



Article

# Psychological Traits and Intention to Use E-Commerce among Rural Micro-Entrepreneurs in Malaysia

Mohd Nor Hakim Bin Yusoff <sup>1</sup>, Fakhrul Anwar Zainol <sup>2</sup>, Razman Hafifi Ridzuan <sup>1</sup>, Mohammad Ismail <sup>1</sup> and Asyraf Afthanorhan <sup>2,\*</sup>

<sup>1</sup> Faculty of Entrepreneurship and Business, Universiti Malaysia Kelantan, Pengkalan Chepa, Kota Bharu 16100, Kelantan, Malaysia; hakimin@umk.edu.my (M.N.H.B.Y.); razmanh@umk.edu.my (R.H.R.); mohammad.i@umk.edu.my (M.I.)

<sup>2</sup> Faculty of Business and Management, Universiti Sultan Zainal Abidin, Gong Badak, Kuala Terengganu 21300, Terengganu, Malaysia; fakhrulanwar@unisza.edu.my

\* Correspondence: asyrafafthanorhan@unisza.edu.my; Tel.: +609-688-8482

**Abstract:** This study was set out to chiefly examine the influence of psychological traits—need of achievement (“N of Ach”) and risk-taking propensity (RTP)—on perceived usefulness (PUF) and perceived ease of use (PercEU), as well as their effects on the intention to use e-commerce among rural micro-entrepreneurs. This study exploited the psychological traits theories and the technology acceptance model (TAM) by utilizing samples represented by rural micro-entrepreneurs. The results of the study found that the N of Ach and RTP significantly influence PUF and PercEU. The two original TAM constructs and PercEU have significant relationships with PUF and intention. At the same time, it was also found that there exists a significant relationship between PUF and intention. This study therefore serves to fill the gaps where N of Ach and RTP of rural micro-entrepreneurs are seldom tested to examine the effects of perceptions of benefits and ease of use on the adoption of e-commerce. On top of that, this study provides vital input to policy makers and stakeholders of rural development in their efforts to increase the adoption of e-commerce among rural micro-entrepreneurs.

**Keywords:** psychological traits; need of achievement; risk-taking; technology acceptance model; rural micro-entrepreneurs



**Citation:** Yusoff, M.N.H.B.; Zainol, F.A.; Hafifi Ridzuan, R.; Ismail, M.; Afthanorhan, A. Psychological Traits and Intention to Use E-Commerce among Rural Micro-Entrepreneurs in Malaysia. *J. Theor. Appl. Electron. Commer. Res.* **2021**, *16*, 1827–1843. <https://doi.org/10.3390/jtaer16050102>

Received: 2 April 2021  
Accepted: 31 May 2021  
Published: 7 June 2021

**Publisher’s Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

It is no secret that small and medium-sized enterprises (SMEs) represent the main drivers of a nation’s economy. SMEs provide job opportunities and contribute significantly towards a nation’s gross domestic product (GDP) [1,2]. In Malaysia, SMEs represent more than 99% of total business establishments involving in sectors of manufacturing, services, agriculture, mining, and construction. Out of those sectors, almost 80% are micro-sized SMEs of which a majority are focused in service sector activities [3]. As the nation’s main economic drivers, SMEs inevitably attract the government’s attention concerning their growth and issues of sustainability [4]. As part of its continuous effort to promote new business establishments, the Malaysian government actively encourages the public to choose entrepreneurship as their first career choice. Various programs have been organized by the government to inculcate entrepreneurial culture among the public and cultivate their interest in entrepreneurship. Besides, enhancing entrepreneurship activities also comprised one of the government’s robust strategies to develop rural areas [5].

The government actively strives to provide a conducive business environment to support new start-up business ventures and the growth of existing businesses. The government’s display of support and commitment is succinctly manifested in the “Rural Development Policy” in which entrepreneurship represents the main thrust. This bold action taken by the government is timely as previous studies have posited that rural communities’ active involvement in entrepreneurial activities can ultimately have a positive

impact on the growth of local economies [6]. The rapid growth of entrepreneurship activities can also have positive chain effects on other economic activities such as job creation, private investment flow, and the rural migration rate [7]. To further strengthen existing entrepreneurship activities, the government has taken a proactive action of enhancing business support programs, so that a conducive business environment can be created for rural folks to form new businesses. In addition, the support programs are also meant to boost the sustainability of existing businesses [8]. Furthermore, the government's financial support programs such as soft loans and grants are made available to small businesses as a means to finance their capital expenditures and daily working capitals, at the same time encouraging the building of physical infrastructures to support the establishment of convenient business activities [8].

In spite of all these, current changes in the global entrepreneurial ecosystem as a result of rapid technological changes have had a greater impact on the larger SMEs' activities, affecting rural micro-enterprises the most [9,10]. Moreover, a combination of financial constraints and low skills further exacerbate the impacts of rapid technological changes for micro-SMEs as the fierce competition is now fueled by a new digital business environment in which technology plays an increasingly important role in every single business activity [11]. Nonetheless, SMEs of all sizes need to ride the new technological wave in order to remain relevant in the market. Explaining the importance of the role of technology to SMEs, the results of a study conducted by [11] on four countries, namely Poland, the USA, Turkey, and China, found that social media was the main medium of communication between customers and companies, SMEs in this context. Never before has the role of technology in business proven to be so compelling than in the recent context when most retail economic activities were 'taken over' by technology, in particular, during the COVID-19 pandemic where human movements were severely restricted [12]. This dramatic change in business environment was particularly noticeable when most retail business transactions were done online as consumers were no longer free to move to shop. It was generally found that SMEs using e-commerce to sell their products and services were most likely to survive the first wave of the COVID-19 pandemic's lockdown measures [13]. Meanwhile, SMEs, especially micro-enterprises that did not use e-commerce platforms for their typical business activities, were found to be severely affected by the lockdowns, with a tremendous decline in their revenues.

Therefore, to mitigate the burgeoning crisis, the government has been actively encouraging new and existing SMEs to adopt e-commerce as an essential element of their business model in order for them to stay relevant amid a highly competitive market. The rapidly shifting trends and developments only serve to support the timeliness of the formation of the National Entrepreneurship Policy 2030 (NEP 2030) in 2019 [5]. The NEP 2030 provides relevant guidelines to entrepreneurs in navigating their activities as well as acting as a catalyst for growth among Malaysian SMEs. One of the objectives of NEP 2030 is to promote the usage of technology and digitization among SMEs, especially among micro-SMEs. In order to realize this objective, various agencies were made responsible to train micro-entrepreneurs in digitalization application skills, such as e-market platforms and social media, so that they can be effectively integrated in their daily business activities. Indeed, the government's move to provide support assistance in the form of trainings and provision of a digital entrepreneur digitalization platform have been very timely. On top of that, in line with the latest technological developments and the fourth industrial revolution (Industry 4.0), the government is also currently developing and coordinating various online hubs for rural businesses to ensure that they retain their competitiveness [8]. The initiative also aims to expand the rural business market through online platforms, synonymously and widely known as e-commerce. In other words, the government is actively promoting the transformation of rural business transactions and activities from the conventional brick-and-mortar system into a more convenient platform of e-commerce. Naturally, these rapid changes in an entrepreneurial ecosystem demand entrepreneur to maximize their technology usage and digitalize their business activities [14]. This vitally

important business transformation effort is also aligned with the aim of the NEP 2030, which is to establish digital entrepreneurship that is in line with the current business climate. Entrepreneurial digitization has the potential to strengthen marketing activities and also build domestic and global market chains. In addition, past studies have shown that online businesses are popular among many entrepreneurs due to their low operational costs, which means that they are especially suitable for small-sized businesses with limited financial resources [15]. This explains why e-commerce today has become a popular and effective platform for conducting one's business activities as well as acting as a substitute for conventional business practices [16].

Recognizing the importance of the use of technology, especially e-commerce in business, this study aims to investigate the factors that influence the intentions and tendencies of rural small entrepreneurs to use e-commerce in their daily activities. This study is based on TAM and the traits theory, where TAM basically advocates that the intention to use technology is obtained by PerEU and PUF, while the traits theory states that entrepreneurial behavior also plays a role in decision making. Thus, this study suggests that traits factors are able to influence the PerEU and PUF of entrepreneurs towards e-commerce. These two theories are discussed further in Section 2.

## 2. Literature Review

### 2.1. The Context of the Study

This study exploited TAM and traits theory in order to explain the intention and the actual behavior that encourages the adoption of e-commerce among businesses. The main components of TRA are attitudes, subjective norms, intentions, and behaviors. Subjective norms and attitudes constitute the two main predictors in the TRA model. An attitude refers to the level of an individual perception of a particular action. Meanwhile, subjective norms are defined as social factors that put pressure or influence an individual's intentions [17]. In contrast, in TAM, attitude measurement was replaced by PercEU and PUF, to which they serve as predictors of intentions. The intention here mediates the relationships between PercEU and PUF and behaviors. In a theoretical sense, the intention to use new technologies is actually influenced by both PercEU and PUF [18]. This explains why TAM is widely used in studies involving the adoption of new technologies. Besides that, TAM also was applied by a number of researchers to examine the behavior of internet users [19–21]. In fact, TAM has been used in various disciplines such as entrepreneurship, ICT, and e-commerce [22–24]. The authors of [25] argued that the constructs in the original TAM were unable to comprehensively explain the diversity of users' behavior. This is because factors that influence the decision to use e-commerce among consumers are different from those among business organizations. In addition, the use of e-commerce among consumers is also regarded as a voluntary decision, while in contrast, the decision for organizations to adopt e-commerce is typically based on a set of instructions or policies.

Indeed, various forms of technologies have been introduced to the market. This naturally affects the factors that influence their usages. As a result, the influence factors differ between each technology. This fact explains how the influencing factors of the usage of technology are not limited to PUF and PercEU only. There are in fact other factors that require careful analysis in order to offer more factually supported information on the factors that influence the use of technology among businesses. This results in the basic TAM, seen as incapable to make effective predictions on all types of technology uses [26]. This consequently prompted researchers to make appropriate modifications to the basic TAM. A myriad of research in M-banking made necessary modifications to this model. For example, the authors of [27] added awareness, compatibility, and resistance on their intentions to use mobile banking in Bangladesh. Meanwhile, the authors of [28,29] furnished the model with security perceptions, consumption cost perceptions, and risk perceptions. The combination of external factors as determinants to PUF and PercEU was made in accordance with the philosophy of this model which allows for modifications [30,31].

The arguments above serve as evidence that many modifications have indeed been made to the basic TAM. In general, RTP and N of Ach, which represents the entrepreneur's traits, are factored as determinants of PUF and PercEU in order to explain the attitude of micro-entrepreneurs in Malaysia towards e-commerce usage. On the other hand, based solely on the entrepreneurship perspective, TAM was mostly exploited to examine environmental factors such as determinants of PUF and PercEU. However, rarely have the effects of psychological factors been tested on both PUF and PercEU, making it highly imperative to analyze an individual's psychological factors, as the individual entrepreneur's character and personality may possibly influence business decision-making activities. According to Kassim (2003), psychological character, or traits a personality in a person, differs between individuals. Past studies in this field have focused on the influence of traits on business performance and the tendency of individuals to engage in entrepreneurship. Almost the entire study found that traits have a significant and positive influence on business performance. It also has a significant influence on the tendency to engage in entrepreneurship. The authors of [32] found that N of Ach and RTP are among the traits that influence the initial success of a business. These findings reinforce the results of a study conducted by [33] who found that N of Ach is able to predict an individual's tendency to engage in entrepreneurship as well as business performance. In other words, traits theory states that entrepreneurs have certain characters and traits that make them able to create success in business. Among the main characters that have been identified are need of achievement, risk attitude, locus of control, self-efficacy, openness, innovativeness, and extraversion [34–37]. The past findings discussed form the basis of this study to evaluate the relationship of entrepreneurial traits, namely N of Ach and RTP, with PercEU and PUF in the TAM model.

An entrepreneur is key personnel who determines and makes decisions in order to navigate the directions that his/her business takes [38,39]. Moreover, in comparison, the management structure of micro-sized SMEs is dissimilar to medium-sized SMEs and large firms, which are equipped with more systematic organization, and also rigorously practice a collective decision-making process. Therefore, it is highly pertinent that a study related to technology adoption among micro, rural SMEs is performed in order to analyze the influence and relevance of entrepreneurial psychology on both PUF and PercEU. This study aims to produce empirical evidence on the impact of RTP and N of Ach on PUF and PercEU in reference to the adoption of e-commerce among rural micro-entrepreneurs, a topic that seldom attains any attention by researchers. Furthermore, this study also intends to shed light on the topics of psychological influence and the propensity of e-commerce adoption among rural micro-entrepreneurs. The results of this study are expected to assist relevant parties in their efforts to formulate effective rural development policies, in particular, those involving entrepreneurial development and economic digitization.

## 2.2. Need of Achievement

Entrepreneurial success is related to the level of N of Ach in that it can be found within the entrepreneurs themselves. Indeed, entrepreneurs with a high N of Ach are more likely to succeed in comparison to entrepreneurs with a low N of Ach [40,41]. Individuals who possess a high N of Ach are more motivated when faced with challenging business environments, as they are more greatly compelled to achieve their performance targets than those with a low N of Ach [42,43]. Meanwhile, in view of employees' performance, N of Ach plays an important role in influencing individuals' job satisfaction, whereby those with a high N of Ach are found to be more capable of satisfactorily completing their work [44]. On the other hand, from an entrepreneurial perspective, N of Ach does yield a significant influence on a business' overall performance. A study by [45,46] found that entrepreneurs with a high N of Ach experience faster growth than those with a low N of Ach. Meanwhile, micro-entrepreneurs operating with limited financial resources and low skills and knowledge typically find e-commerce adoption to be a rather challenging task [47]. Ultimately, the decision to adopt e-commerce is very much dependent on its

myriad of benefits, in particular, the effortless experience that comes with using the system [48].

Previous studies have also found that N of Ach is able to predict the tendency to engage in entrepreneurship among individuals [32,49,50]. Previous researchers have defined the field of entrepreneurship as the first step in starting a new business. Individuals with high N of Ach start a new business because it is driven by pull factors such as desire for independence, recognition, financial success, and self-realization [51]. Therefore, this study argues that an individual's decision to start a new business is made after taking into account the usefulness and easiness of the field to achieve the desired goal. In the context of e-commerce and TAM, theoretically N of Ach is also expected to have an impact on the PercUF and PEU of rural entrepreneurs in regard to the use of e-commerce, and to influence the intention to use it. Thus, it can be deduced from past arguments and studies that a high N of Ach is certainly able to influence entrepreneurs' perceptions on the benefits and ease of adopting an e-commerce system. Furthermore, entrepreneurs with a high N of Ach are also more likely to take up new challenges in order to achieve success, as they are generally found to be more willing to endeavor into new activities to improve their business performance. Therefore, this study hypothesizes that the:

**Hypothesis 1 (H1):** *Need of achievement significantly affects rural micro-entrepreneurs' perceived usefulness of e-commerce; and that the*

**Hypothesis 2 (H2):** *Need of achievement significantly affects rural micro-entrepreneurs' perceived ease of use towards e-commerce.*

### 2.3. Risk-Taking Propensity

In general terms, a risk refers to a situation that is exposed to unfavorable effects of uncertainties. Meanwhile, a risk situation denotes the probability of a negative event occurring that may affect a business' internal activities [52]. On the other hand, risk-taking propensity is defined as the tendency to undertake a risky task with an aim of achieving a specific desired outcome [53]. In view of entrepreneurship, entrepreneurs are often described as individuals who tend and dare to take risks [54]. A risk taker is an individual that is generally confident in making decisions in uncertain situations with limited available information. Nonetheless, any acceptable level of risk is normally determined by individuals and their corresponding risk appetites. Risk-taking propensity is commonly found in investment-driven decision-making processes such as in setting up a new expansion effort or producing a new product for a new market [55].

Individuals are often faced with risks and must learn how to deal with them in order to meet their needs and wants. Basic needs of human beings include items such as safety needs and physiological needs, as well as self-actualization [56]. As far as achievement is concerned, McClelland argued that performance-oriented individuals work hard so that they may achieve what they desire. These individuals firmly believe that great success comes with great sacrifice, an idea that is closely associated with taking higher risks [57]. For micro-entrepreneurs, the decision to be involved in a new venture, specifically those related to technology, is deemed highly risky [58]. Based on the perspective of technology adoption, the decision to use technology (e-commerce) in daily business activities is considered risky among rural micro-entrepreneurs as well. One credible argument claims that as the majority of rural micro-entrepreneur's lack funds, technology exposure, and relevant skills in adopting a new technology, which, coupled with their limited funds for daily operations, consequently exposes them to a higher risk of failure [59]. However, the authors of [60,61] (1985) argued that a real entrepreneur naturally possesses a high tendency to take risks. In addition, entrepreneurs who have a clear mission and aspiration consistently strive to avoid failure, whereby they dare investing in risky decisions in their path towards business success. Using the consolidated arguments above as justifications, this study intensively examines the effects of RTP on rural micro-entrepreneurs' PUF and PercEU. This study therefore tests the following hypotheses of whether:

**Hypothesis 3 (H3):** *Risk-taking propensity significantly affects rural micro-entrepreneurs' perception on e-commerce's usefulness; or if*

**Hypothesis 4 (H4):** *Risk-taking propensity significantly affects rural micro-entrepreneurs' perception on e-commerce's ease of use.*

#### 2.4. Perceived Usefulness and Perceived Ease of Use

PUF is a concept describing a consumer's confidence level towards a particular system that gives a positive impact on their work performance. Meanwhile, PercEU describes a consumer's confidence level towards a system or technology that is easy to use and does not require much effort [19,31]. This concept was first introduced in TAM by the authors of [31], who assumed that there existed relationships between PUF, PercEU, and the consumers' intention and behavior in using technology or making purchase decisions. Furthermore, TAM also suggests that PercEU has a significant influence on PUF. The perception of consumers on the ease of use of a technology inevitably affects the perception of the benefits that can be derived from the specific system or product. As a result, both PUF and PercEU can influence the intention and behavior of micro-entrepreneurs to use a specific technology. Numerous studies on PUF and PercEU have been conducted to examine the intensity of the relationship between these two constructs. A study conducted by the authors of [62] found that PUF and PercEU collectively influence teachers' attitude towards the usage of multimedia in teaching and learning activities. On the other hand, the authors of [63] asserted that perceived online community usefulness has a strong influence on boosting the intention to practice knowledge sharing among community members. In a study on mobile banking adoption, reference [27] concluded that PUF and PercEU both play an important role in progressively influencing consumers' intention to use mobile banking.

The roles of PUF and PercEU in determining consumer intentions have been hotly debated among entrepreneurial researchers. A study related to the adoption of well-being programs among micro-entrepreneurs in Bangladesh conducted by [24] found that both PUF and PercEU help influence the acceptance of micro-entrepreneurs towards new technologies to improve their businesses' well-being. It was also found in the same study that PercEU has a significant relationship with PUF. In short, most TAM researchers found that consumers who believe in a technology or product that is friendly and easy to use will consequently be influenced by the belief of its many benefits, further accelerating its actual adoption. Therefore, this study hypothesizes the followings:

**Hypothesis 5 (H5):** *Perceived usefulness positively influence the intention to use e-commerce among rural entrepreneurs;*

**Hypothesis 6 (H6):** *Perceived ease of use positively influence the perceived usefulness of e-commerce among rural entrepreneurs; and*

**Hypothesis 7 (H7):** *Perceived ease of use positively influence the intention to use e-commerce among rural entrepreneurs.*

### 3. Materials and Methods

This study used quantitative methods to study a population that consisted of rural micro-entrepreneurs located in four localities in Kelantan. Furthermore, this study also applied cross-sectional data to measure the relationship of psychological traits, N of Ach and RTP, and PercEU, PUF, and intention. This study exploited the measurement scale developed and applied by previous researchers for measuring the relationship between these constructs. This approach warranted assurance to the reliability and validity of the instrument, as it was tested and accepted by many past researchers. To measure constructs under the psychological trait of N of Ach, this study utilized measurement scales developed by [64] which comprise five items. The RTP measurement items were adapted from [65], who used this scale to measure one of the features of entrepreneurial orientation. The scale

contains five measurement items. For the construction of PercEU and PUF constructs, a measurement scale was borrowed from [66], who studied consumer acceptance towards online banking in Finland. This scale contains four and five measurement items, respectively. Last but not least, intention was measured using a measurement scale developed by [17,67]. This scale contains four measurement items. Meanwhile, the 5-point Likert scale was applied to measure the constructs, where number 1 indicates the lowest scale value representing a ‘strongly disagree’ view and number 5 points to the highest scale value representing a ‘strongly agree’ view. Prior to the collection of data through distribution of survey questions, a pilot test was conducted to confirm the items’ reliability and validity. In addition, pilot tests to further verify the reliability and validity of measurement items as measurement scales were also developed abroad on the basis of different social and cultural backgrounds.

A total sample of 302 respondents consisting of micro-entrepreneurs were selected using a random sampling method. The sample size of 302 was selected as suggested by [68]. In addition, this study also obtained a list of SMEs from the Majlis Amanah Rakyat (People’s Trust Council), a government agency responsible for the development of rural entrepreneurs. Meanwhile, structural equation modeling (SEM) was utilized to analyze the relationships between psychological traits, PercEU, PUF, and intention and the use of e-commerce among micro-entrepreneurs. The best-known techniques within SEM are the partial least squares (PLS) approaches. PLS are typically used to evaluate theoretical models as depicted in Figure 1, and are capable of simultaneously testing the relationship between indicators and latent variables (measurement models), and relationships between constructs (structural models), even in complex models [69]. These advantages possessed by PLS explain why these approaches were the most appropriate mechanisms to analyze the data of this study. In addition, the use of PLS is also in line with the objective of the study, which is forecast oriented where a normal data distribution is not required.

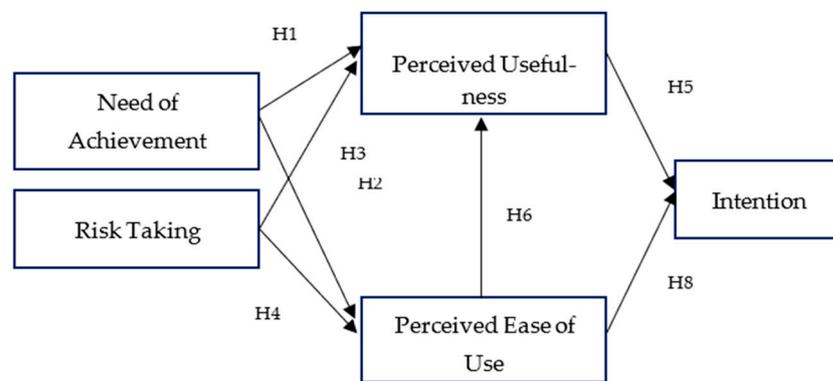


Figure 1. The theoretical framework.

#### 4. Results

##### 4.1. Characteristics of Demographics

The study first established that the majority of respondents were women (55.6%) and that men represented 44.4% of the total respondents. Furthermore, the study established that 87.7% of the respondents were married, whereas 10.9% of them were single and 1.3% of them were widows. In terms of age, 86.3% of the respondents were found to be younger than 41 years old, while 25.2% of them were aged between 41 to 50 years old, and only 18.2% of the respondents were found to be over 50 years old. With regard to educational qualifications, most respondents obtained a secondary school education. Nonetheless, 29.8% of the respondents had acquired a diploma, 6% of them had a degree, and a small 1.3% of them had obtained a master’s degree. It is significant to note that only five respondents (1.7%) did not have a formal education background. On the other hand, insofar as business demographics were concerned, 92.7% of the respondents were operating as micro-sized businesses with a total employee count of less than five. At

the same time, 86.8% of the respondents ran their businesses as sole proprietors, 11.3% as private limited companies, and 2.0% as a partnership. In addition, a majority of the respondents (93.0%) were involved in service activities and that the remaining 7% were focused on manufacturing activities. Lastly, only 61.7% of the respondents were found to have been in business for less than 10 years. The demographic information obtained are illustrated succinctly in Table 1.

**Table 1.** Respondent Background.

Particular	N	%
Sex		
Man	134	44.4
Women	168	55.6
Marital Status		
Single	33	10.9
Married	265	87.7
Widowed	4	1.3
Age		
<20 years old	57	18.9
21 to 31 years old	12	4.0
32 to 41 years old	101	33.4
42 to 51 years old	76	25.2
52 to 61 years old	43	14.2
Over 61 years old	12	4.0
Education Level		
Never attended school	5	1.7
Primary School	11	3.6
Secondary School	172	57.0
Diploma	90	29.8
Undergraduate Degree	18	6.0
Master’s Degree	4	1.3
Type of Business		
Manufacturing	21	7.0
Services	281	93.0
Form of Business		
Sole Proprietorship	262	86.8
Partnership	6	2.0
Private Limited	34	11.3
Tenure		
Less than 1 year	2	0.7
1–6 years	86	28.5
7–11 years	98	32.5
12–16 years	66	21.9
17–21 years	28	9.3
More than 21 years	22	7.3
Number of Employees		
0–5 persons	280	92.7
6–20 persons	22	7.3

*4.2. Results of Measurement Model*

Under measurement model assessment, the data reliability and validity were measured by examining items in latent variables [70].

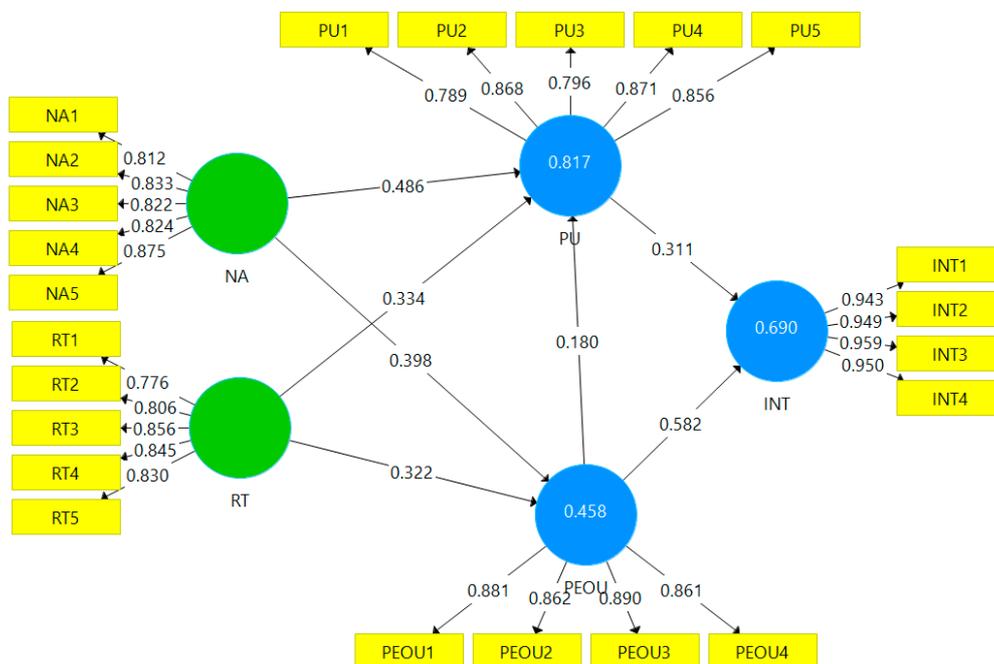
*4.2.1. Loading and Cross-Loading*

Furthermore, the reliability of each measurement item construct was also examined in which loading with more than 0.4 value is generally considered acceptable [71]. Meanwhile, internal consistency was used to test whether the scale used was able to measure the concept that should be measured or otherwise. In general terms, a score above 0.7 is considered

acceptable. Table 2 and Figure 2 shows that the loading value obtained was above 0.7, which means that no internal consistency problems were found in the study.

**Table 2.** Construct validity.

	INT	N of Ach	PercEU	PUF	RTP
INTN1	0.943	0.637	0.744	0.689	0.609
INTN2	0.949	0.614	0.737	0.652	0.564
INTN3	0.959	0.657	0.803	0.708	0.594
INTN4	0.950	0.640	0.756	0.685	0.569
N of Ach1	0.533	0.812	0.476	0.703	0.568
N of Ach2	0.596	0.833	0.558	0.713	0.623
N of Ach3	0.536	0.822	0.530	0.682	0.603
N of Ach4	0.548	0.824	0.530	0.722	0.665
N of Ach5	0.579	0.875	0.586	0.751	0.717
PercEU1	0.700	0.531	0.881	0.571	0.528
PercEU2	0.671	0.509	0.862	0.587	0.518
PercEU3	0.727	0.598	0.890	0.645	0.555
PercEU4	0.696	0.607	0.861	0.647	0.585
PUF1	0.577	0.716	0.547	0.789	0.620
PUF2	0.618	0.745	0.602	0.868	0.727
PUF3	0.585	0.664	0.561	0.796	0.677
PUF4	0.628	0.746	0.630	0.871	0.709
PUF5	0.602	0.713	0.595	0.856	0.686
RTP1	0.482	0.620	0.466	0.625	0.776
RTP2	0.509	0.607	0.543	0.636	0.806
RTP3	0.511	0.659	0.524	0.737	0.856
RTP4	0.509	0.620	0.519	0.680	0.845
RTP5	0.516	0.638	0.524	0.683	0.830



**Figure 2.** Structural model (standardized estimates).

Construct validity is defined when the loadings of all items exceed 0.7 and are greater on their own constructs and lower on other constructs [70]. Should there be a high correlation between the constructs, there is a possibility of multicollinearity problems arising

within the model [69]. Nonetheless, the results gathered indicate no multicollinearity problems were found and that the measurement items were ultimately valid.

#### 4.2.2. Convergent Validity

Convergent validity is a test to see if the items’ measurements are positively correlated with other items’ measurements of the same construct. Average variance extracted (AVE) and composite reliability (CR) are factor loadings commonly used to determine convergent validity. In practical terms, convergent validity is achieved when the AVE value is 0.5 or more [70] and the CR value is 0.7 or more. The results shown in Table 3 found that all factor loadings—CR and AVE—exceeded their cut-off values [70]. Therefore, it can be deduced that the assumption of the convergent validity for this study was truly achieved.

**Table 3.** Construct reliability and convergent validity.

Construct	Label	Std Loading	CR	AVE
Intention	Int1	0.943	0.974	0.903
	Int2	0.949		
	Int3	0.959		
	Int4	0.950		
Need of Achievement	Na1	0.812	0.919	0.695
	Na2	0.833		
	Na3	0.822		
	Na4	0.824		
	Na5	0.875		
Perceived Ease of Use	PercEU1	0.881	0.928	0.763
	PercEU2	0.862		
	PercEU3	0.890		
	PercEU4	0.861		
Perceived Usefulness	PUF1	0.789	0.921	0.700
	PUF2	0.868		
	PUF3	0.796		
	PUF4	0.871		
	PUF5	0.856		
Risk Taking	RTP1	0.776	0.913	0.677
	RTP2	0.806		
	RTP3	0.856		
	RTP4	0.845		
	RTP5	0.830		

#### 4.2.3. Discriminant Validity

Discriminant validity shows the extent to which items in each construct differ from items in other constructs by examining the correlations between potentially overlapping constructs using the Fornell–Lacker criterion analysis. This measuring tool compares the AVE of each construct with the square correlation of all other constructs. The AVE value established must be higher than the square correlation value in order to achieve discriminant validity. Table 4 clearly exhibits the square correlation of each construct and confirms the validity of discrimination. The results of this test also indicate that there were no multicollinearity problems established in the model of this study.

**Table 4.** The Fornell–Larcker criterion.

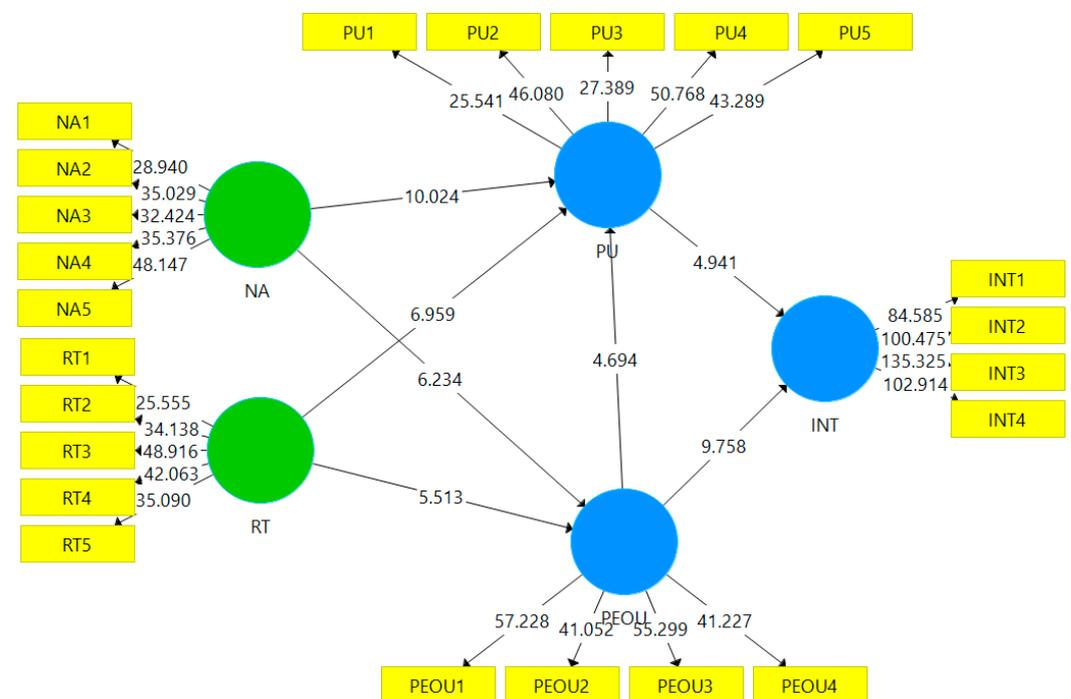
	INT	N of Ach	PercEU	PUF	RTP
INT	<b>0.950</b>				
N of Ach	0.670	<b>0.834</b>			
PercEU	0.800	0.644	<b>0.874</b>		
PUF	0.720	0.857	0.702	<b>0.837</b>	
RTP	0.614	0.764	0.626	0.818	<b>0.823</b>

4.3. Structural Model Result

The second phase of the PLS analysis was centered in making an assessment on the structural model used for the purpose of hypothesis testing [72]. In this phase, the relationship of the constructs was examined closely by making an assessment on the path coefficient ( $\beta$ ) and t-statistics. Table 5 presents results of the hypothesis test. Meanwhile, results of the coefficient path analysis are revealed in Figure 3.

**Table 5.** The path coefficient and hypotheses.

Hypothesis	Regression Path	Standardized Estimates	t-Value	p-Value	Hypotheses Supported
H1	N of Ach_ -> PUF	0.486	10.024	0.000	Yes
H2	N of Ach_ -> PercEU	0.398	6.234	0.000	Yes
H3	RTP -> PUF	0.334	6.959	0.000	Yes
H4	RTP -> PercEU	0.322	5.513	0.000	Yes
H5	PUF -> INT	0.311	4.941	0.000	Yes
H6	PercEU -> PUF	0.180	4.694	0.000	Yes
H7	PercEU -> INT	0.582	9.758	0.000	Yes



**Figure 3.** Structural model (T-value).

The study’s findings exhibited in Table 5 and Figure 3 firmly supported all of the hypotheses proposed earlier in the study. Indeed, it was found that all independent variables of this study had a significant positive relationship with their respective dependent variables. N of Ach and RTP, which are the new constructs introduced in TAM, had significant

relationships with both PercEU and PUF, in which the  $R^2$  for these two relationships were 0.458 and 0.817, respectively. This recorded value of  $R^2$  is generally considered high. It also reflects the N of Ach and RTP, which explained 45.8% of the PercEU variants [72]. Meanwhile with regard to PUF, the N of Ach and RTP relationship explained 81.7% of the PUF variants. Both PercEU and PUF also had a significant influence on intention, where 81.7% of the variance of INT was also explained by these two constructs.

## 5. Discussion

This study incorporated entrepreneurial traits theory and TAM together to unravel the issue of the low e-commerce adoption rate among SMEs, in particular, the rural micro-entrepreneurs. For the purpose of this study, TAM, which commonly exploits PercEU and PUF constructs in predicting the intention to use technology, was modified with the incorporation of two new constructs, N of Ach and RTP. Both of these constructs were selected to serve as predictions for PercEU and PUF and to examine the extent to which entrepreneurs' psychological traits influence the entrepreneurs' perception on ease of use and usefulness of e-commerce. Notably, the results reveal that all seven hypotheses made earlier in the study are firmly supported by data. Indeed, N of Ach and RTP both yield a significant influence on the rural micro-entrepreneurial perceptions of the benefits and importance of technology in a business. Both these constructs confirm the idea that an entrepreneurs' internal characteristics also play an important role in their eventual decision to adopt a specific technology for their businesses. Rural micro-entrepreneurs with a high N of Ach constantly see new things as opportunities and potential benefits that should be exploited to achieve their business plans and aspirations. In other words, the emergence of new innovations as a result of rapid technological changes is regarded as a provision of opportunities waiting to be exploited for rural micro-entrepreneurs with a clear direction and a high N of Ach. Furthermore, entrepreneurs with a high N of Ach are willing to carry out difficult and challenging tasks, as well as feeling confident that the tasks can in fact be accomplished. Results of their efforts symbolize rewards that give them the ultimate satisfaction and represent the key motivation for many successful entrepreneurs. This finding on N of Ach is in line with the finding of study by [73], who found that the need of achievement is a driving factor for the creation of new e-commerce ventures. Thus, it clearly shows that N of Ach is a significant predictor to entrepreneurs' perceptions of the benefits of e-commerce. As N of Ach in the TAM model has never been tested to measure its influence the usage on e-commerce among rural micro-entrepreneurs, and the findings of this study provide a new context in TAM and micro-entrepreneur studies.

On the other hand, the perspective of risks dictates that rural micro-entrepreneurs with a high RTP naturally dare to take up challenges and consistently find ways to succeed. With reference to this study, the adoption of e-commerce requires a relatively large amount of investments, and with limited skills, knowledge, and funds, the risk of adopting e-commerce is considered extremely high for rural micro-entrepreneurs. However, the results of this study indicate that rural micro-entrepreneurs with a high RTP can significantly influence their PercEU and PUF. Moreover, the results also indicate that RTP can positively influence PercEU and PUF, which can consequently affect the micro-entrepreneurs' intention to adopt e-commerce. Thus, this thesis validates the existing studies positing that RTP are able to influence new venture decisions [5,74,75]. The truth is that entrepreneurs with a high RTP do accept e-commerce as a necessity for their business development, as well as seeing it as a strategic tool for their business growth.

Predictably, both PercEU and PUF individually play a major role in influencing the decision to use e-commerce among rural micro-entrepreneurs. The results of this study are in line with other previous studies on the influence of PercEU and PU on dependent variables. A study by the authors of [76] found that PercEU and PUF were two critical factors the success of M-commerce adoption among Taiwan's entrepreneurs. The results also confirm the findings of a study conducted by the authors of [77], who found that PEU has a strong relationship with e-commerce adoption among gen-z entrepreneurs in

Indonesia. Despite the entrepreneurs' obvious lack of skills and low level of education, PercEU and PUF successfully overcame major barriers that previously hindered the use of e-commerce among rural micro-entrepreneurs. In essence, positive PercEUs and PUF positively affect the PUF of e-commerce.

Theoretically, this study provides an understanding of the role of psychological factors on PerEU, PUF, and how they influence the intention to use e-commerce among rural entrepreneurs. Generally, this research provides two important implications for theory. First, the psychological factors and TAM literature are expanded through this research, which investigated the role of N of Ach and RTP in a TAM model predicting the intention to use e-commerce. This study argued that rural entrepreneurs are prepared to use e-commerce despite a lack of weakness if they are achievement oriented and risk takers. The role of these two variables has rarely been examined despite the importance of doing so. Secondly, this is the first study that empirically integrates and tests N of Ach and RTP as predictors to PercEU and PUF in TAM. Previous studies have focused more on the environmental factors and rarely consider these two variables. Thus, the findings of this study add to the literature on entrepreneurial psychological factors and TAM. The practical contribution of this study is to put a greater focus on enhancing the N of Ach and RTP of entrepreneurs, in order to increase the rate of technology adoption, in particular, e-commerce adoption. Active campaigns and a myriad of entrepreneurial culture programs for rural communities can also serve as forms of bold strategies employed to increase entrepreneurial self-motivation among rural micro-entrepreneurs. In addition, the rural micro-entrepreneurs' desire to grow and thrive in business also needs to be further nurtured and enhanced. This is because one of the development barriers for many rural SMEs is the owner's own preference to limit growth [7]. Therefore, should this attitude remain unchanged, the adoption of a new technology like e-commerce will only serve as another obstacle for the government in their efforts to properly develop rural areas, despite the technology's enormous potential as an enabler of rural development. The aggressive development of entrepreneurial attitudes and skills for rural micro-entrepreneurs is certainly needed to increase the viability and growth potentials of their businesses. This may include organizing programs that lead to the development of networking skills among micro-entrepreneurs so that information on not only business operations, but also on available government support programs, can be easily shared among themselves as they now view each other as peers. Plus, the programs can also be jointly organized with local business associations to guarantee a wider reach.

In addition, to ensure that micro-entrepreneurs are not left behind in the rapidly booming digital economy, a simple e-commerce platform that suits the size and nature of business preferences favored by rural micro-entrepreneurs must be urgently developed. Entrepreneurial development agencies and industry players are required to join hands to develop an e-commerce platform that can meet the needs of micro-businesses as well as suit their level of skills and education. Easy-to-operate software and gadgets enhance PercEU, which will inevitably have a positive impact on PUF, consequently increasing the tendency to use e-commerce among rural micro-entrepreneurs.

## 6. Conclusions

This study aimed to uncover the rural acceptance of micro-entrepreneurs towards the use of e-commerce in their business activities. Based on TAM and psychology theory, the findings of this study suggest that two entrepreneurial characteristics, namely N of Ach and RTP, are important elements in increasing the rate of e-commerce usage among rural entrepreneurs. The results of this study provide input that rural micro-entrepreneurs who have a high N of Ach and RTP have a high desire to use e-commerce as a tool to develop their business. Thus, this input is very meaningful and can be used by policy makers, business associations, and institutions of higher learning to design programs to increase the rate of e-commerce usage among entrepreneurs, particularly rural micro-entrepreneurs. This study also confirms the previous findings on the significant role of PUF and PercEU on consumer intentions towards technology adoption. In addition, this study reinforces

TAM's prediction capability on consumer behavior towards new technologies, especially that of rural entrepreneurs. Thus, the study suggests that TAM is a reliable theoretical model to address technology adoption issues among rural entrepreneurs. Furthermore, this study highlights the role of psychology traits in influencing rural entrepreneurs' perception on e-commerce. Therefore, the rural economic development agencies should incorporate these two elements in any capacity building modules and rural entrepreneurship programs.

This study is not without limitations despite its significant contributions. The theoretical framework was developed to investigate the relationship of entrepreneurial psychological traits and PerceEU and PU, which are the main drivers in TAM. However, this study did not measure the direct relationship between entrepreneurial psychological traits and intention. Moreover, this study also did not investigate the actual act towards e-commerce usage. Therefore, future studies are recommended to measure the influence of N of Ach and RTP on intention and the impact on actual usage. Overall, this study contributes to a better understanding on how psychological traits have positively carved perceptions on e-commerce among rural entrepreneurs, despite being surrounded by weaknesses such as a lack of infrastructure, shortness of funds, and less skills. The study also provides input that rural entrepreneurs are prepared to incorporate e-commerce technology in their business models, as it warrants business sustainability. This positive development permits rural entrepreneurs to continue as rural economic development champions.

**Author Contributions:** Conceptualization, M.N.H.B.Y. and F.A.Z.; formal analysis, R.H.R.; methodology, M.I.; writing—review and editing, A.A. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research was funded by the Ministry of Higher Education, Malaysia under the grant entitled Developing a New Rural Business Model Using Psychological Approach (Grant No: R/FRGS/A0100/00288A/003/2018/0000564).

**Data Availability Statement:** Not available.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

- Motta, V. Lack of access to external finance and SME labor productivity: Does project quality matter? *Small Bus. Econ.* **2020**, *54*, 119–134. [CrossRef]
- Park, S.; Lee, I.H.; Kim, J.E. Government support and small- and medium-sized enterprise (SME) performance: The moderating effects of diagnostic and support services. *Asian Bus. Manag.* **2020**, *19*, 213–238. [CrossRef]
- Statistics, D.O. *Economic Census 2011 Profile of Small Medium Enterprise*; Department of Statistics: Putrajaya, Malaysia, 2011.
- Bin Yusoff, M. (Ed.) *The Utilisation of the Government Business Support Services: The Senior Adviser Perspectives*; Universiti Malaysia Kelantan: Kelantan, Malaysia, 2010; Volume 1.
- Yusoff, M.N.H.B.; Zainol, F.A.; Ismail, M.; Redzuan, R.H.; Abdul Rahim Merican, R.M.; Razik, M.A.; Afthanorhan, A. The Role of Government Financial Support Programmes, Risk-Taking Propensity, and Self-Confidence on Propensity in Business Ventures. *Sustainability* **2021**, *13*, 380. [CrossRef]
- Dvouletý, O. Can policy makers count with positive impact of entrepreneurship on economic development of the Czech regions? *J. Entrep. Emerg. Econ.* **2017**, *9*, 286–299. [CrossRef]
- David, F.; Enrique, G.; Julia, L.; Julian, P.; Alvin, S.; Jamie, W.; Tim, W. *Business Development and the Growth of Rural SMEs*; OECD: Paris, France, 2019.
- Rural Development Policy. 2019. Available online: <https://www.pmo.gov> (accessed on 1 July 2019).
- Price, L.; Shutt, J.; Sellick, J. Supporting rural Small and Medium-sized Enterprises to take up broadband-enabled technology: What works? *Local Econ.* **2018**, *33*, 515–536. [CrossRef]
- Bin Yusoff, M.N.H.; Al Mamun, A.; Ibrahim, M.D.; Hassan, H. Measuring and Comparing Functional Business Skills and Knowledge among Asnaf Community in Malaysia. *Econ. Sociol.* **2018**, *11*, 229–247. [CrossRef]
- Bartosik-Purgat, M. Digital Marketing Communication from the Perspective of Individual Consumers: A Cross-Country Comparison. *Entrep. Bus. Econ. Rev.* **2019**, *7*, 205–220. [CrossRef]
- Shah, A.U.M.; Safri, S.N.A.; Thevadas, R.; Noordin, N.K.; Rahman, A.A.; Sekawi, Z.; Ideris, A.; Sultan, M.T.H. COVID-19 outbreak in Malaysia: Actions taken by the Malaysian government. *Int. J. Infect. Dis.* **2020**, *97*, 108–116. [CrossRef]
- Thuy Dam Luong, H.; Huy Khanh, N.; Nguyen, H.T. Towards an economic recovery after the COVID-19 pandemic: Empirical study on electronic commerce adoption of small and medium enterprises in Vietnam. *Manag. Mark.* **2021**, *16*, 47–68. [CrossRef]

14. Irhas, E.M.; Dyah, S.; Yuni, I. Social Media Adoption in SMEs Impacted by COVID-19: The TOE Model. *J. Asian Financ. Econ. Bus.* **2020**, *7*, 915–925. [[CrossRef](#)]
15. Saffu, K.; Walker, J.H.; Mazurek, M. Perceived Strategic Value and e-Commerce Adoption among SMEs in Slovakia. *J. Internet Commer.* **2012**, *11*, 1–23. [[CrossRef](#)]
16. Wei-Loon, K.; Nurul Afiqah, S. The Motivation to Adopt E-commerce Among Malaysian Entrepreneurs. *Organ. Mark. Emerg. Econ.* **2020**, *11*, 189–202.
17. Majid, N.A.; Zainol, F.A.; Wan Daud, W.N.; Afthanorhan, A. Cooperative entrepreneurship in Malaysian secondary schools: A review of current practices. *J. Soc. Sci. Res.* **2019**, *5*, 812–818. [[CrossRef](#)]
18. Venkatesh, V.; Morris, M. Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behaviour. *MIS Q.* **2000**, *24*, 115–139. [[CrossRef](#)]
19. Gefen, D.; Straub, D. The Relative Importance of Perceived Ease of Use in IS Adoption: A Study of E-Commerce Adoption. *J. Assoc. Inf. Syst.* **2000**, *1*, 1–30. [[CrossRef](#)]
20. Kim, S.Y.; Lim, Y.J. Consumers' Perceived Importance of and Satisfaction with Internet Shopping. *Electron. Mark.* **2001**, *11*, 148–154. [[CrossRef](#)]
21. Koufaris, M. Applying the technology acceptance model and flow theory to online consumer behavior. *Inf. Syst. Res.* **2002**, *13*, 205–223. [[CrossRef](#)]
22. Asmy, M.; Hassanudin, M.; Anwar, A. Modeling crowdfunding's behavioral intention to adopt the crowdfunding-waqf model (CWM) in Malaysia: The theory of the technology acceptance model. *Int. J. Islamic Middle East. Financ. Manag.* **2018**, *11*, 231–249. [[CrossRef](#)]
23. Do, B.; Dadvari, A.; Moslehpour, M. Exploring the mediation effect of social media acceptance on the relationship between entrepreneurial personality and entrepreneurial intention. *Manag. Sci. Lett.* **2020**, *10*, 3801–3810. [[CrossRef](#)]
24. Rahman, S.A.; Taghizadeh, S.K.; Ramayah, T.; Alam, M.M.D. Technology acceptance among micro-entrepreneurs in marginalized social strata: The case of social innovation in Bangladesh. *Technol. Forecast. Soc. Chang.* **2017**, *118*, 236–245. [[CrossRef](#)]
25. Fayad, R.; Paper, D. The Technology Acceptance Model E-Commerce Extension: A Conceptual Framework. *Procedia Econ. Financ.* **2015**, *26*, 1000–1006. [[CrossRef](#)]
26. Turner, M.; Kitchenham, B.; Brereton, P.; Charters, S.; Budgen, D. Does the technology acceptance model predict actual use? A systematic literature review. *Inf. Softw. Technol.* **2010**, *52*, 463–479. [[CrossRef](#)]
27. Raza, S.A.; Amna, U.; Nida, S. New determinants of ease of use and perceived usefulness for mobile banking adoption. *Int. J. Electron. Cust. Relatsh. Manag.* **2017**, *11*, 44–65.
28. Hanafizadeh, P.; Behboudi, M.; Abedini, K.; Marziyeh, J. Mobile-banking adoption by Iranian bank clients. *Telemat. Inform.* **2014**, *31*, 62–78. [[CrossRef](#)]
29. Yi-Hsuan, L.; Yi-Chuan, H.; Hsu, C.-N. Adding Innovation Diffusion Theory to the Technology Acceptance Model: Supporting Employees' Intentions to use E-Learning Systems. *J. Educ. Technol. Soc.* **2011**, *14*, 124–137.
30. Ajzen, I. The theory of planned behavior. *Organ. Behav. Human Decis. Process.* **1991**, *50*, 179–211. [[CrossRef](#)]
31. Davis, D.F. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Q.* **1989**, *13*, 319–340. [[CrossRef](#)]
32. Kessler, A.; Korunka, C.; Frank, H.; Lueger, M. Predicting founding success and new venture survival: A longitudinal nascent entrepreneurship approach. *J. Enterprising Cult.* **2012**, *20*, 25–55. [[CrossRef](#)]
33. Collins, C.J.; Hanges, P.J.; Locke, E.A. The Relationship of Achievement Motivation to Entrepreneurial Behavior: A Meta-Analysis. *Hum. Perform.* **2004**, *17*, 95–117. [[CrossRef](#)]
34. Antonic, B.; Bratkovic Kregar, T.; Singh, G.; DeNoble, A.F. The Big Five Personality–Entrepreneurship Relationship: Evidence from Slovenia. *J. Small Bus. Manag.* **2015**, *53*, 819–841. [[CrossRef](#)]
35. Astebro, T.; Herz, H.; Nanda, R.; Weber, R.A. Seeking the Roots of Entrepreneurship: Insights from Behavioral Economics. *J. Econ. Perspect.* **2014**, *28*, 49–70. [[CrossRef](#)]
36. Mirjana, P.B.; Ana, A.; Marjana, M.-S. Examining determinants of entrepreneurial intentions in Slovenia: Applying the theory of planned behaviour and an innovative cognitive style. *Econ. Res. Ekon. Istraživanja* **2018**, *31*, 1453–1471. [[CrossRef](#)]
37. Pihie, Z.A.L.; Bagheri, A. Self-Efficacy and Entrepreneurial Intention: The Mediation Effect of Self-Regulation. *Vocat. Learn.* **2013**, *6*, 385–401. [[CrossRef](#)]
38. Brammer, S.; Hojmoose, S.; Marchant, K. Environmental Management in SMEs in the UK: Practices, Pressures and Perceived Benefits. *Bus. Strategy Environ.* **2012**, *21*, 423–434. [[CrossRef](#)]
39. Debrulle, J.; Maes, J.; Gardiner, E. How Entrepreneurs Think: Financial Decisions for the Long or Short Term. *J. Bus. Strategy.* [[CrossRef](#)]
40. Al Mamun, A.; Ekpe, I. Entrepreneurial traits and micro-enterprise performance: A study among women micro-entrepreneurs in Malaysia. *Dev. Pract.* **2016**, *26*, 193–202. [[CrossRef](#)]
41. Thapa, A. Determinants of microenterprise performance in Nepal. *Small Bus. Econ.* **2015**, *45*, 581–594. [[CrossRef](#)]
42. McClelland, D.C. Achievement and entrepreneurship: A longitudinal study. *J. Personal. Soc. Psychol.* **1965**, *1*, 389–392. [[CrossRef](#)]
43. Karaman, M.A.; Watson, J.C. Examining associations among achievement motivation, locus of control, academic stress, and life satisfaction: A comparison of U.S. and international undergraduate students. *Personal. Individ. Differ.* **2017**, *111*, 106–110. [[CrossRef](#)]

44. Singh, A.P.; Shrivastava, S. Effect of Need for Achievement on the Job Performance-Job Satisfaction Relationship. *Indian J. Ind. Relat.* **1983**, *18*, 437–442.
45. Handrito Radityo, P.; Slabbinck, H.; Vanderstraeten, J. Enjoying or refraining from risk? The impact of implicit need for achievement and risk perception on SME internationalization. *Cross Cult. Strateg. Manag.* **2020**, *27*, 317–342. [[CrossRef](#)]
46. Isaga, N. The relationship of personality to cognitive characteristics and SME performance in Tanzania. *J. Small Bus. Enterpr. Dev.* **2018**, *25*, 667–686. [[CrossRef](#)]
47. Jeffcoate, J.; Chappell, C.; Feindt, S. Best practice in SME adoption of e-commerce. *Benchmarking: Int. J.* **2002**, *9*, 122–132. [[CrossRef](#)]
48. Poon, S.; Swatman Paula, M.C. Small business use of the Internet: Findings from Australian case studies. *Int. Mark. Rev.* **1997**, *14*, 385–402. [[CrossRef](#)]
49. Karabulut, A.T. Personality Traits on Entrepreneurial Intention. *Procedia Soc. Behav. Sci.* **2016**, *229*, 12–21. [[CrossRef](#)]
50. Gürol, Y.; Atsan, N. Entrepreneurial characteristics amongst university students. *Educ. Train.* **2006**, *48*, 25–38. [[CrossRef](#)]
51. van der Zwan, P.; Thurik, R.; Verheul, I.; Hessels, J. Factors influencing the entrepreneurial engagement of opportunity and necessity entrepreneurs. *Eurasian Bus. Rev.* **2016**, *6*, 273–295. [[CrossRef](#)]
52. Salleh, F.; Ibrahim, M.D. Demographic characteristics differences of risk taking propensity among micro and small business owners in Malaysia. *Int. J. Bus. Soc. Sci.* **2011**, *2*, 149–153.
53. Pratono, A.H. Does firm performance increase with risk-taking behavior under information technological turbulence? Empirical evidence from Indonesian SMEs. *J. Risk Financ.* **2018**, *19*, 362–378. [[CrossRef](#)]
54. Angela, R.; Irina, B.; Cristina, C. What drives the creation of new businesses? A Panel-Data analysis for EU Countries. *Emerg. Mark. Financ. Trade* **2018**, *54*, 508–536.
55. Zhaoyang, G.; Wei, J. Risk-taking for entrepreneurial new entry: Risk-taking dimensions and contingencies. *Int. Entrep. Manag. J.* **2019**, *16*, 739–781.
56. Zahra, S.A. Entrepreneurial Risk Taking in Family Firms: The Wellspring of the Regenerative Capability. *Fam. Bus. Rev.* **2018**, *31*, 216–226. [[CrossRef](#)]
57. Che Mat, Z.; Bin Yusoff, M.N.H.; Zainol, F.A.; Afthanorhan, A. Risk-taking propensity personality of women entrepreneurs in Malaysia. *J. Crit. Rev.* **2020**, *6*, 1214–1221.
58. McCarthy, D.J.; Puffer, S.M.; Lamin, A. Entrepreneurial orientation in a hostile and turbulent environment: Risk and innovativeness among successful Russian entrepreneurs. *Eur. J. Int. Manag.* **2018**, *12*, 191–221. [[CrossRef](#)]
59. Antoncic, B. Risk taking in intrapreneurship: Translating the individual level risk aversion into the organizational risk taking. *J. Enterprising Cult.* **2003**, *11*, 1–23. [[CrossRef](#)]
60. Stewart Jr, W.H.; Roth, P.L. Risk propensity differences between entrepreneurs and managers: A meta-analytic review. *J. Appl. Psychol.* **2001**, *86*, 145–153. [[CrossRef](#)] [[PubMed](#)]
61. Stevenson, H.; Gumpert, D. The heart of entrepreneurship. *Harv. Bus. Rev.* **1985**, *63*, 85–94.
62. Weng, F.; Yang, R.-J.; Ho, H.-J.; Su, H.-M. A TAM-Based Study of the Attitude towards Use Intention of Multimedia among School Teachers. *Appl. Syst. Innov.* **2018**, *1*, 36. [[CrossRef](#)]
63. Hashim Kamarul, F.; Tan Felix, B. Examining the determinant factors of perceived online community usefulness using the expectancy value model. *J. Syst. Inf. Technol.* **2018**, *20*, 152–167. [[CrossRef](#)]
64. Heckert, T.M.; Cuneio, G.; Hannah, A.P.; Adams, P.J.; Droste, H.E.; Mueller, M.A.; Wallis, H.A.; Griffin, C.M.; Robert, L.L. Creation of a New Needs Assessment Questionnaire. *J. Soc. Behav. Personal.* **2000**, *15*, 121.
65. Langkamp Bolton, D.; Lane, M.D. Individual entrepreneurial orientation: Development of a measurement instrument. *Educ. Train.* **2012**, *54*, 219–233. [[CrossRef](#)]
66. Pikkarainen, T.; Pikkarainen, K.; Karjaluoto, H.; Pahnla, S. Consumer acceptance of online banking: An extension of the technology acceptance model. *Internet Res.* **2004**, *14*, 224–235. [[CrossRef](#)]
67. Pavlou, P.A. Consumer Acceptance of Electronic Commerce: Integrating Trust and Risk with the Technology Acceptance Model. *Int. J. Electron. Commer.* **2003**, *7*, 101–134. [[CrossRef](#)]
68. Krejcie, V.R.; Morgan, W.D. Determining sample size for research activities. *Educ. Psychol. Meas.* **1970**, *30*, 607–610. [[CrossRef](#)]
69. Henseler, J.; Christian, R.M.; Sinkovics, R.R. The use of partial least squares path modelling in international marketing. *New Chall. Int. Mark. Adv. Int. Mark.* **2009**, *20*, 277–319.
70. Hair, F.J.; Ringle, M.C.; Sarstedt, M. PLS-SEM: Indeed a silver bullet. *J. Mark. Theory Pract.* **2011**, *19*, 139–151. [[CrossRef](#)]
71. Hair, F.J.; Black, W.C.; Babin, B.J.; Anderson, R.E. *Multivariate Data Analysis: A Global Perspective*; Prentice Hall, Pearson Education, Inc.: New Jersey, NJ, USA, 2006.
72. Chin, W.W. (Ed.) *How to Write Up and Report PLS Analyses*; Springer Handbooks of Computational Statistics; Springer: Berlin/Heidelberg, Germany, 2010.
73. Sebor, T.C.; Lee, S.M.; Sukasame, N. Critical success factors for e-commerce entrepreneurship: An empirical study of Thailand. *Small Bus. Econ.* **2009**, *32*, 303–316. [[CrossRef](#)]
74. Forlani, D.; Mullins, J.W. Perceived risks and choices in entrepreneurs' new venture decisions. *J. Bus. Ventur.* **2000**, *15*, 305–322. [[CrossRef](#)]
75. Li, Y.; Ahlstrom, D. Risk-taking in entrepreneurial decision-making: A dynamic model of venture decision. *Asia Pac. J. Manag.* **2020**, *37*, 899–933. [[CrossRef](#)]

76. Hsu, C.-W.; Yeh, C.-C. Understanding the critical factors for successful M-commerce adoption. *Int. J. Mob. Commun.* **2017**, *16*, 50–62. [[CrossRef](#)]
77. Lestari, D. Measuring e-commerce adoption behaviour among gen-Z in Jakarta, Indonesia. *Econ. Anal. Policy* **2019**, *64*, 103–115. [[CrossRef](#)]