
Evaluating Four Factors of Students' Career Adaptabilities (CAA) Using PLS-SEM and MGA Analysis of Demographic Variables

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Abstract

This article concentrates on the four factors that influence students' career adaptability abilities (CAA). These four factors are professional cognizance, implementation capability, an attitude of curiosity, and academic confidence. This study involved a survey of Career Adaptability Abilities among Pre-service Physics Teacher Education Students. Smart-PLS version 4 was utilised to implement the PLS-SEM procedure. These four factors, namely professional awareness (PA), implementation ability (IA), curiosity attitude (CA), and confidence level (CL), were found to have positive and statistically significant effects on the students' career adaptability abilities (CAA), according to the study's findings. In this investigation, socio-demographic characteristics have no moderating effect on the proposed model. Therefore, associated implications and suggestions are proposed to assist in enhancing the students' career adaptability abilities (CAA).

Keywords

PLS-SEM, professional awareness (PA), implementation ability (IA), curiosity attitude (CA) and confidence level (CL), career adaptabilities (CAA)

1. Introduction

Nowadays, pre-service physics students in local undergraduate normal colleges in western Inner Mongolia cannot adapt well to the role of teachers when they first enter the workplace, and their teaching level, management ability and self-confidence level need to be improved. Because of this, the employment rate of students in these regions is lower than that of the developed regions in the east, and the competitiveness is far lower than that of key universities. For this reason, it is very necessary to improve the professional adaptability of pre-service physics students, cultivate their professional awareness (PA), implementation ability (IA), curiosity attitude (CA) and confidence level (CL), it becomes especially important to improve their self-confidence level.

2. Literature review

Career adaptabilities (CAA) among pre-service physics students of teacher education are essential. The professional adaptability of physics teachers who are about to become physics teachers in elementary and middle schools need to have directions on what they are going to do after completing their study. In the context of the new era, colleges and universities need to do a good job in researching the needs of college students' professional ability development, and attach importance

to promoting the development of college students' professional ability to achieve a good match with the job competency requirements put forward by social employers (Cao, 2021).

Professional Awareness (PA) refers to the in-depth thinking and planning for the professional career of future physics teachers, and have the mental preparation that is willing to act for them. Yang et al (2021) by combing through the conceptual connotations of professional self-concept, employ ability, and positive emotions, a moderated model is constructed. The analysis results show that college students' professional self-concept will have a positive impact on employ ability.

Implementation Ability (IA) helps to maintain a positive and optimistic attitude, and use practical actions to achieve your career goals based on your own characteristics. Facing the new needs of society, applied universities must establish a comprehensive education concept in talent training, focusing not only on the education of professional basic knowledge, but also the training of professional core competence, and integrate the training of college students' professional core competence into professional teaching and daily behavior management of students, Cultivate college students' sense of innovation and core competence (Li, 2019).

Curiosity Attitude (CA) is another vital factor pertaining to career adaptabilities. In order to achieve career goals, continue to explore, conduct investigations, and actively seek and grasp opportunities for personal growth. The indispensability of curiosity is not only for creativity, but also closely related to the rich life in the world (Yang, 2021).

Confidence Level (CL) assists in establishing efficient execution, work carefully and conscientiously, constantly learn new skills, overcome various difficulties, and solve problems encountered. For new teachers, whether they can adapt to the teaching profession as soon as possible and complete the identity transformation from "prospective teachers" to "teachers" directly affects their teaching beliefs, professional attitudes and professional abilities, and then relates to the stability and development of the whole teaching team (Wang, 2021).

A very prominent socio-demography characteristic is age. Age has played a moderating role in various structural equation modeling based studies (Biswas et al, 2020; Fisher et al, 2021). The very reason in which age can be a viable moderator lies in the fact that age typically causes the change of attitude and the same time alter the change of behaviour and perception. In this study, age can be a moderator in moderating the effects of the professional awareness (PA), implementation ability (IA), curiosity attitude (CA) and confidence level (CL) on career adaptabilities (CAA).

research hypotheses

There are five research hypotheses in this study.

H1: Professional awareness (PA) will have a significant positive effect on career adaptabilities (CAA) among pre-service physics students of teacher education.

H2: Implementation ability (IA) will have a significant positive effect on career adaptabilities (CAA) among pre-service physics students of teacher education.

H3: Curiosity attitude (CA) will have a significant positive effect on career adaptabilities (CAA) among pre-service physics students of teacher education.

H4: Confidence level (CL) have a significant positive effect on career adaptabilities (CAA) among pre-service physics students of teacher education.

H5: There are moderating effects of socio-demographic characteristics on the proposed model in this study.

3. Methodology

The research design of this study is basically a quantitative method that has been used in most model validation research. This survey based study will keep anonymity and requires the researcher to protect the loss of confidentiality and privacy of the participant. Considering the value of anonymity for the samples being surveyed in hopes of more honest answers, the quantitative method is chosen to complete this study. PLS-SEM approach will be applied for model measurement and testing. Figure 1 below shows the research process of this study. The research flowchart guides the whole process of this study.

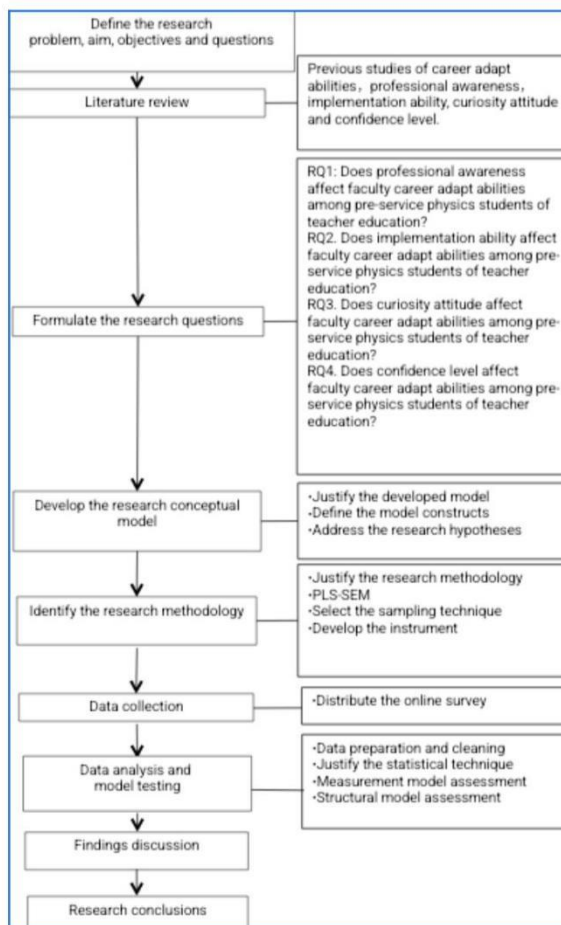


Figure 1: Research flowchart

Source: Developed for this research

The sample calculator of Daniel Soper can be accessed at <https://www.danielsoper.com/statcalc/calculator.aspx?id=89>. The anticipated effect size is set at 0.3 which is the acceptance effect size. The desired statistical power level is set at 0.8 which is a highpower level. There are 5 latent variables in which 1 dependant variable and 4 Independent variables are found in this study. There are altogether 28 observed variables which represent the 28 items in this questionnaire. The probability level is set to 0.05. Thus, the minimum sample size is 148 and the recommended sample size is 150. However, in order to obtain better result as well as to prepare for any invalid data found, 300 to 400 samples will be used in this study.

Source: Developed for this research

The survey items that are used to measure the constructs of the model in this study are included 28 items (Sibunruang et al., 2015). Table 1 shows the Cronbach's Alpha value if item deleted. All values are above 0.7 indicating higher and stronger reliability indices. The reliability indices for all dimensions were above 0.7 and below 0.95. Thus, no issues of multi collinearity and auto collinearity occurred. This instrument is suitable for PLS-SEM analysis later in this study.

Source: Developed for this research

Table 1: Reliability Indices of the Dimensions

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|-----|----------------------------|--------------------------------|----------------------------------|------------------------------|----------------------------------|
| DVM | 13.7333 | 12.686 | .910 | .841 | .951 |
| PAM | 13.5896 | 13.101 | .920 | .856 | .950 |
| IAM | 13.7896 | 13.035 | .895 | .832 | .954 |
| CAM | 13.6813 | 12.719 | .893 | .836 | .954 |
| CLM | 13.7146 | 13.504 | .857 | .761 | .960 |

The table shows the Cronbach's Alpha value if item deleted for the DV and 4 IVs. All values are above 0.7 indicating higher and stronger reliability indices.

Source: Developed for this research

Multigroup analysis (MGA) is a statistical method used to compare the means of multiple groups or populations. It is typically used in research studies to determine if there are significant differences in a particular variable or set of variables between different groups. The purpose of MGA is to identify any group differences, such as demographic or treatment effects, in order to better understand the underlying causes of the outcome being studied. In other words, it tests and compares the effect of every structural path across various groups (Aguinis et al., 2017; Ting, Fam, Hwa, Richard, & Xing, 2019).

4. Findings

Table 2 gives some information about the demographics of the participants, respectively, calculated in SPSS. No missing values are found.

5. Descriptive statistics

Table 2: Demographic Information of the Study

| Name | Mean | Median | Scale min | Scale max | Observed min | Observed max | Standard deviation | Excess kurtosis | Skewness |
|---------------|------|--------|-----------|-----------|--------------|--------------|--------------------|-----------------|----------|
| gender | - | 2 | 1 | 2 | 1 | 2 | 0.492 | -1.887 | -0.361 |
| age | - | 1 | 1 | 2 | 1 | 2 | 0.287 | 6.319 | 2.874 |
| year of study | - | 1 | 1 | 2 | 1 | 2 | 0.432 | -0.638 | 1.17 |
| entry results | - | 2 | 1 | 2 | 1 | 2 | 0.456 | -1.183 | -0.91 |
| institution | - | 2 | 1 | 2 | 1 | 2 | 0.499 | -1.994 | -0.155 |

Source: Developed for this research

6. Outer Loadings

Table 3 below depicts the measurement model of this study. In this research, the factor outer loadings between items and their underlying constructs calculated by Smart-PLS version 4 (Ringle et al, 2022) showed that each item had an indicator loading that was greater than 0.707 and with significant value smaller than 0.050. As shown in table 3 below, all of the factor loadings of the items to corresponding constructs are above 0.7 and significant (p-value < 0.05) which are excellent. Hence, the measurement model has indicator reliability.

Table 3: The Model with Outer Loadings

| | CA | CAA | CL | IA | PA |
|------|-------|-------|----|----|----|
| CA1 | 0.811 | | | | |
| CA2 | 0.881 | | | | |
| CA3 | 0.874 | | | | |
| CA4 | 0.842 | | | | |
| CA5 | 0.852 | | | | |
| CA6 | 0.842 | | | | |
| CAA1 | | 0.782 | | | |

| | | | | | |
|------|--|-------|-------|-------|-------|
| CAA2 | | 0.843 | | | |
| CAA3 | | 0.818 | | | |
| CAA4 | | 0.820 | | | |
| CL1 | | | 0.908 | | |
| CL2 | | | 0.857 | | |
| CL3 | | | 0.937 | | |
| CL4 | | | 0.871 | | |
| IA1 | | | | 0.816 | |
| IA2 | | | | 0.830 | |
| IA3 | | | | 0.882 | |
| IA4 | | | | 0.874 | |
| IA5 | | | | 0.779 | |
| IA6 | | | | 0.836 | |
| PA1 | | | | | 0.832 |
| PA2 | | | | | 0.740 |
| PA3 | | | | | 0.841 |
| PA4 | | | | | 0.816 |
| PA5 | | | | | 0.734 |
| PA6 | | | | | 0.813 |

Source: Developed for this research

7. Internal Consistency Reliability and Convergent Validity Analysis

Besides, construct internal consistency reliability is an indicator of how well and to what extent the indicators of one construct measure that construct (Herzog & Tonchia, 2014). In other words, construct internal consistency shows that the items are measuring the same thing. Cronbach's alpha is a measure used to assess the internal consistency or internal reliability of a set of scales or test items (calculated in Smart-PLS version 4 in this study). In the other words, the reliability of any given measurement refers to the extent to which it is a consistent measure of a concept, and Cronbach's alpha is one way of measuring the strength of that consistency (Urbach & Ahlemann, 2010). The higher amount of α indicates the items have more shared covariance and probably measure the same underlying concept. According to Gefen et al. (2011), in order to check internal consistency, the value of Cronbach's α statistics for exploratory research should be more than 0.6 and for confirmatory research (i.e., CFA) should be more than 0.7. In addition, in CFA and SEM,

internal consistency can be checked by composite reliability (CR) and should be more than 0.7 (Urbach & Ahlemann, 2010). The values of Cronbach's α and CRs are shown in Table 4. As shown in Table 4, all values of Cronbach's α and CRs are greater than 0.7 so the measurement model has internal consistency reliability.

Table 4: The Results of Internal Consistency Reliability and Convergent Validity Analysis

| | Cronbach's alpha | Composite reliability (rho_a) | Composite reliability (rho_c) | Average variance extracted (AVE) |
|-----|------------------|-------------------------------|-------------------------------|----------------------------------|
| CA | 0.924 | 0.925 | 0.940 | 0.724 |
| CAA | 0.833 | 0.840 | 0.889 | 0.666 |
| CL | 0.916 | 0.918 | 0.941 | 0.799 |
| IA | 0.914 | 0.916 | 0.933 | 0.700 |
| PA | 0.885 | 0.889 | 0.912 | 0.635 |

Source: Developed for this research

The results of both Model with Outer Loadings and Related P- Values as well as the results of Internal Consistency Reliability and Convergent Validity Analysis have confirmed that the instrument developed in this study is of no question. Therefore, the measurement model is of standard, and this instrument can be used for assessment of structural model.

8. Assessment of Structural Model

Table 5 below shows the Assessment of Structural Model of this study. According to table 5 below, the path coefficients between all constructs are significant (p -value < 0.01). The results show that all the independent variables have significant and positive effect on dependent variable.

Table 5: Assessment of Structural Model: Path coefficients between all construct

| | Path Coefficients | P Values | Explained Variance (R2) |
|-----------|-------------------|----------|-------------------------|
| CA -> CAA | -0.044 | 0.705 | 0.707 |
| CL -> CAA | 0.278 | 0.021 | |
| IA -> CAA | 0.357 | 0.018 | |
| PA -> CAA | 0.292 | 0.008 | |

Source: Developed for this research

9. Graphic Representation of the Model with Path Coefficients, and Explained Variance

Besides, as shown in figure 2 below and table 5 above, the explained variance of all the constructs (r square is equal to 0.707 which means 70.7% of the variance in the dependent variable construct

can be explained by its predictors which shows all the independent variables are having a substantial effect on the dependent variable in this study, namely SPE.

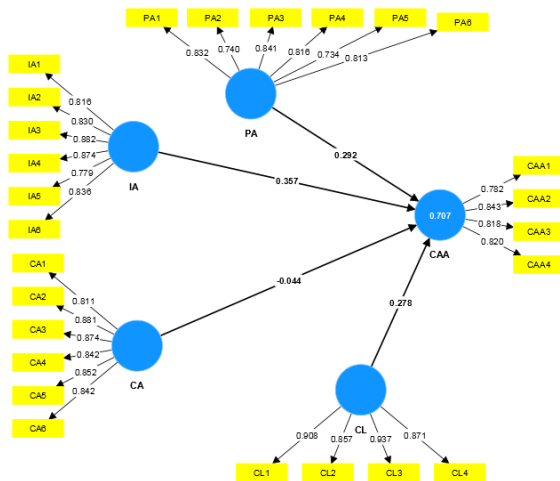


Figure 2: The Graphic Representation of the Model with Path Coefficients, and Explained Variance

Source: Developed for this research

10. Hypotheses Testing

With the confirmation of Structural Model assessment results and the high value of r square as shown in table 5 above, hypotheses testing of this study can be carried out. Table 6 below shows the major findings on the hypotheses testing of this study.

Table 6: Hypotheses Testing

| Hypothesis | Relationships | T value | Decision | 95% CILL | 95% CIUL |
|------------|---------------|---------|----------|----------|----------|
| H1 | CA -> CAA | 0.379 | Rejected | 0.246 | 0.210 |
| H2 | CL -> CAA | 2.316 | Accepted | 0.037 | 0.508 |
| H3 | IA -> CAA | 2.375 | Accepted | 0.038 | 0.621 |
| H4 | PA -> CAA | 2.659 | Accepted | 0.082 | 0.516 |

Source: Developed for this research

For hypothesis 1, t value is -0.246. A zero value is between 95% CILL and 95%CI UL. Hence, the hypothesis 1 is rejected. For hypothesis 2, t value is 2.316. No zero value is between 95% CI LL and 95%CI UL. Hence, the hypothesis 2 is accepted. For hypothesis 3, t value is 2.375. No zero value is between 95% CI LL and 95%CI UL. Hence, the hypothesis 3 is accepted. For hypothesis 4, t value is 2.659. No zero value is between 95% CI LL and 95%CI UL. Hence, the hypothesis 4 is accepted. The results of the study highlighted the positive relationships of the students towards tasks in blended learning courses. As such, the four hypotheses confirmed in this study were:

1: Professional awareness (PA) does not have a significant positive effect on career adaptabilities (CAA) among pre-service physics students of teacher education.

2: Implementation ability (IA) has a significant positive effect on career adaptabilities (CAA) among pre-service physics students of teacher education.

3: Curiosity attitude (CA) has a significant positive effect on career adaptabilities (CAA) among pre-service physics students of teacher education.

4: Confidence level (CL) has a significant positive effect on career adaptabilities (CAA) among pre-service physics students of teacher education.

11. MGA findings

MGA 1 – gender

Permutation multigroup analysis is carried out. Male and female groups are compared. No significant differences are found of all the relationships.

| | Original (male) | Original (female) | Original difference | Permutation mean difference | 2.5% | 97.5% | Permutation p value |
|-----|-----------------|-------------------|---------------------|-----------------------------|--------|-------|---------------------|
| CA | 0.952 | 0.930 | 0.022 | -0.001 | -0.047 | 0.041 | 0.359 |
| CAA | 0.895 | 0.884 | 0.011 | -0.004 | -0.096 | 0.085 | 0.844 |
| CL | 0.947 | 0.936 | 0.011 | -0.001 | -0.049 | 0.045 | 0.665 |
| IA | 0.948 | 0.918 | 0.029 | -0.002 | -0.059 | 0.050 | 0.331 |
| PA | 0.925 | 0.900 | 0.025 | -0.002 | -0.065 | 0.054 | 0.443 |

Source: Developed for this research

MGA 2 – age

Permutation multigroup analysis is carried out. 22 and below and 22 above groups are compared. No significant differences are found of all the relationships.

| | Original (420 and below) | Original (420 above) | Original difference | Permutation mean difference | 2.5% | 97.5% | Permutation p value |
|-----|--------------------------|----------------------|---------------------|-----------------------------|--------|-------|---------------------|
| CA | 0.939 | 0.941 | -0.002 | -0.002 | -0.051 | 0.040 | 0.929 |
| CAA | 0.876 | 0.893 | -0.017 | -0.003 | -0.100 | 0.090 | 0.758 |
| CL | 0.962 | 0.933 | 0.029 | -0.003 | -0.060 | 0.049 | 0.294 |
| IA | 0.957 | 0.925 | 0.032 | -0.001 | -0.062 | 0.053 | 0.302 |

| | | | | | | | |
|----|-------|-------|-------|--------|--------|-------|-------|
| PA | 0.930 | 0.906 | 0.023 | -0.002 | -0.068 | 0.054 | 0.502 |
|----|-------|-------|-------|--------|--------|-------|-------|

Source: Developed for this research

MGA 3 – Year of study

Permutation multigroup analysis is carried out. Year 3 and year 4 groups are compared. No significant differences are found of all the relationships.

| | Original (age 21 and below) | Original (age 21 above) | Original differenc e | Permutati on mean differenc e | 2.5% | 97.5% | Permutati on p value |
|-----|--------------------------------------|-------------------------------|----------------------------|--|--------|-------|----------------------------|
| CA | 0.930 | 0.928 | 0.002 | 0.000 | -0.026 | 0.024 | 0.896 |
| CAA | 0.868 | 0.877 | -0.008 | 0.000 | -0.064 | 0.053 | 0.784 |
| CL | 0.924 | 0.932 | -0.009 | 0.000 | -0.025 | 0.023 | 0.479 |
| IA | 0.919 | 0.934 | -0.014 | 0.000 | -0.031 | 0.029 | 0.338 |
| PA | 0.910 | 0.903 | 0.007 | 0.000 | -0.036 | 0.033 | 0.682 |

Source: Developed for this research

MGA 4 – entry result

Permutation multigroup analysis is carried out. 420 and below and 420 above groups are compared. No significant differences are found of all the relationships.

| | Original (year 3) | Original (year 4) | Original differenc e | Permutati on mean differenc e | 2.5% | 97.5% | Permutati on p value |
|-----|----------------------|----------------------|----------------------------|--|--------|-------|----------------------------|
| CA | 0.937 | 0.947 | -0.010 | 0.002 | -0.045 | 0.053 | 0.721 |
| CAA | 0.909 | 0.823 | 0.086 | 0.005 | -0.090 | 0.109 | 0.100 |
| CL | 0.935 | 0.953 | -0.017 | 0.003 | -0.049 | 0.064 | 0.577 |
| IA | 0.929 | 0.947 | -0.018 | 0.003 | -0.056 | 0.067 | 0.570 |
| PA | 0.919 | 0.893 | 0.027 | 0.003 | -0.060 | 0.070 | 0.470 |

Source: Developed for this research

MGA 5 – institution

Permutation multigroup analysis is carried out. Jining and NeiMenggu groups are compared. No significant differences are found of all the relationships.

| | Original (Jining) | Original (NeiMeng gu) | Original difference | Permutati on mean difference | 2.5% | 97.5% | Permutati on p value |
|-----|----------------------|-----------------------------|------------------------|------------------------------------|--------|-------|-------------------------|
| CA | 0.898 | 0.941 | -0.042 | 0.001 | -0.057 | 0.056 | 0.154 |
| CAA | 0.751 | 0.865 | -0.114 | -0.001 | -0.125 | 0.129 | 0.079 |
| CL | 0.922 | 0.908 | 0.014 | 0.001 | -0.072 | 0.067 | 0.718 |
| IA | 0.900 | 0.921 | -0.021 | 0.001 | -0.075 | 0.074 | 0.595 |
| PA | 0.894 | 0.879 | 0.015 | 0.001 | -0.073 | 0.073 | 0.724 |

Source: Developed for this research

In sum, there are no moderating effects of socio-demographic characteristics on the proposed model in this study. The tested demographic factors include gender, age, years of study, entry results and institutional types.

12. Discussion and conclusion

The study has confirmed that, Professional awareness (PA), Implementation ability (IA), and Confidence level (CL) have significant positive effects on career adaptabilities (CAA) among pre-service physics students of teacher education with only exception of Curiosity attitude (CA). Therefore, efforts have to be done on these four factors in enhancing the level of career adaptabilities (CAA) among the students especially the three significant factors.

In sum, table 7 below summarizes the efforts and suggestions in upholding the four aspects that will bring positive effects on career adaptabilities. These efforts should be implemented in making sure that the level of career adaptabilities is upholstered before the students graduated.

Table 7: Efforts and suggestions in upholding the four aspects that will bring positive effects on career adaptabilities

| Factor | | Efforts and suggestions |
|---------------|--------------------------|--|
| 1 | Professional awareness | various methods have to done in providing professional awareness through workshops, exhibitions, talks, experience sharing sessions of graduated students and etc. identify their strengths and weaknesses, set career goals, and make informed decisions about their career path |
| 2 | Implementation abilities | simulation sessions, experience sharing of graduated students, seminar, students conference, professional talks, and etc. implement new ideas and strategies can help an individual advance in their current role and improve their overall job performance |

| | | |
|---|--------------------|--|
| 3 | Curiosity attitude | problems solving skills seminar, change preparation talk, practical visit, experience sharing of graduated students, interviews with experts of the fields, visiting experts of the field, and etc. the willingness to explore new opportunities, fields or job positions and to be receptive to change |
| 4 | Confidence level | providing professional development training, career related skill training, sharing sessions of successful graduated students, questions and answers sessions with experts of the fields, and etc. Be proactive in seeking out new opportunities, and they may be more likely to negotiate for better compensation, benefits, or working condition |

Source: Developed for this research

There are no moderating effects of socio-demographic characteristics on the proposed model in this study. The tested demographic factors include gender, age, years of study, entry results and institutional types. This suggests that the study found that demographic factors such as gender, age, years of study, entry results, and institutional types did not have a significant impact on the proposed model being studied. It implies that the proposed model is not affected by these demographic factors. Hence, further are needed to confirm this finding and to determine if there are any other factors that may have an impact on the proposed model. Implementation Affects Adaptability.

Implementation abilities affect career adaptabilities

Yes, implementation abilities can greatly affect one's career adaptability. Being able to effectively implement new skills or technologies can open up new opportunities and make an individual more valuable in the job market. Additionally, the ability to implement new ideas and strategies can help an individual advance in their current role and improve their overall job performance.

Curiosity attitude affects career adaptabilities

Yes, having a curious attitude can greatly affect one's career adaptability. Being curious and open to learning new things can help an individual stay current with new skills and technologies in their field, which can open up new opportunities and make them more valuable in the job market. Additionally, a curious attitude can help an individual understand the bigger picture and think outside the box, which can lead to new ideas and strategies that can help them advance in their current role and improve their overall job performance. Furthermore, the willingness to explore new opportunities, fields or job positions and to be receptive to change can be a valuable asset.

Confidence level affect career adaptabilities

Confidence level can also affect one's career adaptability. Confidence can play a big role in an individual's ability to take on new challenges and responsibilities, as well as their ability to communicate and advocate for themselves. Confidence can also help an individual to believe in their own abilities, which can make them more likely to take risks and pursue new opportunities. When individuals feel confident in their skills and abilities, they are more likely to be proactive in seeking out new opportunities, and they may be more likely to negotiate for better compensation, benefits, or working conditions. On the other hand, low confidence can lead to hesitations and doubts that can limit the willingness to try new things, to take on new challenges, or to speak up for

oneself. There are several other factors that can moderate an individual's career adaptability. Some of these include:

1. **Networking:** Building a strong network of professional contacts can help an individual stay informed about new opportunities in their field and can provide valuable connections and support as they navigate career changes.

2. **Resilience:** The ability to bounce back from setbacks and challenges can help an individual stay motivated and focused during times of transition or uncertainty.

3. **Flexibility:** Being open to different types of work or different industries can increase an individual's chances of finding new opportunities that align with their skills and interests.

4. **Self-awareness:** Understanding one's own strengths, weaknesses, values, and goals can help an individual make informed decisions about their career path and can help them identify opportunities that align with their priorities.

5. **Emotional intelligence:** The ability to manage and understand one's own emotions and the emotions of others can be important when navigating the often-complex social dynamics of the workplace, and can help individuals to be more effective at building relationships, communicating and resolving conflicts.

6. **Proactivity:** The ability to take initiative and to be proactive in seeking out new opportunities, learning new skills or creating opportunities can increase chances of success and adaptability in career.

Overall, career adaptability is a complex construct that can be influenced by a variety of factors, including an individual's skills, attitude, confidence, and networks, as well as external factors such as the job market and the economy. Additionally, it is important to note that the study may have limitations and the findings should be interpreted with caution.

There are some limitations in this study and some future suggestions are proposed in tackling these limitations. Similar as prior studies, current study also prone with some limitations. First, data collected through convenience sampling method which might be restrict generalizability of results. For future studies, large samples and with stratified sampling method can be employed to increase the generalizability of the findings.

In conclusion, this study has verified that Professional awareness (PA), Implementation ability (IA), Curiosity attitude (CA), and Confidence level (CL) have significant positive effects on career adaptabilities (CAA) among pre-service physics students of teacher education. Thus, instructors have to ensure that various strategies and suggestions pertaining to the vital four factors examined in this study should be carried out as to well prepared the students by enhancing their career adaptabilities.

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