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# THE EFFECTS OF AVATAR ON TRUST AND PURCHASE INTENTION OF FEMALE ONLINE CONSUMER: CONSUMER KNOWLEDGE AS A MODERATOR

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## ABSTRACT

Recent studies of online consumer trust have focused on trust in either a Web site or an online retailer. However, customer attitude may differ by the type of avatar, because customer trust can be cognitive or emotional. Moreover, customers may depend on their own product knowledge for judgment and decision-making. An online survey of female consumers with two scenarios about skin care products was conducted, and 599 responses were used to test the research hypotheses. The result indicates that avatars

can indeed increase customer trust in e-commerce. It also finds that different types of avatar elicit different types of customer trust. Customers have higher cognitive trust in the expert avatar than in the attractive one, and customers have higher emotional trust in the attractive avatar than in the expert avatar. It was also found that an avatar is effective for customers with either knowledge or low product knowledge, while the effect of the type of avatar on trust is stronger for customers with high product knowledge. The effect of emotional trust on purchase intention is stronger than that of cognitive trust. For cosmetic skin care products, attractiveness may be more important than expertise factors when designing the avatar for an online retailer, and an attractive avatar may be the reference point of consumer's ideal vision of herself.

**Keywords:** Purchase Intention, Emotional Trust, Cognitive Trust, Avatar

## 1. INTRODUCTION

Trust has long been regarded as a catalyst for satisfying buyer-seller exchange relationships. In traditional commerce, the objects of trust can be either a firm (for example, customer trust in a firm's goodwill) or a salesperson (for example, customer trust in salesmanship). However, recent research on online consumer trust has focused on the instrumental, affective, and trusting dimensions of consumer beliefs and shows how these beliefs ultimately influence product purchase intentions[1].

According to Chang et al.[2], lack of trust is a major obstacle to the adoption of online shopping. It is predicted that using avatars as company salespeople could become a popular marketing stream, especially in e e-commerce or m-commerce context. Many researchers have already determined that avatar-based communication may increase perceived interpersonal trust in anonymous online environments[3]. They argued that using avatars as salespeople could increase customer trust. However, customer attitude may depend on the type of avatar. Customer trust can be cognitive or emotional[4]. Moreover, customers may also depend on their own product knowledge rather than on avatars for judgment and decision-making. There is little research discussing the impact of a customer’s product knowledge when examining customer trust in avatars in the context of e-commerce. Therefore, this article’s objectives are to examine the effect of the type of avatar on consumer trust and purchase intention, and to understand the moderating effect of product knowledge.

# 2. LITERATURE REVIEW AND RESEARCH HYPOTHESES

## 2.1 Consumer Trust and Purchase Intention

Trust is a cornerstone of e-commerce[5]. In a business-to-consumer relationship, trust in the e-vendor is important in assessing risk[6]. Trust plays an important role in e-commerce[7]. Therefore, the influence of trust on consumer online transaction activities is fundamental in predicting e-commerce adoption[8]. Riedl et al.[3] argue that consumer decision to adopt internet purchase involves not only perceptions of technology (such as perceived capability) but also trust about the seller. Trust is an essential construct for relationship marketing. Pavlou[8] suggested that individuals with high trust are more likely to be more favorable towards online shopping. McKnight and Chervany[9] emphasized the importance of trust in the formation of consumer attitudes. Chang and Chen[10] found a significant effect of trust in a website on purchase intention. Urban et al.[11] suggest that customers' trust in a virtual salesperson will significantly affect their attitudes toward the Web store and their intention to shop online. This leads to H1.

H1: Customer trust has a positive effect on purchase intention.

## 2.2 Avatar Type and Consumer Trust

Using avatars as a marketing tool is popular in the virtual world. Interaction with avatars online underpins a consumer's attitude toward the brand or retailer[3]. The personality or profile of the avatars may also influence the consumer purchase process. Thus, the plasticity of avatar representations (i.e., the possibility of modifying their appearance and behavior for strategic purposes) is that when a salesperson is perceived as expert, he or she elicits trust. Both cognitive and emotional trust will be discussed this paper[12, 13].

Lewis and Weigert[14] propose that trust is based on a cognitive process (i.e., good rational reasons), and an emotional base (i.e. a strong positive affect for the trustee). They suggest that when good reasons to trust have been identified, cognitive trust develops. Cognitive trust is a customer's confidence in or willingness to rely on a provider's competence and reliability[15]. The emotional aspect of trust consists of a willingness to depend on another party. Emotional trust is a kind of feeling; cognitive trust is a kind of understanding[4]. Komiak and Benbasat[15] described two elements of cognitive trust: in competence and in integrity. Accordingly, emotional and cognitive trust are different because cognitive trust is a customer's

understanding grounded on good rational reasons[16] and (2) emotional trust is an sentiment security which enables a customer to go beyond the evidence and feel comfortable about relying on a trusted person[14].

Pappas and Flaherty[17] suggest that a salesperson's behavior is vital in trust building. Sandra Maria[18] found that in Portugal, involvement of service staff would be instrumental in building trust with the customers and helping customers achieve improved access to and utilization of online services. Moreover, individuals present themselves to others through their verbal and non-verbal behaviors and information; appearance is one kind of non-verbal behavior or information[19]. Cho[6] found that appearance and clothing type affect a consumer's perceptions of a salesperson. Thus, the salesperson's clothing and appearance are forms of non-verbal communication. This study supposes that the effect of avatars on consumer trust depends on the avatar. Shaffer et al.[20] define trust as both an emotional and cognitive state in which someone relies on information received from someone else. Martin et al.[19] also found that the high levels of involvement with the product purchased, participants were sensitive to the expertise of the avatar. The perceived credibility of the avatar mediated the influence of avatar expertise on satisfaction with the retailer, attitude toward the product, and purchase intention. There was an unexpected consequence of avatar attractiveness at high levels of involvement. This effect may reflect the influence of avatar attractiveness. Consequently, this research suggests that customer trust in an expert avatar will be more cognitive, and that customer trust in an attractive avatar will be more emotional. Thus, the H2 and H3 hypotheses are proposed.

H2: Customers' cognitive trust in an expert avatar will be higher than that in an attractive avatar.

H3: Customers' emotional trust in an attractive avatar will be higher than that in an expert avatar.

## 2.3 Consumer Knowledge

Knowledge remains an important topic to consumer researchers. As Christine et al.[21] summarize, consumer researchers frequently distinguish actual knowledge from consumers' assessments of their knowledge, using the terms *objective knowledge* to refer to accurate stored information and *subjective knowledge* to refer to beliefs about their own knowledge. Objective knowledge depends on ability or expertise; subjective knowledge is based on expertise, experience and other factors[22]. Subjective knowledge has typically been measured by subjects' self-reports of their knowledge of a product category or domain. It plays an important role in memory and

problem solving[20, 23]. Many factors such as the level of knowledge contribute to the discrepancy between subjective and objective knowledge[24]. However, objective knowledge has been assessed using texts of an individual's knowledge about a product or domain. In brief, there is a conceptual distinction between objective and subjective knowledge. Subjective knowledge includes one's confidence in his/her knowledge; objective knowledge considers someone actually knows.

Several scholars suggest that the mechanisms through which subjective and objective knowledge affect decision behavior are different[22, 23]. Carlson et al.[22] found that results of the meta-analysis reveal that objective and subjective knowledge relationships from prior research were stronger for products than for nonproducts, for public than for private goods, and for subjective knowledge measures containing an expert than for an "average" standard of comparison. Hadar et al.[23] propose that attempts to increase consumers' objective knowledge of financial instruments can deter their willingness to invest when such attempts weaken consumers' subjective knowledge. In this article, we examine the impact of subjective and objective knowledge.

Selnes and Howell[25] found that decision-making behavior and information processing differ between customers with high and low levels of product knowledge. The former have cognitive skills that enable them to search for intrinsic information cues. As the latter lack these cognitive skills, they are more likely to base their evaluations and choices on more extrinsic descriptions. So unlike customers with a high level of product knowledge and who based their evaluations and choices on cognition, customers with a low level of product knowledge are more likely to use an extrinsic attribute (for example, appearance) as a reference point in an avatar and process information based on emotional factors. Hypotheses H4 and H5 are proposed.

H4a: Compared to consumers with a low level of subjective knowledge, consumers with a high level of subjective knowledge will have more cognitive trust in the avatars.

H4b: Compared to consumers with high levels of subjective knowledge, consumers with a low level of subjective knowledge will have more emotional trust in the avatars.

H5a: Compared to consumers with a low level of objective knowledge, consumers with a high level of objective knowledge will have more cognitive trust in the avatar.

H5b: Compared to consumers with a high level of objective knowledge, consumers with a low level of objective knowledge will have more emotional trust in the avatars.

# 3. METHODOLOGY

## 3.1 Research Design

### 3.1.1 Experimental design and experimental product

Hypotheses were tested by using a 2 (expert/attractive avatar) x 2 (high/low product knowledge) factorial design. The figure of each type of avatar was selected by pre-test 1, and was then used in the experimental situation design. Product knowledge was measured on both a subjective and an objective knowledge scale. In order to design the online purchasing scenario for females, the target product/service should be defined. Many surveys conducted in 2012 concluded that cosmetics, books and electronic goods are the top three products that women purchase online.[26] Thus, skin care products have been chosen as the experimental product in the study. Figure 1 depicts the research framework.

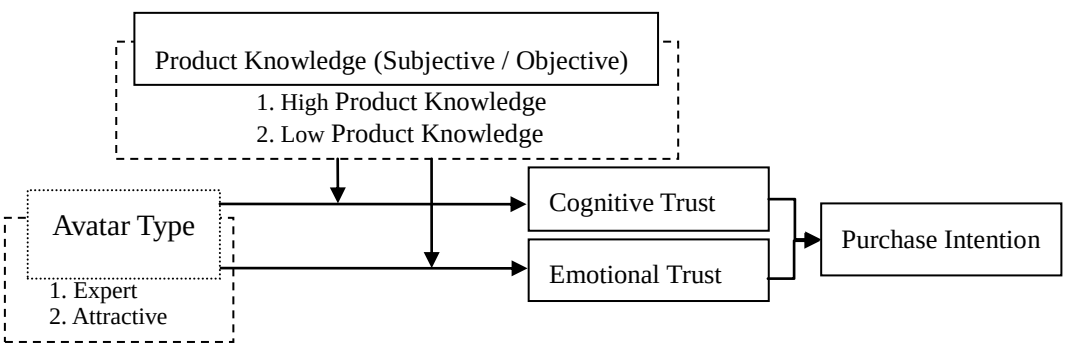


**Figure 1.** Research framework

### 3.1.2 Experimental process

This research includes two pre-tests and one formal test. The pre-test consists of two parts: the first part determines the type of experimental avatar (expert or attractive). The second part of the pre-test identifies whether the items for measuring objective product knowledge are valid.

[Pre-test 1] Five casts are designed for each type of avatar. The first type is a cosmetic doctor (expert avatar) and five avatars are assigned a

character from A to E. The second type of avatar is a beauty queen (attractive avatar) and five avatars are assigned a character from A to E.

Forty-nine questionnaires were sent to female students at Tatung University. In order to identify the expert avatar and the attractive avatar, they were asked four questions. The first two questions were measured on seven-point Likert-type scales ranging from (1) *strongly disagree* to (7) *strongly agree*. The highest average response score of the first question, "Is she attractive" is 5.33 for beauty queen-E, and the second is 4.27 for cosmetic doctor-E. Since their difference is significant through paired test, queen-E is chosen as the attractive avatar.

The second question is "Does she look like an expert?" The results showed that cosmetic doctor-E received the highest average score of 5.16, with beauty queen-E is the second highest average score of 4.57. Since their difference is significant through paired test, cosmetic doctor-E is chosen as the expert avatar.

The third question, "Which one of these virtual salespersons do you consider more attractive?" was used to identify the attractive avatar.

The fourth question "Which of these virtual salespersons do you consider the most attractive?" was used to identify the expert avatar. The results showed that 75.5% respondents recognized beauty queen-E as the most attractive and 65.3% respondents recognized cosmetic doctor-E as the one with the most expertise. Therefore, beauty queen-E and cosmetic doctor-E were chosen as the attractive avatar and the expert avatar.

[Pre-test 2] This part evaluate whether the items of objective knowledge are easy or difficult for the subject. The scale of objective knowledge is made up of 11 items. This pre-test uses a true/false test to give scores of 0 or 1, and then adds up the total score for each respondent. The distribution showed that the scale is suitable for distinguishing high from low objective knowledge.

## 3.2 Measurement

The variables used in this study are avatar type, customer trust, purchase intention, and product knowledge. This study follows Martin et al.[19] to identify avatars as expert or attractive. The expert avatar means the customer perception avatar's appearance as an expertise salesperson (e.g. expertise). The attractive avatar means the customer perception avatar's appearance as an attractive salesperson (e.g., likeability). Following Komiak and Benbasat[15], customer trust is either cognitive or emotional. *Cognitive trust* is defined as a consumer's rational assessment that a trustee will have

the ability to fulfill its obligations as understood by the consumer. *Emotional trust* is defined as a consumer's sense of security and comfort in relation to his or her reliance on a trustee. Based on Komiak and Benbasat,[15] three questions measure "Cognitive Trust in Competence" in terms of (1) whether or not this salesperson was like a real expert in assessing products; (2) whether or not this salesperson had good knowledge about product; and (3) whether or not this salesperson identified the consumer's needs and preferences.

"Emotional Trust" includes the following items: (1) I felt secure about relying on the salesperson for my decision; (2) I felt comfortable about relying on the salesperson for my decision; and (3) I felt content about relying on the salesperson for my decision.

"Purchase Intention" is defined as the extent to which the customer would be likely to purchase a product with avatars as company representatives from a commercial web site. The scale items, adapted from Wang et al.[27], are (1) I would be willing to order product on this web site; (2) the likelihood that I would make an order on this web site is very high; and (3) I would be willing to recommend this web site to my friends.

*Product knowledge* in this study is the amount of object and subject knowledge about skin care products that consumers have. Following Bruck[28], we divide product knowledge into subjective and objective knowledge. *Subjective knowledge* is defined as an individual perception of or confidence in how much a person knows about a product. *Objective knowledge* is defined as an individual's actual knowledge about a product. The subjective knowledge scale was a seven-point scale based on Bruck's[28] self-assessment scale. An objective knowledge scale is developed based on Huang's work[29]. A five-point Likert scale was used to measure each construct except for avatar types and objective product knowledge.

# 4. RESULTS

## 4.1 Profiles of the Respondents

Since our research's target is online consumer behavior and the experimental product is a skin care product, this research targets female users of a well-known web-site as the subjects. Two questionnaires with different scenarios (expert avatar/cosmetic doctor-E or attractive avatar/beauty queen-E) were uploaded to that website. Two types of avatar will be randomly presented to recommend a skin care product, and the respondents were asked to answer the questions listed. An online questionnaire was administered, and 599 valid questionnaires were used to test the research hypotheses (Table 1). SPSS Statistics and AMOS were used to perform the CFA, regression analysis, MANOVA, and one-way ANOVA.

**Table 1.** Profile of the respondents (N = 599)

| Demographic | Item | N | % |
|---|---|---|---|
| Gender | Female | 599 | 100 |
| Age | 19-25 | 503 | 84 |
| | 26-30 | 54 | 9 |
| | 31-35 | 19 | 3.2 |
| | 36-40 | 23 | 3.9 |
| Education | Elementary School<br>Junior High | 7 | 1.2 |
| | Junior High School | 8 | 1.3 |
| | Senior High School | 409 | 68.3 |
| | College | 32 | 5.3 |
| | University | 122 | 20.4 |
| | Graduate School | 21 | 3.5 |
| Occupation | Student | 118 | 19.7 |
| | Soldier | 2 | 0.3 |
| | Labor | 16 | 2.7 |
| | Public Servant | 11 | 1.8 |
| | Education | 15 | 2.5 |
| | Business | 25 | 4.2 |
| | Freelancer | 412 | 68.8 |
| Monthly Income (in NT$) | Below 10,000 | 123 | 20.5 |
| | 10,001-20,000 | 63 | 10.5 |
| | 20,001-30,000 | 168 | 28 |
| | 30,001-40,000 | 215 | 35.9 |
| | 40,001-50,000 | 30 | 5 |
| Annual Expenditure (%) (The online purchasing experiment and the percentage of annual expenditure) | Below 10% | 481 | 80.3 |
| | 11-20% | 77 | 12.9 |
| | 21-30% | 17 | 2.8 |
| | 31-40% | 12 | 2.0 |
| | 41-50% | 10 | 1.7 |
| | Over 51 % | 2 | 0.3 |

## 4.2 Result of Reliability Analysis and Validity of the Measurement Model

In this study, these factors were *cognitive trust*, *emotional trust*, *purchase trust*, *subjective knowledge*. The Cronbach's α test results show that four factors have satisfactory reliability (cognitive trust: 0.945; emotional trust: 0.975, purchase trust: 0.938; subjective knowledge: 0.922). The model was estimated and the results are presented in Table 2, which means that the scale has a good convergent validity, with all factor loadings

above the 50% (0.50) threshold. Overall fit statistics of the measurement model were as follows: $\chi^2_{(18)}$ = 30.605, CMIN/DF = 1.70, GFI = 0.989, AGFI = 0.972, CFI = 0.998, NFI = 0.996, RMR = 0.017 and RMSEA = 0.034. Hence, the findings indicated a reasonable level of fit of the model. Moreover, the composite reliability (CR) of each main construct is greater than 0.7, and AVE of each construct is above 0.5[30]. All these indicate a satisfactory convergent validity of our measurement scales.

**Table 2.** Measurement

| Dimensions | Terms | Factor Loading | Standard Error | *t*-value |
|---|---|---|---|---|
| *Cognitive Trust* | CT1 | 0.914 | 0.023 | 39.74*** |
| AVE = 0.855; | CT2 | 0.933 | 0.025 | 37.32*** |
| CR = 0.947 | CT3 | 0.927 | 0.027 | 34.33*** |
| *Emotional Trust* | ET1 | 0.961 | 0.036 | 26.96*** |
| AVE = 0.929; | ET2 | 0.969 | 0.041 | 23.63*** |
| CR = 0.975 | ET3 | 0.962 | 0.038 | 25.32*** |
| *Purchase Intention* | PI1 | 0.899 | 0.044 | 20.43*** |
| AVE = 0.836; | PI2 | 0.933 | 0.039 | 23.92*** |
| CR = 0.938 | PI3 | 0.910 | 0.040 | 22.75*** |
| *Subjective Product Knowledge* AVE = 0.560; CR = 0.862 | SK1 | 0.780 | 0.037 | 21.08*** |
| | SK2 | 0.779 | 0.034 | 22.91*** |
| | SK3 | 0.542 | 0.054 | 10.04*** |
| | SK4 | 0.808 | 0.031 | 26.06*** |
| | SK5 | 0.800 | 0.035 | 22.86*** |

*Notes：***p < 0.001, **p < 0.01, *p < 0.05*

## 4.3 Result of Regression Analysis

In this study, the regression model can explain the relationship between the independent variables and dependent variable ($F$ = 138.229, $p$ = .000). Both VIF value of cognitive trust and emotional trust were 2.594 and collinearity was not a problem with regression model. The explanatory power of the regression model (Adjust $R^2$) was 0.315. At the same time, the result indicates that cognitive trust has a positive relationship with purchase intention (standardized coefficients was 0.733, *t*-value = 13.445, $p$ = .00), and emotional trust has a positive effect on purchase intention (standardized coefficients is 0.387, *t*-value = 16.613, $p$ = .00), supporting hypothesis H1.

## 4.4 Homogeneity Test and Result of MANOVA

MANOVA was used to test the effect of avatar type on trust, and to examine the moderating effect of product knowledge. Before MANOVA, the Levene method was used to examine the homogeneity of variance. The result shows no significant difference in variance for emotional trust ($p$ = .133). Accordingly, it meets the assumption of homogeneity of variance in the variance analysis. Because the result indicates that the difference for cognitive trust is significant ($p$ = .000), we used independent sample T test to examine the hypotheses again.

The results of the MANOVA analysis are displayed in table 3. The results show that subjective knowledge is the moderating variable. First, the main effects of different type of avatars on customer cognitive trust ($F$ = 15365.224, $p < 0.05$), and on customer emotional trust ($F$ = 2896.949, $p < 0.05$) are significant. Thus, cognitive trust and emotional trust were examined in terms of the effects of different types of avatars. Table 4 shows that customers have more cognitive trust in the expert avatar than in the attractive avatar ($Mean_{expert}$ = 11.441 > $Mean_{attractive}$ = 6.182; $p$ = .000). Hence, H2 was supported. Moreover, customers have more emotional trust in an attractive avatar than in an expert avatar ($Mean_{attractive}$ = 12.571 > $Mean_{expert}$ = 4.756; $p$ = .000). Therefore, H3 was supported. However, the independent sample T test also suggests that a customer's cognitive trust in an expert avatar will be higher than in an attractive avatar ($Mean_{expert}$ = 11.19 > $Mean_{attractive}$ = 6.18; $t(543)$ = 37.636, $p$ = .00), supporting the hypothesis H2.

**Table 3.** Analysis of MANOVA (subjective knowledge as moderator)

| Source of Variation | Depended Variance | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Subjective Knowledge | CT | 40.902 | 1 | 40.902 | 16.625 | .000* |
| | ET | 20.034 | 1 | 20.034 | 6.825 | .009* |
| Avatar | CT | 3850.806 | 1 | 3850.806 | 15365.224 | .000* |
| | ET | 8503.105 | 1 | 8503.105 | 2896.949 | .000* |
| Subjective Knowledge* Avatar | CT | 95.211 | 1 | 95.211 | 38.700 | .000* |
| | ET | 18.256 | 1 | 18.256 | 6.220 | .013* |

*Notes：***p < 0.001, **p < 0.01, *p < 0.05*

**Table 4.** Comparisons of cognitive and emotional trust

| Pairwise Comparisons of Cognitive Trust | | | | | |
|---|---|---|---|---|---|
| Types of Avatars | (I) | (J) | Mean Difference (J-I) | Std. Error | Sig. |
| Cognitive Trust | Attraction | Expert | -5.259 | 0.133 | 0.00 |
| | Expert | Attraction | 5.259 | 0.133 | 0.00 |
| Pairwise Comparisons of Emotional Trust | | | | | |
| Types of Avatars | (I) | (J) | Mean Difference (J-I) | Std. Error | Sig. |
| Emotional Trust | Attraction | Expert | 7.815 | 0.145 | 0.00 |
| | Expert | Attraction | -7.815 | 0.145 | 0.00 |

We find a significant interaction effect between avatar type and subjective product knowledge. The effects of type of avatars and subjective knowledge on customer trust are discussed. The expert avatar led to more cognitive trust than the attractive avatar for customers with high levels of subjective knowledge ($Mean_{expert} = 12.125 > Mean_{attractive} = 6.039$; $F(1, 248) = 1177.544$, $p = .000$). (2)The expert avatar led to more cognitive trust than the attractive avatar for customers with low levels of subjective knowledge ($Mean_{expert} = 10.756 > Mean_{attractive} = 6.324$; $F(1, 349) = 577.314$, $p = .000$). (3)The attractive avatar elicited more emotional trust than the expert avatar for customers with high levels of subjective knowledge ($Mean_{attractive} = 12.562 > Mean_{expert} = 4.385$; $F(1, 248) = 1516.381$, $p = .000$). (4)The attractive avatar elicited more emotional trust than the expert avatar for customers with low levels of subjective knowledge ($Mean_{attractive} = 12.562 > Mean_{expert} = 5.127$; $F(1,349) = 1486.791$, $p = .000$). H4a and H4b are supported.

The moderating effects of subjective knowledge are discussed. After reading the scenario of the expert avatar, consumers with a high level of subjective knowledge had more cognitive trust than those with a low level of subjective knowledge ($Mean_{high} = 12.125 > Mean_{low} = 10.756$; $F(1, 300) = 39.125$, $p = .000$), but after reading the scenario of the attractive avatar, there is no significant difference in cognitive trust between consumers with a high level of subjective knowledge and those with a low level of subjective knowledge ($Mean_{low} = 6.324$, $Mean_{high} = 6.039$; $F(1, 297) = 3.391$, $p = .067$). Consumers' subjective product knowledge will enhance the relationship between the expert avatar and cognitive trust.

After reading the scenario of the expert avatar, consumers with a low level of subjective knowledge have more emotional trust than those with a high level of subjective knowledge ($Mean_{low}$ = 5.127 > Mean $_{high}$ = 4.385; $F(1, 300) = 39.125$, $p = .001$), but after reading the scenario of the attractive avatar, there is no significant difference in emotional trust between consumers with a high level of subjective knowledge and those with a low level of subjective knowledge ($Mean_{high}$ = 12.562, $Mean_{low}$ = 12.579; $F(1, 297) = 39.125$, $p = .924$). Consumer subjective product knowledge will weaken the relationship between the expert avatar and emotional trust. It seems that the expert avatar elicited more cognitive trust than the attractive avatar, and the attractive avatar elicited more emotional trust than the expert avatar. However, the difference in cognitive trust (or emotional trust) in expert and attractive avatar for customers with high subjective knowledge, is larger than it is for customers with low subjective product knowledge. It means that the relationship between type of avatar and type of trust is stronger for customers with high subjective product knowledge than for customers with low subjective product knowledge. The way in which the expert avatar elicits cognitive trust and the attractive avatar elicits emotional trust is stronger for customers who think that they know a product well.

The MANOVA analysis results are displayed in table 5 First, we saw a significant interaction between avatar type and objective knowledge on cognitive trust ($F = 9.974$, $p = .02$), and no significant interaction between avatar type and objective knowledge on emotional trust ($F = 0.733$, $p = .392$).

The expert avatar led to more cognitive trust than the attractive avatar for customers with high levels of objective knowledge ($Mean_{expert}$ = 11.367 > $Mean_{attractive}$ = 6.057; $F(1, 248) = 1127.594$, $p = .000$).

The expert avatar led to more cognitive trust than the attractive avatar for customers with low levels of objective knowledge ($Mean_{expert}$ = 10.825, $Mean_{attractive}$ = 6.400; $F(1, 201) = 337.362$, $p = .000$).

The moderating effects of objective knowledge are further discussed. After reading the scenario of the expert avatar, consumers with high levels of objective knowledge have more cognitive trust than those with low levels of objective knowledge ($Mean_{high}$ = 11.367 > $Mean_{low}$ = 10.825; $F(1, 300) = 5.574$, $p = .019$).

After reading the scenario of the attractive avatar, consumers with a low level of objective knowledge have more emotional trust than those with high level of objective knowledge ($Mean_{low}$ = 6.400 > $Mean_{high}$ = 6.057; $F(1, 297) = 4.506$, $p = .035$). H5a and H5b are supported. The expert avatar led

to a more cognitive trust than the attractive avatar for whether customers with high level of objective knowledge or customers with low level of objective knowledge. However, the difference in cognitive trust in expert and attractive avatar for customer with high objective knowledge is larger than that for customers with low objective product knowledge. This again provides evidence that consumer product knowledge, either subjective (the extent that customer think they know the product well) or objective (the extent to which customers actually know the product well), plays an important role in the information processing of consumers.

**Table 5.** Analysis of MANOVA (objective knowledge as moderator)

| Source of Variation | Depended Variance | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Objective Knowledge | CT | 1.336 | 1 | 1.336 | 0.058 | .476 |
| | ET | 9.988 | 1 | 9.998 | 3.357 | .067 |
| Type of Avatar | CT | 3168.092 | 1 | 3168.092 | 1204.467 | .000** |
| | ET | 7989.098 | 1 | 7989.098 | 2685.013 | .000** |
| Objective Knowledge* Avatar | CT | 26.234 | 1 | 26.234 | 9.974 | .002** |
| | ET | 2.182 | 1 | 2.182 | 0.733 | .392 |

*Notes：***p < 0.001, **p < 0.01, *p < 0.05*

## 5. CONCLUSION

This study contributes to the online marketing literature by exploring the relationship between avatar type and costumer trust, and the relationship between customer trust and purchase intention. It also investigates the moderating role of product knowledge on the relationship between avatar type and customer trust. Moreover, it revalidates the effect of product knowledge by subjective and objective product knowledge separately. According to the statistical analysis, customer trust has a positive effect on purchase intention, so H1 is supported. Customer cognitive trust in an expert avatar will be higher than that in an attractive avatar, and customer emotional trust in an attractive avatar will be higher than that in an expert avatar, so H2 and H3 are supported. Compared to consumers with low level of subjective knowledge, consumers with high level of subjective knowledge will have higher cognitive trust in the avatars, and compared to consumer with high levels of subjective knowledge, consumers with low level of subjective knowledge will have higher emotional trust in the avatars, so H4a and H4b are supported. In addition, compared to consumers with low level of objective knowledge, consumers with high level of objective

knowledge will have higher cognitive trust in the avatar, so H5a is supported. Compared to consumers with high level of objective knowledge, consumers with low level of objective knowledge have higher emotional trust in the avatars. H5b is also supported. The results of empirical analysis suggest that the greater the customer trust, the stronger the purchase intention. This result indicates that consumers' purchase intention is influenced by their cognitive and emotional trust in avatars. Higher cognitive or emotional trust will result in higher purchase intention. Previous research suggested that although both trust in department stores and trust in salespersons are expected to enhance customer loyalty, person-to-person trust has stronger influence on loyalty than does person-to-firm trust[11]. An avatar is similar to a virtual salesperson. Martin et al.[19] suggest that avatars can positively influence the trust of a consumer in a firm and avatar design can be used to establish trust in Internet marketing. Wang et al.[27] considered that customers were willing to accept virtual salespeople to recommend product for them when they have more emotional trust and cognitive trust. The finding coincides with previous similar studies. In addition, we find that emotional trust has stronger influence on purchase intention than cognitive trust. Customers' cognitive trust in an expert avatar will be higher than that in an attractive avatar. On the contrary, customers' emotional trust in an attractive avatar will be higher than that in an expert avatar. It is likely that customers' evaluation is based on peripheral cues in the online skin care products purchasing context, such as expertise or attractiveness. Appearance is an important characteristic of a salesperson[31], and salespeople's appearance may have different effects upon customers[32].

Our findings also indicate that both subjective and objective knowledge have a moderating effect on the relationship between avatar type and customer trust. The effect of the type of avatar on the type of trust is stronger for customers with high subjective/objective product knowledge than for customers with low subjective /objective product knowledge. It is consistent with the findings of Park et al.[33] that knowledge would help customers to be more thoughtful when they need to make a decision.

## 5.1 Managerial Implication

The findings of this research have some implications for marketing strategy of online retailers. First, avatars can be used to increase the customers' trust in the e-commerce. Second, different types of avatar evoke different types of customer trust. Customers have more cognitive trust in the expert avatar but more emotional trust in the attractive avatar. However, either cognitive or emotional trust can increase purchase intention. For this reason, this study suggests that a firm use an avatar to strengthen emotional or cognitive trust, not to sell a product. Thirdly, avatars are effective

regardless of customers' product knowledge, although the effect of the type of avatar on trust is stronger for those with high product knowledge. Finally, for cosmetics, the effect of emotional trust on purchase intention is stronger than that of cognitive trust in the online shopping context. Attractiveness may be more important than expertise when designing the avatar for an online retailer, especially for skin care products. It can create strong emotional brand connections with consumers. Of course, cosmetics companies or online retailers can inform consumers that using their products will make them more attractive and bring them closer to realizing an ideal vision of themselves (an ideal self)[27,32]. However, using an attractive avatar can enhance emotional trust. An attractive avatar may be the reference point of consumer's ideal vision of herself or himself.

## 5.2 Limitations and Further Research

The completeness of the research framework, the design of research method and data collection has been limited by the factors of time, funding, and personal knowledge. The following are the deficiencies of this research and provided for the reference of future research direction. First, the test samples are all from a single website in Taiwan. The limited representativeness of the sample could weaken any generalization of the findings. Further researchers may conduct a wider survey or administer it outside of Taiwan. Second, the target product was a cosmetic skin care product. The product itself might explain why emotional trust is more important than cognitive trust, since the core offering of cosmetic product is beauty. Its function is more difficult to measure objectively. Further research can examine the effect of avatar for different product. Finally, a more rigorous laboratory experiment design could be used to revalidate the effect of the avatar, for example by comparing experimental and control groups.

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