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# The Needs Analysis for Development of Smart 3-wheel Bike for Disabled Entrepreneurs



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**Abstract** The purpose of this study is to examine entrepreneurs with disabilities' views towards the need for technical support. The Unified Theory of Acceptance and Use of Technology (UTAUT) were 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. The findings indicate that the most significant factor is effort expectancy that show the disabled entrepreneurs accept the development of Smart 3-Wheel Bike, which enable them in competing with the other business competitors and remain in the market.

**Keywords** Disabled entrepreneurs · Needs analysis · Technical support

## 1 Introduction

Technology is a vital factor that enables us to remain competitive in business today and it is an important factor for disabled entrepreneurs. Entrepreneurship has become one of the preferred fields of employment for disabled people due to the lack of other employment opportunities. However, the existing technology for disabled people is

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Industry Collaboration in Development Smart 3-Wheel Bike.

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still insufficient to ensure that disabled people remain competitive in the entrepreneurship field. The opportunity for disabled people to be employed is lowered compared to normal people. One of the main reasons is lack of the employability skills. According to Grammenos 2011, statistics of disabled people show lower labor market participation rates than the normal people. Statistics show that in Malaysia only 0.31% of disabled people were employed from 68.7% total labor participation rate in 2019 and become lowest because of the Pandemic Covid-19 outbreak. This figure shows that low skilled sector will be chosen by people with disabilities as their job that is lower-paid occupations, which is stated in research by Meager and Higgins (Meager and Higgins 2011). Doing business or become self-employed becomes a possible solution to problems of low participation rates among disabling people.

According to Zahra et al. (2008), marginal groups such as people with disabilities (OKU) are seen to have the potential to be featured in the field of entrepreneurship, this is because the field of entrepreneurship can be ventured into this group, is because it does not compare physical form and physical disability to succeed as an entrepreneur. In addition, the disabled are not immune from various issues that make it difficult for them to get a job (Ang 2014; Khoo et al. 2012). A study from Rozell et al. (2010) and Othman (2002) see technology as one of the important factors to the success of every entrepreneur in addition to other factors such as motivation, capital, knowledge, and skills. The importance of technology to entrepreneurs has also been supported by a study by Rogoff et al. (2004).

Promoting entrepreneurship constitutes an important part of the national agenda in Malaysia. Malaysia's National Entrepreneurship Policy was introduced as a guide to provide a holistic framework or ecosystem for the development of entrepreneurship in Malaysia, which today is seen to be growing rapidly. This is in line with Malaysia OKU Action Plan 2016–2022, entrepreneurship is made the strategic thrust in empowering the economy of the OKU, through increasing the participation of the OKU in the open, inclusive and accessible job market to enable them to live independently and contribute to national development. People with disabilities are often disadvantaged to handle a complex situation like a business. The duty is much tougher for disabled people and in some cases, even unbearable compared to normal people. Due to their incapacity, they need (e.g. technology) which help them to cultivate the business. Either disable people or non-disabled people, technology is a vital factor to accomplish and sustain self-motivation and self-esteem and to join in the social environment Rozell et al. (2010), Sans-Bobi et al. (2012) and Othman (2002) and Rogoff et al. (2004).

Through this research, researchers from Universiti Malaysia Kelantan are interested to find the solution through developing a prototype to support disabled entrepreneurs in business activity. The prototype is called "Smart 3-Wheel Bike". Therefore, before the development of the Smart 3-Wheel Bike, it is desirable a need analysis study conduct on disabled entrepreneurs on the existing technology for them, the level of acceptance, and intention to use to support them in business activity.

The main objective of this study is to identify the need for the development Smart 3-Wheel Bike based on the UTAUT model for disabled entrepreneurs. This research will answer the following questions. This paper is organized as follows. Section 2

covers a review of relevant literature on the review. Section 3 is a methodology and presents the conceptual framework. Detailed discussion on empirical findings is reported in Sect. 4. Finally in Sect. 5 presents the conclusion and discusses the policy implication.

## 2 Literature Review

Generally, an entrepreneur is defined as someone who runs a business with the aim of profit and innovation in the business. Greene (2000) defines an entrepreneur as an individual who runs his own business while Idris (2003) and Naude (2010) consider entrepreneurs as entrepreneurs and traders who are willing to take risks, always strive to innovate, and be smart and creative in finding ways to improve wealth, power and social status. According to Zahra et al. (2008), marginal groups such as people with disabilities (OKU) are seen to have the potential to be featured in the field of entrepreneurship, this is because the field of entrepreneurship can be ventured into this group, is because it does not compare physical form and physical limitations to succeed as an entrepreneur. In addition, the disabled are not immune from various issues that make it difficult for them to get a job (Ang 2014; Haslina 2006; Khoo et al. 2012). A study from Rozell et al. (2010) and Othman (2002) see technology as one of the important factors to the success of every entrepreneur in addition to other factors such as motivation, capital, knowledge, and skills. The importance of technology to entrepreneurs has also been supported by a study by Rogoff et al. (2004) and a study by Aminova and Marchi (2021) that stated that individual performance is influence by innovation.

The existence of small-scale businesses is seen to be able to contribute to the country's economic growth. According to Abd Ghani et al. (2012), Small and Medium Industries (SMIs) are one of the main catalysts for Malaysia's economic growth. Almost 99.2% of all entrepreneurs in Malaysia are registered SME traders and have contributed 32% of GDP. Looking globally from all over the country, many disabled entrepreneurs have been born with various types of businesses. Starting from the difficulty of getting a job this group is more likely to be self-employed and eventually become entrepreneurs, no matter small or large-scale business. This situation is in line with the strategy stated in the Malaysia OKU Action Plan 2016–2022. The vast potential in the field of entrepreneurship has prompted the government to work hard to cultivate this field to the community through various approaches, departments, agencies, and so on in line with the Malaysia National Entrepreneurship Policy.

The success and failure factors of entrepreneurs according to a study by Rozell et al. (2010) are dependent on several elements such as raw material resources, entrepreneurial motivation, industry knowledge, technology, planning skills communication skills, interpersonal skills, and risk-taking. Yet studies from (Othman 2002; Nordin 1994; Lope Pihie and Elias 1997; Ling 1990; Timmons et al. 1985; Hess 1987; Ken 1990) state that entrepreneurs face various challenges such as lack of

capital, competition, technology, management, communication, changing demand and uncertain economic conditions, where statistics from the National Insolvency Department show that for a period of three years, a total of 4,067 Small and Medium Enterprises (SMEs) have gone bankrupt. Among the factors that cause this situation is whether entrepreneurs fail to continue to grow in line with the boom of 4.0 IR technology. This situation is seen to have a greater impact on disabled entrepreneurs where there is still a lack of technical facilities that are competent for entrepreneurs with disabilities. Therefore, this study was conducted to examine the level of needs and acceptance by disabled entrepreneurs on the development of Smart 3-Wheel Bike.

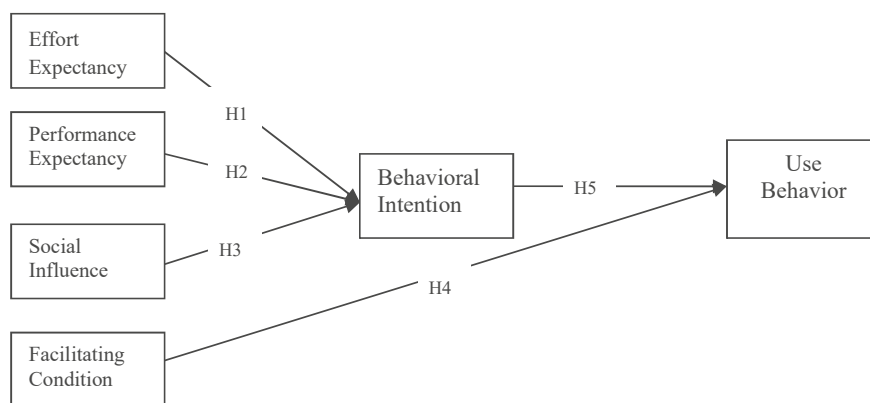
### 3 Methodology

#### 3.1 *The Needs Analysis*

The need analysis is a method proposed by Witkin (1997) that is used to identify gaps between current conditions and target conditions. According to McKillip (2001) stated that needs analysis is the value of judgment for a particular group that has a problem that needs to be solved. Analysis of the need aims to investigate existing issues and the need to develop a supporting technology for the disabled entrepreneur. The designed prototype can be used as a model for one of the supporting technologies for the disabled entrepreneur in business activity. The needs analysis in this study will be conducted through a techniques survey to identify the need to build a Smart 3-Wheel Bike based on disabled entrepreneurs' views. Respondents will be asking a research questionnaire to obtain feedback on the need for the development of a Smart 3-Wheel Bike. The questionnaire distributed to disabled entrepreneurs was to see whether they need to have technical support, assess the level of acceptance of the use of Smart 3-Wheel Bike. Although this prototype can be viable support for the disabled entrepreneur to be used in the business activity its implementation becomes less effective if disabled entrepreneurs do not like to use it.

The questionnaire items of this study were constructed based on the Theory of Acceptance and Use of Technology (UTAUT). The technology acceptance theory proposed by Venkatesh et al. (2003) explains the intention of users to use information systems and human behavior. This theory explains four main constructs namely Performance Expectancy, effort expectancy, Social Influence, and Facilitating conditions which are the direct determinants about intentions and use behaviors (Venkatesh et al. 2003), as shown in Fig. 1. There is one moderating factor that is voluntariness to use.

UTAUT had been used by many researchers in examining the need for of adoption technology. A study by Mikalef et al. (2016) analysis the need of used Video-Based Learning (VBL) technology, Nistor et al. (2012) used UTAUT to examine the need of virtual need practice, Karulkar et al. (2019) examine the need for online food



**Fig. 1** The research model The Unified Theory of Acceptance and Use of Technology (UTAUT) (Adopted from Venkatesh et al. 2003)

delivery service. Abu-Shanab and Pearson (2009) conducted a study using UTAUT on the adoption of Internet banking, Learning Online Social Support, and Lin et al. (2008) investigates the role of Network Information Technology in Online Social Support.

The questionnaires ask the disabled entrepreneurs with the purpose to know if the disabled entrepreneurs needed technical support for their business activities, besides to examine the level of acceptance of the development of Smart 3-Wheel Bike and their intention to adopt the technology. Although Smart 3-Wheel Bike can be viable support for disabled entrepreneurs to remain competitive in daily business activity and to compete with business competitors, this prototype becomes less effective if the disabled entrepreneurs do not like to use it.

### 3.2 Performance Expectancy

Performance expectancy is a level of trust from disabled entrepreneurs that the use of technology is able to help them remain competitive in the market and ability to grow the business. This construct will indicate that the degree to which using Smart 3-Wheel Bike will improve capabilities for disabled entrepreneurs in doing businesses. Venkatesh et al. (2003) defined performance expectancy as “the degree to which the user expects that using the system will help them to attain gains in job performance”. Another researcher Kijisanayotin et al. (2009) also supported that performance expectancy is one of the important indicators to measure the intention to use technology. In this study, performance expectancy was defined as the degree to which a disabled entrepreneur believes that using Smart 3-Wheel Bike will help them in business activity and propose the following hypothesis:

H1: Performance Expectancy is positively influenced behavioral intention to use Smart 3-Wheel Bike by the disabled entrepreneur.

### **3.3 Effort Expectancy**

This construct will measure the level of easiness of use. According to Venkatesh et al. (2003), the effort expectation refers to a person's desire to use technology, and self-efficacy becomes the main determinant of an individual's behavior for the actual use of the technology. A few studies (i.e. Neufeld et al. 2007; Nov and Ye 2010; Pai and Tu 2011; Abbas et al. 2018) among others found there is a positive relationship between effort expectancy on the behavioral intention. Thus this study defines effort expectancy as ease to use Smart 3-Wheel Bike. The second hypothesis is:

H2: Effort Expectancy is positively influenced behavioral intention to use Smart 3-Wheel Bike by the disabled entrepreneur.

### **3.4 Social Influence**

Social influence is the degree to which a consumer is influenced by their peers and other individuals in the social circle to convince him or her to use the technology. A few studies had adopted the social influence in UTAUT analysis and found it to be significant on behavior intention. For example a study by Tibenderana et al. (2010) estimation of adoption Information Communication Technology (ICT) services; Hung et al. (2007) and Al-Shafi and Weerakkody (2009) study on adoption e-government service. Based on the support from past literature, the third hypothesis of this study is as follow:

H3: Social influence is positively influenced behavioral intention to use Smart 3-Wheel Bike by the disabled entrepreneur.

### **3.5 Facilitating Conditions**

According to Brown and Venkatesh (2005) and Venkatesh et al. (2003), the facilitating conditions are defined as the preference of the user to used the resource and support available to execute a behavior. In this study, we define the facilitating condition as a disabled entrepreneur who believes that using Smart 3-Wheel Bike will ease their business activity, which means that facilitating condition is expected to predict user behavior. Then, the fourth hypothesis of this study is:

H4: Facilitating condition is direct influences the use behavioral of Smart 3-Wheel Bike provided for the disabled entrepreneur.

H5: Behavioral intention directly influence disabled entrepreneur usage behavior of Smart 3-Wheel Bike.

The questionnaire used five points Likert scale of 1 = very not agree, 2 = disagree, 3 = disagree, 4 = agree, and 5 = strongly agree. The questionnaire is divided into two parts. Part A is related to demographic factors, Part B is concerned with performance expectancy, effort expectancy, social influence, facilitating condition, and behavioral intention, and part D measures the behavioral intention and use behavior of a Smart 3-Wheel Bike.

The study was carried out in Malaysia on a random group. The respondents of the study consisted of disabled entrepreneurs in Tumpat, Kelantan Malaysia. Data of disabled entrepreneurs were collected from Tumpat District Council (TDC). There are 62 disabled entrepreneurs registered with TDC. 40 respondents were involved in the study self-managed by the researcher. The data obtained were analyzed through descriptive statistics using SPSS software.

#### 4 Result and Discussion

The distribution of respondent data is described in Table 1 which covers gender, business experience.

The distribution of disabled entrepreneurs of the male is 87.5% of the total respondent that equal to 35 persons and female is 12.5%. The respondent age is between 21 to 60 years old, with 17.5% of respondents are in the age group 21 to 40 years old and 62.5% of respondents are grouped in 41 to 60 years old. Business experience

**Table 1** Respondent demographics

Item	Category	Frequency	Percentage
Gender	Male	35	87.5
	Female	5	12.5
Age	Below 20 years old	0	0
	21–40 years old	7	17.5
	41–60 years old	25	62.5
	More than 60 years old	8	20.0
Business experience	1–5 years	6	15
	6–10 years	20	50
	11–15 years	8	20
	16–20 years	3	7.5
	More than 20 years	3	7.5



**Table 2** Result of validity test

Construct	Indicator	Factor loadings	Cronbach's Alpha
Performance expectancy	PE1	0.843	0.889
	PE2	0.915	
	PE3	0.801	
	PE4	0.810	
	PE5	0.868	
Effort expectancy	EE1	0.851	0.872
	EE2	0.896	
	EE3	0.709	
	EE4	0.756	
	EE5	0.890	
	EE6	0.878	
	EE7	0.794	
Social influence	SI1	0.889	0.878
	SI2	0.853	
	SI3	0.792	
	SI4	0.826	
Facilitating conditions	FC1	0.882	0.816
	FC2	0.742	
	FC3	0.871	
	FC4	0.808	
	FC5	0.856	
Behavioral intention	BI1	0.810	0.896
	BI2	0.798	
	BI3	0.885	
	BI4	0.834	
Use behavioral	UB1	0.850	0.886
	UB2	0.845	
	UB3	0.871	
	UB4	0.874	
	UB5	0.872	

indicates that experience between 6 to 10 years had the highest respondent with equal to 50, and 20% of respondents have 11 to 15 years of business experienced.

The reliability and validity tests were conducted. All the constructs were examined for the Cronbach alpha. The entire construct namely effort expectancy, performance expectancy, social influence, facilitating conditions, behavioral intention, and use behavior indicated the coefficient of Cronbach alpha greater than 0.7. Thus the research instrument was either accurate or reliable in qualifying. Table 2 shows the validity results of the main construct based on the UTAUT model.

**Table 3** Result of mean and standard deviation of UTAUT construct

	Mean	Standard deviation
Performance expectancy	4.14	0.898
Effort expectancy	4.45	0.789
Social influence	4.19	0.899
Facilitating conditions	3.90	0.577
Behavior intention	3.78	0.561

We employed descriptive statistics in this study because the data created can be considered as a summary of the entire data set. It is also able to provide information directly and easily (Pallant 2007). Descriptive statistics used were frequency, percentage, mean and standard deviation. The interpretation of the Mean Score based on Pallant (2007) is as follows: the mean score of 0.00–1.66 is at a low level, the mean score between 1.67–3.33 is at a medium level while the mean score is between 3.33 to 5.00 is at a high level.

The first construct is about performance expectancy. In needs analysis studies, performance expectations are a level of trust from disabled entrepreneurs that the use of technology able to help them remain competitive in the market and ability to grow the business. A result shows that the mean value of performance expectancy is 4.14 with a standard deviation of 0.898.

The second construct of the UTAUT model is effort expectancy. According to Venkatesh et al. (2003), the effort expectation refers to a person's desire to use technology and self-efficacy is becomes the main determinant of an individual's behavior for the actual use of the technology. Results show that the mean value is 4.45 with a standard deviation of 0.789. The mean value of this construct is higher compare to the mean of performance expectancy. These results indicate that the desired to use technology in business activity by disabled entrepreneurs becomes the most dominant factor as compared to the performance expectation of the technology.

The third construct is social Influence. The mean of this construct is the lowest compare with the mean of 4.19 and the standard deviation is 0.899. Social influence is defined as an individual who has an interest in someone's life that gives rise to trust and encourages him to use some technology. Social influence is a direct determinant of behavioral intentions. The last construct under the UTAUT model is facilitating conditions that indicate, disabled entrepreneurs believe existing technology, facilities and infrastructure are insufficient for them. The mean value is 3.90 with a standard deviation is 0.577. Based on descriptive estimation, we can conclude that the factor effort expectancy indicates a higher mean value which indicates that disabled entrepreneur is a desire to use a Smart 3-Wheel Bike.

However, to support the above findings regression analysis was conduct and reported in Table 4. The result shows that the coefficient of all indicators was found to be significant. Hence, estimation factor performance expectancy, effort expectancy, social influence, and facilitating condition were found to be significant. These factors

**Table 4** Summary of regression analysis

	Coefficient	Standard error	t-statistic	Significant
Constant	0.6791	0.2811	2.4158	0.0246
Performance expectancy	0.2561	0.1101	2.3260	0.0045
Effort expectancy	0.5671	0.1581	3.5869	0.0004
Social influence	0.1671	0.0912	1.8322	0.0023
Facilitating condition	0.4671	0.1517	1.7607	0.0000

Dependent variable: Use Behavioral.

**Table 5** Results of 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

successfully explained the maximum variance in the use of behavioral. The coefficient of the effort expectancy on use intention indicates the highest coefficient value that indicating the prominent role in influencing the dependent variable of use intention.

Thus based on these results, results of hypothesis testing are displayed in Table 5 as shown in the research model in Fig. 1. All the hypothesis is supported with the empirical finding.

## 5 Conclusion

The finding of this study offer support for the research model. Thus, the main contribution of this study indicates that the disabled entrepreneurs indicate they need the Smart 3-Wheel Bike. Whereas, disable entrepreneurs believe that the introduction of new technical support was able to help disabled entrepreneurs in their business activity. Thus development and introduction of new technical support and facilities for disabled entrepreneurs are needed. A study by Alper (2017) stated that, for an individual with disabilities, specialist and assistive technology need to be designed to

support the needs of this special group that also supported from research by Goggin and Newell (2003).

The result on the effort expectancy construct indicates that this factor is the most important in the needs analysis model. Which, disabled entrepreneurs stated that they need the new technology to remain competitive in the entrepreneurial world. Where this finding has been supported by the result for facilitating conditions. A study by Ostroff (2011) stated that, the need to include technology development in policy for disable people. Arnold and Ipsen (2005) and Dotson et al. (2013) had stated the important role of government policy support for entrepreneurs with disabilities.

Facilitating conditions show a direct effect on user behavior. These findings have been supporting by Bai et al. (2020) who believe in the need for technology to support business activity. Since the development of the Smart 3-Wheel Bike getting supported from disabled entrepreneurs, then these findings can be made a platform for the development of Smart 3-Wheel Bike.

In a conclusion, the findings from the needs analysis indicate the urgent need for development and supporting technology for the disabled entrepreneur. Therefore, the development of the Smart 3-Wheel Bike for disabled entrepreneurs was able to fulfill the disabled entrepreneurs' needs which had been proved base on the estimation analysis using the UTAUT model. Based on the findings related to acceptance and intention to use Smart 3-Wheel Bike, the overall findings from the main construct can be concluded that disabled entrepreneurs strongly accepted the development of Smart 3-Wheel Bike as a supporting facility for them.

For the theory contribution, this study has adopted the UTAUT model in the context of intention to use Smart 3-Wheel Bike. This study has validated a model in the context of the introduction of Smart 3-Wheel Bike to disabled entrepreneurs. This study found that the second important factor for the used intention of Smart 3-Wheel Bike is facilitating condition. This factor indicated that the features offer by Smart 3-Wheel Bike can ease the business activity for the disabled entrepreneur. The limitation of this study is the number of respondents. Due to the outbreak of the pandemic Covid-19, this study was restricted to the sample in Tumpat District. For future research, it suggest to expanding the scope of study and it is recommended that to including other variables to improve the explained variable.

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