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Enhancing Digital Literacy in TVET Education Through Feminist Pedagogy

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Abstract

Digital literacy is essential in today's technology-driven economy, enabling individuals to effectively utilize digital tools for information retrieval, critical thinking, and creative collaboration. Despite its significance, digital literacy in the bakery business sector remains underexplored, with challenges such as aligning university curricula with industry needs and assessing government initiatives in this niche market. This study aims to address these issues by examining the perspectives of bakery business owners on the interaction between universities, industry, and government in promoting digital literacy through the triple helix model. The triple helix model emphasizes the importance of collaboration among academia, industry, and policymakers to foster innovation and skill development. Incorporating feminist pedagogy into this framework further enhances the study's approach by promoting collaborative learning, inclusivity, and empowerment. Feminist pedagogy's focus on creating equitable access to digital literacy aligns with the goals of Technical and Vocational Education and Training (TVET) in breaking down traditional gender barriers and encouraging diverse participation in technology-oriented fields. Through a quantitative methodology involving questionnaires administered to 57 bakery business merchants in a prominent bakery district in Malaysia, the study reveals that perceptions of the university's role in promoting digital literacy are moderate (mean = 3.23), the industry's role is also moderate (mean = 3.43), while the government's role is perceived as high (mean = 3.71). The findings highlight the potential of integrating feminist pedagogy within the Triple Helix framework to create a more inclusive and innovative environment where digital literacy serves as a tool for empowerment. This approach not only benefits the bakery business sector but also strengthens TVET's capacity to cultivate a digitally literate workforce that is adaptable and resilient in an evolving digital landscape.

1. Introduction

In the digital era, technology plays a very essential role in modern society, altering communication between individuals, organizations, and society in many activities. Technological advancements have significantly transformed our daily lives, enabling us to aspire to become digital citizens (Liu et al, 2020). Digitalization can be regarded of as the ability of individuals to apply skills on digital devices so that they can search for information,

analyse critically, and cooperate creatively with others. In addition, it also entails effective communication while paying attention to electronic security (Hariati, 2021). Acceptance of a more autonomous technology can influence the intention to acquire AI-based smart devices (Sohn & Kwon, 2020).

Digital literacy is a must for every individual to survive in a digital society. Several countries have taken attempts to build a comprehensive framework (Rahman et al., 2020). The media and creative industries in Malaysia are increasing quickly in the application of digital technologies and 5G, the creation of creative content, and the development of creative human capital (Raji et al., 2022). Developing a digital marketing approach that meets the situation can enhance company sales through e-commerce (Murdiana & Hajaoui, 2020). The small business sector plays a vital role in producing jobs, enhancing the quality of life, establishing a culture of entrepreneurship, creativity, innovation, and creating business prospects.

The digitalisation process also challenges the customary way businesses are operated, how they interact, and how customers acquire products and services (Abdullah et al., 2021). Digitization plays a vital role in business and without business transformation, the economic and environmental concerns of the future cannot be tackled sustainably (Bican & Brem, 2020). Industry has to be more willing to engage with educational institutions to achieve numerous benefits. The national education system also plays an essential role in encouraging students to get interested in entrepreneurial efforts (Hassan, Lashari & Basit, 2021).

The government has launched numerous programs to reform Technical and Vocational Education and Training (TVET) to make the local workforce more competitive and produce graduates who are able to adapt to technology and become successful business owners (Kenayathulla, 2021). The introduction of digital literacy in TVET is crucial to fulfil the needs of the increasing baking industry and produce experts who can adapt to technological changes. The integration of digital technology in the bakery sector not only helps in operations and marketing, but also in industrial innovation. Digital solutions for data analysis and performance tracking assist firms to understand customer patterns and preferences, enabling more precise product development and greater business growth.

Feminist pedagogy emphasizes collaborative learning, inclusivity, and empowerment, which align with the broader goals of TVET in fostering equitable access to digital literacy (Koseoglu, 2020). Within the triple helix model, involving academia, industry, and government, feminist pedagogy plays a pivotal role in addressing gender disparities and promoting social justice in digital learning environments. By integrating feminist principles, TVET institutions can create more inclusive curriculums that encourage diverse participation and foster critical thinking, thus breaking down traditional gender barriers in technology-oriented fields. Integrating feminist pedagogy within the triple helix model enhances TVET's capacity to adapt to evolving digital landscapes while fostering a culture of inclusivity and equity. This approach not only equips learners with critical digital competencies but also nurtures a supportive environment that values diverse perspectives and promotes social responsibility (Ramos & Roberts, 2021).

As such, pedagogy plays a significant part in the triple helix and TVET model by providing a teaching strategy that is relevant, effective, and flexible to the needs of industry and society (Thuketana, 2023). In the framework of the triple helix, which involves collaboration between universities, industry, and government, pedagogy guarantees that vocational education and training programs are tailored to job market demands as well as technological improvements. An innovative and student-centered pedagogical approach can increase technical and vocational abilities, preparing students to confront the difficulties of the world of work (George et al, 2023). Through tight collaboration between academia, industry, and government agencies, effective pedagogy can stimulate innovation, speed technology transfer, and boost worker competitiveness, further contributing to sustainable economic development.

University and industry collaboration plays an important role in the advancement of the knowledge-based economy; however, some studies found that there is a negative relationship between the challenges and benefits of collaboration between the two parties (De Silva et. al, 2021). The needs of the industry nowadays are more oriented to the ability and flexibility to manage the various tasks provided. Banal-Estañol, Jofre-Bonet & Lawson (2015) found that there is a limited positive effect where collaboration between universities and industry can harm scientific productivity. Knowledge transfer between universities and industry occurs through various means that are redefined into a channel and process where the content of knowledge in individuals or processes in organizations is the main component that drives the use of knowledge transfer mechanisms (Fabiano, Marcellusi & Favato, 2020).

This study will use the theory of the triple helix model by Etzkowitz, H., & Zhou, C. (2017) saying the picture of interaction and interconnectedness between three entities leads to innovation and progress which is important where involved in the innovation process which is between universities, industry and government. In the university is from the academic field. While in the industry from companies and firms. The Triple Helix trade-offs between the relative rigidity that may arise in an overpopulated institutional network and the relationship between excessive uncertainty in the network. (Leydesdroff et al., 2014). The Triple Helix operates as a center of production, the government develops a new relationship of insight and invention, which serves as the principle of

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developing a knowledge-based economy. Adequate connection between test results and these assessments is hard due to the absence of a clear framework and reference point (Tomczyk, 2019). As reference, refer Fig. 1.

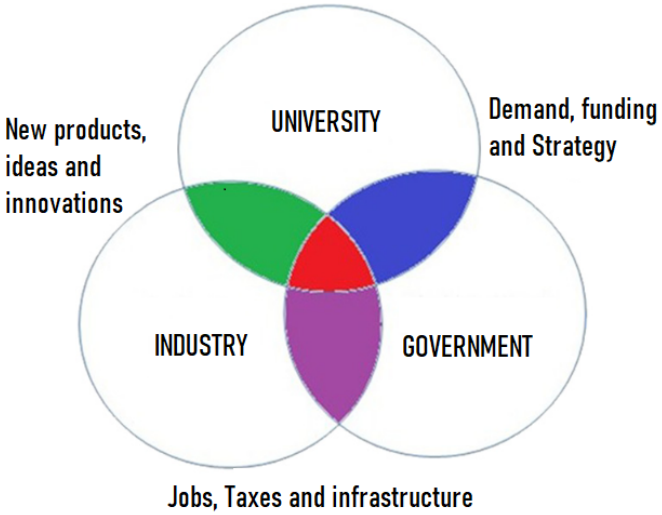

Fig. 1 *Triple helix model (Etzkowitz & Zhou, 2017)*

In the concerns that have been discussed, these were the objectives of the study:

1. To identify the perspective of merchants in the bakery business industry regarding the role of the university in digital literacy based on the triple helix model.
2. To identify the perspective of merchants in the bakery business industry regarding the role of the industry in digital literacy based on the triple helix model.
3. To identify the perspective of merchants in the bakery business industry regarding the role of the governments in digital literacy based on the triple helix model.

In the bakery business, feminist pedagogy can be a transformative approach to enhancing digital literacy by promoting inclusivity, collaboration, and empowerment within the sector. Traditionally male-dominated areas like business management and digital marketing can become more accessible to women and marginalized groups through feminist-informed educational initiatives (Parker, 2023). Within the triple helix model, comprising academia, industry, and government—this pedagogy ensures that digital literacy is integrated into bakery training programs, empowering business owners and workers with the skills needed to navigate e-commerce, digital marketing, and online customer engagement.

Academia plays a key role by developing gender-sensitive training programs that teach digital skills, such as managing online bakery orders, utilizing social media for marketing, and implementing digital payment systems. Industry partners, including bakery associations and tech companies, can collaborate by offering hands-on workshops, mentorships, and real-world applications of digital tools that break traditional gender norms. Meanwhile, government bodies can provide funding, policy support, and incentives to promote digital literacy in bakeries, particularly for women-led enterprises, thereby encouraging equitable access to technology-driven growth in the sector (Ross-Jones, 2018).

Hence, by integrating feminist pedagogy within the triple helix framework, bakery businesses can foster a more inclusive and innovative environment where digital literacy becomes a tool for empowerment. This approach not only equips merchants with the necessary digital skills to thrive in a competitive market but also ensures diverse voices are represented in business decision-making and innovation. Ultimately, this synergy enhances the resilience and competitiveness of bakery businesses in the digital economy while promoting social equity and economic empowerment.

2. Methodology

This study uses a quantitative survey method to collect data from bakery establishments in one of the districts in Malaysia that are well known in bakery industry. According to Creswell (1994), quantitative research studies are enquiries into social or human problems, based on testing theories that consist of variables measured by numbers and analyzed with statistical processes. In this quantitative research design, data is collected by questionnaires or structured interviews.

This survey uses a questionnaire as a research instrument. The respondents, who consisted of merchants in the bakery business industry, were given a questionnaire to complete. This questionnaire provides a series of variables that have been designed to test their perspective of the involvement of universities, industry, and

government towards digital literacy based on the Triple Helix concept. The data acquired was evaluated using statistical processes to better the knowledge of the issues under research.

In this study, population and sample play an essential role. The research population comprised of bakery business owners who opened bakery shops in one of the districts in Malaysia that are well known in bakery industry, with a total of 89 bakeries. Random proportional sampling is utilised in this survey to ensure that the study sample comprises a percentage that is comparable to the characteristics of the population (Berndt, 2020). This means that the study sample should reflect a certain percentage of the population, so that the study results can provide a more accurate picture of the perception of bakery business owners towards digital literacy and the role of universities, industry, and government based on the triple helix model which is 57 respondents. Furthermore, in this study, the researcher employed the triple helix model in a questionnaire to determine the role of universities in digital literacy in the setting of government, industry, and baking enterprises in Malaysia. Respondents are given a series of questionnaires, and the information they fill out will be utilised to determine the outcomes of the study.

The study tool utilised is a structured questionnaire, which is an appropriate technique to obtain participation from the respondents. This questionnaire does not require personal information, including names, as the data is examined as a sample and not based on a single individual, guaranteeing that respondent anxiety is minimized. The questionnaire was sent personally to the responders. Table 1 displays the instrument that was built.

Table 1 *Distribution of questionnaire items*

Part	Construct	No. of Item
A	Demographics	7
B	Role of the University: • Consultation services • Collaboration with industry experts • Skill opportunities • Provide a program	10
C	Role of the Industry: • Consultation services • Facilitate resource access • Provide program courses • Networking opportunity	10
D	Role of the Government: • Provide sponsorship • Promotion of Cooperation • Development provides loans • Provide consultation services	10

The data analysis of this study involves the interpretation of quantitative data obtained using the Statistical Package for the Social Sciences (SPSS) application. Descriptive statistics are produced to provide an overview of the distribution, dispersion, and central tendency of variables through means and standard deviations. Consequently, the combined influence of the triple helix model and feminist pedagogy creates a conducive environment for digital literacy, driving growth, innovation, and societal impact through tailored programs, practical insights, and policy support.

3. Result and Discussion

This research received responses by 57 bakery merchants around the district. Table 2 shows the result of demographic findings that have been responded by the individuals participating in the study.

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Table 2 *Characteristics of the individuals participating in the study*

Demographics	Frequency	Percentage
Gender		
Men	14	24.6%
Female	43	75.4%
Age		
18-20 Years	2	3.5%
21-30 Years	28	49.1%
31-40 Years	16	28.1%
40 years and above	11	19.3%
Race		
Malay	20	35.1%
Chinese	15	26.3%
Iban	13	22.8%
Others	9	15.8%
Level of education		
SRP/ PMR/ PT3 Certificate	1	1.8%
SPM Certificate	13	22.8%
STPM Certificate	9	15.8%
Diploma	16	28.1%
Bachelor Degree	18	31.6%
Type of business		
Single	29	50.9%
Sharing	6	10.5%
Private Limited company	17	29.8%
Others	5	8.8%
Business Term		
Less than 1 year	10	17.5%
2-4 Years	18	31.6%
5-7 Years	11	19.30%
8-10 Years	5	8.8%
More than 10 years	13	22.8%

Based on the data in Table 2, the demographics for the perception of merchants who have responded the questionnaire reveal that a total of 23 persons who have contributed to 75.4 percent while 24.6 percent are men, a total of 14 men who completed the questionnaire. The majority of 28 respondents aged 21 to 30 years and the least number of 2 people aged 18 to 20 years answered the questionnaire. The district has a mix of races with a total of 20 people consisting of Malays, 15 Chinese, while 13 Ibans and other races, 9 entrepreneurs answered the questionnaire.

Then, for the level of tradesman educators who completed the questionnaire, the largest level was 19 individuals with Bachelor Degree and the lowest level was SRP/ PMR/ PT3 certificate who answered. A total of 29 single business bakeries, 17 sole proprietorships, 6 partnership baking enterprises and only 5 additional merchants. Most of the business periods of 18 bakery merchants have been running for 2 to 4 years, 13 bakeries that have been functioning for more than 10 years are located in the district. Next is a descriptive examination of the perspective of merchants in the bread business industry regarding the function of colleges in digital literacy based on the triple helix model. Table 2 also offers a descriptive analysis of the viewpoint of merchants in the bread business industry regarding the role of colleges in digital literacy based on the triple helix model.

Table 3 *Analysis of perspective of merchants in the bakery business industry regarding the role of the university towards digital literacy based on the triple helix model*

No	Items	Mean	Standard Deviations
1.	The University provides consultation or assistance services to the Bakery Business	2.98	1.275
2.	The University provides industry training possibilities (practical, projects, etc.) to the Bakery Business	3.26	1.316
3.	The University equips students with digital literacy skills applicable to the baking industry world.	3.30	1.295
4.	The University offers courses and programs relevant to the digital needs of the Bakery Business.	3.28	1.278
5.	The University provides access to marketing resources connected to the industry (eg: digital laboratories, software tools) for the Bakery business.	3.26	1.275
6.	The University provides networking opportunities for Bakery enterprises to interact with digital specialists and partners	3.28	1.278
7.	The University involved Bakery sector professionals to provide negotiations to ensure that the digital literacy curriculum fulfils the demands of the Bakery Business.	3.28	1.278
8.	The University creates enough bakery business experts with digital literacy skills	3.28	1.264
9.	The University delivers a university digital literacy program linked with current and developing trends in the Bakery Business market.	3.19	1.246
10.	The University is actively committed in knowledge transfer efforts to share digital expertise and best practices with Bakery enterprises	3.19	1.231
	Total	3.23	1.210

Based on the data, the item on the university teaches students with digital literacy skills applicable to the bakery industry environment get the highest mean which is 3.30. Next, item on the university offers courses and programs relevant to the digital needs of the bakery business industry, the university provides networking opportunities for the bakery business to connect with digital experts and partners, the university engages bakery industry professionals to provide consultation to ensure that the digital literacy program meets the needs of the business bakery, and the university provides a university digital literacy program aligned with current and emerging trends in the bakery business industry got the second highest mean of 3.28, while the University provides industry training opportunities (practical, projects, etc.) to the bakery business got an average mean of 3.26 .

Next, for the item the university provides a university digital literacy program aligned with current and emerging trends in the bakery business industry and the university is actively involved in knowledge transfer initiatives to share digital expertise and best practices with the bakery business getting a mean of 3.19. And finally, the item for the university to provide counsel or guiding services to the bread industry obtained the lowest mean of 2.98 and standard deviation 1.275. Overall, the perception of merchants in the bread business industry about the contribution of the university towards digital literacy is at a moderate level with mean of 3.23.

A feminist pedagogy perspective on the bakery business industry emphasizes the importance of inclusive, collaborative, and empowering educational approaches in fostering digital literacy. From this standpoint, universities play a crucial role in bridging gender and social gaps by integrating participatory learning methods and critical thinking into digital literacy programs tailored to the bakery sector. The triple helix model, which promotes collaboration between universities, industry, and government, aligns with feminist pedagogy's commitment to equity and shared knowledge creation. By involving diverse voices and addressing the specific needs of bakery business owners, universities can enhance operational efficiency and innovation while fostering a socially conscious approach to digital literacy that benefits both women and marginalized groups in the industry (Wagh, 2022). This intersection of feminist pedagogy and the triple helix model ensures that digital literacy initiatives are not only practical and industry-relevant but also equitable and transformative.

The opinion of merchants in the bread business industry regarding the function of universities in digital literacy is usually positive and full of hope. They consider universities as institutions that have the potential and obligation to give appropriate digital information and skills to students, which can ultimately be implemented in the bakery company. Traders feel that the digital literacy courses and programs offered by the university can allow them to better understand the latest technology, increase operational efficiency, as well as extend the market through online platforms. They also demand continual collaboration and support from universities in the form of

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training, workshops, and studies that can have a good impact on their business success (Reddy, Chaudhary & Hussein, 2023).

Students who study economics and social sciences are more likely to have digital literacy abilities including communication, critical thinking, problem solving and technology skills, whereas students who study humanities are more likely to have creativity and information (Sciumbata, 2020). This investigation suggests that universities need to boost efforts in offering specific assistance for the bakery company, especially considering the significant demand for digital literacy skills in this sector. In addition, the diversity of students' academic backgrounds shows that a more holistic and integrative approach is needed in the curriculum to combine these key elements, so that students are better prepared to handle the difficulties of a more digitised and sophisticated baking business. Next, table 4 offers a descriptive analysis of the viewpoint of traders in the bakery business industry regarding the role of the industry towards digital literacy based on the triple helix model.

Table 4 *Analysis of perspective of merchants in the bakery business industry regarding the role of the industry towards digital literacy based on the triple helix model*

No	Items	Mean	Standard Deviations
1.	The industry provides consultation or guidance services to the Bakery Business	3.44	1.134
2.	The industry facilitates access to marketing resources connected to the industry (eg digital laboratories, software tools) for the Bakery business.	3.40	1.132
3.	The industry delivers course training programs (practical, projects, etc.) that increase digital literacy for the Bakery Business.	3.56	1.134
4.	The industry facilitates marketing access to the Bakery Business.	3.46	1.135
5.	The industry provides networking opportunities for Bakery enterprises to interact with digital professionals and partners to the Bakery Business.	3.42	1.133
6.	The industry provides capital assistance and loans to the Bakery Business.	3.49	1.120
7.	The industry gives support with information and technology equipment to bakery merchants.	3.39	1.114
8.	The industry provides technology equipment loans to bakery merchants	3.35	1.110
9.	The industry has provided information loans to bakery merchants	3.33	1.123
10.	The bread sector works with the University to establish digital literacy programs and initiatives.	3.42	0.963
	Total	3.43	0.994

The item with the highest mean is that the industry conducts course training programs (practical, projects, etc.) that promote digital literacy for the bakery business which is 3.50. Next, for the industry item, there is offering financial help and loans to bakery enterprises with a mean of 3.39. While the industry item giving marketing access to the bakery firm had a mean of 3.46. The industry provides consultancy or guidance services to bakery enterprises with a mean of 3.44. Next, for the item that the industry provides networking opportunities for bakery firms to connect with digital experts and partners to the bakery business and the bakery industry engages with the university to establish digital literacy programs and initiatives obtained a mean of 3.42.

Then, for the item of the industry provides access to marketing resources connected to the industry (eg digital labs, software tools) for the bakery business getting a mean of 3.40. Regarding the industry item, there is giving information aid and technological equipment to bakery traders, and it gets 3.39. The industry gives technological equipment loans to bakery traders with a mean of 3.35 and the lowest mean is 3.33, which is the item where the industry provides information loans to bakery dealers. Overall, the impression of traders in the bread business industry about the involvement of the industry in digital literacy is also at a reasonable level with a mean value of 3.43

As such, from a feminist pedagogy perspective, the role of the industry in promoting digital literacy within the bakery business sector should emphasize inclusivity, empowerment, and equitable access to digital resources. Feminist pedagogy advocates for collaborative learning environments where diverse voices, particularly those of women and marginalized groups, are recognized and valued (Long, 2023). In the context of the triple helix model, which emphasizes the synergy between universities, industry, and government, the industry's role extends beyond merely adopting digital tools to fostering an environment that encourages critical thinking, creativity, and shared learning. By embracing feminist principles, the bakery industry can create more inclusive training programs, mentorship opportunities, and digital literacy initiatives that empower all participants, enhancing

innovation, operational efficiency, and social equity within the sector. This approach ensures that digital transformation is not only technologically driven but also socially responsible and transformative.

The perspective of merchants in the bread business industry regarding the role of the industry in digital literacy is highly encouraging and full of hope. They regard the industry as the key driver in offering the latest technology and digital tools that are relevant and practical to utilise in their operation. Traders believe that the industry will continue to offer innovative and easy-to-use digital solutions that help increase operational efficiency and expand their markets (Fathullah et al, 2023). In addition, traders also demand support in the form of training, workshops, and collaborative programs that can help them become more skilled in using digital technology, further expanding their firm in an increasingly competitive digital environment.

Training programs in digital literacy boost individual digital talents and general well-being, especially for disadvantaged people in developed and developing countries (Choudhary & Bansal, 2022) This shows that investment in practical training programs by industry has a vital role in developing digital literacy in the baking sector. However, there is a need to increase access to important information sources to enable merchants in enhancing their digital skills. This study highlights the necessity of collaboration between the industry and merchants to reach a balance in the provision of training and information, so boosting the competitiveness and effectiveness of the bread business in the ecosystem. more complicated digital. Table 5 provides the item analysis for the view of traders in the bakery business industry regarding the government's role in digital literacy based on the triple helix model.

Table 5 *Analysis of perspective of merchants in the bakery business industry regarding the role of the government towards digital literacy based on the triple helix model*

No	Items	Mean	Standard Deviations
1.	The Government provides consulting or assistance services to Bakery Businesses.	3.67	0.97
2.	The Government supports literacy initiatives that help merchants in the bakery Business sector	3.77	1.018
3.	The Government supports course training programs (practical, projects, etc.) that increase digital literacy for the Bakery Business.	3.74	1.009
4.	The Government is collaborating with industry stakeholders to implement digital literacy programs and initiatives for Bakery merchants.	3.72	0.978
5.	The Government provides support for digital literacy skills training which is crucial to bakery firms.	3.68	1.072
6.	The Government fosters and supports digital literacy among merchants in the Bakery Business.	3.77	1.018
7.	An awareness program led by the government raises awareness about the necessity of digital literacy among bakery merchants.	3.63	1.112
8.	The Government is cooperating with universities to offer a targeted digital literacy program for Bakery merchants.	3.58	1.101
9.	The Government provides information loans to Bakeries	3.77	1.086
10.	The government is funding in research and development to enhance digital literacy and skill development for Bakeries	3.72	1.098
	Total	3.71	0.987

For the item with the highest mean score of 3.77, the government supports literacy initiatives that benefit traders in the bakery business sector, the government encourages and supports digital literacy among traders in the bakery business industry and the government provides information loans to bakery traders. Next, for the item the government provides course training programs (practical, projects, etc.) that increase digital literacy for the bakery business obtained a mean of 3.74. The item of the government partnering with industry partners to implement digital literacy programs and initiatives for bakery merchants and the government engaging in research and development to enhance digital literacy and skill development for bakery dealers likewise obtained a mean of 3.72.

The following item, which is the government providing support for digital literacy skills training that is crucial to the bakery business, earned a mean of 3.68. While the item of the government giving advice or assistance services to bakery enterprises got a mean of 3.67. For the item of awareness campaign led by the government to increase awareness of the importance of digital literacy among bakery traders, it got a mean of 3.63 and the lowest mean is the item that the government cooperates with the university to develop a digital literacy program adapted

for bakery traders which is 3.58 and the standard deviation is 1.101. Overall, the perception of traders in the bakery business industry regarding the government's role in digital literacy is at a high level with a mean of 3.71.

The government's role in promoting digital literacy within the bakery business sector should focus on fostering equitable access, inclusivity, and empowerment through policy and support frameworks. Feminist pedagogy emphasizes the need for policies that address the unique challenges faced by women and marginalized groups in accessing digital education and resources (Long, 2023). Within the triple helix model, which highlights collaboration between universities, industry, and government, the government plays a pivotal role in ensuring that digital literacy initiatives are inclusive and socially just. By implementing gender-sensitive policies, funding inclusive training programs, and supporting community-driven digital education initiatives, the government can create an environment that empowers diverse participants in the bakery industry. This approach not only enhances digital literacy but also promotes social equity, operational efficiency, and innovation, ensuring that the benefits of digital transformation are shared across all segments of society.

The view of merchants in the bakery business industry towards the government's participation in digital literacy is usually positive, with high expectations for the support and initiatives supplied. Traders perceive the government as a dominant force in creating policy and providing the necessary infrastructure to increase digital literacy among entrepreneurs (Malik et al, 2023). They anticipate the government to continue to give subsidies, incentives, and training programs that can help them adapt digital technologies more efficiently. In addition, merchants also hope that the government will intensify efforts in digitizing the economy through awareness campaigns, technical support, and the provision of platforms that can facilitate the integration of technology in their everyday business operations.

According to Demir & Danisman, (2021), the uncertainty of the government's economic policies increases the interest rate on bank loans dramatically, which potentially increases the chance of borrower default. Although government funding for digital literacy projects is considerable, collaboration between government and institutions in producing personalised programs still needs greater emphasis. The effectiveness of the government's digital literacy strategy needs to be strengthened with better engagement with academic institutions to guarantee that the training given genuinely address the unique needs of bakery merchants. In addition, a stable and transparent economic policy from the government is also crucial to avoid financial risks for merchants who depend on bank loans, which can affect the efficiency of digital literacy in the bakery business industry.

4. Conclusion

The research offers many efforts to promote collaboration between colleges and industry in the baking business. It offers combined training programs to strengthen students' technical and entrepreneurial skills, and giving more funding and support options for bakery entrepreneurs. Feminist pedagogy within the triple helix model is highly relevant for enhancing digital literacy in the bakery business sector by fostering inclusivity, collaboration, and empowerment across academia, industry, and government. In TVET programs focused on bakery skills, feminist pedagogy ensures that training is gender-sensitive, breaking traditional barriers and enabling equitable access to digital tools such as online ordering systems, social media marketing, and e-commerce platforms. Universities and governments can also hold extensive digital literacy training programs, including online courses, workshops, and seminars. The government can give incentives and funds for firms to increase their digital literacy, such as grants, loans, and tax breaks. A joint awareness campaign and collaborative programs can also improve the partnership. Future research should broaden the study to additional regions or industries, and analyse the view of universities or governments towards digital literacy using the Triple Helix approach. This research can serve as a reference for future studies and provide significant resources for understanding the perception of merchants in the bread business industry.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of the paper.

Author Contribution

The authors confirm contribution to the paper as follows: ***Xu Wenjun****: Literature review, methodology, data collection and project administration.* ***Khairul Anuar Abdul Rahman****: Drafted the manuscript and provided substantial revisions formal analysis, and validation.* ***Arihasnida Ariffin****: Contributed to writing the results and*

discussion sections, conceptualization, methodology and resources. ***Suhaizal Hashim****: Conceptualization, methodology and resources.*

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