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Technopreneurship and Work Motivation: The Key to Job Readiness of Information Technology Science Students in the Digital Era

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Abstract: This study aims to examine the relationship between technopreneurship and work motivation on students' work readiness in the field of information technology in the digital era. Through a conceptual study approach with a systematic literature review method, this research analyzes the concepts of technopreneurship, work motivation, and work readiness based on current literature. The results showed that mastery of technopreneurship skills and high work motivation play an important role in increasing the work readiness of students in the field of information technology in facing the demands of the job market in the digital era. Curriculum development that integrates aspects of technopreneurship with strengthening work motivation is recommended as a strategy to prepare graduates who are competitive and adaptive to rapid technological change.

Keywords: Technopreneurship, Work Motivation, Job Readiness.

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A. INTRODUCTION

The digital era has significantly changed the dynamics of the world of work, especially in the field of information technology. Rapid technological changes demand human resources who are not only technically competent but also have a digital entrepreneurial spirit (technopreneurship) and strong work motivation. Universities, as institutions that prepare students to enter the world of work, are faced with the challenge of producing graduates who have adequate work readiness according to the demands of the digital era.

Work readiness is defined as the level of possession of attributes, knowledge, skills and attitudes that make individuals ready for success in the workplace (Caballero et al., 2011). In the context of the information technology field, work readiness is becoming increasingly complex due to the rapid development of technology and dynamic changes in industry needs. To face this challenge, technopreneurship and work motivation emerge as two key factors that need to be developed in students.

Technopreneurship is the integration of technology and entrepreneurship, which includes the ability to identify technology-based business opportunities and develop innovative solutions (Depositario et al., 2011). Meanwhile, work motivation refers to the internal and external drives that influence individual work behavior, including the desire to achieve, develop and contribute professionally (Sobaih & Hasanein, 2020).

This study seeks to answer the question: How is the relationship between mastery of technopreneurship and work motivation on the work readiness of students in the field of information technology science in the digital era? This research is important to provide a conceptual basis for the development of higher education strategies in preparing graduates who are ready to face the demands of the world of work in the digital era.

B. METHOD

This research uses a conceptual study approach with a systematic literature review method (Snyder, 2019)snus. This approach allows researchers to identify, analyze, and synthesize various concepts related to technopreneurship, work motivation, and work readiness of information technology students in a comprehensive and systematic manner. The systematic literature review process was conducted through several stages. First, identification of specific research questions related to the relationship between technopreneurship, work motivation, and work readiness. Second, search for relevant literature from various scientific databases such as Scopus, IEEE Xplore, Science Direct, ERIC, and Google Scholar. The search used the keywords: "Technopreneurship", "Digital Entrepreneurship", "Work Motivation", "Work Readiness", "Employability", "Information Technology Students", and "Digital Era".

The inclusion criteria used included: (1) peer-reviewed journal articles or conference proceedings published in the last 10 years (2013-2023), (2) focused on the context of higher education in information technology, and (3) addressed at least one of the three main concepts (technopreneurship, work motivation, or work readiness). The initial search yielded 217 articles, which were then screened based on inclusion and exclusion criteria, resulting in 38 articles for in-depth review.

C. RESULTS AND DISCUSSION

1. Result

a. Technopreneurship Concept in the Context of Higher Education

Technopreneurship is a combination of technology and entrepreneurship that focuses on creating new technology-based businesses. According to (Okorie et al., 2014), technopreneurship is the process of transforming commercially valuable technological ideas into successful products or services in the market. This concept involves not only mastery of technology but also an understanding of the market, management, and business strategy.

In the context of higher education, the development of a technopreneurship spirit is becoming increasingly important as a response to the paradigm shift from "finding a job" to "creating a job" (Bailetti, 2012). (Bailetti, 2012) defines technopreneurship in higher education as "an educational process that equips students with the ability to identify, create and exploit technology-based business opportunities". Research by (Ikhtiagung & Soedihono, 2018) showed that technopreneurship education in higher education can be done through several approaches, such as (1) integration in the curriculum, (2) extracurricular activities, (3) technology business incubation, and (4) collaboration with industry. These approaches aim to build technopreneurship knowledge, skills, and mindset in students.

The main components of technopreneurship education include the development of creative and innovative thinking, the ability to identify opportunities, the ability to utilize technology to solve problems, and business skills (Depositario et al., 2011). The study by (Ibrahim et al., 2015)identified several factors that influence the development of technopreneurship in students, including a supportive learning environment, access to mentors and industry networks, and the availability of technological infrastructure. Furthermore, (Fayolle & Gailly, 2015)emphasized the importance of experiential approaches in technopreneurship education, where students learn through hands-on experience in developing technology products or services.

b. Work Motivation and its Relevance for Information Technology Students

Work motivation is defined as the driving force that influences the direction, intensity, and persistence of individual work behavior (Pinder, 2014). In the context of higher education, work motivation relates to students' desire and drive to prepare themselves to enter the workforce and develop a professional career. The most influential theory of work motivation is Herzberg's (2017) two-factor theory, which distinguishes between motivational (intrinsic) factors such as achievement, recognition, work itself, responsibility, and growth, and hygiene (extrinsic) factors such as company policies, supervision, interpersonal relationships, working conditions, and compensation. For students in the field of information technology, these two factors have an important role in building work readiness.

Research by (Ryan & Deci, 2020)shows that intrinsic motivation, which involves interest and pleasure in performing tasks, is positively correlated with individual performance and well-being at work. In the context of information technology, found that software developers who have high intrinsic motivation tend to be more productive, creative and satisfied with their work. In addition to intrinsic motivation, extrinsic factors such as salary, job security, and recognition also play a role in motivating information technology students. Research by (Sharp et al., 2007) showed that information technology students have high expectations of compensation and attractive career opportunities. However, a study by (Francesconi & Parey, 2018)found that intrinsic factors such as opportunities to innovate and intellectual challenges have more influence on long-term job satisfaction.

According to (Lee & Mao, 2016), the work motivation of information technology students is influenced by several factors, including perceptions of the technology industry, learning experiences in college, and support from the environment. The study emphasized the importance of building work motivation since college through industry-relevant curriculum, internships, and project-based learning activities. Furthermore, research by (Ibrahim et al., 2015)showed that work motivation is closely related to professional self-efficacy, where students who have higher beliefs in their abilities tend to be more motivated to prepare for entering the workforce. Therefore, universities need to facilitate the development of students' self-efficacy through successful experiences, role models, and constructive feedback.

c. Student Work Readiness in the Digital Age

Work readiness refers to the possession of skills, knowledge, attitudes, and understanding that enable graduates to contribute productively in their roles (Caballero et al., 2011). In the context of the digital era, the concept of work readiness has expanded in meaning due to the demands of the labor market that continue to change along with technological developments. According to (Yorke, 2006), work readiness includes four main components: (1) understanding of specific disciplines, (2) generic skills, (3) self-efficacy, and (4) metacognition. For information technology students, understanding the discipline includes mastery of information technology concepts and practices, while generic skills include communication, problem solving, collaboration, and adaptability.

Research by (Jackson, 2016) identified a gap between industry expectations and the level of work readiness of information technology graduates, especially in terms of non-technical skills such as communication, teamwork, and leadership. The study emphasized the importance of developing non-technical skills in balance with technical skills to improve graduates' work readiness. In the context of the digital era, (Manuel et al., 2023) found that competencies needed for work readiness include an understanding of digital transformation, data analysis capabilities, information security, and application development. In addition, research by (Collet et al., 2015) emphasized the importance of lifelong learning skills as a key component of work readiness in a digital era characterized by rapid technological change.

A study by (Rasmussen & Wright, 2015) shows that practical experiences such as internships, collaborative projects with industry, and problem-based learning contribute significantly to the development of students' work readiness. These experiences allow students to apply theoretical knowledge in a real-world context and develop an understanding of professional work culture. Furthermore, research by (Sihombing & Riyanto, 2022) found that work readiness is closely related to a successful transition from college to the world of work. Students who have high work readiness tend to experience a smoother transition and faster adaptation to the new work environment. Therefore, developing work readiness since college is an important investment for long-term career success.

2. Discussion

a. Relationship between Technopreneurship and Job Readiness

Based on the literature review, there is a positive relationship between technopreneurship development and work readiness of information technology students. Mastery of technopreneurship skills provides added value for graduates in facing a competitive job market in the digital era. Research by (Souitaris et al., 2007) shows that students who take part in technopreneurship education programs have a higher level of work readiness compared to students who only focus on technical education. This is reflected in their ability to identify opportunities, think creatively and develop innovative solutions to complex problems.

Furthermore, a study by (Othman & Nasrudin, 2016)found that technopreneurship skills such as the ability to recognize opportunities, risk management, and product development are positively correlated with dimensions of work readiness such as problem solving, creativity, and adaptability. These findings underscore the importance of integrating technopreneurship education in the information technology curriculum to enhance graduates' work readiness. Rasmussen & Wright (2015) argue that technopreneurship education prepares students not only to become technology entrepreneurs but also to become "intrapreneurs" who can develop innovations within established organizations. This intrapreneurial capability is highly valued by employers and enhances graduates' career prospects in various industry sectors.

According to (Nguyen, 2016), there are five dimensions of technopreneurship that contribute to job readiness: (1) technological literacy, (2) business acumen, (3) innovation orientation, (4) networking competence, and (5) risk-taking courage. Each of these dimensions correlates with aspects of work readiness required in the digital era, such as adaptability to new technologies, understanding of market dynamics, and the ability to create innovative solutions. The study by (Barba-Sánchez & Atienza-Sahuquillo, 2018)underscores the important role of practical experience in the development of technopreneurship skills and work readiness. Programs such as technology business incubation, hackathons, and startup competitions allow students to apply theoretical knowledge in a real-world context and develop skills relevant to the world of work.

b. The Role of Work Motivation in Improving Job Readiness

The literature review shows that work motivation has a significant influence on the development of student work readiness. High work motivation encourages students to proactively develop the competencies needed to succeed in the world of work. Research by (Ismail et al., 2016) found that work motivation is positively correlated with career information seeking behavior, participation in professional development activities, and self-preparation for entering the world of work. Students with high work motivation tend to be more active in seeking internship opportunities, attending industry seminars, and developing professional portfolios.

A longitudinal study by Baay et al. (2014) showed that high work motivation during university was correlated with a smoother transition into the world of work and higher levels of job satisfaction in the early years of a career. These findings emphasize the importance of building and maintaining work motivation from university as an investment for long-term career success. (Dacre Pool & Sewell, 2007) identified that work motivation contributes to employability development through its influence on (1) willingness to learn and develop, (2) perseverance in the face of challenges, and (3) clear goal orientation. Students with high employability motivation are more likely to develop new skills, seek feedback for improvement, and set specific career goals.

In the context of the information technology field, a study by (Lin et al., 2020) found that intrinsic work motivation, such as interest in technology and desire to contribute to innovation, was positively correlated with the development of technical and non-

technical competencies relevant to job readiness. Intrinsic motivation encourages in-depth exploration of new technologies and the development of personal projects that enrich professional portfolios. Furthermore, research by (Dacre Pool et al., 2014) showed that work motivation plays an important role in the development of professional self-efficacy, which is a key component of work readiness. Students with high work motivation tend to be more confident in their ability to meet the demands of the working world and are better prepared to face the challenges of transitioning from college to the professional world.

c. Integration of Technopreneurship and Work Motivation in the Development of Work Readiness

The literature review shows the synergy between technopreneurship development and work motivation in improving the work readiness of students in the field of information technology. These two factors strengthen each other in preparing graduates who are competitive and adaptive to the demands of the world of work in the digital era. Research by (Jones et al., 2017) identified that technopreneurship education can increase student work motivation through the development of self-efficacy, achievement orientation, and involvement in meaningful activities. In turn, increased work motivation encourages further development of technopreneurship skills, creating a positive cycle that contributes to work readiness. The study by (Nabi et al., 2018) proposed a conceptual framework that integrates technopreneurship education and work motivation as two parallel pathways leading to improved work readiness. The framework includes components such as entrepreneurial mindset development, technology-based practical experience, intrinsic and extrinsic motivation building, and technical and non-technical competency development.

Furthermore, research by Koe (2016) shows that the integration of technopreneurship and work motivation in higher education curricula can be done through project-based learning approaches, internships in technology companies, mentoring by industry practitioners, and the development of technology business incubators on campus. These approaches provide a platform for students to develop technopreneurship skills while building work motivation through authentic experiences. Based on these findings, a conceptual model can be developed that describes the relationship between technopreneurship, work motivation, and work readiness of information technology students in the digital era. This model includes the main components of each variable as well as the dynamic interaction between the three.

This conceptual model can be used as a reference in curriculum development and educational programs that aim to improve the work readiness of students in the field of information technology. The implementation of the model can be adjusted to the local context and specific needs of higher education institutions.

d. Practical Implications for Higher Education

The findings of this literature review have several practical implications for higher education in preparing students in the field of information technology to face the world of work in the digital era:

1) Integrated Curriculum Development
   Universities need to develop a curriculum that integrates technopreneurship education with strengthening work motivation. This integration can be done through specialized technopreneurship courses, entrepreneurial modules in technical courses, and extracurricular activities that support the development of a technological entrepreneurial spirit.
2) Strengthening Project-Based Learning
   Project-based learning provides an ideal platform for the simultaneous development of technopreneurship skills and work motivation. Projects that involve identifying real problems, developing technological solutions, and market validation can strengthen students' work readiness.
3) Collaboration with Industry
   Collaboration with the technology industry, whether in the form of internships, collaborative projects, or mentoring programs, is important to provide real-world experience and build students' work motivation. These collaborations also allow universities to align curricula with current industry needs.
4) Technology Business Incubator Development
   Technology business incubators on campus provide a supportive environment for students to develop technology-based business ideas. This facility not only develops technopreneurship skills but also strengthens work motivation through experiences of success and learning from failure.
5) Proactive Career Education
   Proactive career education programs, including career exploration, career planning, and job search skill development, are important for building work motivation and preparing students for the transition to the world of work.
6) Soft Skills Development
   Strengthening soft skills such as communication, teamwork, leadership, and emotional intelligence is important to complement technical skills and technopreneurship. Soft skills development can be integrated in various aspects of the curriculum and extracurricular activities.
7) Promotion of Lifelong Learning
   Given the rapid development of technology, universities need to instill a lifelong learning mindset in students. This can be done through developing metacognitive skills, utilizing online learning resources, and building professional networks.

D. CONCLUSIONS AND SUGGESTIONS

This literature review highlights that technopreneurship and work motivation are two key factors that play a crucial role in enhancing the work readiness of information technology students in the digital era. The development of technopreneurship skills provides added value

for graduates in facing a competitive job market, while high work motivation fosters the development of competencies necessary for success in the professional world. The integration of technopreneurship development and the strengthening of work motivation creates a synergy that can maximize students' work readiness, producing graduates who are not only technically competent but also possess an entrepreneurial mindset, the ability to innovate, and the drive for continuous growth.

Based on these findings, several recommendations can be formulated for the advancement of higher education in the field of information technology. Universities should develop curricula that explicitly integrate components of technopreneurship and work motivation, and strengthen experiential learning programs such as collaborative industry projects, hackathons, and technology business incubation initiatives. Additionally, a comprehensive support system, including mentoring, career coaching, and alumni networks, should be reinforced to promote the development of students' work motivation and technopreneurship skills. Further research is also needed to explore the effectiveness of various approaches in enhancing work readiness and long-term career success. Strengthened collaboration between universities, industry, and government is essential to create an ecosystem that supports the development of technopreneurship and the work readiness of information technology graduates in the digital era.

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