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Abstract

The use of ICT has the potential to contribute to the improvement of the business sustainability, especially for small and medium entrepreneurs (SMEs), thus increasing community participation in entrepreneurship. This study was conducted to examine the relationship between ICT use practices in empowering rural entrepreneurs in Penang, Malaysia. The design of the study is quantitative in that the research instrument uses a questionnaire that has been distributed online (online survey) through Google Forms to the respondents. The sample of respondents in this study was selected using purposive and snowball samplings, which involved 158 rural entrepreneurs in Tasek Gelugor and Balik Pulau, Penang. Data were analyzed using Statistical Package for Social Science (SPSS) version 27.0. The results of the study found that the practice of using ICT in business, such as internet application medium ($\beta = 0.91$, $p < 0.05$) and information sources ($\beta = 0.19$, $p < 0.05$), is an indicator or predictor of the empowerment of urban entrepreneurs in Penang. This study can provide input to the government to formulate strategies to increase awareness among entrepreneurs about the importance of ICT, in addition to organizing programs and activities that can further improve the skills of entrepreneurs in the use of ICT.

Keywords: ICT Usage, Rural entrepreneurs, Small Business, Community Empowerment

Introduction

The fourth industrial revolution, or Industry 4.0, is the latest revolution towards expanding the use of the Internet and ICT in various aspects of society. This revolution brought changes to various aspects of society, especially the reliance on the Internet, which changed how information is accessed and disseminated (Nagamani and Veni, 2016; Ahmad, 2016). Kagermann et al (2013) considered that the implementation of the concept of Industry 4.0 in the production sector implies the use to the maximum capacity of the power of communications technology and innovative inventions to stimulate the development of production technologies. Industry 4.0 strengthens the role of ICT in economic development (Schwab, 2017; Sima et al., 2020), increases GDP growth, helps offer employment opportunities, organizational structuring and productivity, and poverty eradication (Palvial et al., 2017).

In order to empower the community, especially rural entrepreneurs, engagement with ICT needs to be strengthened. ICT has six roles in society: (a) as a contributor to economic factors, (b) a communicator of development information, (c) a distributor of information, (d) a socialization agent, (e) an educational promoter and (f) a disseminator of entertainment information (Chapman and Slaymaker, 2009).

Since ICT has a significant role in society, it is suitable as a platform for transforming rural communities (Aruleba and Jere, 2022; Musa, 2002). This is because of the role of ICT, which causes the administrative process to be systematic and effective and becomes an asset for community development, especially in rural areas (Kwapong, 2009; Rahman and Bhuiyan 2016). Muhammad Sani Bashir et al (2011); Zulkefli et al (2008) stated that the approach through ICT in national development is a strategy to bridge the digital divide between urban and rural residents as well as improve the situation of rural residents who are always in poverty. Therefore, this study aims to examine the role of digital marketing in empowering rural entrepreneurs.

Purpose of The Study

- To identify the empowerment of rural entrepreneurs.
- To evaluate the use of ICT in business.
- To examines the relationship between ICT usage in business with the empowerment of rural entrepreneurs.

Literature Review

Industry 4.0 has seen the Internet influence economic, social, environmental activities and it has a considerable influence in the development of nations and societies. The concept of Industry 4.0 has aroused the interest of researchers. Previous research (Kitchin, 2015; Ruth, 2007; Synowiec, 2021) stated that the process of development of rural communities through ICT applications is suitable as an intervention tool to change the socio-economic situation of the community while helping to eradicate poverty. This opinion is supported by Kotteman and Buyer (2009); Dirks and Wanda (2022) because the use of technology is able to increase the dissemination of information and open up varied opportunities in society.

Currently, online businesses are gaining popularity in the community. According to Fanggidae et al (2019), women are listed as among the most widely used online businesses. In Malaysia, the majority of online businesses are monopolized by women who primarily sell clothing, food and health products. Brands such as Bella Ammara, Zawara, and Marshmallows scarf are some examples of well-known brands that have successfully created the online business phenomenon in the country (Omar et al., 2017). Therefore, women are seen as the main target of the government in the field of ICT-based business. According to Maier and Nair-Reichert (2008), women have increasingly proven to be active and enthusiastic participants in a large variety of ICT-enabled projects. As a result, various efforts and initiatives have been introduced to assist rural women entrepreneurs to encourage them to venture into this field of ICT-based entrepreneurship.

In Malaysia, the strategy toward creating 30 percent of the rural population involved in entrepreneurial activities by 2020 is carried out through e-entrepreneurship programs. According to Ainum (2017), the strategy is an effort to involve community participation in the field of online business to empower and improve the socio-economic status of rural communities. The program aims to encourage the participation of all levels of society to get involved in the field of online business to improve and enhance the socio-economic status of

rural communities. This e-entrepreneur program also focuses on rural development to ensure increased income and community involvement to meet future challenges in line with the National Transformation 2050 (TN50) towards achieving the 2030 Sustainable Development Goal.

Castells (2013) argues that the effects of ICT are only positive when applied by those with good education and employment levels, especially in developing countries, and the opposite effect arises if applied by disadvantaged communities, especially in rural areas. Furthermore, the potential of ICT as a growth medium does not cover all parts of the world, especially in less developed countries (Harris, 2016; Mansell, 2014; Thomas, 2012; Tikao, 2013). However, the views of these researchers have not been fully proven yet. This situation may be because ICT has not been widely used, making it difficult to access, especially in rural areas. ICT is also challenging to achieve in rural areas (Aruleba and Jere 2022) as it is influenced by aspects of lack of knowledge and expertise about ICT (Harris, 2016). In addition, according to Velaga et al (2012), a major reason for this is that rural communities struggle to maintain the pace at which digital connectivity grows, i.e., Internet and broadband infrastructures are hard to penetrate in these communities.

Research Methods

The study aims to examine the extent of ICT's potential and capability in ensuring the effectiveness of digital marketing among small entrepreneurs during the Covid-19 pandemic. This study used quantitative research. The population of this study consisted of small entrepreneurs from Tasek Gelugor and Balik Pulau areas in Penang. They conducted online business based on social media mediums as a business platform.

Balik Pulau area is one of the districts in the Southwest Penang Island District. Balik Pulau is a suburban area where the majority of the residents engage in informal activities such as agricultural activities, fisheries and food products Small Medium Enterprises (SME). Tasek Gelugor is a town in the Seberang Perai Utara district, close to the state boundary with Kedah. In addition to oil palm farming and other activities, the majority of the communities in Tasek Gelugor also do business through SMEs. Refer to Figure 1.



Figure 1: Map of the study area.

Participants and Procedure

The study sample was selected based on the list of small entrepreneurs in the Tasek Gelugor area (77 people) and small entrepreneurs in the Balik Pulau area (89 people). The study's sampling for this research was selected using Purposive Sampling, and the study was conducted in several phases.

The initial phase consisted of a survey questionnaire utilizing Google Form links. The researchers distributed Google Form links to small business owners in Tasek Gelugor and Balik Pulau (166 people). During the first phase of the survey, a total of 42 responses were collected. During the second phase, 57 additional respondents were collected, bringing the overall number of respondents to 99.

Since the number of responders is still limited, the researchers decided to select small enterprises in Tasek Gelugor and Balik Pulau, Penang, using the snowball sampling technique. Through this strategy, researchers gave personal connections to persons conducting business exclusively in Tasek Gelugor and Balik Pulau, Penang suburbs. This section of the survey was completed by 59 respondents, bringing the total number of participants to 158. (Refer Table 1).

Table 1

Method of Sample Collection

Category	Population	1st survey	2nd survey	Snowball Sampling	Sample
Tasek Gelugor	77	20	26		46
Balik Pulau	89	22	31		53
i. Food Delivery Tasek Gelugor, Sungai Dua, Kepala Batas				21	59
ii. Balik Pulau Food & Healthy Product Delivery				38	
Total					158

Source: Online survey (2020)

Data Analysis

Descriptive analysis was used to analyze the data from the questionnaire. The frequency distribution was used to analyze the sociodemographic information of the respondents, business backgrounds and ICT usage in their business. Cronbach Alpha Reliability Analysis was used to measure the reliability of the items for the dependent variable (empowerment of rural entrepreneurs) and the independent variable/independent variable (application medium, information source).

The Cronbach Alpha values were based on Kirk (1984); Babie (1992) reliability indices, as shown in Table 2. Next, Multiple Regression analysis with the step wise method was used to study the relationship between ICT usage in their business (independent variable) and the empowerment of rural entrepreneurs (dependent variable).

Table

Reliability of Cronbach Alpha (Reliability Analysis)

Indicators	Cronbach's alpha value
Very high	> 0.90
High	0.70 – 0.89
Moderate	0.30 – 0.69
Low	<0.30

Source: Kirk (1984) dan Babie (1992)

Result and Discussions

This study consisted of three parts, namely: (a) sociodemographic profile, (b) business profile, and (c) the relationship between ICT usage in business with the empowerment of rural entrepreneurs.

1) Sociodemographic Profile

Based on the study, the demographic profiles of the respondents are as follows (Table 3). Findings show that most respondents are female (69%), aged 31 to 40 years (36.7%), and have a higher level of education (62%).

Table 3

Sociodemographic profile

Profile	Frequency (n)	Percentage (%)
Age		
21 to 30	50	31.6
31 to 40	58	36.7
41 to 50	30	19.0
51 to 60	20	12.7
Total	158	100.0
Sex		
Male	49	31.0
Female	109	69.0
Total	158	100.0
Education level		
Higher education (1st degree)	98	62.0
Higher School Certificate	17	10.8
Secondary education	43	27.2
Total	158	100

Source: Online survey (June 2020)

2) Business Profile

The business profiles of the respondents are displayed in Table 4. The majority of responders (61.4%) are involved in the food industry. Sixty-three respondents (23.4%) have been in business between 1 and 3 years. The income profile of the respondents reveals that 44 people (27.8 percent) earn RM1001 to RM2000, followed by RM1000 and below (40 people or 25.3 percent), RM2001 to RM3000 (37 people or 23.4%), RM3001 to RM4000 (31 people or 19.6%), and RM4001 to RM5000 are represented by six respondents with the highest income (3.8 percent).

Table 4

Business profile

Profile	Frequency (n)	Percentage (%)
Types of business		
Food business	97	61.4
Clothing business	18	11.4
Beauty and health products business	12	7.6
Service business	25	15.8
Others	6	3.8
Total	158	100.0
Business period		
Less than 1 year	37	23.4
1 to 3 years	63	39.9
4 to 6 years	34	21.5
7 to 9 years	8	5.1
10 years and above	16	10.1
Total	158	100.0
Monthly income		
Under RM1000	40	25.3
RM1001 to RM2000	44	27.8
RM2001 to RM3000	37	23.4
RM3001 to RM4000	31	19.6
RM4001 to RM5000	6	3.8
Total	158	100.0

Source: Online survey (2020)

3) Empowerment of Rural Entrepreneurs

This section will examine two main parts, namely (i) the empowerment of rural entrepreneurs and (ii) the use of ICT in business (application medium and information resources through the Internet). Analysis for each section was performed using percentage, mean and reliability tests. The categories of answers given to the respondents were according to the Likert scale starting from (1) 'strongly disagree' to (5) 'strongly agree'.

3.1) Empowerment of rural entrepreneurs

As shown in Table 5, the empowerment of rural entrepreneurs consists of 10 items that include entrepreneurs' perceptions of internet use in their enterprises. The Cronbach Alpha value for this variable is $\alpha = 0.810$. In terms of empowering rural entrepreneurs, most respondents assume that they do not have to spend a considerable amount of money to subscribe the Internet facilities (mean = 4.49). In addition, the respondents state that the frequency of use in daily tasks can increase their skills (mean = 4.79), and the respondents also strive to follow the latest developments in line with the progress of development in their place (mean = 4.78). However, there are also respondents who feel that they are rarely given exposure to information related to the development of ICT skills (mean = 4.67). However, the academic background of the respondents was seen to help their work when using computers (mean = 4.44). In terms of gender, the respondents assume that men are more exposed to the development of ICT than women (mean = 3.86).

In addition, the respondents assume that they are more comfortable with the existing situation without learning something new related to ICT (mean = 3.79) and they also think

that Internet facilities are not important for use today (mean = 3.75). Next, there are a number of respondents who make full use of ICT facilities available in their homes (mean 3.56). On the other hand, there are respondents who have computer equipment facilities but do not have Internet facilities due to unsatisfactory Internet networks (mean = 3.44).

Table 5

Empowerment of rural entrepreneurs

No.		1	2	3	4	5	Mean
		Percentage					
1	My academic background helped my work using computers.	9.5	3.8	-	19.6	67.1	4.44
2	Frequent use of ICT in daily tasks can increase my skills.	-	2.5	4.4	4.4	88.6	4.79
3	I have computer equipment facilities but do not have Internet facilities due to unsatisfactory Internet network.	-	-	73.4	8.2	18.4	3.44
4	I was given less exposure to information related to the development of ICT skills.	-	7.6	-	10.1	82.3	4.67
5	I am comfortable with the existing situation without learning anything new related to ICT.	-	10.1	-	89.9	-	3.79
6	I try to keep up with the latest developments in line with the progress of development in my place.	-	3.2	3.2	5.7	88.0	4.78
7	I don't think I have to spend a lot of money to subscribe to the Internet.	7.0	6.3	1.9	84.8	-	4.49
8	I don't think the Internet is important for current use.	-	11.4	1.9	86.7	-	3.75
9	I can fully access the ICT facilities available in my home.	-	43.0	4.4	5.7	46.8	3.56
10	I think men are more advanced in the development of ICT than women.	-	1.9	11.4	86.7	-	3.86
The Cronbach Alpha value, $\alpha = 0.810$.							

4) ICT Usage in Business

4.1) Application medium

Application medium refers to social media applications used as online business platforms for rural entrepreneurs, such as WhatsApp, Telegram, Facebook, Instagram and blog/personal website applications. The categories of answers given to the respondents are according to the Likert scale ranging from (1) 'very less often' to (5) 'very often'. The Cronbach Alpha value for this variable is $\alpha = 0.906$.

Table 6

Internet Application Medium

Internet Medium	Application	1	2	3	4	5	Mean	Standard deviation
		Percentage						
WhatsApp		2.5	5.7	9.5	37.3	44.9	4.16	0.99
Instagram		3.8	1.3	17.1	38.6	39.2	4.09	0.97
Facebook		3.2	3.4	11.4	36.7	44.3	4.14	1.00
Telegram		3.2	3.2	15.8	38	39.9	4.07	0.98
Blog/personal website		2.5	20.3	70.9	3.2	3.2	2.84	0.66

The Cronbach Alpha value, $\alpha = 0.906$.

Table 6 shows that the WhatsApp application is the most frequently used internet application medium by respondents, with a mean score of 4.16 (SP = .99). Currently, the WhatsApp application is the best platform to communicate and share information about the respondent's business in the form of text, images, voice and video. In addition, the Facebook application is also an option for respondents (mean score = 4.14, SP = 1.00) to expand their business through information sharing and promoting their products to other Facebook users. Other applications such as Instagram (mean score = 4.09, SP = .97) and Telegram (mean score = 4.07, SP = .98) are also internet application mediums for rural entrepreneurs to grow their businesses. However, the use of blogs/personal websites (mean score = 2.84, SP = .66) is still less applied by the respondents.

4.2) Sources of information through the Internet

The second aspect, the source of information in this study referred to online searches related to entrepreneurial information and business types, search for information about the economy and suppliers as well as introduce their own products or brands through social sites. The categories of answers given to the respondents were according to the Likert scale ranging from (1) 'very less often' to (5) 'very often'. The Cronbach Alpha value for this variable is $\alpha = 0.923$.

Table 7 reveals that respondents use the Internet as a source of information search related to entrepreneurship and type of business (mean score = 4.48, SP = .77), as well as to introduce their own products or brands through social sites (mean score = 4.46, SP = .99). In addition, respondents are also active in searching for information sources on the Internet related to suppliers (mean score = 4.18, SP = 1.23) as well as issues related to the economy (mean score = 4.02, SP = 1.26).

Table 7

Sources of information through the Internet

Sources of information through the Internet	1	2	3	4	5	Mean	Standard deviation
	Percentage						
Searching for entrepreneurial information and business types.	0	1.3	13.3	20.9	64.6	4.48	0.77
Introducing own products or brands through social media.	3.3	3.1	8.2	12.7	72.9	4.46	0.99
Searching for economic related information.	2.5	17.1	11.4	13.2	55.7	4.02	1.26
Find information about suppliers.	3.2	14.6	5.1	15.2	62	4.18	1.23

The Cronbach Alpha value, $\alpha = 0.923$.

5) The Relationship between ICT usage in business and the Empowerment of Rural Entrepreneurs

This study examined the relationship between digital marketing and the empowerment of rural entrepreneurs. Multiple Regression with step wise method showed two dimensions, namely application medium and information source, have a significant relationship with the empowerment of rural entrepreneurs. Table 8 shows that the application medium ($F = 829.717$, $p < 0.05$) contributed 84.1 percent to the empowerment of rural entrepreneurs. This indicates that the application medium ($\beta = 0.91$, $p < 0.05$) is the main indicator or predictor of the empowerment of rural entrepreneurs. The combination of application medium with information source ($\beta = 0.19$, $p < 0.05$) adds another 1.1 percent influence on the empowerment of rural entrepreneurs.

Table 8

The relationship between ICT usage in business and the empowerment of rural entrepreneurs.

	R	R Square	Adjusted R Square	F	Beta	Nilai t	Signifikan
Application medium	0.917	0.842	0.841	829.717	.917	13.210	0.000
Source of information	0.924	0.853	0.851	449.604	.196	3.441	0.001

*Significant at the 0.05 level

Summary and Discussion

This study involved rural entrepreneurs in Tasek Gelugor and Balik Pulau, Penang. The majority of respondents are women entrepreneurs aged 31 to 40 years and have a higher level of education. Rural entrepreneurs also mostly run food businesses and run businesses for 1 to 3 years and earn a monthly income between RM1001 to RM2000.

WhatsApp application is rated as the most frequently used internet application medium by respondents. This finding is supported by the study of Clement (2019) who found that WhatsApp has become one of the most popular in the market, as evidenced from its usage by over 1600 million active users as compared to other messenger applications. According to

Iqbal (2019), in 2017 Malaysia was ranked as the world second largest WhatsApp Messenger users with 68% of their market penetration. Besides, research conducted by Shahkat Ali and Kootbodien (2017) found out a positive impact of WhatsApp as an effective medium of interpersonal communication.

In addition, this study found respondents use the Internet as a source of information search related to entrepreneurship and type of business. According to Chou, Tan, and Yen (2004), internet offers an opportunity for businesses to create an image, offer information about products and services, develop relationships with profitable customers, better understand the consumer buying practices, ensure continuous product improvements with respect to customers' needs. Furthermore, the findings of Kursan and Mihic (2010) found that Internet serves the important role of attracting and retaining the users/customers and, in that way, managing the long-term customer relationships.

This result is in line with (Felix et al., 2017; Shareef et al., 2019; Shiau et al., 2017; Singh et al., 2017) who state that social media has been recognized as the most powerful medium in business strategy. The results of this study coincide with the study of Park et al (2017), who argue that the use of online social media enhances the ability of entrepreneurs to find new opportunities or take advantage of emerging new opportunities. Furthermore, the study by Bajpai, Pandey, and Shriwa (2012) found that the use of social media can provide advertising, and marketing opportunities (Parveen and Farzana, 2012) while (Edosomwan et al., 2011; Abuhashesh, 2014; Bhanot, 2014; Venkateswaran et al., 2019), found that the use of social message can also improve communication between business organizations and consumers.

Overall, the application medium is a major contributor to rural entrepreneurs' empowerment. This study's results prove that using social media applications as a platform in business is critical to empowering rural entrepreneurs to use ICT in their enterprises. In addition, online information sources also influence the empowerment of rural entrepreneurs through the search for information related to entrepreneurship and type of business, information on the economy and suppliers, as well as introducing their own products or brands through social sites. The findings of this study are supported by Esselaar et al. (2008), who stated that ICT could provide advantages to consumers and entrepreneurs. In fact, this technology also serves to expand the market through the channeling of information about products and online transactions (Smallbone et al., 2002). Yeung (2014) added that entrepreneurs could use online social media as an effective tool to create networks with customers/partners and develop/maintain an active online identity.

Undoubtedly, ICT is the best platform for rural communities because it can provide a significant socio-economic impact on rural communities if fully utilized. In fact, the effective use of technology will help expand their business. This study found that the use of ICT is seen to give positive feedback among the rural population in Tasek Gelugor and Balik Pulau, Penang. To empower rural communities to engage in entrepreneurial activities, they need to utilize ICT in business as optimally as possible as this facility will expand the market network as well as obtain relevant inputs. Even so, a rural entrepreneur needs to learn or be given training. In addition, the government and the private sector need to invest heavily in providing infrastructure and physical facilities to enable rural communities to gain exposure and subsequently become proficient in using ICT.

Theoretical Contribution

The discussion of this study also takes into account the Schumpeter Theory expressed by Joseph A. Schumpeter who has brought a model of entrepreneurship in 1994. The model

expressed by Schumpeter emphasizes innovation as a characteristic of entrepreneurship. The role of innovation or modification meant by him includes all activities or efforts that lead to a renewal. For Schumpeter, an entrepreneur is considered an 'innovator' who will not let the economic system be in a frozen state. He stated that the actions of entrepreneurs are likened to the act of building or 'creative destruction'. Schumpeter also associated the innovation with events that lead to major changes or 'revolutionary changes' that have a significant impact on an industry.

This theory is important to the existing knowledge. The entrepreneurial model introduced by Schumpeter sees innovation as the core of entrepreneurship. The meaning of innovation intended by Schumpeter includes all activities that lead to a renewal including the introduction of new technological processes or new products. Schumpeter also sees an entrepreneur as the initiator of innovation that will not allow the economic system to remain in a static environment. In this article, rural entrepreneurs are seen to be innovative in terms of marketing their business. This is proven through the practice of using technology as a tool and channel to market their products.

The innovation theory of profit claims that the main function of an entrepreneur is to introduce, well, innovation which Schumpeter defined as any new policy that reduces the overall cost of production or increases the demand for products. Any profit an entrepreneur receives from these efforts is a form of reward for their performance. Creating innovations was the first step on the path to success and economic profits for entrepreneurs.

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