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# Consumer Perception of Electronic Commerce – Incorporating Trust and Risk with the Technology Acceptance Model

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## Abstract

The rapid growth in internet technology and the innovations in smart devices has had its impact on how businesses used to operate a decade ago to how consumers followed traditional shopping behavior when goods or services was required. The rise in internet users presents the opportunity of Electronic Commerce, the idea of providing and accessing goods and services using internet, such as selling goods and services, performing financial transactions and even booking an appointment. The two leading theories - perceived ease of use and usefulness have been employed in numerous information systems research studies to help understand consumer behavior in e-commerce environments. As the acceptance of e-commerce in Fiji is relatively low, this paper integrates the findings of previous researches with the perceived trust and perceived risk of consumers to provide a comprehensive framework of online shopping behavior based on the Technology Acceptance Model. To gain an in-depth understanding of consumers' acceptance of e-commerce an online questionnaire was used with questions which focused on these disciplines. The outcome of which verified that there were correlations between trust, perceived risk, perceived ease of use, perceived usefulness and usage of e-commerce. Through the use of this research, businesses in Fiji may incorporate features as per user expectations and have a good background before venturing into e-commerce.

**Keywords:** Consumer behavior, online shopping, perceived ease of use, perceived risk, perceived trust, perceived usefulness, technology acceptance, transaction intentions, e-commerce

## 1. Introduction

Tremendous growth has been experienced in ICT and much of the advancement may be attributed to the various types of ICT ventures that invent and commercialize a variety of ICT products [1]. With emerging information technology, more and more people can access internet connectivity everyday using smart devices. According to Internet World Stats, as of December, 2017 54.4% of the world population use the internet [2].

Many firms approach the e-commerce market with no clear idea of where they are going. In this emerging global trend of business, technology is increasingly

becoming a necessary component and a strong promoter for electronic sales. The use of internet in business has enhanced productivity, encouraged greater customer participation and satisfaction, besides reducing costs. With the current developments in internet and web-based technologies, distinctions between traditional markets and the global electronic marketplace-such as business capital size, among others-are gradually being narrowed down. One of its utmost result is the convenience of online shopping. Online shopping can be considered as an exchange of money, time and effort for getting products and services.

e-Commerce is beginning to gain traction in the Pacific Island Countries (PICs) [3–5] as the affordability and availability of Internet connectivity becomes better. Many businesses in sales and retail are trying to take advantage of e-Commerce's many capabilities, flexibilities for service provision, convenience, and cost savings [6, 7]. A few researches [3–5] have looked into the availability, provision, and challenges of e-Commerce in the region from the business owner's perspective. Consumers perception of e-Commerce is lacking or non-existent for Pacific Island Countries. Preliminary investigation with many consumers found trust and risk as being a common inhibitor to engage in e-Commerce and the same has been found in published literature [8–10]. This research study aims to fill the research gap on consumers' perception of e-Commerce taking into consideration the trust and risk factor. Based on this knowledge, the relevant stakeholders, namely businesses, consumers and government as regulators can create a conducive e-Commerce landscape.

The Technology Acceptance Model (TAM) has been used to ground this research from a theoretical perspective and align it with a validated research model. The Technology Acceptance Model (TAM) [11] has been widely used by researchers to check and test the acceptance of e-Commerce technology by users [3, 12–15]. The model determines how users might react to the acceptance of new technology based on their Perceived-Ease-Of-Use (PEOU) and Perceived Usefulness (PU) of technology [3, 11]. e-Commerce being a new technology for the consumers in the Pacific Island Countries (PICs), and its acceptance and use could easily be determined with the Technology Acceptance Model. Furthermore, the TAM is versatile enough to be easily customized and extended to incorporate trust (Perceived Trust) and risk (perceived Risk) factors for consideration into use and acceptance of e-Commerce. Therefore, the Technology Acceptance Model that could be customized and expanded to incorporate trust and risk was preferred over other models such as Unified Theory of Acceptance and Use of Technology (UTAUT) [16], Theory of Planned Behavior (TPB) [17], and Theory of Reasoned Action (TRA) [18].

In this paper, perceived trust, perceived risk, perceived usefulness and ease of use is integrated using the Technology Acceptance Method (TAM) to explore its effect on customers' acceptance of e-commerce in Fiji. Data was gathered from 82 respondents by use of online questionnaire, links of which were distributed using means of social media, emails and forums. It is empirical to maintain the consistency of perceived trust and perceived risk with perceived ease of use and perceived usefulness, which is further used to measure general perceptions.

This research study and the results of this research intends to add a body of knowledge on consumers perception of e-Commerce that is lacking or non-existent for Pacific Island Countries. The implications of filling this research gap with the body of new knowledge are many for the society. For example, e-Commerce now contributes substantially to a countries Gross Domestic Product (GDP) [19, 20]; creates employment [21, 22]; businesses can saves costs on all the physical resources required to operate a brick and mortar retail outlet [21, 22]; customers can get cheaper products with the removal of the middle-man [21, 22]. Within the Pacific

Island Countries, e-Commerce is seen as a pathway for Small and Medium Enterprises (SME) and sole entrepreneurs to get into the market without requiring the upfront capital to establish a physical presence. But venturing into any business, including e-Commerce is a risk. Understanding consumers' perception of e-Commerce, their perceived ease of use and usefulness, building trust and mitigating risks will go a long way in ensuring that consumers continue engaging in e-Commerce.

In a survey conducted by the Reserve Bank of Fiji, it was discovered that 88.8% of the respondents preferred to use cash over electronic money [23]. This meant that even though electronic money is available, there exists a high level of hesitancy in consumers. Should the hesitancy persist, Fiji may not be able to fully capitalize in the e-commerce sector. Hence the need for research to investigate and evaluate the factors associated to with a consumers' trust and their perceived risk towards engaging in e-commerce.

## **2. Literature review**

Technology Acceptance model was used to gain knowledge of its users towards accepting any new information technology thought is four key variables; Perceived Trust, Perceived Risk, Perceived Usefulness and Perceived Ease-of-Use. The Concept of Perceived Trust is the key as every aspect of personal interaction with information technology is based on trust in one way or another [24]. The users of the e-commerce platform will need to invest their trust into the system to safeguard their personal information such as age, name, location, bank card numbers and pin codes. The users will have to have a level of reliability on the information system that the personal information entered will remain confidential and trust the merchant offering goods and services through e-commerce is not fraudulent.

Perceived Risk is a key influential factor for Perceived Trust. Perceived risks the uncertainty the consumer has while deciding to transact on an e-commerce website. The term perceived risk means the individual's subjective belief about potentially negative consequences from his/her decision [25]. Certainly, people may experience a certain degree of risk when purchasing a product through a web-based shopping channels because perceived risk has the characteristics to increase vulnerabilities and generate inhibiting aspects to consumers' willingness to participate in online shopping activity [26]. The consumer is faced with financial risk, functional risk, reputation risk and time risk. These risk are beyond a consumers control and the consumer may fear falling victim to a fraudulent activity.

Perceived Usefulness is defined as the degree to which a person believes that using a particular system would enhance his or her job performance [27]. The consumer evaluates the usefulness of using the e-commerce website to purchase goods and service again the traditional walk in the shop practice. Will the use of e-commerce site save him or her time from visiting the shop, is the price of the product cheaper if purchased online directly from supplier, and is there more variety of goods of service available online then local vendors. These are few of the assessing questions a consumer asks themselves before deciding on the Usefulness of the e-commerce websites.

Perceived Ease of Use refers to the degree to which a person believes that using a particular system would be free of effort [27]. The e-commerce website design need to factor in the internet connectivity of the country such as Fiji so that the pages are not overloaded with graphic which would take time to load in slow internet speeds leading to consumers losing interest. The e-commerce site needs to be user friendly, the web-content should be precise yet simple for its customers to easily understand.



E-commerce webpages should not feel cumbersome to online visitors, providing easy simple navigation steps to purchase goods and services without spending much time and clicks on multiple links. If a system is relatively easy to use, individuals will be more willing to learn about its features and finally intend to continue using it [28].

Numerous businesses are unable to turn e-commerce into an opportunity which could be used for the benefit of both businesses and consumers. Many new enterprises in developing countries lack the technical expertise and knowledge on the power of using internet as a tool to boost the sale of goods and expand the reach of services offered. The challenge of convincing decision makers of companies to invest into e-commerce for long term profitability is a hindrance caused by lack of knowledge in the technological advancements of this era. A computer-interface to human relationship is evident in e-commerce which results in risk being a major and common factor which repels consumers from e-commerce. A narrow definition provided in [29] states that e-commerce is the “sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organizations, conducted over the Internet” where by ordering of goods and services are done online but the final delivery of the good or service may be done online or offline.

Businesses that wish to gain consumers' loyalty and construct long term associations must research on factors which may affect how a consumer reacts to their e-commerce site. Factors such as; consumer's expertise on use the of smart devices and computers, knowledge about internet and accessibility, the type of goods and services which appeal to consumers using e-commerce, the target audience for e-commerce goods and services, consumer financial constrain to invest in internet verse the e-commerce gain and most importantly the widespread age group of the country. A country with majority of population born and living in the period of internet advancement would be more loyal for e-commerce services. An example of gaining consumers' trust is proposed via a model in [30] whereby with the use of the model consumers can avoid deception in transactions by comparing new transactions with old ones. A study by Jones and Leonard [31] revealed that the trust of consumers in e-commerce is heavily influenced by internet safety. Together with the ease of use of e-commerce interface, as explained in [32] aspects such as diversity, discounts, convenience and influence via social networks also play a vital role in driving consumers towards the use of e-commerce.

Preceding e-commerce research had the absence of explaining the perceived risk, perceived usefulness, perceived trust and perceived ease of use from a consumer's approach. The research gap in the confidence of consumer to engage in the use of local vendor e-commerce site in evaluation to foreign e-commerce site, evolution of risk for after sale support for e-commerce vendor local and overseas, the usefulness of adapting to e-commerce verse the reality of beneficial gain it would provide consumers of developing country such as Fiji. Consumers and other stakeholders are often cautious of transacting online. Not only are they making an online transaction in exchange of electronic cash but are also pushing confidential information in the hands on the business. The details provided by consumers has a financial value though it may not be seen at beginning. As explained in [33] “e-business owners are exploiting the user's privacy for the growth of their business”. Electronic commerce businesses buy information about individuals, their personal details, shopping habits and web page visitation listings [34]. Major ethical issues companies face when doing business related to e-commerce are privacy, security, trust, intellectual property rights, some environmental issues. In order to manage ethical issues in e-commerce, managers have to help the company to design an effective strategy and long-term management procedure as well as security policies and training. Different companies and different fields of e-commerce have

different security problems, thus, different strategies, “however it must be legal, feasible, effective and innovative” [35].

### **3. Research model and hypothesis**

Various factors affect a consumer’s intention to transact online such as perceived risk, trust in the online store, perceived reputation and size of the business [36]. The Technology Acceptance Model (TAM), which is used as the base for this research is extended to comprise of specific concerns mainly perceived trust and perceived risk; integration of which make for the core objectives of this paper. Similar context is claimed in [37] that the primary concern of the customers in e-shopping context is trust and perceived ease of use. This research attempts to construct a model for analyzing e-commerce adoption from a consumer’s perspective based on TAM, which has been widely studied and accepted as a powerful framework for researching IT adoption and usage.

This leads to suggest the following hypotheses:

#### **3.1 Perceived risk [PR]**

It refers to the degree of consumer distrust that the use of e-commerce is unsafe. Whether it be of consumers’ privacy and safety or the risk involved with the processing of transactions. Perceived risk consists of information misuse, failure to gain product benefit and functionality inefficiency risk [38]. When consumers’ buy from web, they provide their personal and financial information, both of which revealed on network might be misused. Also, during web purchasing the consumer may face problems such as the purchased product not meeting expectations because the customer does not get an opportunity to inspect before buying. Another problem is the delay in delivery. Regarding this paper, consumers who believe that the level of perceived risk is high in terms of risks to personal information and risks in transaction processing; do not tend to adopt e-commerce. Keeping this observation, the following is hypothesized:

H1: Perceived risk (PR) negatively influences the consumer’s intention to transact online.

H2: Perceived risk of information misuse negatively influences perceived ease-of-use (PEOU).

H3: Perceived risk negatively influences perceived usefulness (PU).

#### **3.2 Perceived trust [PT]**

For vendors to excel in e-commerce, online trust is vital as it is claimed that in the virtual world the issue of trust gets enlarged [39]. A lack of trust discourages online consumers from participating in e-commerce and deters any purchase over the internet. Online trust is one of the factors that is frequently associated with the failure or success of online ventures and its multi-dimensional character makes it a complicated issue. On the assumption of trust’s relation with purchasing online the following is hypothesized:

H4: Trust in e-commerce positively influences the perceived risk associated with transacting online.

H5: Trust in e-commerce positively influences the consumer’s intention to transact online.

H6: Trust in e-commerce positively influences perceived ease-of-use (PEOU).

H7: Trust in e-commerce positively influences perceived usefulness (PU).

3.3 Perceived usefulness [PU]

Is defined as the degree to which a consumer believes that using a system would enhance their job performance [40] and how effectively it improves the way a consumer can complete a task. Therefore, accurate information should be provided in conjunction with the core features of the e-commerce site. Based on these findings, the following hypotheses are proposed:

H8: Perceived usefulness positively influences the consumer’s intention to transact online.

3.4 Perceived ease of use [PEOU]

Ease of use is defined as the consumers’ perception that use of the new technology will be free of hardship and low in complexity. This is also to allow consumers to experiment with new innovations and evaluate its benefits easily and at no extra cost. Out of the five principles for ease of use explained in [41], this paper focusses on the learnability of an e-commerce site; that is “how easy is it for consumers to accomplish basic tasks the first time they encounter the design”. Applying this to the research, ease of use is the consumer’s perception that shopping on the internet will involve only minimum effort. Similarly, a quota sample was used as the research sample in [42] which was then evaluated against the TAM. The research concluded with the result that consumers in Croatia, which is a developing country feel that getting information from e-commerce would be free of effort (ease of use) and useful in their retailing experiences. By applying these into e-commerce context, the following is hypothesized:

H9: Perceived ease-of-use positively influences perceived usefulness (PU).

H10: Perceived ease-of-use positively influences the consumer’s intention to transact online.

4. Research model

The hypotheses discussed above are depicted in the proposed research model in Figure 1; where the correlations between each factor is shown. A plus sign depicts a

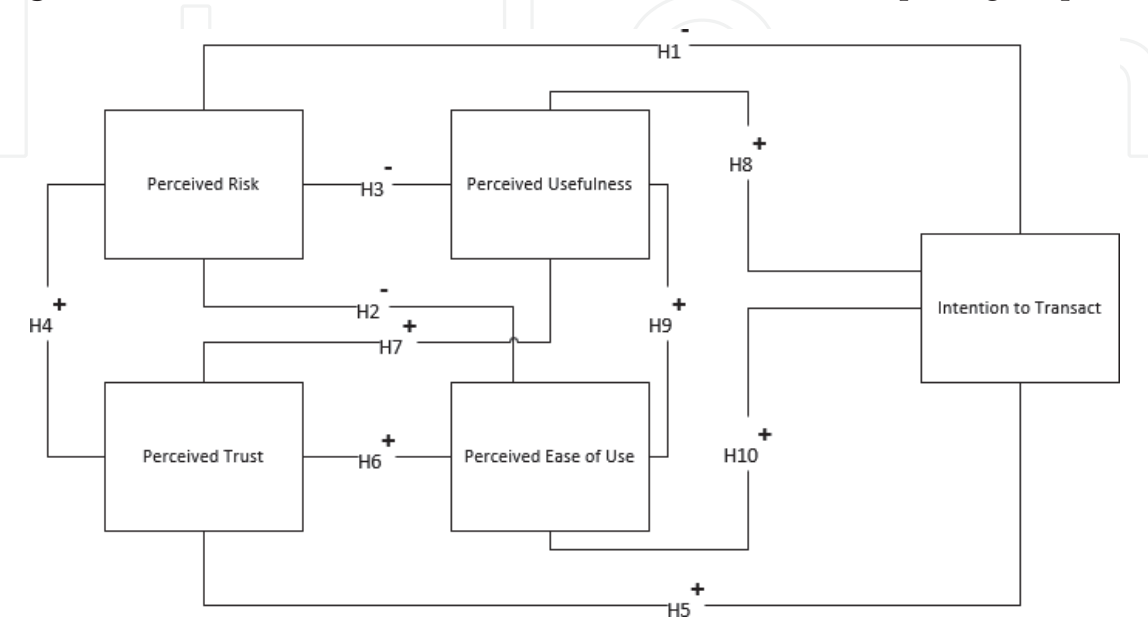


Figure 1.  
Research model.

positive influence while a minus sign depicts a negative influence. For instance, perceived risk negatively influences a consumer's intention to transact (H1) while perceived trust positively influences a consumer's intention to transact (H5).

## 5. Theoretical background

*Technology Acceptance Model (TAM)*: As explained by Venkatesh and Davis in [43] TAM is a model through which a consumer's intention to use a system is determined by two principles; perceived ease of use and perceived usefulness. This model has been successfully adapted and extended in developing countries like Jordan to aid in explaining online purchasing and consumers' behavior towards it. The simplicity and adaptability of this model is what makes it so popular and successful as it is easy to understand and permits to differentiate among the results for various information systems [44].

In context of perceived usefulness, a consumer may be targeting to achieve various advantages from e-commerce such as obtaining discounts, saving time and money, getting a wide variety of products to choose from, however this paper focusses on the type of information provided by e-commerce sites, where a consumer sees the information provided as useful or not. Perceived ease of use is simply described as when a consumer is easily able to perform the required tasks on an e-commerce site, such as searching for information, saving an order for a product and using the customer services feature. According to a research [45] customers who think that purchasing over internet is useful, and they can do it easily as they tend to adopt e-commerce.

## 6. Methodology

The objectives of this paper are reached through three methods. Firstly, by reading relevant literature already published in this context. The research done in the TAM model revealed that perceived trust and perceived risk was a made-up behavior of people who would make decision through observing other people's e-commerce experiences. The decision on perceived trust and perceived risk depended on the outcome of someone's e-commerce experience to be positive or negative. Whether the consumer was a victim of fraud and experienced financial loss or the consumer received a bargain on the selected good or service. This pre-deciding factor was to learn from others experience and could impact on the future of the e-commerce by researchers, as perceived trust and perceived risk are subjective approach to e-commerce growth. The opportunity to execute studies with various designs is offered by means of conducting surveys whereby specific research questions can be answered [46]. With the aim of exploring and bringing out consumers' views on the theoretical concepts of TAM with trust and perceived risk, a quantitative research was conducted by the use of an online questionnaire. The questionnaire was designed to gain an insight on the confidence of a user towards the use of an online e-commerce site in comparison to their opinions on the perceived trust and perceived risk, and the frequency of the user's online e-commerce activity. Moreover, the decision to adopt a quantitative research method is supported by the fact that this method is useful in situations where data is analyzed and reported through statistical inferences and analyses [47]. The questionnaire was distributed to diversity group of people to collect as much sample data as possible. The diversity included different age groups, young teenagers to senior citizens, low to high computers literacy group and a variety of internet accessibility



areas. A consumer’s actual usage of e-commerce was used as the dependent variable as that was the main variable which was to be measured. Similarly, trust, perceived risk, perceived ease of use and perceived usefulness were used as independent variables which were claimed to be affecting the dependent variable. The survey was published online from 12th September 2018 to 23rd October 2018 and the link was circulated to as many consumers as possible via email and posts on social media accounts after which a total of 83 responses were collected. The primary participants were friends, families and colleagues of the researchers who after completing the survey further circulated the survey link. Lastly, by analyzing the data collected and using the Technology Acceptance Model (TAM) to validate the research questions. Earlier results showed that there are dependent variables such as age and computer literacy provided mixed results on an individual’s willingness to overlook the perceive risk and trust against the benefits of e-commerce. Independent variables in our quantitative research was the locality of our consumer’s and the accessibility to internet. The geographical landscape and internet still new to a country such as Fiji, the awareness of e-commerce website to its population and the changing idea of perceived trust and perceived risk a challenge.

7. Results

Validity is an extent to which a measure or set of measures correctly represents the concept of the study [48]. It is concerned with how well the concept is defined by the measures. While reliability is an extent to which variable or set of variables is consistent in what it is intended to measure [48].

The main difference with validity is, reliability relates to what should be measured not how it is measured [48]. **Table 1** below shows the reliability item (validity of each indicator).

Factor loadings value should be at least 0.5 to be considered acceptable [49]. In **Table 1**, all latent variables and hypothesis variables are above the acceptance range and will be included in the analysis.

The values suggests that with each variables or indicators are validating their construct (hypothesis). Using “PR” latent variable as example, the construct variable has 3 hypothesis (H1, H2, an H3) and all of them have loading values greater than 0.5.

Latent variable	Hypothesis variable	Standardized loadings	Critical ratio
PR	H1	0.724	13.581
	H2	0.751	19.924
	H3	0.756	15.052
PT	H4	0.730	11.556
	H5	0.767	20.626
	H6	0.813	22.512
	H7	0.781	18.646
PU	H8	0.797	16.832
PEOU	H9	0.767	15.917
	H10	0.761	19.310

**Table 1.**  
*Results of reliability tests.*

Variable test	Question(s)
Trust	Do you trust online trade either locally or internationally?
Risk	Do you believe e-commerce websites have security features to carry out online financial transactions securely?
	How secure do you feel in sharing your personal details on an e-commerce website? (1 - least secure & 5 - most secure)
Usefulness	Do you believe e-commerce websites provide accurate information on products on sale and delivery times?
Ease of Use	Do you think e-commerce websites are user friendly?
Usage	Overall, what would your final choice be about e-commerce locally?

**Table 2.**  
*Research questionnaire.*

Age group	Percentage
Under 21	0%
21–24	13.41%
25–34	58.54%
35–44	25.61%
45–54	0%
55–64	0%
65 or older	2.44%

**Table 3.**  
*Respondents’ demographics by age group.*

This indicates that those 3 indicators have a good validity level and they are to be considered as valid indicators to measure the PR (Perceived Risk) construct.

The core motive of the research was to capture consumer perception on trust, risk, usefulness, ease-of-use and usage. The design of the questionnaire questions captured just that. **Table 2** lists the key question(s) to measure and address each perception area.

The demographic details of respondents to the survey of 82 sample size as per **Table 3** shows that 97.56% of the respondents were within the age of 21–44.

The objectives of the paper as well as the analysis and results refer to the two main pillars of the TAM model; perceived ease of use and perceived usefulness. Following are statistical analysis and short discussions on each of the hypothesis of this paper. Since the sample size consisted of 82 respondents, and the Kolmogorov–Smirnov test was used to prove that the data was normally distributed, and all data types were ordinal; non-parametric spearman’s correlational tests were conducted on the hypothesis.

**7.1 H1: perceived risk [PR] negatively influences the consumer’s intention to transact online**

As depicted in **Table 4** a correlation was discovered between a consumer’s perceived risk in transaction processing and intention to transact online ( $r = -0.139$ ,  $p\text{-value} = 0.212$ ). Since the correlation is negative and  $p\text{-value}$  significant, this implies that there is a significant relationship between the two; as a

Correlations				
			Risk transaction_ processing	Intention_to_transact_ online
Spearman's rho	Risk Transaction_ Processing	Correlation Coefficient	1.000	-0.139
		Sig. (2-tailed)		0.212

**Table 4.**  
*Correlation – PR in transaction processing & intention to transact.*

consumer’s perceived risk in transaction processing increases, the intention to transact online decreases.

As shown in **Table 5** a correlation was discovered between a consumer’s perceived risk of personal information and intention to transact online ( $r = -0.022$ ,  $p\text{-value} = 0.844$ ). Since the correlation is negative and  $p\text{-value}$  significant, this implies that there is a significant relationship between the two that as a consumer’s perceived risk of personal information increases, the intention to transact online decreases.

7.2 H2: perceived risk [PR] negatively influences perceived ease-of-use [PEOU]

As per the data presented in **Table 6** a correlation was discovered between a consumer’s perceived risk in transaction processing and perceived ease of use ( $r = -0.264$ ,  $p\text{-value} = 0.017$ ). This implies that there is a relationship between the two that as a consumer’s perceived risk in transaction processing increases, the perceived ease of use decreases. However, the probability for this correlation to arise due to sampling variation is low (that is, there is a correlation).

As shown in **Table 7** a correlation was discovered between a consumer’s perceived risk of personal information and perceived ease of use ( $r = -0.177$ ,

Correlations				
			Risk personal_ information	Intention_to_transact_ online
Spearman's rho	Risk Personal_ Information	Correlation Coefficient	1.000	-0.022
		Sig. (2-tailed)		0.844

**Table 5.**  
*Correlation - PR of personal information & intention to transact.*

Correlations				
			Risk transaction_ processing	Ease_of_use
Spearman's rho	Risk Transaction_ Processing	Correlation Coefficient	1.000	-0.264*
		Sig. (2-tailed)		0.017

\*Correlation is significant at the 0.05 level (2-tailed).

**Table 6.**  
*Correlation - PR in transaction processing & PEOU.*

Correlations				
			Risk personal_ information	Ease_of_use
Spearman's rho	Risk Personal_ Information	Correlation Coefficient	1.000	−0.177
		Sig. (2-tailed)		0.112

**Table 7.**  
*Correlation - PR of personal information & PEOU.*

p-value = 0.112). This implies that there is a significant relationship between the two that as a consumer's perceived risk of personal information increases, the perceived ease of use decreases.

**7.3 H3: perceived risk [PR] negatively influences perceived usefulness [PU]**

A very strong correlation was discovered between a consumer's perceived risk in transaction processing and perceived usefulness ( $r = -0.306$ , p-value = 0.005) as shown in **Table 8**. This implies that there is a relationship between the two that as a consumer's perceived risk in transaction processing increases, the perceived usefulness of e-commerce decreases. However, the probability for this correlation to arise due to sampling variation is low (that is, there is a correlation).

As shown in **Table 9** a strong correlation was discovered between a consumer's perceived risk of personal information and perceived usefulness ( $r = -0.267$ , p-value = 0.015). This implies that there is a relationship between the two that as a consumer's perceived risk of personal information increases, the perceived usefulness of e-commerce decreases. However, the probability for this correlation to arise due to sampling variation is low (that is, there is a correlation).

Correlations				
			Risk transaction_ processing	Usefulness
Spearman's rho	Risk Transaction_ Processing	Correlation Coefficient	1.000	−0.306*
		Sig. (2-tailed)		0.005

\*Correlation is significant at the 0.01 level (2-tailed).

**Table 8.**  
*Correlation - PR in transaction processing & PU.*

Correlations				
			Risk personal_ information	Usefulness
Spearman's rho	Risk Personal_ Information	Correlation Coefficient	1.000	−0.267*
		Sig. (2-tailed)		0.015

\*Correlation is significant at the 0.05 level (2-tailed).

**Table 9.**  
*Correlation - PR of personal information & PU.*



7.4 H4: trust in e-commerce positively influences the perceived risk associated with transacting online

As depicted in **Table 10** a correlation was discovered between a consumer’s trust in e-commerce and perceived risk in transaction processing ( $r = -0.188$ ,  $p\text{-value} = 0.092$ ). This implies that there is a significant relationship between the two that as a consumer’s trust in e-commerce increases, the perceived risk in transaction processing decreases.

As shown in **Table 11** a correlation was discovered between a consumer’s trust in e-commerce and perceived risk of personal information ( $r = -0.246$ ,  $p\text{-value} = 0.026$ ). This implies that there is a relationship between the two that as a consumer’s trust in e-commerce increases, the perceived risk of personal information decreases. However, the probability for this correlation to arise due to sampling variation is low (that is, there is a correlation).

7.5 H5: trust in e-commerce positively influences the consumer’s intention to transact online

As depicted in **Table 12** there exists a correlation between trust and a consumer’s intention to transact online ( $r = 0.141$ ,  $p\text{-value} = 0.206$ ), thus concluding that as a consumer’s trust in e-commerce improves, the consumer’s intention to transact online also increases and vice versa.

Correlations				
			Trust	Risk_transaction_processing
Spearman's rho	Trust	Correlation Coefficient	1.000	−0.188 <sup>*</sup>
		Sig. (2-tailed)		0.092
<sup>*</sup> Correlation is significant at the 0.05 level (2-tailed).				

**Table 10.**  
Correlation - trust & PR in transaction processing.

Correlations				
			Trust	Risk_Personal_Information
Spearman's rho	Trust	Correlation Coefficient	1.000	−0.246*
		Sig. (2-tailed)		0.026
*Correlation is significant at the 0.05 level (2-tailed).				

**Table 11.**  
Correlation - trust & PR of personal information.

Correlations				
			Trust	Intention_to_transact_online
Spearman’s rho	Trust	Correlation Coefficient	1.000	0.141
		Sig. (2-tailed)		0.206

**Table 12.**  
Correlation - trust & intention to transact.

7.6 H6: trust in e-commerce positively influences perceived ease-of-use [PEOU]

As shown in **Table 13** trust and the consumer’s perceived ease-of-use revealed a correlation ( $r = 0.159$ ,  $p = 0.154$ ). Hence implying that as trust in e-commerce improves so does the consumer’s perception of ease of use and vice versa.

7.7 H7: trust in e-commerce positively influences perceived usefulness [PU]

As shown in **Table 14** trust and the consumer’s perceived usefulness revealed a correlation ( $r = 0.322$ ,  $p = 0.003$ ) indicating that as trust in e-commerce improves, so does the consumer’s perceived usefulness of e-commerce; and vice versa. However, the probability for this correlation to arise due to sampling variation is low (that is, there is a correlation).

7.8 H8: perceived ease-of-use positively influences perceived usefulness [PU]

As depicted in **Table 15** perceived ease of use and the consumer’s perceived usefulness revealed a correlation ( $r = 0.174$ ,  $p = 0.118$ ). Hence implying that that as a consumer’s perceived ease of use improves, so does the perceived usefulness of e-commerce and vice versa.

Correlations				
			Trust	Ease_of_use
Spearman’s rho	Trust	Correlation Coefficient	1.000	0.159
		Sig. (2-tailed)		0.154

**Table 13.**  
*Correlation - trust & PEOU.*

Correlations				
			Trust	Usefulness
Spearman’s rho	Trust	Correlation Coefficient	1.000	0.322*
		Sig. (2-tailed)		0.003

\*Correlation is significant at the 0.01 level (2-tailed).

**Table 14.**  
*Correlation - trust & PU.*

Correlations				
			Ease_of_use	Usefulness
Spearman’s rho	Ease_Of_Use	Correlation Coefficient	1.000	0.174
		Sig. (2-tailed)		0.118

**Table 15.**  
*Correlation - PEOU & PU.*

7.9 H9: perceived ease-of-use positively influences the consumer’s intention to transact online

As presented in **Table 16** a correlation was discovered between ease of use and intention to transact online ( $r = -0.015$ ,  $p = 0.897$ ). Since the correlation is negative and p-value is more than zero, this implies that there is a relationship between the two that as a consumer’s perceived ease of use increases, the intention to transact online decreases. This could be due the factor of trust, that if an e-commerce site is easy to use, then there may be something suspicious about it.

7.10 H10: perceived usefulness positively influences the consumer’s intention to transact online

As shown in **Table 17** there exists a positive correlation between perceived usefulness and a consumer’s intention to transact online ( $r = 0.112$ , p-value = 0.319), thus concluding that as consumer’s perceived usefulness of e-commerce improves, the consumer’s intention to transact online also increases and that there is a significant relationship between the two; and vice versa.

Spearman’s Rho is a versatile measure of association tool that is being widely used [50, 51]. Many published research papers [52, 53] have used Spearman’s Rho to measure the association and significance of risks and trust of using e-Commerce web sites. Spearman’s Rho is a non-parametric test used to measure the strength of association between two variables, where the value  $r = 1$  means a perfect positive correlation and the value  $r = -1$  means a perfect negative correlation. Spearman’s Rho is a nonparametric measure of rank correlation. It assesses how well the relationship between two variables can be described using a monotonic function. The hypothesis is already evaluating the impact of one concept on another. For example, H4: Trust in e-commerce positively influences the perceived risk associated with transacting online. Based on the aims of our research study to find the consumer perceptions of e-Commerce use and acceptance, Spearman’s Rho is used to measure the strength of association between the Perceived Usefulness, Perceived Ease of Use, Perceived Risk and Perceived Trust. This association of positive or negative correlation is indicative of the impact of one concept on another.

The p-value tells you whether the correlation coefficient is significantly different from 0. (A coefficient of 0 indicates that there is no linear relationship.) If the

Correlations				
			Ease_of_use	Intention_to_transact_ online
Spearman’s rho	Ease_Of_Use	Correlation Coefficient	1.000	−0.015
		Sig. (2-tailed)		0.897

**Table 16.**  
*Correlation - PEOU & intention to transact.*

Correlations				
			Ease_of_use	Intention_to_transact_ online
Spearman’s rho	Usefulness	Correlation Coefficient	1.000	0.112
		Sig. (2-tailed)		0.319

**Table 17.**  
*Correlation - PU & intention to transact.*

p-value is less than or equal to the significance level, then you can conclude that the correlation is different from 0. The P-value is the probability that you would have found the current result if the correlation coefficient were in fact zero (null hypothesis). If this probability is lower than the conventional 5% ( $P < 0.05$ ) the correlation coefficient is called statistically significant.

In most cases, in our results under 7.1 to 7.10, all the P values are more than 0, which indicates a correlation. In some cases, P values are less than 0.05, which still indicates a correlation but not that significant. Where the P values are less than 0.05, we have clearly explained the reasons.

## 8. Discussion

The objectives of this study were to explore the effect of perceived trust and perceived risk on the two dimensions of the TAM as well as on a consumer's final intention to transact. The **Table 18**, summarizes the results of the hypotheses for this paper.

As depicted in the **Table 18**, only one hypothesis (H10) was rejected, that is a direct relationship was expected between perceived ease of use and a consumer's intention to transact, however the correlation showed an inverse relationship implying that in Fiji, according to the sample and results, the easier an e-commerce site is to use, the more suspicious consumers may be of it, thus leading to a decline in its use.

The other hypotheses were accepted with relationship types as listed, for example;

- Inverse – as a consumer's perceived risk of e-commerce decreases, the intention to transact increases.
- Direct – as a consumer's trust in e-commerce improves, the intention to transact also increases.

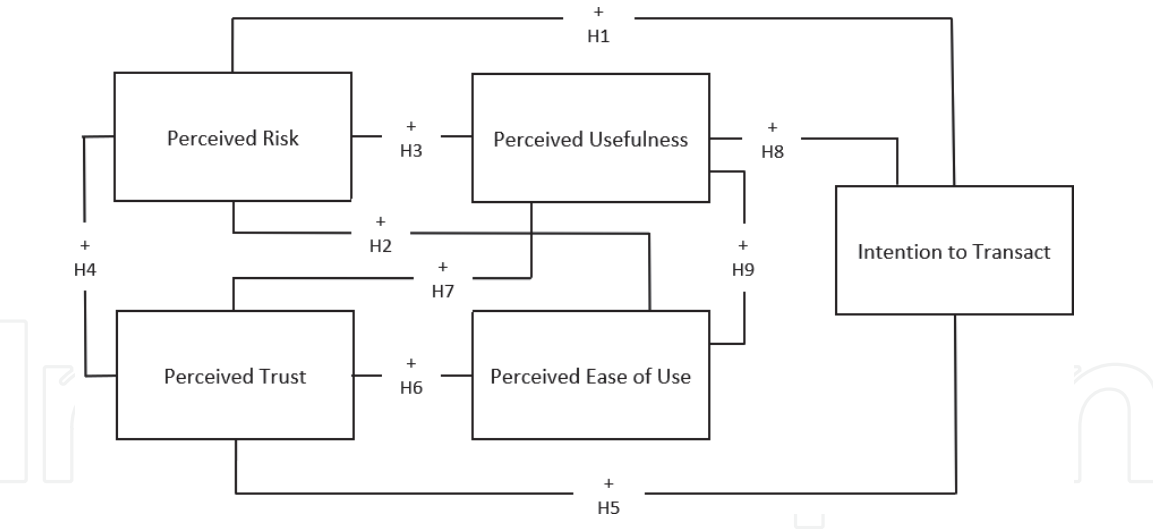
The results of this research exhibit that both perceived risk and perceived trust affect a consumer's intention to transact as well as the ease of use and usefulness of an e-commerce site. Indicating that:

- Perceived risk negatively influences intention to transact, ease of use and usefulness of an e-commerce site. With this result, there were similarities and

Hypothesis	Correlation	Accept\ reject	Relationship type
H1	Perceived Risk → Intention to Transact	Accept	Inverse
H2	Perceived Risk → Perceived Ease of Use	Accept	Inverse
H3	Perceived Risk → Perceived Usefulness	Accept	Inverse
H4	Trust → Perceived Risk	Accept	Inverse
H5	Trust → Intention to Transact	Accept	Direct
H6	Trust → Perceived Ease of Use	Accept	Direct
H7	Trust → Perceived Usefulness	Accept	Direct
H8	Perceived Usefulness → Intention to Transact	Accept	Direct
H9	Perceived Ease of Use → Perceived Usefulness	Accept	Direct
H10	Perceived Ease of Use → Intention to Transact	Reject	Inverse

**Table 18.**  
*Hypothesis correlation relationship.*





**Figure 2.**  
*Updated research outcomes model.*

differences with the study [54] in a developing country Jordan, where by a correlation was found between perceived risk and intention to use (negative influence), however no significant relation found between perceived risk and ease of use and usefulness.

- Perceived trust positively influences intention to transact, ease of use and usefulness of an e-commerce site. Similarly, [55] proves that “trust increases the perceived usefulness of the website” as well as ease of use.
- Perceived usefulness positively influences intention to transact, which was also upheld in [56] as the correlation between both usefulness and actual use had a value of  $r = 0.732$  confirming the relationship.
- Perceived ease of use positively influences perceived usefulness as was also proven in [57] via a study conducted on 155 online consumers.

Based on the results of the study, we have revised our research model from **Figure 1** above to that of **Figure 2** below. The updated research outcomes model in **Figure 2** below takes into consideration H10 that was rejected (that is a direct relationship was expected between perceived ease of use and a consumer’s intention to transact). The new research outcomes model is based on **Table 18: Hypothesis Correlation Relationship**.

The study also revealed that consumers in Fiji have a good understanding of e-commerce as 70.73% of the respondents have used e-commerce to purchase goods. Also, e-commerce has made an impact on the consumers in Fiji as 40.25% of the sample already make online purchases at least once a month. 37.80% of the respondents chose ease of purchase as a contributing factor in transitioning from traditional walk in shop purchasing to online e-commerce shopping with the second highest factor being accessibility with 17.07%.

## 9. Conclusion

It can therefore be concluded that before a certain type of technology is introduced, it is pragmatic to conduct market research to gauge the views of the receivers of the technology. This may also enable businesses to develop on features

that matter rather than investing in technology which may not be widely accepted. The future of e-commerce to thrive in Fiji seems beyond the horizon as many advances in technology will need to be made to gain the trust of consumers and decrease the perceived risks.

## 9.1 Recommendation

This study suggests that for Fijian businesses to venture into e-commerce, the platform must be secure to gain consumers' trust and reduce consumers' perceived risk of e-commerce. Together with this, providing sufficient information on e-commerce site and making sites easy to use will positively impact consumer's behavior of trusting and transacting online.

## 9.2 Further research opportunities

This research was conducted with a time constraint, thus making it difficult to obtain a larger sample. The study was conducted in a developing country – Fiji, thus generalizing the results in a rapidly growing world may be difficult. Further research may be conducted with a larger sample size to give a true depiction of the Fiji population. The hypothesis which was rejected was done so with a low correlation coefficient, hence further research can be conducted to verify and validate the results for this hypothesis.

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