
Relationship of Research Self-Efficacy, Perceptions of the Research Training Environment and Interest in Research Among Business Education Students

Marilyn Pasion Gaoat

College of Business Education, University of La Salette, Inc., Santiago City, Philippines

Email address:

marilyngaoat2022@gmail.com

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Abstract: Research is essential to the improved practice of a profession and is indispensable in completing a program of study. However, business education students have remarkable difficulty and challenges in conducting research resulting in the inability to complete their research projects on time. This study will examine the relationship between the three research constructs: research self-efficacy, perceptions of the research training environment, and interest in research among business education students. Furthermore, the study will investigate whether business education students differ in research self-efficacy, perception of the research training environment, and interest in research based on their demographic characteristics. Employing a cross-sectional research design and using structured questionnaires administered to 149 business education students, it was revealed that there is no significant difference in the three research constructs in terms of gender and program of study and no significant relationship between gender and program of study and the three research constructs. This study suggests integrating research into coursework to promote interest in research and provide a supportive research training environment that will contribute to a positive research experience among students. Moreover, a recommendation is to conduct a follow-up study employing a longitudinal research design per program to measure the influence of research self-efficacy, research training environment, and interest in research of the students through their program of study.

Keywords: Research Self-Efficacy, Research Interest, Research Productivity, Business Education

1. Introduction

Producing original research is essential to earn a baccalaureate degree. The task entails completing scholarly written research noteworthy for dissemination in presentation or publication. During the Fourth Industrial Revolution, it is emphasized that the needed skills of today's workforce are changing, placing complex problem-solving, critical thinking, and creativity [1]. Students and their research will help society better comprehend the human and natural world we live in as they pursue new knowledge that provides the community with different ways of examining humanity's complexity, problems, and beauty. Recognizing research as the heart of every higher educational institution, universities employ massive efforts to strengthen the research productivity of both faculty and students.

Given that completion of research is an essential requirement to complete a program of study, a substantial

percentage of business students fail to complete research during the term the course is enrolled. Attitude significantly encourages students to engage in research activities [2]. It has been proved that engaging students in structured research experiences, financial support, and productive faculty members train productive scholars [3]. Similarly, institutional support such as rewards, incentives, and recognition given to those who engage in research coupled with research capability building, efficient and updated information computer technology (ICT) support, and upgraded library resources enhance research productivity [4].

Scholars have noted the relevance of understanding students' research self-efficacy, a perception of the research training environment, and interest in research in developing research competence. It has been investigated these research constructs among doctoral counselor education students [5]. They recommended replication of the study as a basis for

designing an intervention that promotes and develop research competencies. Hence, this study was undertaken to understand further the relationship between research self-efficacy, a perception of the research training environment, and interest in research among business education students. With this, it shall assist the university in developing policies and interventions that support them in promptly completing their research as a requirement for a program of study.

1.1. Purpose of the Study

The present study investigated the relationship among three research constructs: research self-efficacy, perception of the research training environment, and interest in research based on the student's gender and program of study. The study's result will identify potential implications on research productivity as a basis for intervention for the students to complete research to earn their baccalaureate degree.

1.2. Research Questions

The research questions investigated were the following:

What is the difference in the research self-efficacy, perception of the research training environment, and interest of the participants when grouped according to gender and program of study?

What is the relationship between the participants' research self-efficacy, perceptions of the research training environment and interest in research and their gender and program of study?

What is the relationship between the participants' level of research self-efficacy, perception of the research training environment and interest in research?

2. Literature Review

Research has been conducted on the relevance of research self-efficacy, perceptions of the research training environment, and interest in research in developing research competence of students at the undergraduate level, including faculty. These research constructs are presented in the subsequent discussion.

2.1. Research Self Efficacy

Perceived self-efficacy is defined as an individual's strong confidence in one's competence to accomplish an assigned task producing a favorable influence on their well-being in various ways [6]. Self-efficacy is acquired from sources of self-belief, namely mastery experiences, vicarious experiences, and verbal persuasion [6, 7]. Researchers have investigated research self-efficacy at the undergraduate level in psychology, education, counseling, and medicine; hence studies in these fields were considered in the review. A study has led to a logic model denoting that a program of study focused on scholarly practitioner research and academic writing increased students' self-efficacy, hence creating an impact on degree completion [8]. Research implied that students with high scores of research self-efficacy reveal to

become scholarly productive, have more research publications, are more comfortable with the research process, and rely less on their advisers [5, 9, 10].

Researchers identified research skills among students of which scientific research self-efficacy is positively affected by metacognitive thinking skills [11, 2]. Researchers continue to strengthen their research competence and technical, computational, and conceptual skills through sustained collaboration with researchers and non-researchers [12]. Furthermore, students' research self-efficacy is enhanced when they complete an independent research project like a thesis or dissertation, the positive demeanor of the instructor and a supportive and cooperative learning environment [13, 14]. Eventually, student learning styles are significantly associated with their research self-efficacy [15].

Investigations were conducted on the relationship of research self-efficacy and demographic information such as education level, gender, age, ethnicity, prior degree specialty, the program of study, career aspirations, type of college attended, and types of research. It was noted that age is not statistically significant with research self-efficacy, which is different from the findings of other study that age is positively correlated with research self-efficacy [16, 17]. It was found that gender and research self-efficacy scores are not statistically significant [5, 10, 15, 16]. It was found that educational level and research self-efficacy are not statistically significant; however, the in a separate study it implies that higher educational attainment has greater confidence to perform research tasks [5, 18]. Other researchers also found that the program of study does not have a statistically significant relationship to research self-efficacy [10, 15]. Other factors such as ethnicity, prior degree specialty, career aspirations, type of college attended, and types of research are not significantly associated with the improvement of research self-efficacy [10, 15]. Students need to be exposed to research experiences supported by a training environment that promotes research to develop their research self-efficacy [19]. Recent findings indicate that training environment quality, willingness to use research in future work, positive emotions during coursework, and perceived utility of research skills in future work environment influence students' confidence to perform research tasks during their thesis and dissertation experience [13, 20].

2.2. Research Training Environment

Research is required to be conferred a degree, respectively. In this perspective, a university is necessitated to deliver a research-oriented program of study. The Research Training Environment Scale was developed consisting of a 54-item that measure the nine components of the research training environment [21]. The scale entails measuring research activities on designing and executing research projects, preparing manuscripts of a theoretical nature or a critical review of literature, conducting program evaluation or needs assessment, and making a presentation at research conferences [4].

The perception of the research training environment is higher for older students compared to younger ones, and

higher educational attainment leads to positive feelings about the research training environment for a reason that number of years in education increased comfort with research activities [5]. The research mentoring and coaching given by the adviser and research instructor were significant in enabling students to complete their research [9, 13, 15, 22, 23]. Students' positive experiences like a supportive classroom environment, research and development project, annual research conference, and reading research bulletins contribute to their knowledge in research [13, 14, 24, 25]. Research training programs were found to develop students' skills to carry out research projects [2, 11, 26].

2.3. Interest in Research

Interest is casually defined as a positive disposition towards learning and achieving a goal. Students are expected to do independent research projects. Bishop and Bieschke [27] developed a 16-item scale that measures students' interest in research-oriented activities.

The top source of students' motivation in research activities is curiosity compared to completion of research as a requirement for graduation, which is last on the list [23]. Demographic information was studied as to its relationship to interest in research. Researchers support the hypothesis that research interests do not differ in gender and age [10, 16, 24, 28]. Statistics anxiety indirectly affects a research interest, but quantitative and computer skills enhance students' confidence in completing the statistics tasks [29]. Students' research experience from one coursework to the next does not increase their interest in research, however, it is the perceived utility of the acquired research skills that influence their interest in research [20, 28].

Studies have investigated the relationship between research self-efficacy, research training environment, and interest in research. Results showed that the perceived quality of the research training environment contributed to students' research self-efficacy [19, 20, 30, 31]. Research self-efficacy and interest in research are significantly related [5, 28]. Students with a higher level of research self-efficacy are more likely to have a higher interest in research [32].

2.4. Significance of the Study

The result of the study will ascertain which research construct will have a significant relationship, and the findings shall provide valuable information to undergraduate programs in crafting policies and interventions that encourage and foster research among business education students.

2.5. Theoretical Framework

The research construct on research self-efficacy and interest in research is based on social cognitive theory, the research training environment is based on Gelso's research training environment theory, and interest in research is based on expectancy-value theory.

The social cognitive theory states that learning occurs within a dynamic and reciprocal interaction of intrapersonal

influences, the behavior individual engages in, and environmental forces [33]. Lies at the center of social cognitive theory is self-efficacy that explains the four sources of information affecting the perception of self-efficacy [6]. Williams (1995) describes the four sources and two additional more sources in which he explains that self-efficacy is influenced by experiences of success and failures, observing others, imagined success experiences, persuasory dialogue, physiological responses, and subjective states of feeling and mood [34]. A social cognitive theory are directly linked to interest and social support [35].

Research training environment theory which is based the research training environment scale which, entails the components of faculty modeling, positive reinforcement, early involvement in research, teaching relevant statistics, looking inward for ideas, science as a social experience, all experiments are flawed, focus on varied investigative styles, and wedding science and practice [21]. The theory suggests that a supportive research environment influences the students' interest in research [31].

3. Method

3.1. Research Design

This study utilized a cross-sectional correlational design. The correlational design aims to determine whether two or more variables are related; however, it is essential to point out that a correlation or relationship between two things does not necessarily mean that one thing causes the other [36]. In this study, the researcher used the design to examine the relationship among variables as they occur in their natural situation but does not infer a causal relationship. A correlational research design was chosen for this study since the purpose was to determine if there is a relationship between research self-efficacy, the perception of the research training environment, and interest in research among business education students. Because the variables of interest were operationalized as continuous variables, which enabled measurement of the strength and amplitude of the link between them, this form of research design was appropriate. Moreover, the researcher also investigated the potential difference in the research self-efficacy, perception of the research training environment, and interest in research of students enrolled in business education programs. Furthermore, this study will explore the relationship between the students' research self-efficacy, perceptions of the research training environment, interest in research, and demographic information such as gender and program of study.

3.2. Study Site and Participants

At the University of La Salette, Inc, particularly at the College of Business Education, the research courses for business education students are offered at the third-year level of their curriculum. Two courses are designed for the students to work on their research projects. These courses are Methods of Research and research courses specifically for their

specialization, such as marketing, finance, human resource management, hospitality management, tourism management, and office administration. Approval of the administration was sought before the conduct of the study.

There were 167 potential participants in the study; however, from the distributed questionnaire through Google Form, eighty-nine percent (89%) were retrieved; hence, the final sample consisted of 149 business students. The demographic information of the participants is shown in table below.

Table 1. Participants' demographic profile.

| Characteristics | Category | f | % |
|------------------|----------|-----|-----|
| Gender | Male | 40 | 27 |
| | Female | 109 | 73 |
| Program of Study | BSBA | 94 | 63 |
| | BSHM | 24 | 16 |
| | BSTM | 28 | 19 |
| | BSOA | 3 | 2 |
| Total | | 149 | 100 |

Regarding gender, 109 participants (73%) were female, and 40 participants (27%) were male. As regards their program of study 94 participants (63%) were in the business administration program, 28 participants (19%) were in the tourism management, 24 participants (16%) were in the hospitality management program, and three or two (2%) were in the office administration program.

3.3. Research Techniques

The three research constructs investigated in the study were (a) research self-efficacy, (b) perception of the research training environment, and (c) interest in research.

Research Self Efficacy Scale (RSES). The instrument is a 38-item scale designed to measure an individual's perceived ability to perform various research tasks in which the participants were asked to rate the degree to which they feel confident in their ability to accomplish each task ranging from 0 (no confidence) to 100 (complete confidence) [37]. As a basis for the interpretation, the mean is interpreted with a Likert's scale of 1 (0) as No Confidence; 2 (10-29) as Slightly Confident; 3 (30-69) as Somewhat Confident; 4 (70-99) as Fairly Confident, and 5 (100) as Complete Confidence. A factor analysis of the research self-efficacy scale confirms that the results of the RSES entail a coherent factor structure, hence have potential usefulness for understanding beliefs regarding their ability to complete various research tasks [38]. The psychometric soundness of the RSES in exploratory factor analysis [39]. Vaccaro recounted a high internal consistency and reliability of the items in the questionnaire with a Cronbach Alpha of .958 [40]. Exploratory factor analysis for the structural validity of the scale and generated an alpha coefficient of .87 [41].

Research Training Environment Scale-Revised (RTES-R). This is a 54-item measure of nine of the elements (faculty modeling, positive reinforcement, early involvement in research, teaching relevant statistics, looking inward for ideas, science as a social experience, all experiments are flawed, focus on varied investigative styles, and wedding science and practice) [21]. The participants are instructed to provide a

response to each item based on a range of scales from 1 (disagree) to 5 (agree). As a basis for the interpretation, the mean is interpreted with a Likert's scale (1.00 – 1.49, Disagree; 1.50 – 2.49, Somewhat disagree; 2.50 – 3.49, Neutral; 3.50 – 4.49, Somewhat agree; 4.50 – 5.0, Agree). Reliability analysis of the RTES-R by Kahn and Miller (2000) revealed a coefficient alpha of .95 compared to the short form, with a coefficient alpha of .87 for the score [42]. Chesnut, Siwatu, Young, and Tong measured the reliability of the instruments, and it was estimated by Cronback's Alpha of .81 [19]. Chumwichan and Siriparp [31] highly recommended the application of the RTES-R in the conduct of further studies specifically in the educational field.

Interest in Research Questionnaire (IRQ). This 16-item scale intends to measure participants' interest in research-oriented activities [27]. The participants are instructed to provide a response to each item based on a range of scales from 1 (very uninterested) to 5 (very interested). As a basis for the interpretation, the mean is interpreted with a Likert's scale (1.00 – 1.49, Very uninterested; 1.50 – 2.49, Uninterested; 2.50 – 3.49, Indifferent; 3.50 – 4.49, Interested; 4.50 – 5.0, Very interested). The instrument has been proven to be a reliable instrument in studying interest in research and reported a Cronbach Alpha coefficient of .93 [16, 29, 32, 40].

3.4. Data Collection

For the data collection process of this study, a letter of informed consent and the survey questionnaire was distributed to the participants using Google Forms. Retrieved responses were evaluated to check on the completeness of the answers. Submissions with incomplete responses were discarded and excluded from the analysis. After all the responses had been retrieved, the information was scored using Microsoft Excel. The retrieved responses were then securely kept by the researcher.

3.5. Data Analysis

After all the information collected has been scored and entered into Microsoft Excel. The responses on the research self-efficacy scale (RSES-R), research training environment scale (RTES), and interest in research questionnaire (IRQ) were computed using an average. The data were analyzed using an Independent Sample t-test, one-way ANOVA, Chi-square test, and Pearson Product Moment Correlations. Beforehand, the data set was tested using normality, homogeneity of variance, linearity, and multicollinearity, and no assumption violations were identified.

3.6. Ethical Considerations

The researcher protected the participant's right to self-determination, anonymity, and confidentiality. For this reason, the participants were given complete information on the nature of the study through written informed consent, which was distributed with the questionnaire. All of the data was anonymous during this study. Responses to the survey questionnaires were anonymous, and identifying information was kept anonymous.

4. Results

This section presents the findings and results of the statistical analyses applied to data to determine the relationship between the research constructs: research self-efficacy, research training environment, and interest in

research. The results of the participants' research self-efficacy, perception of the research training environment, and interest in research if there is a difference and relationship as to their gender and program of study.

Research Self-efficacy, Perception of the Research Training Environment, and Interest in Research

Table 2. Participants' research self-efficacy, research training environment and interest in research.

| Research constructs | Mean | Standard deviation |
|-------------------------------------|-------|--------------------|
| Research Self-efficacy (RSE) | 66.89 | 14.99 |
| Research Training Environment (RTE) | 3.50 | 0.48 |
| Interest in Research (IR) | 3.60 | 0.79 |

Descriptive statistics on the research self-efficacy, perception of the research training environment and interest in research is shown in Table 2. Results indicated that the participants are somewhat confident on their self-efficacy (M=66.89, SD=14.99). The participants perception of the research training environment was that they somewhat agree with the research training that are given them to them in their program of study (M=3.50, SD 0.48). The participants interest on research showed that they are interested (M=3.60, SD=0.79).

Research Questions 1: What is the difference in the research self-efficacy, perception of the research training environment, and interest of the participants when grouped according to gender and program of study?

In order to determine if gender significantly differentiates the research self-efficacy, perception of the research training environment, and interest on the research of the participants, Analysis of Variance (ANOVA) was conducted on their scores in the three research constructs.

Table 3. Independent Sample t-Test on Research Self-efficacy, Research Training Environment, and Interest on Research based on Gender.

| | Group | N | M | SD | t | df | p-value |
|-----|--------|-----|-------|-------|------|-----|---------|
| RSE | Female | 109 | 67.74 | 14.71 | 1.14 | 147 | 0.255 |
| | Male | 40 | 64.57 | 15.69 | | | |
| RTE | Female | 109 | 3.51 | 0.45 | 0.42 | 147 | 0.675 |
| | Male | 40 | 3.47 | 0.55 | | | |
| IR | Female | 109 | 3.66 | 0.72 | 1.59 | 147 | 0.113 |
| | Male | 40 | 3.43 | 0.93 | | | |

An Independent Sample T-test was conducted to compare the male and female responses/assessment on RSE, RTE, and IR. The test result revealed no significant difference between the male and female assessments. Thus, both groups have the

same level of: RSE (t (147)=1.14, p=0.255), RTE (t (147)=0.42, p=0.675), and IR (t (147)=1.59, p=0.113). Thus, the null hypothesis must not be rejected at 0.05 level of significance.

Table 4. One-way ANOVA on Research Self-Efficacy, Research Training Environment and Interest on Research based on Program of Study.

| | Program | N | M | SD | df | F | p-value |
|-----|---------|----|-------|-------|----|-------|---------|
| RSE | BSBA | 94 | 65.70 | 16.18 | 3 | 1.523 | 0.211 |
| | BSHM | 24 | 67.41 | 13.04 | | | |
| | BSTM | 28 | 71.48 | 11.45 | | | |
| | BSOA | 3 | 57.11 | 14.92 | | | |
| RTE | BSBA | 94 | 3.54 | 0.49 | 3 | 0.817 | 0.486 |
| | BSHM | 24 | 3.42 | 0.50 | | | |
| | BSTM | 28 | 3.42 | 0.43 | | | |
| | BSOA | 3 | 3.32 | 0.14 | | | |
| IR | BSBA | 94 | 3.64 | 0.79 | 3 | 0.274 | 0.844 |
| | BSHM | 24 | 3.56 | 0.88 | | | |
| | BSTM | 28 | 3.52 | 0.73 | | | |
| | BSOA | 3 | 3.40 | 0.35 | | | |

The one-way analysis of variance (ANOVA) was used to determine whether there are any statistically significant differences in RSE, RTE, and IR in the program of study. The test result revealed that the respondents have the same level of: RSE (F (3)=1.52, p=0.211), RTE (F (3)=0.817, p=0.486) & IR (F (3)=0.274, p=0.844). Thus, the null

hypothesis must not be rejected at 0.05 level of significance.

Research Question 2: What is the relationship between the participants' research self-efficacy, perceptions of the research training environment and interest in research and their gender and program of study?

This study investigated the influence of the students' information on gender and program study on their research self-efficacy, perceptions of the research training environment, and interest in research. The test of relationship using Chi-square at .05 level of significance was conducted.

Table 5. Relationship (Chi-Square Test) of gender and research self-efficacy, research training environment, and interest in research.

| | X ² | df | p-value |
|-----|----------------|----|---------|
| RSE | 2.69 | 2 | 0.260 |
| RTE | 5.55 | 3 | 0.135 |
| IR | 8.35 | 4 | 0.080 |

A Chi-square test for independence was conducted to know whether gender is associated with RSE, RTE, and IR. The test result showed that gender is not associated to RSE ($X^2(2)=2.69$, $p=0.260$), RTE ($X^2(3)=5.55$, $p=0.135$), and IR ($X^2(4)=8.35$, $p=0.080$). Thus, the null hypothesis must not be rejected at 0.05 level of significance.

Table 6. Relationship (Chi-Square Test) of program of study and research self-efficacy, research training environment, and interest in research.

| | X ² | df | p-value |
|-----|----------------|----|---------|
| RSE | 6.19 | 6 | 0.403 |
| RTE | 9.58 | 9 | 0.385 |
| IR | 7.23 | 12 | 0.842 |

A Chi-square test for independence was conducted to know whether the program of study is associated with the RSE, RTE, and IR. The test result showed that program is not associated to, RSE ($X^2(6)=6.19$, $p=0.403$), RTE ($X^2(9)=9.58$, $p=0.385$), and IR ($X^2(12)=7.23$, $p=0.842$). Thus, the null hypothesis must not be rejected at 0.05 level of significance.

Research Question 3: What is the relationship between the participants' level of research self-efficacy, perception of the research training environment and interest in research?

The study investigated if there is a relationship between business education students' research self-efficacy, perception of the research training, and interest in research.

Table 7. Correlations between research self-efficacy, perception of the research training environment, and interest in research.

| Variable | | RSE | RTE | IR |
|----------|---------|-------|-------|----|
| RSE | r | — | | |
| | p-value | — | | |
| RTE | r | 0.404 | — | |
| | p-value | <.001 | — | |
| IR | r | 0.501 | 0.588 | — |
| | p-value | <.001 | <.001 | — |

Pearson Product Moment Correlation was conducted to determine if and how strongly the participants' level of research self-efficacy, perception of the research training environment, and interest in research are related. The test result revealed that the three variables has a moderate to strong positive relationship; RTE & RSE ($r=0.404$, $p<0.001$), IR & RSE ($r=0.501$, $p<0.001$) and IR & RTE ($r=0.588$, $p<0.001$). It implies that the three variables are directly proportional to each other. Thus, the null hypothesis must not be accepted at 0.05 level of significance.

5. Discussion

This study was conducted to investigate the relationship of research self-efficacy, perceptions of the research training environment, and interest in research among business education students. It may provide beneficial information to assist the university in developing policies and programs that encourage and foster research among them. The findings revealed no significant difference in research self-efficacy, research training environment, and interest in research based on gender and program of study. The correlation test of the participants' gender and program of study on the three research constructs also revealed no association. This result is distinct from this study since most of the studies undertaken to relate demographic information with interest in research are age and gender; however, the results most likely confirmed that interest in research increase from one course to the next [28]. This contrasting result is attributed to the varying number of participants in each program of study. Nevertheless, integrating research in the coursework is needed to enhance research self-efficacy of business education across all programs.

Looking further on the relationship of gender on research self-efficacy, the findings imply that age and gender does not influence the students' self-belief of their competence to accomplish research which is paralleled to the studies [5, 10, 15, 16]. Likewise, the student's perception of the research training program is not significantly related to gender and program of study, which varies with the findings that the perception of the research training environment is higher for female students [5]. It also denotes no significant difference as to the program of study. The findings imply that research experiences that allow students to enhance their research self-efficacy are not evident; hence providing a supportive research training environment will enable students to complete their research projects.

The statistical relationship between research self-efficacy, perception of the research training environment, and interest in research among students suggests that research self-efficacy is influenced by the perception of the research training environment and interest in research. Similarly the current findings of the study suggest that as the student progresses in their coursework, an enhanced research training environment is desired to provide the students with engaging research experiences which eventually promotes research interest among them [5, 19, 20, 28, 30-32].

6. Conclusion

This study investigated the relationship between research self-efficacy, perception of the research training environment, and interest in research among business education students looking into the difference between these research constructs to students' gender and program of study of the three research constructs. The results of statistical analyses revealed no significant difference in research self-efficacy, perception of the research training environment, and interest in research in

terms of gender and program of study. Moreover, there is no significant relationship between gender and program of study and research self-efficacy, perception of the research training environment, and interest in research. Finally, the research self-efficacy, training environment, and interest in research have moderate to strong positive relationships. Therefore, the college may consider integrating research into coursework to promote interest in research among students. Additionally, provide a supportive research training environment that will contribute to a positive research experience among them.

7. Limitations and Recommendations for Future Research

There are important limitations in this study, which may have influenced the results. First, the study was conducted during the time of the COVID-19 pandemic, during which face-to-face interaction was restricted, which would influence the students' appreciation of the research support services provided by the institution. During the study, the instruction delivery mode is either the use of printed modules or an online platform. The study does not identify who among the participants are in printed modules and online platforms, differentiating the interaction between faculty and students that might influence the students' confidence to conduct research and interest in research. Despite these limitations, this was the first study to investigate the relationship between research self-efficacy, perception of the research training environment, and interest in research among business education students of a higher education institution.

Since this is the first study to investigate the relationship between research self-efficacy, perception of the research training environment, and interest in research among business education students, a follow-up on this study is desired. A longitudinal study per program is recommended to measure other variables that may influence the research self-efficacy, research training environment, and interest in research of business education students throughout their program of study.

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