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The interplay of TPACK, self-efficacy, and career motivation among economics teachers: a mediation analysis

**Problem and aim.** The paper emphasizes self-efficacy in education and career choice. Self-efficacy and a willingness to learn are the main differentiators in competitive human resource development in the digital age. A school’s competence and graduates’ potential determine its success. The paper investigates how self-efficacy (EK) mediates Technological Pedagogical Content Knowledge (TPACK) and career choice motivation for economics teachers. Technology, pedagogy, and economics content knowledge (TPACK) are taught separately and together to undergraduate economics education students. In the post-COVID-19 era, where technology is vital to education, the research is relevant to assessing college students’ TPACK competencies. The study aims to clarify the relationship between TPACK, self-efficacy, and career choice motivation in economics education students by evaluating the self-efficacy mediation model.

**Material and methods.** The study used a conceptual modeling research design with a quantitative approach, examining four observational variables such as TPACK, self-efficacy as a prospective teacher as the exogen variable, and career choice motivation as an economics teacher as the endogen variable. This research involves 346 students in Java, Indonesia, using the CB-SEM analysis to identify the TPACK components and students’ self-efficacy as prospective teachers.

**The result of the study.** The study discovers a substantial relationship between TPACK, self-efficacy, and career choice motivation, with an index of goodness of fit of RMSEA = 0.021, ChiSq/df = 1.146, CFI = 0.966, and TLI = 0.965 considered acceptable. The indirect effect test of the relationships between TPACK and career choice motivation as an economics teacher (b = 0.064, p = 0.022) reveals that self-efficacy mediates the relationship between TPACK and career choice motivation as an economics teacher. The results confirm that TPACK has a significant relationship with career choice motivation as an economics instructor, both directly and indirectly through self-efficacy mediation.

**Conclusion.** The differences show that the TPACK components might help students, parents, and institutions evaluate the teaching and learning process. The researchers also expect the facilitators and constitutional bodies to take strategic moves to improve and develop the supporting infrastructures for education. The next fundamental questions are about the quality of technology integration and the effectiveness of college students’ skills development.

**Keywords:** TPACK, self-efficacy, motivation, career choice, teacher competency

**For Reference:**
Introduction

Education scholars are still grappling with a great number of vexing problems on a global scale, and experts in the area remain unsatisfied with their search for solutions. Referring to the Global Education First Initiative (GEFI), three main priorities are protecting every child’s right to a proper education, redefining learning for the twenty-first century, especially in the age of artificial intelligence, and promoting global citizenship [1]. To promote education internationally, it seeks political will, financial resources, and coordination between governments, international organizations, civil society, and the corporate sector. To support this activity, member countries, non-governmental organizations, and other stakeholders must collaborate. This stimulates knowledge sharing, best practices, and novel teaching methods. If human resources don’t comprehend their competence and self-efficacy, this hope will be hard to achieve. Estuary, human resource development practitioners, education, and international groups like UNESCO must focus on the Education for All movement, the Global Education First Initiative, and the Sustainable Development Goals to advance global education. These activities strive to improve education, provide high-quality education to all students, and promote lifelong learning.

SDG-4’s core objective also encourages lifelong learning and inclusive, high-quality education [2]. These objectives include early childhood education, primary and secondary education, reading and numeracy skills, technical and vocational education, and teacher training. Furthermore, SDG-4 directly addresses education, with the goal of ensuring inclusive and equitable quality education and fostering opportunities for lifelong learning for all [3]. Early childhood education, access to elementary and secondary schools, reading and numeracy skills, technical and vocational education, and increasing the number of educated teachers. As a result, it is critical to encourage collaboration among member countries, non-governmental organizations, and other stakeholders in order to support this activity. This promotes best practices exchange, the development of innovative educational methodologies, and the exchange of knowledge and experience. Of course, this hope will be difficult to realize if human resources do not recognize their own lack of expertise and self-efficacy.

Subsequently, international efforts led by human resource development practitioners, educators, and international organizations such as UNESCO must focus on the Education for All movement, the Global Education First Initiative, and the Sustainable Development Goals, which are critical to the advancement of global education. These efforts aim to provide all students with a high-quality education, address educational difficulties, and promote the prospect of lifelong learning.

Motivating youths to be quality teachers who consistently stay in the education field is an international concern now. This process requires a clear curriculum and program which entails the participation of the decision-makers and the expert in character development and education [4; 5]. Several studies show that their cultural background and social norms can influence people’s views and opinions about educators. The prestige and honorable status of teachers in some societies can inspire young people to pursue teaching as a career. Interest in teaching might suffer, however, in societies that see teachers adversely or if the profession is not held in high regard.
Previous research suggests various elements associated to the motivation of work choices as instructors. According to Stallmacher's research, in low-income neighborhoods, being a teacher appears to be a safer profession option that is more frequently endorsed by social circles [6]. Lohbeck explained that the 'Educatically Motivated' profile had the most satisfaction and the least anxiety and anger, whereas the 'Utility-Oriented' profile had the least pleasure and the most anxiety and anger [7]. The importance of one's family in making career choices was found, as was one's interest in and the practicality of studying chemistry [8]. According to the findings of the Taimalu study, Finnish student teachers scored contentment with choice, prestige, and remuneration higher, while Estonian students rated expertise, social dissuasion, and work difficulties higher [9]. Yurtseven study showed that career adaptability and academic drive strongly affected attitudes toward the teaching profession [10]. According to Greisel's research findings, pre-service teachers may not be trained enough to appropriately judge their own ability and may be oblivious of external variables that facilitate or hinder evidence-informed thinking [11]. Setting future objectives is a deciding factor in all aspects of life [12]. As a conclusion, people who spend less time worrying about their future are more pessimistic. Furthermore, intrinsic variables such as the happiness a person receives from helping others and making a difference in the world might influence interest in a profession in teaching.

According to study, pay influences motivation for selecting a career in education [13]. Money has a huge impact on people's drive to enter the teaching profession. A teacher's pay and job security may be important considerations for anyone thinking about a career in education. Individuals may be dissuaded from entering the teaching profession if earnings are poor or the economic outlook is bleak. It's crucial to stress, especially in the context of a few of these studies, that people are driven by different things for different reasons. The study describing the constancy of career choices as a teacher demonstrates work stability. While there may be financial issues, there is stability in the education sector that can attract individuals. The demand for instructors remains constant, despite the fact that it is dynamic, particularly in regions that require teaching professionals.

This work stability creates a sense of security and assurance, which many people value when choosing a career. Furthermore, the teacher’s function and impact in society can bring a sense of gratitude and emotional fulfillment. Teachers are frequently regarded as leaders and mentors who make substantial contributions to creating society's values and culture. Opportunities to connect with students, cooperate with colleagues, and contribute to the improvement of the education system all contribute to the high demand for this profession. Personal qualities such as interest and ability in teaching, similar beliefs, and a desire to help and serve others can all affect a teacher's career decision. Each person's motivation for choosing this profession is unique.

Similar to the global situation, the interest in teaching careers concerns the researchers about the absorption of the education workforce in Indonesia. The data unreleased by the Indonesian Ministry of Education shows that interest has been going up and down during the last three years. The period of 2019 to 2020 saw a declining number of economics teachers of 561 people or an average of 16 teachers in each of 35 areas in Indonesia. On the other hand, the period of 2020 to 2021 saw a rising number of 350 economics teachers compared to that of the year 2020. The latest number could not compensate for the declining number from 2019 to 2020 [14]. This confirms that the effort to absorb the new economics teachers to fulfill the shortage of economics teachers in Indonesia is not optimized.
The education field requires various components supporting the teaching and learning process, one of which is the learning model that can maximize the teaching and learning activity. Previous research has inspired the need to focus on the implications and repercussions of the area, which necessitate various supporting components of the teaching and learning process, such as increasing the use of digital technology in tertiary institutions [15]. The study's findings examine decisions from a variety of aspects, including their effectiveness, efficiency, and impact on student learning experiences and the overall dynamics of the higher education system [16]. By establishing the TPACK concept in learning, which combines technology knowledge, pedagogical knowledge, and content knowledge. TPACK competencies can be developed by teachers through training and professional development.

Most Indonesian universities that produce prospective teachers apply the TPACK approach in teaching and learning. TPACK stands for technology (T), pedagogy (P), and content knowledge (CK). TPACK is a framework that combines three main components of technology, pedagogy, and knowledge to promote modern learning [17]. The three components need to get applied together as a single unit when planning the learning and evaluating processes since those later will be a particular element that runs the development of future education called the era of digital technology [18].

The Covid-19 pandemic has accelerated the application of TPACK-based learning in education. The technology integration process in teaching and learning activities is required for distance learning. The education world has undergone great changes due to the pandemic, one of which is that classical and conventional learning is less effective and efficient during lockdown [19]. However, not all students and educational institutions can quickly adapt to the latest educational procedure called online learning [20]. The problems with educational infrastructures that support online learning can be one of the online learning obstacles in emerging and developing countries [21]. TPACK and students' career choice motivation are two related variables in education. However, only a few researchers examine the factors that affect the students' career choice motivation in technology and education. Hence, self-efficacy might be an essential factor connecting TPACK and students' motivation for career choice. Self-efficacy refers to students' belief in their effort to reach TPACK and succeed in technology and education careers. Some research indicated that self-efficacy significantly affects students' motivation and career choices.

Meanwhile, students' career choice motivation might be influenced by several factors, including career interest, educational experience, and the social environment. However, several studies have also indicated that internal factors such as self-efficacy might influence the students' career choice motivation [22]. On the other hand, this research discusses the creation of self-efficacy with a focus on the personal effort to move forward and the readiness to accept the normative consequences as an educator is referred to as a variable that affects the career choice as a teacher [23; 24]. By involving the internal factor of self-efficacy as a mediation factor, this research is expected to provide insights to supplement the study on career choice motivation as a teacher, particularly in the subject of economics.

Due to the reason mentioned above, the research questions that this research shall answer are as follows:

RQ1) Is there any direct relationship between the TPACK of the economics department students and their career choice motivation as an economics teacher?

RQ2) Is there any direct relationship between the economics department students' self-efficacy and their career choice motivation as an economics teacher?
RQ3) Is there any mediated relationship of self-efficacy when mediating the TPACK and career choice motivation as an economics teacher?

The research is expected to contribute to the development of human resources competency in the field of economics education. Next, it is also expected to produce suggestions for educational institutions regarding the fair distribution of education-supporting infrastructure. Lastly, it is also expected to provide materials for further research in developing and distributing the 21st century educational competencies trilogy.

**Literature review**

**TPACK as Competencies Trilogy in Learning**

TPACK is a learning concept focused on the connection between technology, pedagogy, and content knowledge in the teaching and learning process. Technology refers to the devices and resources used to support the teaching and learning process, such as computers, tablets, and educational software. Pedagogy refers to the theory and practice of teaching and learning, including methods and approaches to facilitate teaching and learning activities. Content knowledge refers to the learning materials, including concepts, facts, and skills required by students. TPACK framework indicates that the effective use of technology in education needs an understanding of how those three fields interact among others and how they can be integrated to promote the teaching and learning process [18].

In the process of becoming a teacher, according to previous studies, TPACK might assist prospective teachers to keep on learning and developing their skills to master effective learning through technology[25]. This can improve the prospective teachers' willingness to learn and develop themselves since they will feel more competent and well-trained when managing effective learning assisted by technology. Besides, technology also enables prospective teachers to deliver better learning experiences that can motivate their students, which, later on, will motivate themselves to keep providing effective learning.

Studies also have found that TPACK might influence students' motivation to choose a teaching career [26]. TPACK can influence students' motivation by improving their interests in their learning field. Using technology can make a topic seem more interesting and easier to understand so that students' interest in this field can increase [27]. Besides, the technology learning approach can lift students' motivation to study and develop their skills [28].

**Students Self-Efficacy Versus Self-Esteem**

In the context of career choice, the difference between self-esteem and self-efficacy is a vital issue to comprehend. Self-esteem and self-efficacy are two different psychological concepts, yet both might influence someone's decision-making process regarding career choice [29]. Self-esteem is more about personal confidence in their ability in general. Individuals with high self-esteem tend to feel confident in their ability and potential, whereas those with low self-esteem tend to feel less confident and doubtful. Regarding career, high self-esteem might help someone feel sure when making decisions and pursuing their desired career. However, overly high self-esteem without adequate skills might also hinder someone from reaching their career objective [29]. Several self-esteem components that need to be known are the ability to interact and adapt themselves to their environment, resilience, and the skills to comprehend the values and essential meanings of being a teacher [30; 35].
It is worth noting that self-esteem is not static, and various factors, including experience, environment, and self-perception might influence it. Therefore, each individual needs to maintain their beliefs by gaining experiences and developing masteries related to the desired career [36]. Besides, personal belief can also be affected by self-perception of success in the desired career. Individuals with strong perceptions that they will be successful in a certain career tend to have stronger confidence to pursue their career objective [37]. However, overestimating oneself can create an overconfidence that does not correspond with reality and might fail the said individuals to reach their career objectives [38].

Therefore, it is essential to establish balanced and realistic self-esteem by objectively appreciating individual ability and potential. There are two normative beliefs in behavioral theory: injunctive and descriptive normative beliefs. Cialdini et al. (1990) introduced an injunctive normative belief concept related to the reference, individual, or group of individuals that can support or oppose the achievement behavior [40]. The latest research defines descriptive normative belief as the second type of normative belief [3; 40]. Normative descriptive belief describes personal perceptions toward another individual's behaviors who does something or does not behave in certain ways [40]. From the educational perspective, self-esteem reflects how far prospective teachers are willing to adopt the teachers' common behaviors when teaching.

### Research Methods

**Aims and Scopes**

This research examines the TPACK (Technology, Pedagogy, And Content Knowledge) competency model of the college students of the education department in Java Island, Indonesia. The research scope includes the analysis of the TPACK competency model in the context of learning using technology in economics education at the undergraduate level mediated by self-efficacy in influencing the dependent variable of career choice motivation as an economics teacher in Indonesia.

**Population and Sampling**

The research population was the whole students of the economics education department all over Indonesia. In the wake of the enormous population size, this research applied the cluster sampling method with the random sampling technique proposed by Cochran [41]. From whole universities with undergraduate department of economics education, the samples were taken from students who have undergone four semesters or more with a number of 346 students at six universities of Universitas Negeri Jakarta, Universitas Negeri Semarang, Universitas Negeri Malang, Universitas Pendidikan Indonesia (Bandung), Universitas Negeri Yogyakarta, and Universitas Negeri Surabaya.

**Research Design**

The research applied conceptual modeling research design with a quantitative approach testing four observational variables, such as TPACK, self-efficacy as a prospective teacher as the exogen variable, and the variable of career choice motivation as an economics teacher as the endogen variable. This research aimed to test the mediating model of self-efficacy (EK) when mediating TPACK and career choice motivation (MK) as an economics teacher. Choosing Indonesia for this research was appropriate since the government needs to focus
more on supporting the educational program for those higher education institutions. This research employed a covariance-based structural equation model (CB-SEM) using IBM SPSS AMOS 28 software to confirm the theories and hypotheses.

**Instruments Development**

Four testing instruments were adopted from several previous research while TPACK was adopted from an instrument developed by Bahador et al. (2018) and Bingimlas (2018), with 41 statements representing the students' ability and understanding of TPACK [42; 43]. The self-efficacy instrument was adopted from Schwarzer and Jerusalem (1995) with 16 statements, and the instruments of career choice motivation were adopted from previous research (Kloeppe1, 2019; McClelland, 1987; McClelland, 1985; Ridho, 2020; Spangler, 1992) with 30 statements [46–49]. The context being adopted, among others, were the economics teaching materials, teaching media, and the statements that take the perspective of economics education students. The research instruments used the measurement scale of 1 to 7 to examine the tendency of respondents' attitudes on statements related to the observation variable from the perspective of prospective economics teachers in Indonesia.

**Data Collection and Analysis**

The data was collected using a survey through online questionnaires given to students of the economics education department. The research applied a closed questionnaire with seven options of the Likert scale. Respondents were volunteering, and the ones involved in the survey were not named. The ethical agreement was gained from the Institutional Research Committee of the Universiti National Malaysia for each aspect of this research. The SEM testing method with AMOS analysis was used to prove the research hypotheses.

**Pilot Study**

We assessed the validity and reliability of questionnaires using content, construct, and internal validity tests, as well as expert opinions and guidance. To analyze the viability of the material, we sought the support of seven experts from four institutions in Indonesia and Malaysia, which resulted in a change in question style to achieve the research purpose. In addition, for exploratory factor analysis (EFA), we performed a pilot survey on 150 persons using self-administered questionnaires. During the EFA stage, we deleted empat item pernyataan motivasi pilihan kerja dan dua item pernyataan self-efficacy that did not meet the cut-off value. The EFA results were used for field research as well as Confirmatory Factor Analysis (CFA) and structural equation modeling (SEM).

**Results**

**Respondents' Description**

The whole data collected represents the demographic conditions of the research respondents. The data is presented below.

The data contains three main characteristics of the respondents: age, gender, and university. Table 1 shows four groups of students' age distribution with an almost evenly distributed mean. Regarding gender, female students had a larger contribution of 187 (54%) than male counterparts, with a number of 159 (46%). Based on the respondents' responses, it was known that they were students of the economics
education department of six well-known Indonesian universities. The largest number was the students of UNJ, with 75 respondents (21.83%), while the lowest was the students of UPI, with 45 respondents (12.75%). The largest group of respondents was the fifth-semester students, while the lowest was the eighth-semester students. The sixth-semester students were not included in this research since they were undergoing internship when this research took place.

Table 1

<table>
<thead>
<tr>
<th>No.</th>
<th>Characteristics</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18 years old</td>
<td>44</td>
<td>12.72</td>
</tr>
<tr>
<td></td>
<td>19 years old</td>
<td>81</td>
<td>23.40</td>
</tr>
<tr>
<td></td>
<td>20 years old</td>
<td>128</td>
<td>37.00</td>
</tr>
<tr>
<td></td>
<td>21 years old</td>
<td>65</td>
<td>18.80</td>
</tr>
<tr>
<td></td>
<td>22 years old</td>
<td>22</td>
<td>6.40</td>
</tr>
<tr>
<td></td>
<td>23 years old</td>
<td>5</td>
<td>1.40</td>
</tr>
<tr>
<td></td>
<td>24 years old</td>
<td>1</td>
<td>0.28</td>
</tr>
<tr>
<td>2.</td>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>187</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>159</td>
<td>46</td>
</tr>
<tr>
<td>3.</td>
<td>University</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Universitas Negeri Malang</td>
<td>59</td>
<td>17.17</td>
</tr>
<tr>
<td></td>
<td>Universitas Negeri Surabaya</td>
<td>53</td>
<td>15.37</td>
</tr>
<tr>
<td></td>
<td>Universitas Negeri Semarang</td>
<td>54</td>
<td>15.56</td>
</tr>
<tr>
<td></td>
<td>Universitas Negeri Yogyakarta</td>
<td>60</td>
<td>17.32</td>
</tr>
<tr>
<td></td>
<td>Universitas Negeri Jakarta</td>
<td>75</td>
<td>21.83</td>
</tr>
<tr>
<td></td>
<td>Universitas Pendidikan Indonesia</td>
<td>45</td>
<td>12.75</td>
</tr>
<tr>
<td>4.</td>
<td>Semester</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Semester ke 3</td>
<td>84</td>
<td>24.28</td>
</tr>
<tr>
<td></td>
<td>Semester ke 5</td>
<td>209</td>
<td>60.40</td>
</tr>
<tr>
<td></td>
<td>Semester ke 7</td>
<td>52</td>
<td>15.03</td>
</tr>
<tr>
<td></td>
<td>Semester ke 8</td>
<td>1</td>
<td>0.28</td>
</tr>
</tbody>
</table>

Measurement Model

To analyze the structure of the factors and the relationship between observed variables and other constructs, the measurement model for each construct was performed using confirmatory factor analysis (CFA) with SPSS-AMOS 28. In this work, we used Pooled-CFA, which helped analyze all constructions and sub-constructs simultaneously. Several fit indices criteria were used to evaluate the fit of the measurement model, including the Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), Tucker Lewis index (TLI), Normed Fit Index (NFI), and the degrees of freedom for the chi-square (Chi-sq/df). The following is the minimum cut-off value for goodness-of-fit indices: RMSEA = 0.08; CFI = 0.80 permissible; 0.90 baik; TLI = 0.90; Chi-sq/df = ≤ 3.00 okay; ≤ 5.00 allowed.
As demonstrated in Figure 1, the model meets the fit indices criterion, with RMSEA 0.02 and CFI >0.9, TLI >0.9, and ChiSq/df <5.0. The factor loadings for all items in the construct ranged from 0.68 to 0.77, showing that the condition of measuring scale unidimensionality for each variable was Step over the criteria. As stated by the literature, the results in Figure 1 confirm that the students' Economic Teacher Career Choice (MK) construct has three main components, the TPACK construct has seven basic components, Self-efficacy has three components. Furthermore, the correlation value for each construct and sub-construct is less than 0.85, showing that each construct is unique [50].

We also tested for reliability and validity. Discriminant validity allows access to the model and verifies the presence of construct redundancy. Discriminant validity is determined using Fornell and Larcker's (1981) criteria, which include a diagonal value (bold) of average variance extracted (AVE) that is more than 0.5. The AVE for all constructs in this study varies from 0.510-0.566 (0.5), confirming the convergent validity criterion. Furthermore, AVE and composite reliabilities were calculated to assess convergent validity. The CR of all latent constructs in the proposed model spans from 0.743 to 0.892 (0.70), and the AVE value is greater than 0.50. As a result, all of the research measures must meet convergent validity standards. Table 2 shows that the AVE and factor loading of all items are greater than the thresholds, indicating that the measures are unidimensional. In terms of composite reliability, all constructs have CR values more than 0.6, indicating that the measurement model for all constructs has met the composite reliability criteria (see Table 2).
### Table 2

<table>
<thead>
<tr>
<th>Construct</th>
<th>Dimension</th>
<th>Factor Loading</th>
<th>Construct Reliability (CR ≥ 0.70)</th>
<th>Variance Extracted (AVE ≥ 0.50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career Choice Motivation (MK)</td>
<td>(MK1) The need for praise/appreciation</td>
<td>0.792</td>
<td>0.796</td>
<td>0.566</td>
</tr>
<tr>
<td></td>
<td>(MK2) The need for an authority</td>
<td>0.722</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(MK3) The need for plentiful friends</td>
<td>0.741</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology Pedagogy Content Knowledge – Economics Science (TPACK)</td>
<td>(T) The technology knowledge</td>
<td>0.737</td>
<td>0.892</td>
<td>0.542</td>
</tr>
<tr>
<td></td>
<td>(CK) The understanding of the economics materials</td>
<td>0.762</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(P) The pedagogy knowledge</td>
<td>0.745</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(TCK) Technology knowledge mastery in learning</td>
<td>0.744</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(PCK) The knowledge of the strategy in teaching the economics materials</td>
<td>0.770</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(TPK) The knowledge of the strategy and technology in teaching economics</td>
<td>0.708</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(TPCK) The knowledge of the technology and strategy in teaching economics</td>
<td>0.682</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Efficacy (EK)</td>
<td>(EK1) Self-efficacy in high expectation of successful career choice</td>
<td>0.655</td>
<td>0.743</td>
<td>0.510</td>
</tr>
<tr>
<td></td>
<td>(EK2) Self-efficacy in learning outcome achievement</td>
<td>0.704</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(EK3) Self-efficacy in facing obstacles and problems in delivering the</td>
<td>0.741</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>teaching and learning process in the economics education program</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to the criteria suggested by Fornell and Larcker (1981), discriminant validity can be determined by checking whether or not the diagonal value (bold) of the average variance extracted (AVE) is greater than 0.50 [51]. This evidence suggests that the Self-efficacy construct's subconstructs are distinct in both their conceptual content and their internal consistency (see Table 3).

### Table 3

<table>
<thead>
<tr>
<th>Construct</th>
<th>MK</th>
<th>TPACK</th>
<th>EK</th>
</tr>
</thead>
<tbody>
<tr>
<td>MK</td>
<td>0.752</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TPACK</td>
<td>0.299</td>
<td>0.736</td>
<td></td>
</tr>
<tr>
<td>EK</td>
<td>0.385</td>
<td>0.201</td>
<td>0.714</td>
</tr>
</tbody>
</table>

Notes: TPACK = Technology, Pedagogy, Content Knowledge (economics); EK = Self-Efficacy; MK = Career Choice Motivation

**Structural Model**

The result of the final model indicates the relationship between TPACK and the career choice motive. As illustrated by Figure 1, the index of goodness of fit (RMSEA=0.021, ChiSq/df= 1.146, CFI= 0.966, TLI= 0.965) is considered okay (Awang et al., 2015; Hair et al., 2018). This indicates that all fit indices for the proposed structural model meet the good fit prerequisite.
Hypotheses Testing

Path Analysis and Hypotheses Testing

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Relationship</th>
<th>Unstandardized</th>
<th>Standardized</th>
<th>P-value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>TPACK → MK</td>
<td>0.217</td>
<td>0.230</td>
<td>****</td>
<td>Significant</td>
</tr>
<tr>
<td>H1.1</td>
<td>TPACK → EK</td>
<td>0.144</td>
<td>0.201</td>
<td>0.006</td>
<td>Significant</td>
</tr>
<tr>
<td>H2</td>
<td>EK → MK</td>
<td>0.447</td>
<td>0.339</td>
<td>****</td>
<td>Significant</td>
</tr>
</tbody>
</table>

Notes: TPACK=Technology, Pedagogy, Content Knowledge (economics); EK=Self-Efficacy; MK= Career Choice Motivation, **** = significant < 0.001

The Mediating Testing

To test the effect of self-efficacy mediation on the relationship between TPACK and career choice motivation, this research adopted the testing procedure of the Sobel test [54; 55] with a biased-correlated confidence interval of 95. The testing result is as follows:

![Figure 3 Self-Efficacy Mediation Triangle](image-url)
### Table 5

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Relationship</th>
<th>Indirect Effect</th>
<th>Z-Sobel</th>
<th>Criteria</th>
<th>p-value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>H3</td>
<td>Role model of TPACK $\rightarrow$ EK $\rightarrow$ MK</td>
<td>0.064</td>
<td>2.275</td>
<td>Z sobel $&gt; 1.96$</td>
<td>0.022</td>
<td>Partial Mediation (Significant)</td>
</tr>
</tbody>
</table>

Notes: Sobel Test Equation: $z$-value = $a*b$/SQRT ($b^2*S_a^2 + a^2*S_b^2$), (*) = significance $< 0.05$

As illustrated in Table 5, The Mediating Testing Result, the output of the indirect effect of the relationship between TPACK through self-efficacy and career choice motivation as an economics teacher ($b = 0.064$, $p = 0.022$) indicates the mediating relationship half of self-efficacy in mediating of TPACK and career choice motivation as an economics teacher (RQ3). The result confirms that TPACK has a significant relationship, both direct and through the mediation of self-efficacy toward the career choice motivation as an economics teacher (RQ1, 2, 3).

#### Discussion

Teacher's competency is a complex expertise that requires the prospective teachers to not only understand a certain subject, but also demand them to possess the skills combined with the understanding of pedagogy, public speaking, and technology. TPACK is a suitable representation to measure such complex knowledge [56; 58]. In line with previous studies that students' interest in certain fields of study would get them to choose a career path intersecting with their field of expertise [59; 60], this research discovers a significant relationship between TPACK and career choice as an economics teacher.

The new perspective provided by this research indicates that the testing results of TPACK dimensions of Technology Knowledge (TK), the understanding of Content Knowledge (CK), the understanding of Pedagogy Knowledge (PK), the skills of Technology Content Knowledge (TCK), the understanding of teaching economics material (PCK), the comprehension of strategy to teach economics lessons (TPK) and the understanding of technology and strategy for teaching economics content knowledge (TPCK) are proven successful and valid to represent the main components of TPACK in the context of economics education learning. This research also discovers that TPACK contributes to the improvement of career choice motivation as an economics teacher. Teachers with a strong TPACK are more confident and surer in integrating technology into the teaching and learning process, and they also feel that their job is more fun and satisfying.

Some studies suggested that teachers with strong TPACK skills are highly motivated to apply technology in learning [27; 61]. This research proves that teachers with strong TPACK have the tendency to use technology in the learning process. They feel they have the expertise required to work assisted by technology and can enjoy the expertise to help their students learn.

This research confirms that prospective teachers' ability to integrate technology, pedagogy, and content knowledge (TPACK) into economics learning affects the self-efficacy of the prospective teachers as it improves their self-efficacy and expectation of successful
career choice (EK1), self-efficacy of learning outcome achievement (EK2), self-efficacy of facing obstacles and problems in delivering the lesson in the economics department program (EK3). In this context, teachers with high self-efficacy in integrating technology into learning tend to have higher TPACK and more positive career choice motivation.

The research also sheds some light on the significant construct measurement results used to measure the relationship between career choice motivation as an economics teacher and self-efficacy. As mentioned by previous relevant studies that self-efficacy is a main factor of motivation and learning achievement, and it is considered to have a significant influence on the determination of career choice motivation [62; 63]. Self-efficacy also affects the teachers' success in acquiring TPACK [64]. Besides, this research also finds that teachers with higher TPACK tend to get more motivated to follow a teacher's career path [26; 65]. Several studies discovered self-efficacy mediates teachers' TPACK and career choice motivation [66].

However, research on such relationships is relatively few and inconsistent. Another previous study revealed that self-efficacy has no mediating role in the relationship between TPACK and career choice motivation as a teacher [67]. For instance, a study conducted by Wang et al. (2019) discovered that teachers' self-efficacy in technology and pedagogy affects the use of technology by the teachers when delivering the economics lesson [68]. The study also found that teachers with higher self-efficacy in technology and pedagogy tend to integrate technology more actively into the learning process, resulting in better TPACK. Besides, teachers' self-efficacy in content knowledge also indicates the use of technology in the learning process. Another study conducted by Zeng dan Guo (2021) displayed that teachers' self-efficacy in economics content knowledge affects the use of technology in economics learning [69]. Teachers with higher self-efficacy in the economics content knowledge tend to be more in integrating technology into the learning process, which later on will improve the learning effectiveness and develop the career motivation as an economics teacher.

Research on the relationship between teachers' TPACK and their career choice motivation is still few and inconsistent. Several studies noted that TPACK indirectly affects teacher career choice motivation, while another argued that TPACK directly influences career choice motivation as a teacher [70]. However, each principle and system involving technology in education should have influencing factors, such as the readiness level of the institution and the support from the institution's management. In this sense, any institution that provides support and has sufficient infrastructure for technology tends to develop its teachers' self-efficacy in applying technology in the learning process. Besides, numerous activities supporting the development and understanding of recent technology are required.

This research contributes to the theory of career choice as a teacher, where the research findings demonstrate tested instruments that adopt three main motivations of the human theory proposed by McClelland (1985). The construct of career choice motivation as a teacher in this research is comprised of three sub-constructs, including (MK1) the need for praise/appreciation, (MK2) the need for authority, and (MK3) the need for plentiful friends. The construct testing result based on McClelland's motivation theory is in line with and supports the previous studies' argumentation that any individual with a high need for affiliation tends to look for social interaction and satisfaction in helping other individuals. The interest in
being a teacher might appear as the individual enjoys the emotional satisfaction and close affiliation with their students and feels the opportunity to influence their students' lives through education [71; 72]. Besides, the need for achievement also plays a critical role related to the interest in being a teacher. Any individual with high achievement tends to push themselves to win achievement and success. Being a teacher gives such an opportunity to gain achievement in helping their students reach their potential and see their development [7; 73]. Yet, it is worth noting the importance of the need for authority. The need for authority can push an individual to gain influence and control over other individuals [74; 75]. In the context of being a teacher, the healthy need for authority can be managed to empower students, create positive change in the education system, and play a vital role in developing an effective curriculum.

The application of McClelland's motivation theory in the context of teaching career interest in Indonesia can present knowledge on several psychological factors that influence individual interest. Yet, it is also worth noting that McClelland's motivation theory does not exclusively describe this phenomenon and the existence of other contributing factors. So, more comprehensive research is required to understand better the interest in being a teacher in Indonesia.

Conclusions

Considering the high interest in being an economics teacher compared to the limited job openings in that field, this research tested the students' motive to stay on the career path of an economics teacher. After combining the human motive construct developed by McClelland (1985) and the behavior theory of Bandura (1997), this research also added up the newer literature on the TPACK model, self-efficacy, and career choice motivation from the perspective of prospective economics teachers. These three constructs indicated a significant connection to the Indonesian students' motive to keep struggling in education as their future career path. According to the research findings, self-efficacy partially contributes more than TPACK in motivating students to choose a career as an economics teacher. Besides, self-efficacy significantly mediates the relationship between TPACK and career choice motivation as an economics teacher.

The imbalance between the workforce and job openings in education demands that educational institutions produce competitive graduates to raise their opportunities to work as a teacher. It is essential for the department that manages education to bring in educational and human capital practitioners to conduct a workshop or guest lecture on the challenges of the teaching profession in the future. This step is expected to motivate students to prepare themselves better by gaining better academic achievement and improving their skills.

This research was limited to education department students with economics subject, while the other subjects were not examined. The limited scope of respondents in Java Island did not represent Indonesia's educational facilities and culture. Therefore, a future study is expected to take that portion to supplement this research. Besides, this research only focused on the internal factors that directly intersect with the respondents, so it is recommended to add a study that examines the external factors, such as family influence, environment, and economic rationality as the observation objects.
REFERENCES


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