, p. 59-75). The four dimensions of the instruments were conceptualization, implementation, early tasks, and presenting the results. The total number of items was 30 and all of them were positive items. The research instrument is highly reliable as Cronbach's alpha showed a result of 0.931. The validity of the instrument was confirmed by the experts. The instrument also contained some items for obtaining the demographic details of the participants.

6.2 Research Participants

92 Ph.D. research scholars were selected as participants in this study from different institutions in West Bengal.All the researchers, currently pursuing their Ph.D. in different universities in West Bengal are the population in this study. A simple random sampling technique was employed for the selection of the participants. During the study, the researchers used online as well as offline methods for collection of data. As an online technique, the researchers send a Google form link to the participants using WhatsApp and Email. Also, physical paper copies of the questionnaire were given to the participants by the researchers. Out of 92 students, 66 scholars were male and 26 scholars were female. 34 scholars belong to the Faculty of Arts, commerce, etc. and 58 scholars belong to the Faculty of Science. Most of the scholars (78) were full-time research scholars and few of them (14)

were part-time research scholars. The participants were also divided based on their years of research involvement. Separate demographic information of the participants is presented in Table no-1

Table No-1: Demographic Information of the Participants

		Frequency	%
Gender	Male	66	71
	Female	26	29
Faculty	Arts, Commerce, etc.	34	37
	Science	58	63
Type of Researcher	Full-time Researcher	78	85
	Part-time Researcher	14	15
Research Involvement	Below 2 years	35	38
	Between 2-4 years	28	30
	Above 4 years	29	32

6.3 Data Analysis

The data were analysed using the respective research approaches, and the findings were afterwards presented in many tables. Descriptive and inferential statistics were determined by performing statistical calculations using SPSS-22.0 software. Three t-tests and one ANOVA were conducted to examine the statistical significance of variations in research self-efficacy across different variables and to evaluate four assumed statistical hypotheses.Skewness, kurtosis and correlation was also done using SPSS software.

7.0 Results

7.1 Descriptive Statistics

Table2: Mean and S.D. Score of Research Self-efficacy of Scholars

Variables	Particulars	M	S.D.
Gender	Male	128.71	17.67
	Female	126.65	13.56
Faculty	Arts, Commerce, etc.	124.23	15.08
	Science	130.41	17.09

Type of Scholars	Full-Time	128.89	16.46
	Part-Time	123.85	17.15
Years of Research Involvement	Below 2 Years	124.51	19.70
	2-4 Years	128.51	12.59
	Above 4 Years	132.25	15.09
Total Scholars		128.13	16.57

Notes. M= Mean, S.D.= Standard Deviation

Analysis:

From Table2 we find that the mean score of all research scholars is 128.13 and the standard deviation is 16.57. This indicates that the research scholars have a high level of self-efficacy belief in research(as the minimum score is 30 and the maximum score is 150). We can also find that 68 % of scholars obtain a score between the range of 144.7 to 111.56.

Further Table2 also indicates that the male scholars' mean is 128.71 and the female scholars' mean is 126.65. So, male scholars' have slightly better research self-efficacy. From the perspectives of faculty, we can find that science scholars (M=130.41) are better than arts, commerce etc. scholars (M=124.23). It is also important to note that full-time research scholars (M=128.89) significantly scored well in research self-efficacy as compared to part-time research scholars (M=123.85). Another interesting finding, we can see that those scholars, who have more than 4 years in research obtain the best mean score (M=132.25). The mean scores of below 2 years and between 2-4 years are respectively 124.51 and 128.51.

Table 3: Mean, S.D., Skewness and Kurtosis Value of Dimensions of Research Self-efficacy Scale

Measures	Conceptualization	Implementation	Early Task	Presenting the Results
Mean	4.13	4.31	4.27	4.38
S.D.	0.89	0.88	0.89	0.85
Skewness	-0.781	-1.10	-0.985	-1.369
Kurtosis	0.123	0.541	0.274	1.490

Analysis:

Table 3 shows mean, standard deviation, skewness and kurtosis scores according to the four dimensions of the research instrument. Those dimensions we already mentioned in the instrument section. According to the table 3 mean score of 'presenting the results' dimension is highest (M=4.38) and the 'conceptualization' dimension is lowest (M=4.13). So, we can infer that the research scholars have more efficacy in 'presenting the results and less efficacy in 'conceptualization'. The scores of skewness indicate that it follows negative skewness.

Table 4: Correlation Matrix

Measures	Conceptualization	Implementation	Early Task	Presenting the Results
Conceptualization	1	0.354*	0.283*	0.330*
Implementation	0.354*	1	0.226*	0.235*
Early Task	0.283*	0.226*	1	0.287*
Presenting the Results	0.330*	0.235*	0.287*	1

*the correlation is significant at the 0.01 level (2-tailed)

Analysis

Table 4 shows the correlation matrix among the four dimensions of the research self-efficacy scale i.e., conceptualization, implementation, early task and presenting the results. The result of correlation analysis indicates that all the dimensions are correlated among themselves.

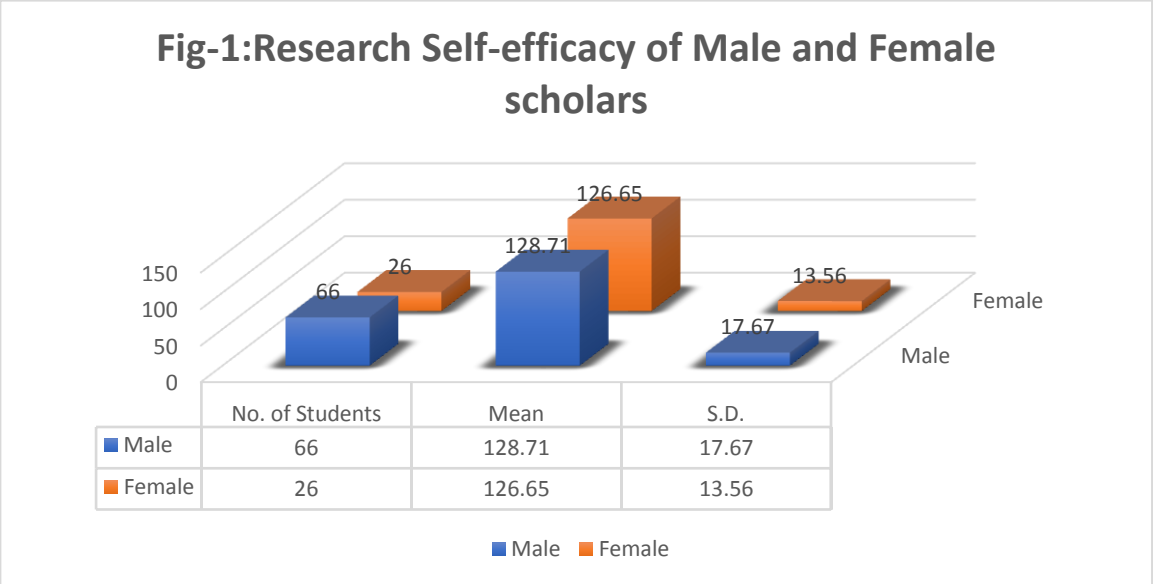
7.2 Inferential Statistics

H_{01}: There is no distinction in research self-efficacy among male and female researcher scholars.

Table5: t-test reporting of research self-efficacy between male and female scholars

Particulars	Mean	Standard Deviation	t-value	t-critical value	df(degrees of freedom)	p-value	Decision
Male	128.71	17.67	.534^{NS}	1.99	90	.594	Accepted
Female	126.65	13.56					

NS= Not Significant at 0.05.



Analysis:

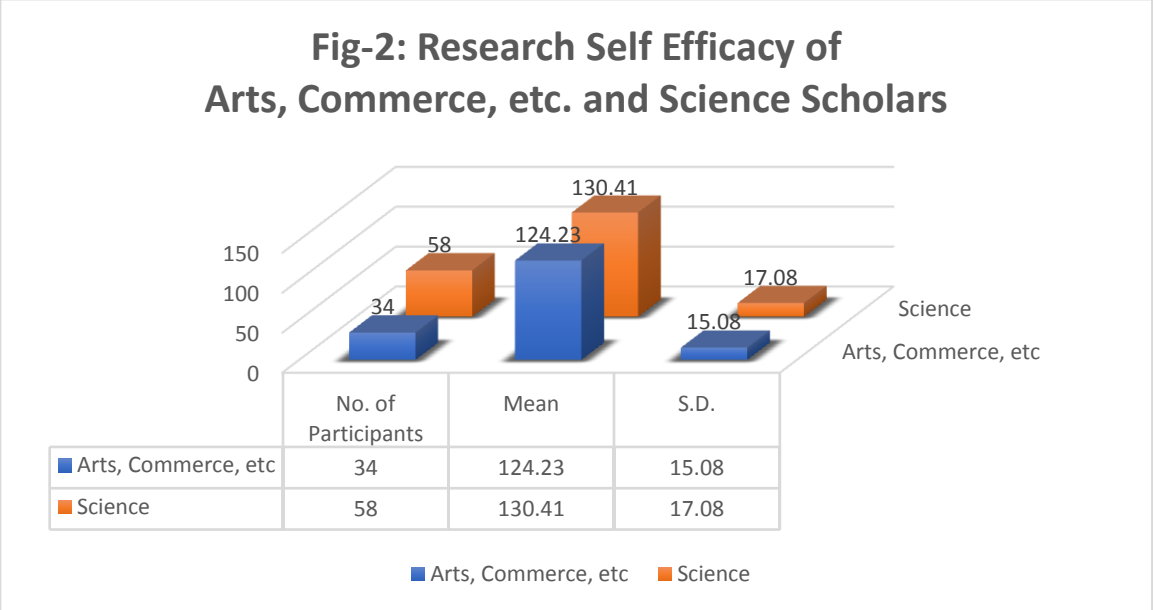
Table5 shows that the calculated t-value of research self-efficacy for male and female Ph.D. research scholars is .534, which is quite smaller than 1.99, the critical value of t at 0.05 level of significance for 90 df (degrees of freedom). Therefore, the t-value of the result is not significant. Also, the p-value supports the result as p (0.594)>0.05. So, the assumed null hypothesis "there is no distinction in research self-efficacy among male and female researcher scholars" is failed to reject. Therefore, it may be inferred that there is a lack of substantial difference in the research self-efficacy scores between male and female research researchers.

H_{02}: There is no distinction in research self-efficacy among research scholars concerning their stream of study.

Table6: t-test reporting of research self-efficacy between arts, commerce, etc. and science scholars

Particulars	Mean	Standard Deviation	t-value	t-critical value	df(degrees of freedom)	p-value	Decision
Arts, Commerce, etc.	124.23	15.08	1.75^{NS}	1.99	90	.084	Accepted
Science	130.41	17.09					

NS= Not Significant at 0.05.



Analysis:

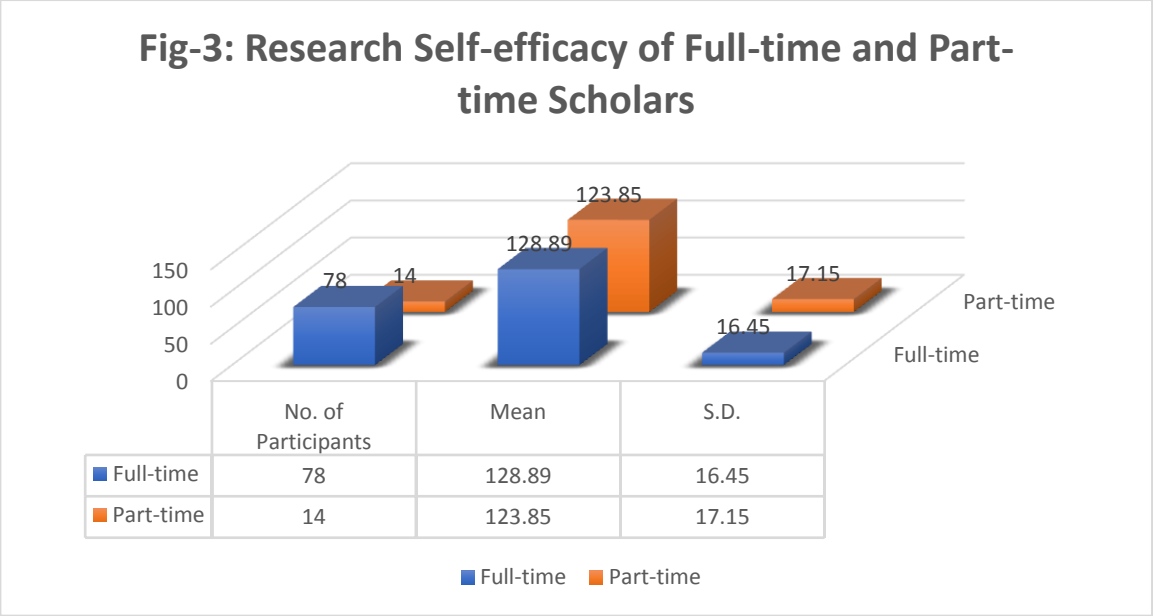
A review of Table6 shows that the calculated t-value of research self-efficacy for arts, commerce, etc. and science Ph.D. research scholars is 1.75, which is smaller than 1.99, the critical value of t at 0.05 level of significance for 90 df (degrees of freedom). Therefore, the t-value of the result is not significant. Also, the p-value supports the result as p (0.084)>0.05. So, the assumed null hypothesis "there is no distinction in research self-efficacy among research scholars concerning their stream of study" is failed to reject. Therefore, it may be inferred that there is a lack of substantial difference in the research self-efficacy scores between arts, commerce, etc. and science research scholars.

H_{03}: There is no distinction in research self-efficacy between full-time research scholars and part-time scholars.

Table7: t-test reporting of research self-efficacy between full-time research scholars and part-time scholars

Particulars	Mean	Standard Deviation	t-value	t-critical value	df(degrees of freedom)	p-value	Decision
Full-time Scholars	128.89	16.45	1.04^{NS}	1.99	90	.297	Accepted
Part-time Scholars	123.58	17.15					

NS= Not Significant at 0.05.



Analysis:

A review of the Table7 shows that the calculated t-value of research self-efficacy for Full-time and part-time Ph.D. research scholars is 1.04, which is quite smaller than 1.99, the critical value of t at 0.05 level of significance for 90df(degrees of freedom). Therefore, the t-value of the result is not significant. Also, the p-value supports the result as p (0.297)>0.05. So, the assumed null hypothesis "there is no distinction in research self-efficacy between full-time and part-time research scholars" is failed to reject. Therefore, it may be inferred that there is a lack of substantial difference in the research self-efficacy scores between full-time and part-time research researchers.

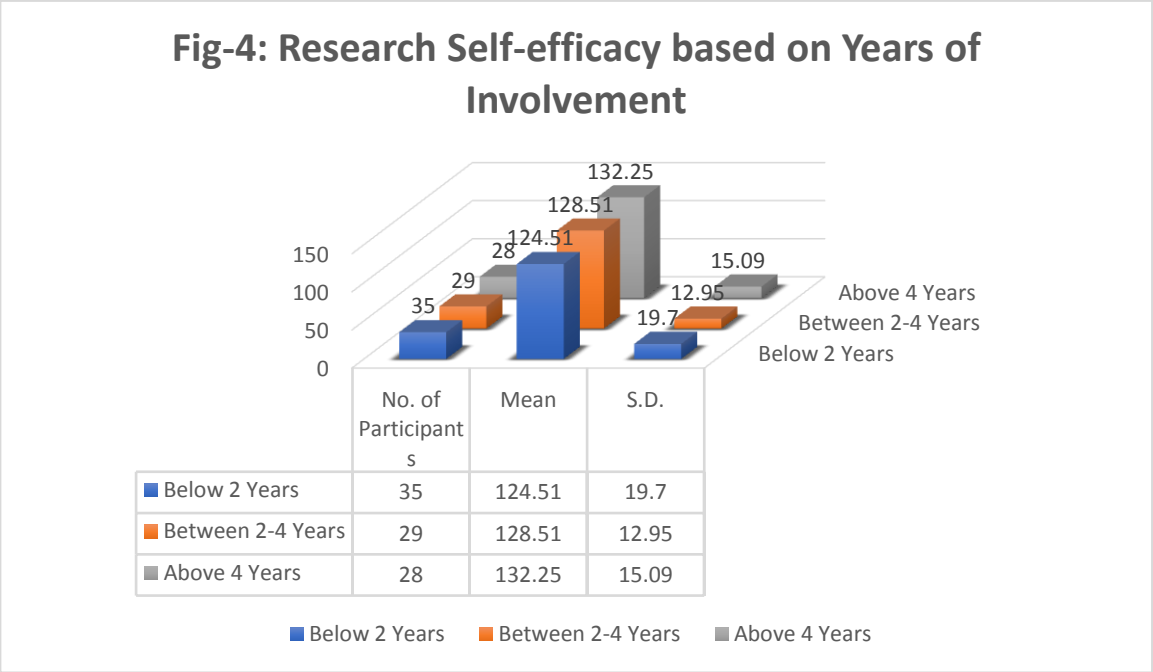
H_{04}: There is no distinction in research self-efficacy among research scholars concerning their years of research involvement.

Table8: F-test reporting of research self-efficacy score of scholars based on their years of research involvement

Source of Variance	df	Sum of Squares	Mean Sum of Squares	F-cal	F-crit	p-value

Between Grous	2	937.201	468.600	1.734[NS]	3.10	0.182
Within Groups	89	24051.234	270.239			
Total	91	24988.435				

NS= Not Significant at 0.05.



Analysis:

A review of the Table8 shows that the calculated F-value of research self-efficacy of Ph.D. research scholars is 1.734, which is quite smaller than 3.10, with the critical value of t at 0.05 level of significance. Therefore, the F-value of the result is not significant. Also, the p-value supports the result as p (0.182)>0.05. So, the assumed null hypothesis "there is no distinction in research self-efficacy among research scholars concerning their years of research involvement" is failed to reject. Therefore, it may be inferred that there is a lack of substantial difference in the research self-efficacy scores concerning their years of research involvement.

8.0 Findings

The findings of the investigation are summarized in the next paragraphs.

- The Ph.D. research scholars obtained a high level of research self-efficacy score, which indicates they have belief in their research activity.
- There is no statistically significant disparity in research self-efficacy levels between male and female research scholars.
- Scholars from science faculty scored more than arts, commerce, etc., however no statistical distinction between them.
- Full-time research scholars showed more research efficacy than part-time research scholars. Here also statistical disparity was found between them.
- The scholars, involved in research for more than 4 years obtained the highest score as compared to others, although no statistical difference was found.

9.0 Limitation

Due to the very short time, the study is confined to 92 participants only.

10.0 Conclusion

This study is the first in West Bengal to measure the self-efficacy in research of Ph.D. research scholars and compare them according to their demographic variables. The results of the investigation show that Ph.D. research scholars from different universities in West Bengal have a high level of research self-efficacy. Some key findings we found from this study that are science scholars have more research efficacy than arts, commerce, etc. full-time scholars have more efficacy than part-time scholars and more experienced scholars also have more research self-efficacy than less experienced. Although the study participants are small, the findings will help educators, policymakers etc.

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