

Research Article

Smart 3-Wheel Bike: Technical Support for Disabled Entrepreneurs

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Abstract: Technology is a crucial aspect of starting a business, particularly for disabled entrepreneurs who may face additional challenges due to their disabilities. Entrepreneurship has become a preferred field of employment for disabled people, primarily due to a lack of other employment opportunities. However, the current technology available for disabled entrepreneurs is insufficient, and they may not be able to compete effectively in the business world. Compared to non-disabled individuals, disabled people have lower labor market participation rates, which limits their opportunities for employment. Running a business can be challenging for anyone, but disabled people often face additional obstacles that make it harder for them to succeed. Due to their disabilities, they may require specific technology or technical assistance to help them grow their business. The Smart 3-Wheel Bike was developed to provide better facilities to disabled entrepreneurs, making it easier for them to organize and operate their businesses competitively. The process of developing this product is based on three phases: the analysis phase, the design and development phase, and finally the implementation and evaluation phase. In the analysis and evaluation phases, two case studies were conducted on the needs and acceptance of the prototype. The findings from the two case studies indicated that the development of the Smart 3-Wheel Bike for disabled entrepreneurs was able to fulfill the disabled entrepreneurs' needs, and people with disabilities accept this technology in running their businesses.

Keywords: Disabled Entrepreneurs, Technology, Entrepreneurship.



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1. INTRODUCTION

Disabled people face numerous challenges when it comes to employment opportunities, and one of the main reasons is a lack of employability skills. According to Grammenos (2011), disabled people experience lower labor market participation rates than non-disabled individuals. In 2019, only 0.31% of disabled individuals were employed out of the total labor participation rate of 68.7%, a figure that has further decreased due to the COVID-19 pandemic. These statistics demonstrate that disabled people are often concentrated in lower-skilled, lower-paid occupations (Meager and Higgins, 2011). However, promoting entrepreneurship can provide a potential solution to the problem of low participation rates. Self-employment or running their own businesses can offer disabled people more control over their employment situation and provide opportunities for financial independence.

In Malaysia, promoting entrepreneurship is a critical component of the national agenda, and the introduction of the "National Entrepreneurship Policy" (DKN) provides a holistic framework for the development of entrepreneurship in the country. This policy is in line with the OKU Action Plan 2016-2022, where entrepreneurship is a strategic focus to empower the economy of the OKU. The plan aims to increase the participation of disabled individuals in an open, inclusive, and accessible job market, enabling them to live independently and contribute to national development.

Assisting disabled entrepreneurs can make a significant contribution to the Sustainable Development Goals (SDGs) outlined by the United Nations. By promoting entrepreneurship among disabled individuals, this technology contributes to SDG 8: Decent Work and Economic Growth. SDG 8 aims to promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all. By providing better facilities and technology for disabled entrepreneurs, the Smart 3-Wheel Bike helps to ensure that no one is left behind, which is the central aim of the SDGs. Additionally, promoting entrepreneurship among disabled individuals can also contribute to SDG 10: Reduced Inequalities, as it can help to reduce the gap between disabled and non-disabled individuals in terms of employment opportunities and economic empowerment.

Recent studies have highlighted the challenges faced by disabled individuals in the labor market and the potential benefits of entrepreneurship. According to Stone and Horn (2021), they found that disabled entrepreneurs are more likely to pursue social entrepreneurship, which involves using business ventures to address social or environmental issues. Another study by Corbisiero and Schaper (2020) found that disabled entrepreneurs face unique challenges in accessing capital and resources, but they are also more likely to innovate and take risks in their businesses. In addition to entrepreneurship, some researchers have suggested that remote work and digital platforms can provide more opportunities for disabled individuals to participate in the labor market. Marques and Jesus (2020) found that remote work can be an effective strategy for accommodating disabled workers and promoting inclusivity in the workplace. Overall, these studies demonstrate the importance of creating a more inclusive and accessible labor market for disabled individuals.

1.1 Problem Statement

Disabled individuals often encounter additional barriers when starting or growing a business due to their disabilities, which can limit their access to resources and opportunities compared to non-disabled individuals. Research has shown that technology can be a crucial factor in enabling disabled entrepreneurs to succeed in the business world, by providing them with the necessary tools and assistance to overcome these barriers and compete effectively (Sans-Bobi, M. A. et al. 2012, Rozell et.al. (2010), Norasmah (2002), and Rogoff et al. (2004)). However, despite the potential benefits of technology, the current options available for disabled entrepreneurs are often insufficient. The Smart 3-Wheel Bike was developed specifically to address this gap, with the goal of providing disabled entrepreneurs with a tool that can help them to overcome the unique challenges they face and run their businesses in a more competitive and sustainable manner. By focusing on the specific needs of disabled entrepreneurs and leveraging technology to address these needs, the Smart 3-Wheel Bike has the potential to make a meaningful contribution to the broader goal of promoting inclusive entrepreneurship and sustainable economic development for all.

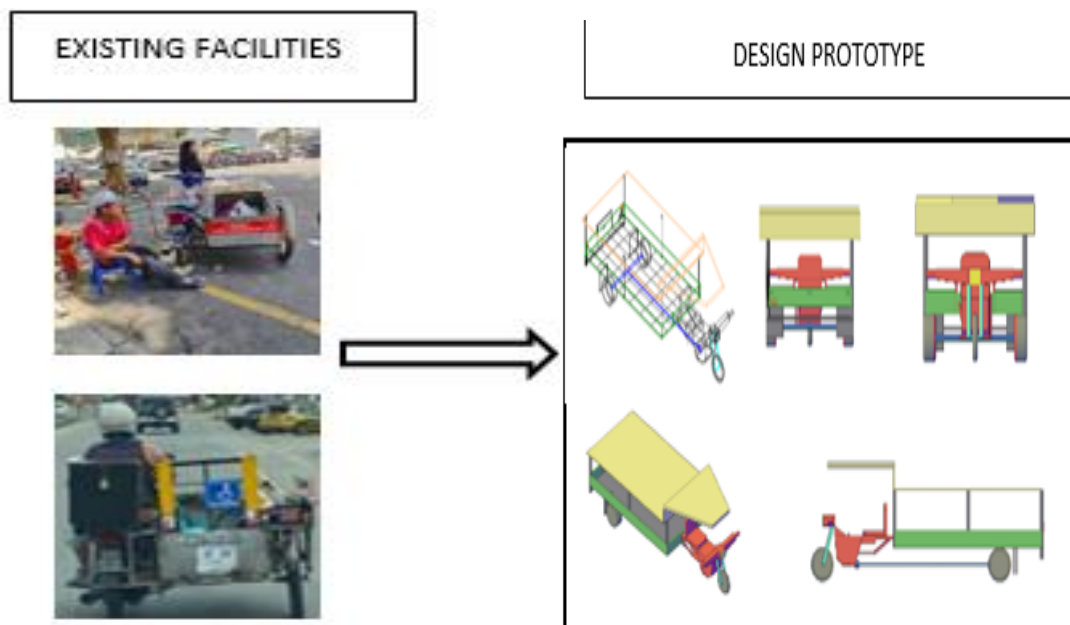
2. PRODUCT INNOVATION

2.1 Product Design

Smart 3-Wheel is designed using a modified motorcycle where it will be equipped with reverse gear transmission facilities, a large basket/place to place the sales items, roofed, and equipped safety

features. As compared to the available supporting facilities for disabled people, Smart 3-Wheel Bike is more user-friendly.

2.2 Prototyping Process



Prototype frame



Installing baskets on motorcycle



Install rear gear



Extend the gear to facilitate OKU



Install Roofed



Safety Feature





2.3 *Product development*

This product is a collaboration project between UMK and Deen Ironwork that is fully funded by UMK Prototype Research Grant (UMK-Pro). In December 2020, the process of analysis, design, and development has been started and already completed in January 2022 and received a patent from MyIpo.

3.0 METHODS

The process of developing a Smart 3-Wheel Bike is based on three phases, the analysis phase, the design and development phase, and finally implementation and evaluation phase. In the analysis and evaluation phase, two case studies were conducted on the needs and acceptance of the prototype.

4.0 RESULTS AND DISCUSSIONS

(i) In Analysis Phase the first Case Study was conducted.

The purpose of this study is to examine entrepreneurs with disabilities' views on the need for technical support. The Unified Theory of Acceptance and Use of Technology (UTAUT) was used as a basic model for study. A survey method was utilized among 40 respondents in Tumpat Kelantan, Malaysia that categorize as disabled entrepreneurs to investigate their technology needed. The data obtained were analyzed using Statistical Packages for the Social Sciences (SPSS) software for descriptive statistics and regression analysis.

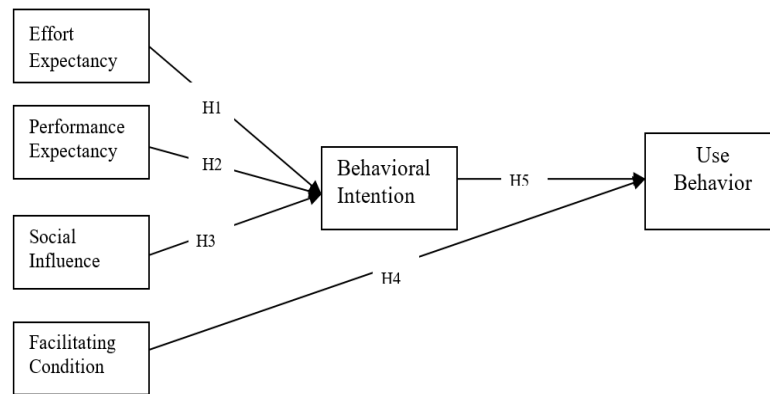


Figure 1: Research Model

Table 1: Full result

	Coefficient	Significant
Performance expectancy	0.2561	0.0045
Effort expectancy	0.5671	0.0004
Social influence	0.1671	0.0023
Facilitating Condition	0.4671	0.0000

Table 2: Hypothesis testing

Hypothesis	Test
H1: Performance Expectancy is positively influenced behavioral intention to use Smart 3-Wheel Bike by the disabled entrepreneur.	Supported
H2: Effort Expectancy is positively influenced behavioral intention to use Smart 3-Wheel Bike by the disabled entrepreneur.	Supported
H3: Social influence is positively influenced behavioral intention to use Smart 3-Wheel Bike by the disabled entrepreneur.	Supported
H4: Facilitating condition is direct influences the use behavioral of Smart 3-Wheel Bike provided for the disabled entrepreneur.	Supported
H5: Behavioral intention directly influence disabled entrepreneur usage behavior of Smart 3-Wheel Bike.	Supported

The findings indicate the urgent need for development and supporting technology for disabled entrepreneurs. Therefore, the development of the Smart 3-Wheel Bike for disabled entrepreneurs was able to fulfill the disabled entrepreneurs' needs which had been proved based on the estimation analysis using the UTAUT model.

(ii) The second case study were conducted in Implementation and Evaluation Phases.

The Smart 3-Wheel Bike was developed to provide better facilities to entrepreneurs with disabilities. The study will examine the factors of acceptance of technology in assisting entrepreneurs

with disabilities (PWDs) through the development of the "Smart 3-Wheel Bike". Using Smart-PLS analysis and the sample size is 37 people of disability (PWDs) from Kelantan.

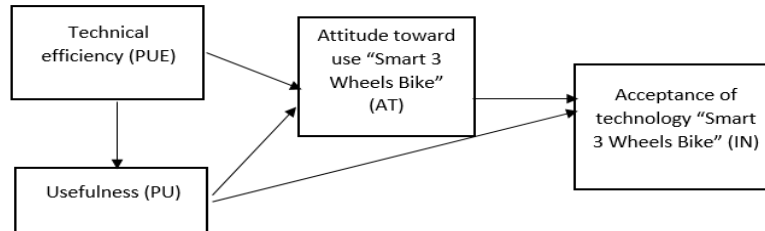


Figure 2: Research Model

Table 3: Discriminant Validity (HTMT)

	AT	IN	PU	PUE
AT	0.896			
IN	0.716	0.852		
PU	0.611	0.587	0.861	
PUE	0.764	0.682	0.808	0.879

Note: AT is attitude; IN is Acceptances of technology; PU is usefulness; PUE is Technical efficiency.

Table 4: Hypothesis Testing

Hypothesis	Relationship	p-values	f ²	VIF	Results
H1	IN → AT	0.000	1.054	1.000	Supported
H2	IN → PU	0.000	0.525	1.000	Supported
H3	IN → PUE	0.000	0.870	1.000	Supported

The results reveal that all variables such as technical efficiency, usability, and attitude to use technology influence the acceptance of the development of the "Smart 3 Wheels Bike ". Therefore, people with disabilities accept this technical assistant in running their businesses. In a conclusion, the need for technology in helping entrepreneurs with disability (PWDs) through the development of the "Smart 3-Wheel Bike" is very much needed.

5.0 IMPORTANCE OF PRODUCT

Smart 3-Wheel Bike will be able to facilitate disabled people in doing business and growing their business. In most cases, due to inappropriate technologies, people with disabilities have disadvantages to obtain independent individuality as well as necessary information for their business

and overcoming barriers to organizing their business competitively. Thus, to strengthen the entrepreneurship of disabled people, is, therefore, essentially providing technical support to them.

5.1 *Advantages*

1. Able to facilitate disabled people to operate the vehicle easily because it is equipped with reverse gear transmission.
2. The vehicle had a larger storage space
3. The vehicle is equipped with a roof
4. The design and size are ideal
5. Equipped with safety features

5.2 *Marketability*

Smart 3-wheel Bike design to fulfill the need of disabled people. Besides, this product is seen to be able to meet demand other than the disabled people, where it can be used in the small-scale agricultural sector (such as palm oil farmers, rubber, vegetables, and others), business (hawkers and petty traders) based on size, function, and as well as user-friendly.

6.0 CONCLUSION

The Smart 3-Wheel Bike is the technical assistance and technology that is very much needed by disabled entrepreneurs to make their business easier and to remain competitive in their business activities.

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