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E-Purchase Intention of Sustainable Innovation in Management Strategies

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***Abstract* — This paper was intended to determine what factors affect online shoppers' purchase intention in the e-business environment and to verify how organizations' internal and external dynamics may underlie the success of e-commerce companies. Although the technology-acceptance model is widely accepted in research of e-commerce topics, the present study went beyond technology and targeted other factors that might have dramatic influence on online shoppers' purchasing intention as well. The results showed positive correlations among the identified factors indicating a great influence of innovative performance in different areas of management strategies on e-purchase intention; they also demonstrated the great impact from the awareness of sustainability development in e-commerce companies. These results may provide some insight on how e-business companies can improve their performance and win in fierce competition.**

***Keywords* — E-Commerce, Sustainable Innovations, Sustainability, Management Strategies, E-Purchase Intention, EFA, SEM, Path Analysis.**

I. INTRODUCTION

In the last decade, the explosion in the use of electronic commerce by the business sector has seen tremendous and dramatic changes in consumer's purchase behavior resulting from the influence of the e-business environment[1]-[3]. An E-business has been defined as the application of information and communication technologies in support of all the activities of business[4]. Commerce, which constitutes the exchange of products and services between businesses, groups and individuals, can be seen as one of the essential activities of any business[5]-[8]. Electronic commerce involves the use of computer technologies to enable the external activities and relationships of a business with individuals, groups and other businesses.

E-commerce covers outward-facing processes that touch customers, suppliers and external partners [9]. It includes sales, marketing, order taking, delivery, customer service, purchasing of raw materials and supplies for production and procurement of indirect operating-expense items such as office supplies[10]-[14]. It involves new business models and the potential to gain new revenue or lose some existing revenue to new competitors. Ambitious as it is, it is relatively easy to implement because it involves only three types of integration: a vertical integration of front-end web site applications to existing transaction systems, a cross-business integration of a company with web sites of customers, suppliers or intermediaries such as web-based marketplaces, and an integration of technologies with modestly redesigned processes for order handling, purchasing or customer service[14].

While e-business includes e-commerce, it also covers internal processes such as production, inventory management, product development, risk management, finance, knowledge management and human resources [15]. E-business strategies are more complex, more focused on internal processes and are aimed at improvements in efficiency, productivity and cost savings [16]-[18]. So, e-business enables an enterprise to reach the global customers. In an attempt to extend their sales platforms to a futuristic dimension, business houses have incorporated software that can run on platforms offered by the World Wide Web [19]. Fig. 1 explains e-business service platforms.

Fig. 1. A Chart of an E-Business Service Platform.

According to the current theory, both e-commerce and e-business address these processes in addition to managing technological infrastructure of databases, application servers, security tools, systems management and legacy systems[20]-[22]. And both involve the creation of new value chains between a company and its customers and suppliers as well as within the company itself. A wise company may decide to consolidate its gains and complete the work involved in its existing and largely separate e-commerce, ERP, CRM or supply-chain initiatives before making the big leap to becoming an e-business[23]-[25].

Due to its original products of books and videos, Amazon focuses on app stores, book depositories, game studios, instant videos, instant videos, kindles, studios, etc[26]. Alibaba, on the other hand, leans toward internet services, online platforms, online money transfers and mobile commerce. As the three Chinese Internet giants (Baidu, Alibaba, Tencent) expand their businesses, infiltrating into every section of the industrial chain, a

comparison of the three companies from a financial point of view will provide an illustrative account of the situation[26][27]. As shown in Fig. 2, Alibaba's quarterly sales revenues sharply increased from 0.8 billion U.S. dollars to 3.06 billion U.S. dollars.

Table 1. Comparing Alibaba and Amazon.

	Amazon.com, Inc.	Alibaba Group Holding Limited
Type	Public	Public
Traded as:	NASDAQ: AMZN	NYSE: BABA
Founded in:	1994, Seattle, U.S.A.	1999, Hangzhou, China
Industry	Internet, online retailing, e-commerce	Internet, online retailing, e-commerce
Srea	Worldwide	Worldwide
Founder	Jeff Bezos	Jack Ma
Products	App store, The Book Depository, Game Studios, Instant Video, Instant Video UK, Instant Video German, Kindle, Lab126, Studios, Twitch.tv, Woot, MyHabit.com, Shopbop, Askville	E-commerce, Online auction hosting, Online money transfers, mobile commerce
Revenue	US$ 74.45 billion (2013)	CN¥52.50 billion (2014)
Operating income	US$ 745.0 million (2013)	CN¥24.80 billion (2014)
Net income	US$ 274.0 million (2013)	CN¥23.31 billion (2014)
Total assets	US$ 40.15 billion (2013)	CN¥111.54 billion (2014)
Total equity	US$ 9.74 billion (2013)	CN¥39.73 billion (2014)
Employees	132,600 (June 2014)	26,845 (October 2014)
Business model	Single: B2C	Multiple: B2B, B2C
Subsidiaries	Amazon Web Services, Alexa Internet, Audible.com, Digital Photography Review, A9.com, Goodreads, Internet Movie Database, Junglee.com, Twitch, Zappos	Alibaba.com, Taobao, eTao, Aliexpress, Alipay, Juhuasuan, Youku, Tudou, Guangzhou Evergrande F.C., Tmall, AliR&D, UCWeb

Alibaba began trading on the New York Stock Exchange after pricing its initial public offering at $68 a share, putting the China-based company's valuation at $167.6 billion, which exceeded Amazon's market capitalization of $150.2 billion, as of its closing price in New York of $325. Amazon, by contrast, produced just $274 million in profit in 2013 [28].

Alibaba has positioned itself toward holding onto the Chinese market while growing; it has also shown an ability to turn a profit, which is something Amazon has had a difficult time doing. Investors have criticized Amazon for its lack of profit, pushing the company's stock down more 18% [29]. Another reason is that Alibaba now holds the crown as the world's most highly valued e-commerce company.

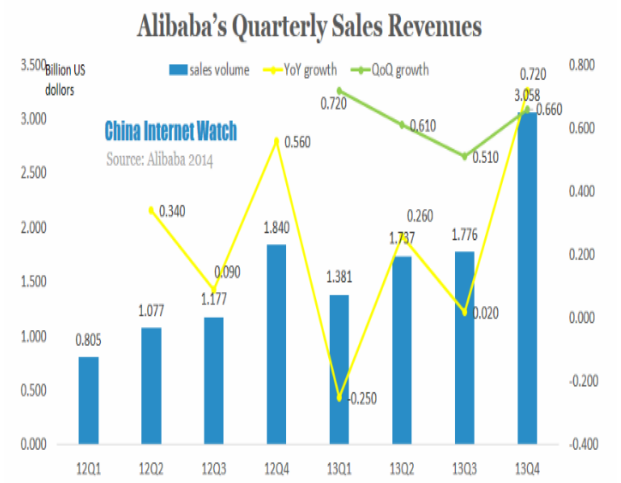

Fig. 2. Alibaba's Quarterly Sales Revenues. Source: http://www.chinainternetwatch.com/7276/a-glimpse-at-chinese-internet-giants-2013-financial-statements/ Viewed Available on May 28, 2014.

Overall, Alibaba.com, Taobao.com, have led the development of massive small and medium enterprises and individual e-commerce [30]. In this way, they have promoted the internationalization of e-commerce in general [31].

Economists have theorized that e-commerce will lead to intensified price competition, as it increases consumers' ability to gather information about products and prices. Research by four economists at the University of Chicago has found the growth of online shopping also affecting the industry's structure in two areas that have seen significant growth in e-commerce: e-bookshops and travel agencies[32]. Generally, larger firms are able to use economies of scale and offer lower prices. The lone exception to this pattern has been the very smallest category of booksellers, shops with 1-4 employees, which appear to have withstood the trend[33].

Individuals or businesses involved in e-commerce, whether buyers or sellers, rely on Internet-based technologies to accomplish their transactions[34]-[37]. E-commerce is recognized for its ability to allow businesses to communicate and to form transactions anytime and anywhere. Whether an individual is in U.S. or overseas, business can be conducted through the internet. The power of e-commerce has caused geophysical barriers to disappear, making all consumers and businesses on earth potential customers and suppliers[38]-[40]. EBay is a good example of e-commerce by which individuals and businesses are able to post and sell their items around the globe[41].

Online selling activities have been very experimental to date, without a sufficient amount of data generated to provide conclusive results. However, important issues have emerged that can be identified for the purpose of promoting future discussion and analyses. These issues vary according to the organization in question, the type of products it sells online, online selling patterns, online customer base, approach to online selling and resource expansions [42].

Online retails have promoted their products through advertisements in brochures, journals, publications and announcements at conferences and events, and on their websites[43]. If more strategic marketing techniques are not employed by business owners, potential customers may not know that the product exists, or may not know that they can purchase the item online [44].

Another emerging trend that is worth noting involves the purchasing patterns of online customers[45]. These patterns include the number of items purchased per customer and the number of repeat customers.

Running a successful e-commerce business can be very rewarding, yet challenging at the same time. Even if you sell a great product, it can become difficult to get the word out about your business if you don't have a well-designed website or marketing strategy [46].

The objective of the present study is to investigate the factors that influence consumers' purchase intentions during their individual purchases online, to conduct an empirical investigation for a comprehensive understanding of the effects of factors influencing their purchase behavior, to make available managerial implications for the online retailing industry, and make a contribution to innovative product research[47][48]. Via the investigation mentioned above, a great influence of innovativeness and segmentation strategies on consumers' purchase intention was revealed. These findings may provide some insights on how to improve companies' performances[49].

II. METHODS

This dissertation was intended to investigate the factors that affect consumers' purchase intention in the e-commerce environment and organizations' internal and external influence on the success of e-commerce[50]. Although the technology acceptance model is widely accepted in e-business research, the present study targeted the effects perspectives other than technologies, e.g., the factors of innovativeness in segmentation and positioning strategies which also have dramatic influences on online shoppers' purchasing intention [51]. To a large extent, methodology determines the outcomes of any research. Therefore, it is crucial to choose appropriate research methods and conduct them effectively in order to answer the research questions and to meet the research objectives[52][53].

From an extensive literature review and a number of quantitative surveys and in-depth interviews with the senior managers of some e-commerce companies, a conceptual model and a set of hypotheses were proposed [54]. Both were instrumental to a comparative analysis between two typical e-business companies, Alibaba and Amazon. The first section of this chapter presents the conceptual model of the present study. In the second section, the two primary methods used in analyzing novel performance in four areas of corporation management (financial, technological, marketing and sustainable development) are described [55]. The third section is mainly related to the SEM quantitative methodology and

how it was combined with the qualitative methods to fit the unique circumstances of the present study [56]. The fourth and fifth sections discuss how the population and sample sizes were determined according to the hypotheses while the final section elaborates on the pilot study by examining the data collected through it [57].

III. Data Analyses And Results

A. Model 1: Sustainability and Technological Efficiency

This section presents the testing of the causal relationship between sustainability and technological efficiency. The variables involved and the statistic al methods used are described in the following:

There will be a positive relationship between sustainability and technological efficiency.

Observed variables: Sus 1 (Sustainability), Sus 2 (Awareness), Sus 3 (Consistency), and Sus 4 (Development), Tec 1 (Communicability), Tec 2 (Complexity), Tec 3 (Divisibility), Tec 4 (Attitude and usage) and Tec 5 (Micro-culture)

Latent variables: Sustainability and technological efficiency.

Statistical method: Structural equations model (SEM).

The following material is organized into three sections: offending estimates, construct reliability and average variance extracted, and goodness of fit [58].

Offending estimates: According to Hair et al. (1998), two common occurrences are: a negative standard error and a standardized regression weight exceeding or being very close to 1.0. In the present study, the standard error was between .040 and .172 (see Table 1), with the range of standardized regression weights being from .131 to .730 (see Table 2). These results show that there were no issues of offending estimate for Model 1.

Table 1. Model-1 Variances.

	Estimate	S.E.	C.R.	P
e1	.892	.100	8.918	***
e2	.572	.079	7.246	***
e3	.814	.093	8.736	***
e4	.752	.098	7.693	***
e5	.367	.043	8.623	***
e6	.429	.061	7.023	***
e7	.451	.054	8.317	***
e8	.451	.054	8.317	***
e9	.332	.040	8.351	***

Note: Estimate = Unstandardized coefficients; SE = Standard errors; C.R. = Critical ratio; p = Significance: * p < .05, **p < .01, ***p < .001

Table 2. Model-1 Standard Regression Weights.

			Estimate
Sus 1	<---	Tec 1	.634
Sus 2	<---	Tec 2	.636
Sus 3	<---	Tec 3	.713
Sus 4	<---	Tec 4	.612
Sus 2	<---	Tec 1	.563
Sus 3	<---	Tec 2	.838
Sus 4	<---	Tec 3	.782
Sus 3	<---	Tec 4	.854
Sus 4	<---	Tec 1	.768

Note: Estimate = Standardized coefficients

Construct reliability and average variance extracted: Claes and Larcker (1981) pointed out that a model is acceptable when the construct reliability is greater than .7 and that the average variance extracted (AVE) needs to be

greater than .5 to be acceptable. In the present study, the construct reliability for sustainability was calculated at the suggested low limit of .70, with this formula[59]:

$$\rho_{c1} = \frac{(\sum \lambda_1)^2}{[(\sum \lambda_1)^2 + \sum \theta_1]}$$

ρ_{c1} is the construct reliability of sustainability. Let λ_1 be the standardized loadings (or the standardized coefficients) for sustainability. Let $\theta 1$ be the error variance for sustainability. Based on the data in Table 3, the construct reliability of sustainability was calculated.

The construct reliability of firms' reputation in Model 1 was calculated at the suggested low limit of .70, with this formula:

$$\rho_{c2} = \frac{(\sum \lambda_2)^2}{[(\sum \lambda_2)^2 + \sum \theta_2]}$$

Table 3. Model-1 Factor Loadings, Construct Reliability and AVE.

	Factor loadings	Squared multiple correlations	Error variance	Construct reliability	Average Variance extracted
Sus 1	.768	.590	.89		
Sus 2	.854	.730	.57		
Sus 3	.782	.612	.81		
Sus 4	.838	.701	.75		
Sus 5	.563	.317	1.52		
				.7613	.4938
Tec 1	.634	.401	.33		
Tec 2	.636	.405	.45		
Tec 3	.713	.509	.43		
Tec 4	.612	.374	.37		
				.8100	.5167

ρ_{c2} is the construct reliability of firms' reputation in Model 1. Let λ_2 be the standardized loadings for firms' reputation. Let θ_2 be the error variance for firms' reputation. Based on the data in Table 3, the construct reliability of firms' reputation in Model 1 was calculated.

$$\rho_{v1} = \frac{\left(\sum \lambda_1^2\right)}{[(\sum \lambda_1^2) + \sum \theta_1]}$$

The average variance extracted from perceived risks was calculated at the suggested low limit of .50, with this formula:

ρ_{v1} is the average variance extracted from technological efficiency based on the data in Table 3.

The average variance extracted from sustainability in Model 1 was calculated at the suggested low limit of .50, with this formula:

$$\rho_{v2} = \frac{\left(\sum \lambda_2^2\right)}{[(\sum \lambda_2^2) + \sum \theta_2]}$$

ρ_{v2} is the average variance extracted from sustainability in Model 1. Based on the data in Table 3, the average variance extracted from firms' reputation in Model 1 was calculated.

In summary, the construct reliability and average variance extracted in Model 1 were considered satisfactory as both were much higher than the suggested values (.70 and .50, respectively)[60]. This suggests that the inner quality of Model 1 was acceptable and deserving further analyses (see Table 4).

Table 4. Model-1 Regression Weights.

	Factor loadings	Squared multiple correlations	Error variance	Construct reliability	Average Variance extracted
Sus 1	.768	.590	.89		
Sus 2	.854	.730	.57		
Sus 3	.782	.612	.81		
Sus 4	.838	.701	.75		
Sus 5	.563	.317	1.52		
				.7613	.4938
Tec 1	.634	.401	.33		
Tec 2	.636	.405	.45		
Tec 3	.713	.509	.43		
Tec 4	.612	.374	.37		
				.8100	.5167

Note: Estimate = Unstandardized coefficients; SE = Standard errors; C.R. = Critical ratio; p = Significance: * p < .05, **p < .01, ***p < .001

Goodness of fit: Fig. 3 is a graphic representation of Model 1. For this model, chi square is 57.938 (degree of freedom = 26, CMIN/DF = 2.23, with a probability level of .000).

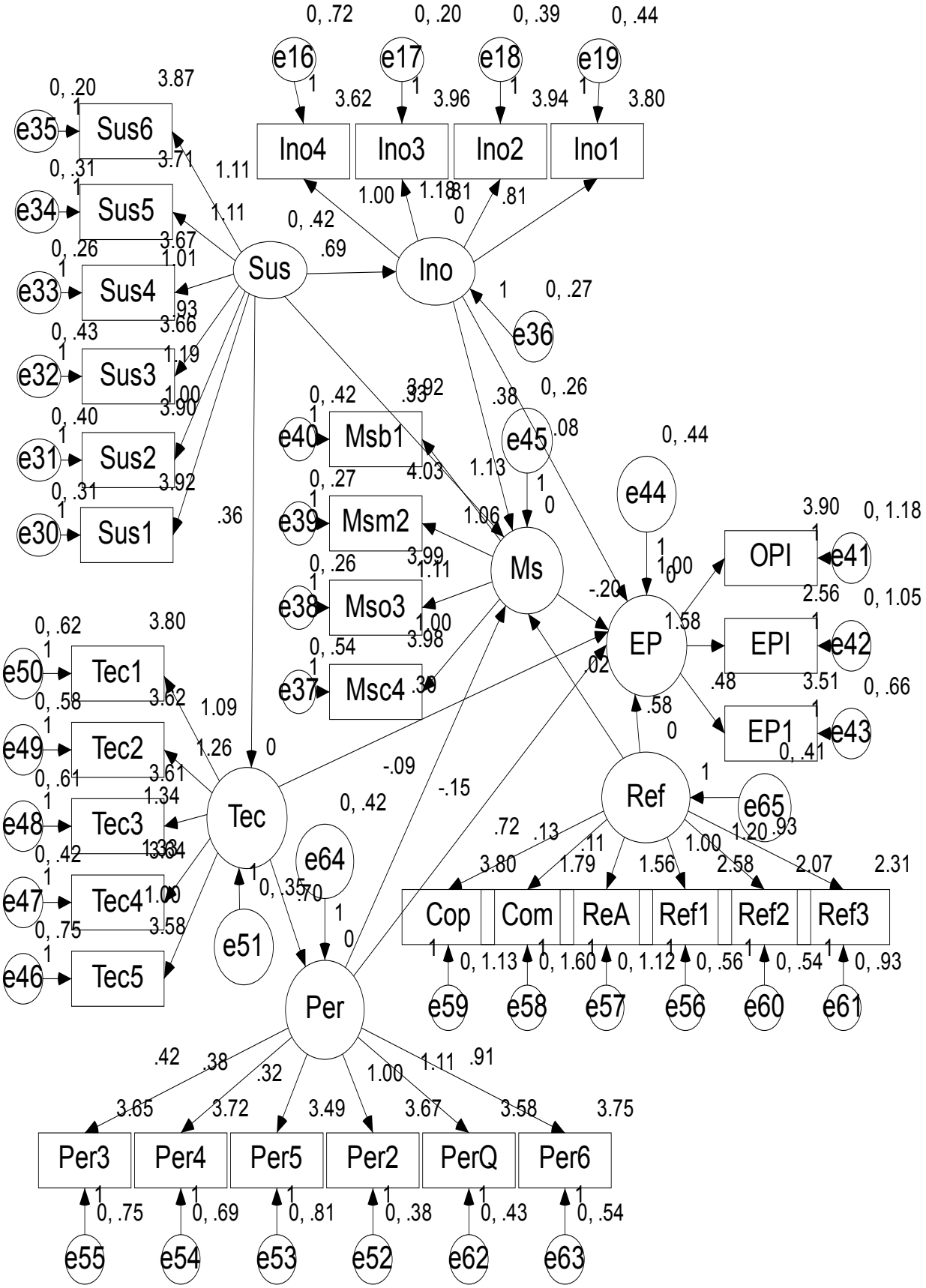

Fig. 3. Model-1 Path Diagram

All the critical values fit into the recommended index value, with p = .000. GFI (.948), IFI (.961) and CFI (.961) are greater than .9; these figures revealed a good model fit for Model 1[61].

Figure 3 demonstrates a positive and significant (p < .001) relationship between sustainability and technological efficiency. Sus 1 (Sustainability), Sus 2 (Awareness), Sus 3 (Consistency), and Sus 4 (Development), Tec 1 (Communicability), Tec 2 (Complexity), Tec 3 (Divisibility), Tec 4(Attitude and usage) and Tec 5 (Micro-culture). These results show that firm's sustainability had a positive effect on technological efficiency[62].

B. Discussion for Model 1

In the following paragraphs, certain variables are explained due to their high correlation coefficients in Fig.

In Fig.3, the standardized regression weight is significantly high (-.88) between firms' reputation x and perceived risks[63]. This result suggests that firms' reputation could decrease perceived risks. The detailed standardized regression weights for firms' reputation and perceived risks will be presented in the following paragraph[64].

The standardized regression weight of Sus 1 (Sustainability), Sus 2 (Awareness), Sus 3 (Consistency), and Sus 4 (Development), Tec 1 (Communicability), Tec 2 (Complexity), Tec 3 (Divisibility), Tec 4 (Attitude and usage) and Tec 5 (Micro-culture). Hence, firm's sustainability of consistency was the most influential variable for technological efficiency[64].

C. Model 2: Perceived Risks and Behavioral Intention

This section presents the testing of the causal relationship between perceived risks and behavioral intention. For the testing of Hypothesis, the variables involved and the statistical methods used are described in the following[65].

There will be a negative relationship between perceived risks and behavioral intention.

Observed variables: Sus 1 (Sustainability), Sus 2 (Awareness), Sus 3 (Consistency), and Sus 4 (Development), Msf 1 (Focus strategy), Msm 2 (Macroeconomics), Msm 3 (Optimization), Msc 4 (Geo-centric strategies).

Latent variables: Sustainability and management strategies Statistical method: Structural equations model (SEM).

The following discussion is organized into three sections: offending estimates, construct reliability and average variance extracted, and goodness of fit[66].

Offending estimates: Before evaluating a model's goodness of fit, offending estimates should be checked[67]. An offending estimate is any value of a parameter that exceeds its theoretical or acceptable limits. According to Hair et al. (1998), two common occurrences in this area are a negative standard error and a standardized regression weight exceeding or being very close to 1.0. Researchers should resolve these problematic occurrences before evaluating any specific result for the model, as changes in any part of the model can have a significant impact on the results. In the worst case, a researcher may need to redefine the model or even redesign the survey questions.

In Table 5, the standard errors in Model 2 are from .388 to .1.513. There are no negative standard errors in this model. Also, as shown in Table 6, the standardized regression weight ranges from -.301 to .857. All standardized regression weights are below 1.0. Thus, it is clear that the offending estimates did not occur in Model 2[68].

Construct reliability and average variance extracted: Claes and Larcker (1981), stated that a model is acceptable when the construct reliability is greater than .7 and that the average variance extracted (AVE) needs to be greater than .5 to be acceptable[68]. In the present study, the construct reliability for behavioral intention was calculated at the suggested low limit of .70.

Table 5. Model-2 Variances.

	Estimate	S.E.	C.R.	p
Sus	.707	.158	4.461	***
e12	.701	.113	6.181	***
e1	.639	.072	8.909	***
e2	.822	.096	8.577	***
e3	.679	.075	9.112	***
e4	.445	.048	9.914	***
e5	.567	.066	8.567	***
e6	.388	.041	9.438	***
e9	.819	.094	8.752	***
e10	.561	.079	7.141	***
e11	.891	.100	8.911	***

Note: Estimate = Unstandardized coefficients; SE = Standard errors; C.R. = Critical ratio; p = significance: * p < .05, **p < .01, ***p < .001

ρ_{c1} is the construct reliability of behavioral intention. Let λ_1 be the standardized loadings (or the standardized coefficients) for behavioral intention. Let θ_1 be the error variance for behavioral intention (See Table 6).

Table 6. Model-2 Standardized Regression Weights.

			Estimate
Sus 1	<---	Msf 1	.564
Sus 2	<---	Msm 2	.835
Sus 3	<---	Mso 3	.781
Sus 4	<---	Msc 4	.857
Sus 2	<---	Msf 1	.768
Sus 3	<---	Msm 2	.739
Sus 4	<---	Mso 3	.766
Sus 3	<---	Msf 1	.720
Sus 4	<---	Msm 2	.711
Sus 1	<---	Msm 3	.767

Note: Estimate = Standardized coefficients

$$\rho_{c2} = \frac{(\sum \lambda_2)^2}{[(\sum \lambda_2)^2 + \sum \theta_2]}$$

The construct reliability of perceived risks in Model 3 was calculated at the suggested low limit of .70, with this formula (see Table 7):

Table 7. Model-3 Factor Loadings, Construct Reliability and AVE.

	Factor loadings	Squared multiple correlations	Error variance	Construct reliability	Average Variance extracted
Sus 1	.682	.465	.39		
Sus 2	.767	.588	.57		
Sus 3	.711	.506	.44		
Sus 4	.720	.518	.68		
Msf 1	.768	.590	.89		
Msm 2	.857	.735	.56	.8445	.4756
Mso 3	.781	.609	.82		
Msc 4	.835	.697	.76		
PR 5	.564	.318	1.52		

Another index, similar to construct reliability, is "average variance extracted" (ρv), which shows how much variance in the latent variable comes from the observed variables.

The higher the average variance extracted, the better the observed variables are in explaining the latent variable. Generally speaking, a model's inner quality is considered good when the average variance extracted is higher than .5 [69]. ρv_1 is the average variance extracted from behavioral intention based on the data in Table 7.

The average variance extracted from perceived risks in Model 2 was calculated at the suggested low limit of .50, with this formula:

$$\rho_{v2} = \frac{\left(\sum \lambda_2^2\right)}{[(\sum \lambda_2^2) + \sum \theta_2]}$$

ρv2 is the average variance extracted from perceived risks in Model 2 based on the data in Table 7.

In summary, the construct reliability and average variance for Model 2 were satisfactory as all of them were much higher than the suggested value (.70 and .50), meaning that the inner quality of Model 3 was acceptable for further analyses (see Table 7).

Goodness of fit: Fig. 4 is a graphic representation of Model 3. For this model, chi square is 101.887 (degree of freedom = 43, CMIN/DF = 2.369, probability level = .000)

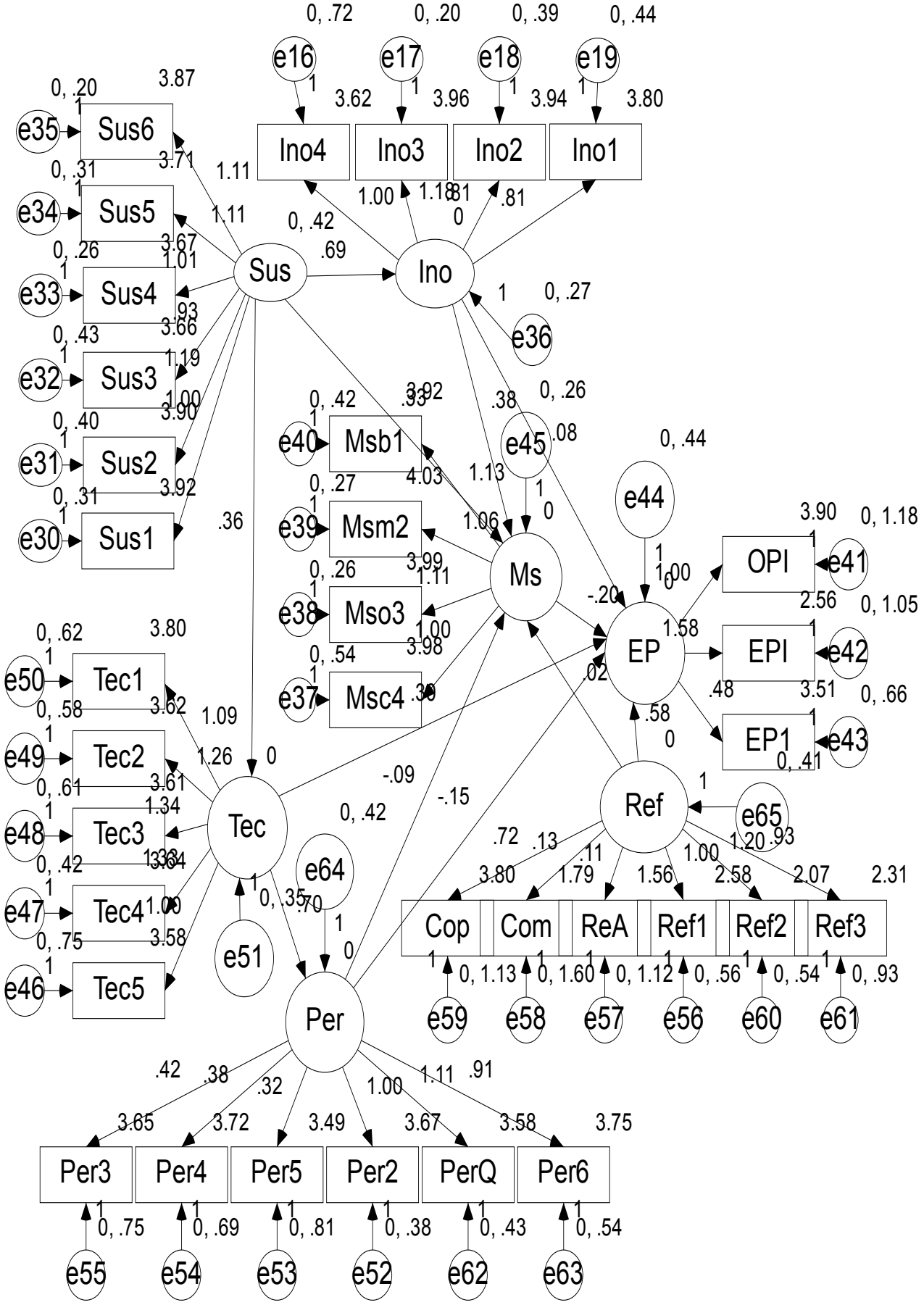

Fig 4. Model-3 Path Diagram.

All the critical values fitted into the recommended index value with p = .000 because these values were greater than .9 (GFI = .926, IFI = .953, TLI = .939, CFI = .952). These data clearly point to a good model fit for Model 2.

As shown in Fig. 4, Sus 1 (Sustainability), Sus 2 (Awareness), Sus 3 (Consistency), Sus 4 (Development), Msf 1 (Focus strategies), Msm 2 (Macroeconomics), Msm 3 (Optimization), and Msc 4 (Geo-centric strategies) are interrelated, and Model 2 predicts a positive and significant relationship between sustainability and management strategies [70].

D. Discussion for Model 2

As shown in Fig. 4, the standardized regression weight is -.315 between sustainability and management strategies. This result suggests that sustainability did significantly affect management strategies. Therefore, the most influential variable for management strategies was focus strategies.

E. Model 3: Perceived Value and Management Strategies.

There will be a positive relationship between perceived value and management strategies.

Observed variables: Per 1 (Perceived value), Per 2 (PAI), Per 3 (Objective price), Per 4 (Reference price), Per 5 (Perceived quality), Per 6 (Perceived value of money), Msf 1 (Focused strategies), Msm 2 (Macroeconomics), Mso 3 (Optimization), Msc 4 (Gero-centric strategies)

Latent variables: Perceived value, management strategies
Statistical methods: Structural equations model

The following discussion is organized into three parts: offending estimates, construct reliability and average variance extracted, and goodness of fit.

Offending estimates: Before evaluating a model's goodness of fit, offending estimates should be checked (Jung, 2007). An offending estimate is any value of a parameter that exceeds its theoretical or acceptable limits. According to Hair et al. (1998), two common occurrences in this area are a negative standard error and a standardized regression weight exceeding or being very close to 1.0.

A researcher should resolve these problematic occurrences before evaluating any specific results of the model as changes in any one part of the model can have a significant impact on the results. In the worst situations, a researcher may need to redefine the model or even redesign the survey question.

As shown in Table 8, the standard error in Model 3 is between .038 and .193. There are no negative standard errors in Model 3. Also, as shown in Table 8, the standardized regression weight ranges from .348 to .862. All standardized regression weights are below 1.0.

Thus, offending estimates did not occur in Model 3.

Table 8. Model-3 Variances.

	Estimate	S.E.	C.R.	p
PEU	.279	.057	4.934	***
e9	1.003	.193	5.194	***
e1	1.326	.156	8.478	***
e2	.830	.104	8.011	***
e3	.741	.093	7.980	***
e4	.975	.127	7.693	***
e5	.435	.045	9.570	***
e6	.560	.060	9.313	***
e7	.308	.042	7.408	***
e8	.197	.038	5.201	***

Note: Estimate = Unstandardized coefficients, SE = Standard errors, C.R. = Critical ratio, p = Significance:
* p < .05, **p < .01, ***p < .001

Construct reliability and average variance extracted: According to Claes and Larcker (1981), a model is acceptable when the construct reliability is greater than .7, and the average variance extracted (AVE) needs to be greater than .5 to be acceptable.

ρ_{c2} is the construct reliability for perceived ease of use in Model 3. Let λ_2 be the standardized loadings for perceived ease of use. Let θ_2 be the error variance for perceived ease of use. Based on the data in Table 10, the construct reliability for perceived ease of use in Model 3 is .615. The average variance extracted from attitudes was calculated at the suggested low limit of .50, with this formula (See Table 9):

$$\rho_{v1} = \frac{\left(\sum \lambda_1^2\right)}{\left[\left(\sum \lambda_1^2\right) + \sum \theta_1\right]}$$

Table 9. Model-6 Standardized Regression Weights.

			Estimate
Ms 1	<---	Per 1	.348
Msm 2	<---	Per 2	.625
Mso 3	<---	Per 3	.660
Msc 4	<---	Per 4	.787
Per 1	<---	Ms 1	.680
Per 2	<---	Msm 2	.712
Per 3	<---	Mso 3	.714
Per 4	<---	Msc 4	.731

Note: Estimate = Standardized coefficients

The average variance extracted from perceived ease of use in Model 3 was calculated at the suggested low limit of .50 (See Table 10):

Table 10. Model-3 Factor Loadings, Construct Reliability and Ave.

	Factor loadings	Squared multiple correlations	Error Variance	Construct Reliability	Average Variance extracted
Msf 1	.680	.463	1.33		
Msm 2	.712	.507	.83		
Mso 3	.714	.510	.74		
Msc 4	.731	.534	.97		
				.6753	.4422
Per 1	.862	.744	.20		
Per 2	.787	.619	.31		
Per 3	.660	.435	.56		
Per 4	.625	.391	.43		
				.8516	.5933

With the formula:

$$\rho_{v2} = \frac{\left(\sum \lambda_2^2\right)}{\left[\left(\sum \lambda_2^2\right) + \sum \theta_2\right]}$$

ρ_{v2} is the average variance extracted from perceived ease of use. Based on the data in Table 10, the average variance extracted from perceived ease of use in Model 3 is .591.

In summary, the construct reliability and average variance extracted in Model 3 are satisfactory, both being higher than the suggested values (.70, .50, respectively).

This suggests that the inner quality of Model 3 was acceptable for further analyses (see Table 10).

Goodness of fit: For this model, chi square is 47.723 (degree of freedom = 19, CMIN/DF = 2.512), with a probability level of .000.

All the critical values fit into the recommended index

value with p = .000. GFI (.752) < .8. So, clearly Model 3 had no good model fit. Thus, Hypothesis 7 was rejected.

F. Discussion for Model 3

In the present study, SEM was conducted to analyze the details of Model 3, but the data did not support the posited association between those two groups of factors. Therefore, there are no statistical significance between the variable group of management strategies and that of perceived value.

G. A Summary of Hypothesis Testing

The results of hypothesis testing, which were based on the best-fitting model, are summarized in Table 11, which indicates that all hypotheses were supported at the significance level of .001.

Table 11. Results of Hypothesis Testing.

Hypotheses	Coefficient estimates	Standardized regression weights	P	Results
1	Overall model		.000***	Supported
2	Sustainability -> Innovation	.69	.001***	Supported
3	Sustainability -> Technologies	.36	.001***	Supported
4	Sustainability -> Management S	.42	.016*	Supported
5	Innovation -> Management S	.38	.046*	Supported
6	Technology -> Perceived V	.70	.001***	Supported
7	Perceived V -> Management S	.42	.001***	Supported
11	Management S -> E-purchase intension	.44	.001***	Supported
12	Reference V -> E-purchase intention	.58	.005**	Supported

Note: * p < .05, **p < .01, ***p < .001

The standard regression weights are .52 for H1, .69 for H2, .36 for H3, .42 for H4, .70 for H6, .38 for H5, .42 for H7, .44 for H11, and .58 for H12.

H. A Summary of the Path Analysis

Results from the factor analysis and SEM revealed the interrelationships among innovation, sustainability, sustainable innovations, management strategies and technological efficiency on e-purchase intention in the overall model. The indices of fitness show that the proposed model was supported by data.

Based on the results of the hypothesis testing, a path analysis was conducted to explain the inter-correlations among the identified factors.

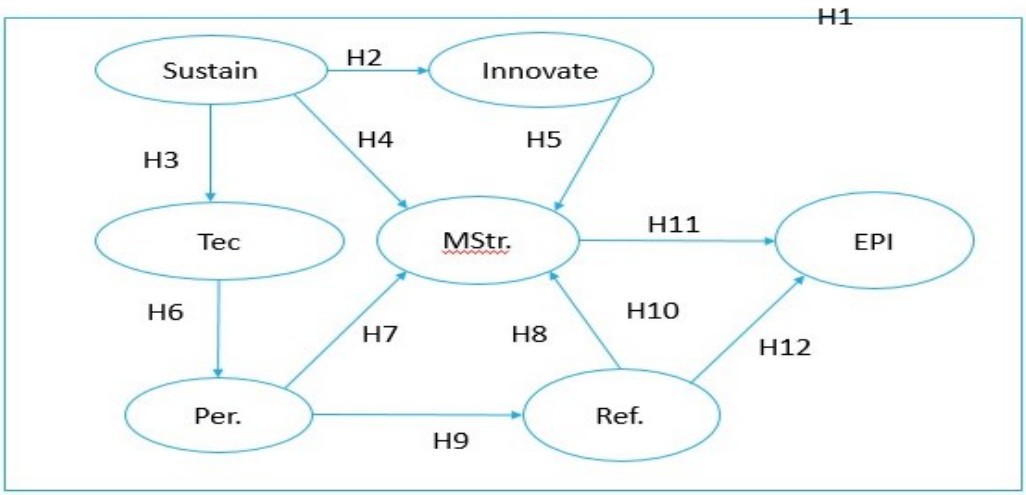

Fig. 5. The Overall Model of All Paths.

The hypothesis testing in the present study made it possible to understand the magnitude of impact, both direct and indirect, among identified variables. These path coefficients represent the strength of a direct or indirect effect of an exogenous variable (e.g., task-technology fit or perceived ease of use) on behavioral intention[71].

Bollen (1986) stated that both direct and indirect effects can help answer important questions regarding the influence of one variable on another and that, overall, the total effect is more relevant[72]. Fig. 5 illustrate the effects and path coefficients for each independent variable in the overall model. Table 12 exhibits how e-purchase intention was affected by reference value, perceived value.

Table 12. Direct, Indirect and Total Effects.

Paths	Direct effect	Indirect effect	Total effect
Perceived value (Per) -> Reference value (Ref)	.72		
Reference value (Ref) -> EPI	.58		
Management S (MS) -> EPI	.44		
Sustainable (Sus) -> Innovations (Ino)	.69		
Sustainable(Sus) -> Technologies (Tec)	.36		
Technologies (Tec) -> Perceived value (Per)	.70		
Path 1			
Sus -> Ino -> Ms -> EPI	.36	.69	.51
Path 2			
Sus -> Ms -> EPI		.32	.71
Path 3			
Sus -> Tec -> Per -> Ref -> EPI	.30	.58	.42
Path 4			
Per -> Ms -> EPI		.29	.45

As we can see from Table 12, the detailed model analyses for all factors provided an answer to RQ3, what are the relative degrees of impact of these key factors on consumers' online purchasing intention.

I. A Summary of the Overall Measurement Model

Table 13. A Summary of the Action Steps.

Components	Code	Items	Action steps
Innovation factors	Ino 1 Ino 2 Ino 3 Ino 4	IV 5: Adopter category innovativeness IV 6: Personal innovativeness in IT and usefulness IV 8: Ease of use IV 9: Compatibility	-- Encouraging innovativeness -- Using incentives to promote innovative activities -- Retaining talents with large incentives

Sustainability	Sus 6	IV 33: Sustainability	-- Increasing awareness of sustainable developments
	Sus 5	IV 34: Awareness of sustainability	
	Sus 4	IV 35: Sustainable development	-- Increasing consistency in sustainability
	Sus 3	IV 36: Consistency	-- Making resources accessible and providing managerial support
	Sus 2	IV 10: B2B and B2C	
	Sus 1	IV 12: Other models	
Tec efficiency	Tec 1	IV 13: Communicability	-- Enlarging the population of the investigated targets
	Tec 2	IV 14: Complexity	
	Tec 3	IV 15: Divisibility	-- Investing more in research departments
	Tec 4	IV 2: Attitude and usage	-- Making the tech efficiency measureable
	Tec 5	IV 42: Micro-culture	-- Cultivating a technology-friendly environment by interaction
Perceived value	Per 1		-- Reducing complaints by reducing low-grade products
	Per 2	IV 17: Perceived risks	
	Per 3	IV 18: Information on product attributes	-- Making available merchandize information online as much as possible
	Per 4	IV 19: Objective price	-- Promoting diversity instead of price wars
	Per 5	IV 20: Reference price	
	Per 6	IV 21: Perceived quality	-- Making comparisons and contrasts possible by supplying more product information
		IV 22: Perceived price	
		Perceived risks	
		Perceived value of money	-- Making payment and funding processes easier

IV. Conclusion

A. Suggestions for Increasing E-Purchase Intention

In the present study, a conceptual model was successfully applied in an empirical investigation of e-purchase intension. The paths in the proposed model clearly revealed the due processes for e-purchase intension. In the following paragraphs, suggestions derived from the results of the present study will be offered in a sequence of steps [73],[74].

Step 1: Sustainable Innovation in Management Strategies via E-Purchase Intention[75]

-- Enhancing the awareness of sustainable development
-- Increasing the consistency in sustainability
-- Making accessible resources while providing managerial support
-- Strongly encouraging innovativeness
-- Offering incentives for innovative activities
-- Retaining talents by large incentives

Step 2: Ensuring an Efficiency-Technology Fit via E-Purchase Intention[76]

-- Enlarging the population of the investigated targets
-- Investing more in research departments
-- Making technological efficiency measureable
-- Cultivating a technologically friendly environment by interaction

Step 3: Creating Relative Advantages via E-Purchase Intention

-- Enhancing awareness of sustainable development
-- Increasing consistency in sustainability
-- Making accessible resources while providing managerial support
-- Enlarging the population of the investigated targets-- Investing more in research departments
-- Making technological efficiency measureable
-- Cultivating a technologically friendly environment by interaction
-- Reducing complaints by reducing low-grade products
-- Making available merchandize information online as much as possible
-- Promoting diversity instead of price wars
-- Making comparisons and contrasts possible by giving more product information
-- Making payment and funding process easier

Step 4: Creating Relative Advantages and Management Strategies via E-Purchase Intention

-- Reducing complaints by reducing low-grade products
-- Making merchandize information available online as much as possible
-- Promoting diversity instead of price wars
-- Making comparisons and contrasts possible by supplying more product information
-- Making payment and funding processes easier

B. Scholarly Contributions

The present study bears important implications to the research community[77]. It identified main factors that contribute to e-purchase intention and provided an empirical rationale for managers to seriously consider these factors[78].

First, this study was informed by the literature of purchase intention quite well. It also yielded empirical support to a conceptual model that connects several factors and brought them to bear on behavioral intention[79][80]. Moreover, the interrelationships among the identified

factors of innovativeness (adopted innovativeness, personal innovativeness in IT, usefulness, ease of use, compatibility), management strategies (macroeconomics, attitude and usage, micro-culture, geo-demographics), novel in products (communicability, complexity, divisibility, relative advantages, perceived risks), novel business model, reference value (brand credibility, brand prestige, perceived risks, perceived value of money) were further explored in the present study[81],[82].

Second, the present study provides managers with meaningful information[83],[84]. Its results underlie a framework that encompasses the interrelationships among those important variables and help managers determine which factors to focus on in efforts to enhance online shoppers' purchase intention. It will also bring to the attention of managers the interrelationships among the relevant factors that may be conducive to marketing strategies targeting clients' satisfaction[85].

C. The Study's Limitations

The present study has a number of shortcomings[86]. First, the sample was online-based, with all of the respondents taken from China and U.S[87]. These individuals might have dispositions and behavioral patterns that differed from those in other geographic areas of the two countries[88].

In the present study, only cross-sectional data were collected[89-91]. In reality, however, embedded applications may differ from the mobile websites. Access through different mobile devices might have affected users' answers to the survey questions[92].

Due to the discrepancies in respondents' knowledge and levels of comprehension, the responses to the questionnaire items might not have been reliable[93-94]. Moreover, the present study's sample mainly consisted of people in the 20-35 age group, which might not have been representative of any targeted marketplace. Finally, the process of data screening in the present study might not have been reliable because some elements had been excluded from data analyses.

D. Suggestions for Future Studies

In the future, researchers should examine the extent to which the present study's results may be generalized to other areas of China or other countries. Longitudinal studies should be conducted to gain information on how users' adopting behavior may change over time. Researchers should also differentiate among specific versions of mobile banking. Finally, they should further analyze how demographical differences may be utilized to generate business insight[95-96].

More specifically, future studies' populations should covered diversified areas, instead of being confined to two counties or two giant companies[97]. Since e-commerce and mobile commerce often overlap each other, efforts should be made to have their differences and similarities teased out. Online shopper's demographical differences and their impact should also be considered, and more variables in this area should be considered in future studies[98].

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