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THE INFLUENCE OF THE THREAT OF TECHNOLOGICAL INNOVATION ON STUDENT JOB INSECURITY: THE MEDIATING ROLE OF DIGITAL LITERACY, PERSONAL INNOVATION, AND TECHNOLOGICAL INNOVATION

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Abstract. The rapid development of technology raises concerns about the future of employment, especially for students who are preparing to enter the world of work. This study was conducted to examine the effect of the threat of technological innovation on the level of career concerns (job insecurity) of students, as well as to analyse the mediating role of digital literacy, personal innovation, and technological innovation. This research uses a quantitative approach with a quasi experiment method using a pretest-posttest control group design. The research population was the final year students of Tidar University, with sampling using random sampling technique to obtain 100 respondents. The sample was divided into two groups, namely the experimental group that received treatment in the form of materials, videos, and articles on the impact of technological disruption, and the control group without treatment. The research was conducted for three months from March to May 2025. The results showed that the threat of technological innovation has a positive effect on student job insecurity, both directly and through the mediating role of digital literacy, personal innovation, and technological innovation. This finding implies that strengthening technological competence without mental readiness can increase career anxiety. Therefore, educational institutions are expected to not only improve digital literacy, but also develop programmes to strengthen students' psychological adaptation in the face of industry changes.

Keywords: *Job Insecurity, Digital Literacy, Personal Innovation, Technological Innovation, Technological Threat.*

I. INTRODUCTION

The rapid development of digital technology, including innovations in artificial intelligence and industrial automation, has had a major impact in changing the landscape of the world of work globally. Technological advancements not only improve the efficiency of companies, but also pose a serious threat to the stability of human employment, especially through the massive reduction of labour requirements (Yuan & Liu, 2025; Leong et al., 2025; Brougham & Haar, 2018). This disruption phenomenon has led to heightened career concerns, especially among the younger generation who have yet to enter the workforce. The urgency of this research lies in the importance of understanding how students, as future workers, respond to threats from technological developments that have the potential to increase job insecurity. Given the accelerating pace of technological development, this research is relevant and urgent to conduct in order to provide an overview of the mental readiness of the younger generation in facing the challenges of the labour market in the digital era.

Students were chosen as the object of research because they are a population group that is currently in the transition stage from education to the world of work. Unlike experienced workers, students do not have direct experience facing the pressures of the world of work, so they tend to be more vulnerable to concerns about the future of their careers (Peiró et al., 2012). In addition, students are a segment that is actively exposed to technological information and are expected to have better adaptability to industry changes than established worker groups. This research differentiates itself from previous studies that mostly examine *job insecurity* in active employees (Zou & Deng, 2020), with a new focus on observing college students who will soon enter the workforce, so as to capture different psychological dynamics.

This study involves several main variables, namely Threat of Technological Innovation as the independent variable, Job Insecurity as the dependent variable, and three mediating variables namely Digital Literacy, Personal Innovation, and Technological Innovation. Exposure to the threat of technological innovation is thought to increase students' job insecurity. However, individual characteristics such as good digital literacy, level of personal innovativeness, and ability to understand and adapt technology can weaken the negative

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effect. The relationship between these variables is tested by examining the direct effect of *Threat of Technological Innovation* on *Job Insecurity*, as well as seeing how the three mediating variables are able to bridge the effect.

Based on previous research, various studies have examined the effect of technological developments on job insecurity, but the majority were conducted on the permanent worker population (Brougham & Haar, 2018; Zou & Deng, 2020). Research by Anand et al. (2023) confirmed the significant influence of technology on worker anxiety, while Yuan & Liu (2025) highlighted the influence of technology on career readiness in the younger generation but only to the extent of direct influence without considering the role of internal psychological variables. This study fills the gap by experimentally testing how exposure to technological threats affects students' *job insecurity*, as well as the role of Digital Literacy, Personal Innovation, and Technological Innovation as mediators in strengthening or weakening the effect.

Thus, this research offers novelty in the form of testing student behaviour models against the threat of technological innovation using a *pretest-posttest* experimental design with a control group, which has not been done much before. In addition, this study introduces an approach that incorporates internal mediating variables that have rarely been studied simultaneously in the context of university students. Theoretically, this study expands the understanding of the dynamics of *job insecurity* in the digital era, while practically this study provides strategic recommendations for education to improve students' readiness to face future job challenges. The main objective of this study is to examine the effect of the threat of technological innovation on students' career concerns and analyse the mediating role of digital literacy, personal innovativeness, and technological innovation in strengthening or reducing this effect.

II. RESEARCH METHODS

This research uses a quantitative approach with a quasi experiment method designed with a pretest-posttest control group design. This design allows measuring changes in the level of job insecurity before and after treatment is given to the experimental group, and compared with the control group that does not receive treatment (Creswell, 2014). The use of experimental methods was chosen to obtain empirical evidence regarding the effect of exposure to the threat of technological innovation on the level of career concerns of students, as well as to analyse the mediating role of Digital Literacy, Personal Innovation, and Technological Innovation variables. This experimental design is expected to provide stronger internal validity compared to descriptive or correlational approaches.

The research instrument is a structured questionnaire arranged on a 5-point Likert scale, with a range of answers from "Strongly Disagree" (1) to "Strongly Agree" (5). The job insecurity measurement was adapted from Brougham and Haar (2018) which has been widely used in research related to perceptions of career uncertainty. Meanwhile, the instrument for Digital Literacy was adapted from Marsh (2018), the Personal Innovation instrument was adapted from Chayomchai (2020), and the Technological Innovation instrument refers to the construct of Sun et al. (2021). The validity of the instrument was tested through content validity tests by involving experts in the fields of human resource management and organisational psychology. In addition, an empirical validity and reliability test was conducted through a pretest on a small group of students to ensure measurement accuracy (Hair et al., 2017).

The data in this study are primary, obtained directly from student respondents through filling out questionnaires online and offline. The research location is Tidar University, which is one of the state universities that has a diversity of student backgrounds. The selection of this location is based on easy access and population characteristics that are in accordance with the research objectives. This research was conducted from March to May 2025, which included the stages of initial data collection (pretest), treatment, and final data collection (posttest).

The population in this study were all active undergraduate students at Tidar University. The participants in the study amounted to 100 final year students (at least semester 5) who were selected using random sampling techniques (probability sampling) so that each member of the population had the same opportunity to be selected as a respondent (Sugiyono, 2021).

Participant criteria include:

1. Active students in their final semester (at least 5th semester),
2. Do not have permanent work experience,
3. Willing to follow the entire series of experiments until the posttest.

The sample was then randomly divided into two groups, namely:

1. The experimental group of 50 people, given treatment in the form of lecture material on the impact of technology on the world of work, video simulations of company efficiency without human labour, and articles related to the development of technological innovation.
2. The control group of 50 people, was not given treatment but still participated in filling the pretest and posttest simultaneously with the experimental group.

Data analysis techniques were carried out using SmartPLS 4.0 software with the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach, in accordance with the recommendations of Hair et al. (2017) for predictive model analysis with a limited number of samples. The analysis was carried out in two stages, namely:

1. Outer Model Analysis, aimed at testing measurement quality through:
   a) Convergent Validity, with a loading factor criterion ≥ 0.70,
   b) Discriminant Validity, through the Fornell-Larcker value and cross loading,
   c) Composite Reliability, with a minimum reliability value ≥ 0.70.
2. Inner Model Analysis, to test direct and indirect relationships between variables, including:
   a) Path coefficient test, t-statistic, and P-value to test the significance of the relationship between variables,

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b) Effect size test (f^2) to measure the strength of the influence of each construct,
c) Mediation test with indirect effect method to analyse the indirect effect of Threat of Technological Innovation variable on Job Insecurity through mediation of Digital Literacy, Personal Innovation, and Technological Innovation.

The PLS-SEM approach was chosen because it is able to accommodate models with several mediating variables and provide robust results even with a moderate number of samples (Hair et al., 2017).

II. RESULTS AND DISCUSSION

Assessing the Outer Model or Measurement Model

There are three criteria in using data analysis techniques with SmartPLS to assess the outer model, namely Convergent Validity, Discriminant Validity and Composite Reliability.

Convergent Validity

Convergent validity of the measurement model with reflexive indicators is assessed based on the correlation between item score/component score estimated with PLS Software. An individual reflexive measure is said to be high if it correlates more than 0.70 with the measured construct.

Table 1. Outer Loadings (Measurement Model)

	Digital Literacy	Job Insecurity	Personal Innovation	Technological Innovation	The Threat of Technological Innovation
X.1					0,791
X.2					0,815
X.3					0,771
X.4					0,803
X.5					0,777
Y.1		0,772			
Y.2		0,743			
Y.3		0,815			
Y.4		0,819			
Y.5		0,706			
Z1.1				0,760	
Z1.2				0,803	
Z1.3				0,841	
Z1.4				0,837	
Z1.5				0,766	
Z2.1	0,825				
Z2.2	0,828				
Z2.3	0,792				
Z2.4	0,820				
Z2.5	0,808				
Z3.1			0,779		
Z3.2			0,853		
Z3.3			0,789		
Z3.4			0,772		
Z3.5			0,772		

The outer model value or the correlation between constructs and variables has fulfilled convergent validity because all indicators have a loading factor value above 0.70. Thus this modified model has met the criteria for good convergent validity.

Discriminant Validity

Discriminant validity is carried out to ensure that each concept of each latent variable is different from other variables. The model has good discriminant validity if each loading value of each indicator of a latent variable has the greatest loading value with other loading values on other latent variables. The results of discriminant validity testing are obtained as follows:

Table 2. Discriminant Validity Value (Fornell- Larcker)

	Digital Literacy	Job Insecurity	Personal Innovation	Technological Innovation	The Threat of Technological Innovation
Digital Literacy	0,815				
Job Insecurity	0,960	0,772			
Personal Innovation	0,968	0,970	0,794		
Technological Innovation	0,968	0,966	0,975	0,802	
The Threat of Technological Innovation	0,991	0,948	0,957	0,961	0,792

Composite Reliability.

The validity and reliability criteria can also be seen from the reliability value of a construct and the Average Variance Extracted (AVE) value of each construct. The construct is said to have high reliability if the value is 0.70 and the AVE is above 0.50.

Table 3. Composite Reliability Value

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Digital Literacy	0,873	0,874	0,908	0,664
Job Insecurity	0,830	0,831	0,881	0,597
Personal Innovation	0,853	0,854	0,895	0,630
Technological Innovation	0,861	0,862	0,900	0,644
The Threat of Technological Innovation	0,851	0,851	0,893	0,626

Based on table 3, it can be concluded that all constructs meet the reliability criteria. This is indicated by the composite reliability value above 0.70 and AVE above 0.50 as recommended criteria.

Testing the Structural Model (Inner Model)

Testing the inner model or structural model is carried out to see the relationship between constructs, the significance value and R-square of the research model. The structural model is evaluated using the R-square for the dependent construct t test as well as the significance of the structural path parameter coefficients.

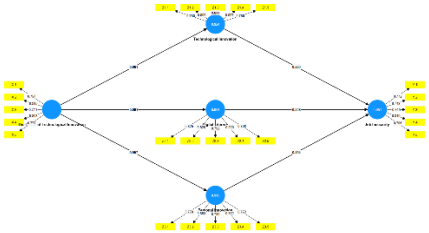

Figure 1. Tested structural model

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In assessing the model with PLS, it starts by looking at the R-square for each dependent latent variable. Table 4 is the result of the R-square estimation using SmartPLS.

Table 4. R-Square value

	R-square	Adjusted R-square
Digital Literacy	0,981	0,981
Job Insecurity	0,951	0,950
Personal Innovation	0,915	0,915
Technological Innovation	0,924	0,923

Table 4 shows the R-Square value for the Digital Literacy variable is obtained at 0.981. This result shows that 98.1% of the Digital Literacy variable can be influenced by The Threat of Technological Innovation. The R-Square value for the Job Insecurity variable is obtained at 0.951. This shows that 95.1% of Job Insecurity variables can be influenced by Technological Innovation, Digital Literacy and Personal Innovation. The R-Square value for the Personal Innovation variable is obtained at 0.915. This result shows that 91.5% of the Personal Innovation variable can be influenced by The Threat of Technological Innovation. Then the R-Square value for the Technological Innovation variable is obtained at 0.924. These results indicate that 92.4% of Technological Innovation variables can be influenced by The Threat of Technological Innovation.

Hypothesis Test Results

Direct Effect (Partial)

Table 5. Direct Effect Hypothesis Test Results (Partial)

	Original sample (O)	Sample average (M)	Standard deviation (STDEV)	T statistic (|O/STDEV|)	P values	Alpha	Conclusion
Digital Literacy -> Job Insecurity	0,238	0,224	0,101	2,361	0,018	0.05	Influential Significant Positive
Personal Innovation -> Job Insecurity	0,454	0,458	0,114	3,963	0,000	0.05	Significant Positive Influence
Technological Innovation -> Job Insecurity	0,293	0,304	0,114	2,564	0,010	0.05	Significant Positive Influence
The Threat of Technological Innovation -> Digital Literacy	0,991	0,991	0,003	336,537	0,000	0.05	Significant Positive Influence
The Threat of Technological Innovation -> Personal Innovation	0,957	0,957	0,006	150,722	0,000	0.05	Significant Positive Influence
The Threat of Technological Innovation -> Technological Innovation	0,961	0,961	0,005	183,730	0,000	0.05	Significant Positive Effect

Table 5 shows that the partial test results of the variables studied all have a P value smaller than 0.05.

1) Digital Literacy on Job Insecurity: the analysis results show that the effect of the Digital Literacy variable on Job Insecurity shows a path coefficient value of 0.238 with a t value of 2.361 (>1.979) and a P value of 0.018 (<0.05). This result means that Digital Literacy has a positive and significant effect on Job Insecurity.
2) Personal Innovation on Job Insecurity: the analysis results show that the effect of the Personal Innovation variable on Job Insecurity shows a path coefficient value of 0.454 with a t value of 3.963 (>1.979) and a P value of 0.000 (<0.05). These results mean that Personal Innovation has a positive and significant influence on Job Insecurity.
3) Technological Innovation on Job Insecurity: the analysis results show that the effect of Technological Innovation variable on Job Insecurity shows a path coefficient value of 0.291 with a t value of 2.564 (>1.979) and a P value of 0.010 (<0.05). This result means that Technological Innovation has a positive and significant influence on Job Insecurity.
4) The Threat of Technological Innovation on Digital Literacy: the results of the analysis show that the effect of The Threat of Technological Innovation variable on Digital Literacy shows a path coefficient value of 0.991 with a t value of 336.537 (>1.979) and a P value of 0.000 (<0.05). This result means that The Threat of Technological Innovation has a positive and significant influence on Digital Literacy.

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5) The Threat of Technological Innovation on Personal Innovation: the results of the analysis show that the effect of The Threat of Technological Innovation variable on Personal Innovation shows a path coefficient value of 0.957 with a t value of 150722 (> 1.979) and a P value of 0.000 (<0.05). These results mean that The Threat of Technological Innovation has a positive and significant influence on Personal Innovation.
6) The Threat of Technological Innovation on Technological Innovation: the analysis results show that the effect of The Threat of Technological Innovation variable on Technological Innovation shows a path coefficient value of 0.961 with a t value of 183.730 (>1.979) and a P value of 0.000 (<0.05). These results mean that The Threat of Technological Innovation has a positive and significant influence on Technological Innovation.

Mediation Effect

In this analysis, it will be seen the high coefficient of influence both directly and not. Testing through mediation to dig deeper into whether the mediating variable successfully mediates the influence of the independent variable on the dependent. the P value number is less than 0.05, the independent variable has an effect on the dependent or not, can be described in the indirect effect output, if the dependent variable is through the mediating variable. The results of path analysis at the output of the indirect effect, if the P value is less than 0.05, there is a mediating influence (Sofyani, 2013: 27).

Table 6. Hypothesis Test Results of Mediation Effect

	Original sample (O)	Sample average (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Description
The Threat of Technological Innovation -> Digital Literacy -> Job Insecurity	0,235	0,222	0,100	2,360	0,018	Mediating
The Threat of Technological Innovation -> Personal Innovation -> Job Insecurity	0,434	0,438	0,110	3,945	0,000	Mediating
The Threat of Technological Innovation -> Technological Innovation -> Job Insecurity	0,282	0,292	0,109	2,580	0,010	Mediating

Effect of The Threat of Technological Innovation on Job Insecurity through Digital Literacy

The results of the analysis show that The Threat of Technological Innovation has a significant indirect effect on Job Insecurity through Digital Literacy with a path coefficient value of 0.235 with a t value of 2.360 (> 1.979) and a P value of 0.018 (<0.05). This result means that The Threat of Technological Innovation can effectively increase Digital Literacy which in turn can contribute to an increase in Job Insecurity. Because the direct effect of The Threat of Technological Innovation on Job Insecurity is also significant. Digital Literacy acts as a partial mediation, which means Digital Literacy strengthens the influence of Human The Threat of Technological Innovation on Job Insecurity.

The influence of The Threat of Technological Innovation on Job Insecurity through Personal Innovation

The analysis results show that The Threat of Technological Innovation has a significant indirect effect on Job Insecurity through Personal Innovation with a path coefficient value of 0.434 with a t value of 3.945 (> 1.979) and a P value of 0.000 (<0.05). This result means that The Threat of Technological Innovation can effectively increase Personal Innovation which in turn can contribute to increasing Job Insecurity. Because the direct effect of The Threat of Technological Innovation on Job Insecurity is also significant. Personal Innovation acts as a partial mediation, which means that Personal Innovation strengthens the influence of The Threat of Technological Innovation on Job Insecurity.

The effect of The Threat of Technological Innovation on Job Insecurity through through Technological Innovation

The analysis results show that The Threat of Technological Innovation has a significant indirect effect on Job Insecurity through Technological Innovation with a path coefficient value of 0.282 with a t value of 2.580 (> 1.979) and a P value of 0.010 (<0.05). This result means that an effective The Threat of Technological Innovation can increase Technological Innovation which in turn can contribute to an increase in Job Insecurity. Because the direct effect of The Threat of Technological Innovation on Job Insecurity is also significant. Technological Innovation acts as a partial mediation which means Technological Innovation strengthens the influence of Human The Threat of Technological Innovation on Job Insecurity.

Effect Size (f square)

Effect size (f square) is used to evaluate the specific impact of independent variables on predicting the dependent variable. This measurement is done by looking at changes in the R Square value after certain independent variables are removed from the model. F square is interpreted as $f^2 < 0.02$ → very small effect (not significant), $0.02 \leq f^2 < 0.15$ → small effect, $0.15 \leq f^2 < 0.35$ → medium effect, $f^2 \geq 0.35$ → large effect. From the analysis results, the effect size is obtained as follows:

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Table 7. Effect Size (f square)

	f-square
Digital Literacy -> Job Insecurity	0,060
Personal Innovation -> Job Insecurity	0,166
Technological Innovation -> Job Insecurity	0,070
The Threat of Technological Innovation -> Digital Literacy	52,098
The Threat of Technological Innovation -> Personal Innovation	10,793
The Threat of Technological Innovation -> Technological Innovation	12,168

Based on the table results can be explained as follows:

1) Digital Literacy on Job Insecurity: the F Square value for this path is 0.060. This is a small effect, which indicates that Digital Literacy has little effect on Job Insecurity. Digital Literacy has a small significant impact on increasing Job Insecurity.
2) Personal Innovation on Job Insecurity: the F Square value for this path is 0.284. This is a medium effect, which indicates that Personal Innovation has a medium influence on Job Insecurity. Personal Innovation has a significant impact in increasing Job Insecurity.
3) Technological Innovation on Job Insecurity: the F Square value for this path is 0.070. This is a small effect, which shows that Technological Innovation has little effect on Job Insecurity. Technological Innovation has a small significant impact on increasing Job Insecurity.
4) The Threat of Technological Innovation on Digital Literacy: the F Square value for this path is 52.098. This is a large effect, which shows that The Threat of Technological Innovation has a large influence on Digital Literacy. The Threat of Technological Innovation has a very significant impact on increasing Digital Literacy.
5) The Threat of Technological Innovation on Personal Innovation: the F Square value for this path is 10.793. This is a large effect, which shows that The Threat of Technological Innovation has a large influence on Personal Innovation. The Threat of Technological Innovation has a very significant impact on increasing Personal Innovation.
6) The Threat of Technological Innovation on Technological Innovation: the F Square value for this path is 12.168. This is a large effect, which shows that The Threat of Technological Innovation has a large influence on Technological Innovation. The Threat of Technological Innovation has a very significant impact on increasing Technological Innovation.

The Effect of Digital Literacy on Job Insecurity

The results showed that Digital Literacy has a positive and significant effect on Job Insecurity. This finding shows that the higher a person's level of digital literacy, the higher the level of anxiety about their job continuity. This is due to the awareness of individuals who have high digital competence of the rapid pace of technological development, including the potential replacement of human roles by automation and artificial intelligence. This awareness encourages individuals to feel that they must continue to adapt and improve their competence to remain relevant (Ghislieri et al., 2018; Gekara et al., 2019). However, other studies show different results. Van Laar et al. (2017) found that digital literacy can strengthen adaptability and actually reduce job anxiety, while Zaki and Nor (2020) asserted that mastery of digital literacy can act as a protector against job insecurity.

The Effect of Personal Innovation on Job Insecurity

This study also found that Personal Innovation has a positive and significant effect on Job Insecurity. Individuals with high levels of personal innovation are at risk of experiencing greater psychological pressure because they feel required to constantly create new ideas. This can lead to anxiety about increasing organisational expectations and fear of failure, thus exacerbating perceptions of job insecurity (Akgunduz & Eryilmaz, 2018; Hanif & Ahmad, 2021). In contrast, some previous studies such as Lee and Song (2017), and Ahmed et al. (2022), actually show that personal innovation can increase self-efficacy and strengthen a sense of security because individuals are considered as strategic assets of the organisation.

Effect of Technological Innovation on Job Insecurity

The findings of this study indicate that Technological Innovation also has a positive and significant effect on Job Insecurity. This shows that technological innovation in organisations often not only increases productivity, but also creates anxiety among employees about the continuity of their work (Degryse, 2016; Huws et al., 2017). On the other hand, Brynjolfsson and McAfee (2015) argue that technological innovation creates new jobs for adaptive labour, while Arntz et al. (2016) mentioned that technology does not necessarily reduce the number of jobs, but rather transforms the types of jobs available.

Effect of The Threat of Technological Innovation on Digital Literacy

This study found that The Threat of Technological Innovation has a very significant effect on Digital Literacy. The higher the perception of technological threats, the greater the tendency of individuals to increase their digital competence. Awareness of the threat of technological disruption encourages individuals to learn and develop digital skills as an adaptation strategy (Xu et al., 2021; Kim & Park, 2020). However, some studies such as Nasir and Zeeshan (2017) and Barley et al. (2017) also note that technological threats can have negative psychological effects in the form of resistance to digital transformation.

The Effect of The Threat of Technological Innovation on Personal Innovation

The results also prove that The Threat of Technological Innovation has a significant effect in increasing Personal Innovation. Exposure to threats encourages individuals to adopt innovative attitudes as a form of adaptive response to environmental changes (Ghosh, 2019; Wang et al., 2022). However, research by Li and Sun (2018) and Tims et al. (2016) show that technological pressure can cause fear, which leads to a decrease in creativity and innovation motivation.

The Threat of Technological Innovation's Effect on Technological Innovation

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This research shows that threats from technological advances encourage organisations and individuals to increase Technological Innovation. Perceived external threats lead organisations to proactively create technological innovations in response to environmental uncertainty (Ransbotham et al., 2017; Zhang & Zhang, 2020). However, some studies such as Ashford et al. (2018) and Vrontis et al. (2019) note that technological pressures can cause organisational confusion or even encourage conservative attitudes in innovative risk-taking.

Effect of The Threat of Technological Innovation on Job Insecurity through Digital Literacy

The results showed that Digital Literacy mediates the relationship between The Threat of Technological Innovation and Job Insecurity. This means that increasing digital literacy due to technological threats actually increases individual anxiety due to increased awareness of the complexity of future challenges (Marler et al., 2017; Schreurs et al., 2020). On the other hand, Carvalho et al. (2021) and Kundu and Gahlot (2023) found that increasing digital literacy can increase self-confidence and reduce job insecurity if utilised proactively.

The effect of The Threat of Technological Innovation on Job Insecurity through Personal Innovation

The results of mediation through Personal Innovation show that individuals who feel threatened by technological advances tend to increase personal innovation, which ironically can worsen the perception of job insecurity. This is in line with the findings of Zhu et al. (2019) and Shin & Konrad (2017) which state that pressure for innovation in a competitive context can increase job stress. In contrast, Yuan and Woodman (2016) and Luo et al. (2021) mention that personal innovation can function as a positive coping that reduces job insecurity.

The Effect of The Threat of Technological Innovation on Job Insecurity through Technological Innovation

Finally, the results of this study indicate that technological innovation driven by perceived threats can increase Job Insecurity. That is, organisational efforts to increase technology adoption in response to external pressures may exacerbate workers' anxiety regarding job stability (Susskind & Susskind, 2015; Cuyper & Witte, 2016). However, studies such as Tarafdar et al. (2019) and Sørensen (2020) suggest that technological innovation can also create a sense of security, especially when workers are actively involved in the technological transformation process.

III. CONCLUSIONS

Based on the results of the research that has been conducted, it can be concluded that the threat of technological innovation has a significant effect on increasing student career concerns or job insecurity. The threats posed by technological advances encourage students to improve their digital literacy, personal innovation, and technological innovation skills. However, increasing these abilities does not automatically reduce career concerns, in fact in certain contexts it can strengthen students' insecurity about future job prospects. This study also shows that Digital Literacy, Personal Innovation, and Technological Innovation act as mediators that strengthen the influence of technological innovation threats on job insecurity. Thus, it can be concluded that individual characteristics related to digital competence and tendency to innovate play an important role in shaping students' perceptions of the threat of the world of work in the digital era.This research provides theoretical and practical implications that can contribute to the development of science and decision-making in education and organisations. Theoretically, this study enriches academic studies related to the dynamics of job insecurity in the younger generation in the context of technological disruption, especially by incorporating mediating variables such as digital literacy and personal innovation that have not previously been widely studied in the student population. The findings of this study provide a new understanding that mastery of technology and a tendency to innovate are not always protective factors against job anxiety, but can play a role in increasing concerns if not balanced with psychological readiness. Practically, this study provides recommendations for educational institutions to not only improve students' digital literacy, but also provide training related to stress management and mental readiness in facing the transformation of the world of work. The results of this study can also be a reference for policy makers to design an educational curriculum that is more adaptive to industry changes. This study has several limitations that need to be considered in the interpretation of the results. First, the study was only conducted on final year students at one university, Tidar University, so the results may not be generalisable to a wider population or students in different scientific fields. Secondly, this study used an experimental design with short-term measurements, so it could not observe the long-term effects of exposure to information about technological threats on changes in job insecurity perceptions. Third, the research variables focused on digital literacy, personal innovation, and technological innovation, without considering social environmental factors such as organisational support or learning climate that also have the potential to moderate perceptions of career insecurity. Based on the research results and limitations, this study recommends that future researchers test a more diverse sample both in terms of educational background and institution to increase the generalisability of the research results. Future research is also recommended to use a longitudinal approach to see how job insecurity perceptions develop over time after individuals are exposed to various information about technological advances. In addition, future researchers can expand the research model by adding external variables such as organisational environment, perceived social support, or learning climate that can moderate the effect of technological threats on career anxiety. It is also recommended to develop interventions that not only focus on increasing digital competence, but also on strengthening students' psychological readiness and adaptive abilities in facing the challenges of the future world of work.

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