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"Why Am I So Angry?"
The Rule of Receivers' Emotional Status under Reputation Warfare

Shu-Ting Liu[1], Su-Houn Liu[2], and Hsiu-Li Liao[3*]
Information Management, National Central University, Taiwan[1]
Information Management, Chung Yuan Christian University, Taiwan[2,3]
105423005@cc.ncu.edu.tw[1], vandy@cycu.edu.tw[2], hsiuliliao@cycu.edu.tw[3]
Corresponding Author

Abstract

Misinformation has been constantly increasing on social media in recent years. They may mislead people by delivering incorrect news; the reputation of those who are targeted by fake news may be severely af-fected. This is known as "reputation warfare." This study examined how consumers' emotions and locus of control impact their judgment of the authenticity of online news, corporate reputation and behavior. This study aims to better understand the influences of environment on consumers' perceptions and deci-sion-making. This is an exploratory study that utilized the experimental method. A total of 100 university students were recruited for this study and were asked to answer a survey questionnaire about four negative online news articles. The results support the observations of past research on the influence of fake news. Furthermore, this study found that consumers who receive rewards that meet their expectations will be unlikely to discontinue purchasing product from a company subject to misinformation. Consequently, when consumers feel that the reward is below their expectations, online news will have an impact on their purchase intention. The study's results indicate that companies must pay attention to ongoing changes in customers' emotional status. Even if the remuneration is unrelated to the company, consumers' reactions to fake news are still subject to its influence.

Keywords: Social media, fake news, misinformation, reputation warfare, anchoring effect

1. Introduction

Social networking sites (SNS) are filled with diverse types of information, including politics, economics, and entertainment. Hence, it is very convenient to regard SNS as important sources of information. Users no longer need to read newspapers or use search engines as the SNS newsfeed would automatically present relevant information to read; however, it is doubtful if such information must be fully believed in. Allcott and Gentzkow (2017) found that during the 2016 US presidential election, large amounts of "fake news" emerged which subsequently influenced the electoral process and results. Ferrara (2017) also found that during the run-up to the 2017 French presidential elections, numerous social bots appeared which spread false information over the Internet. Busari (2017) proposed that there is real harm caused by fake news. These researches indicate that an increasing amount of fake news is emerging on SNS around the world which interferes with public thinking.

The targets of fake news are the ones who are mostly affected; these could be the members of the government or the government as a whole, corporations, and other powerful non-government organizations. The reputation of these groups may become severely affected which may result in people refusing to interact with these groups; as a

consequence, the government may lose public trust and companys may lose huge amounts of money in business. This war between online news and organization is known as "reputation warfare" (2010). The Internet has changed the rules of warfare. If an organization is unable to respond instantly to the negative information, it will severely damage the company's reputation. Several known companies such as Domino's Pizza, the pizza chain restaurant, Chevron, the multinational energy corporation, and Target, the discount store retailer, have all been subjected to attacks in reputation warfare.

When individuals receive false online information and believe that it is real, they may feel a sense of disappointment towards the organization and may take action; therefore, in this era of the Internet, people's ability to distinguish real and fake news is a crucial topic of research (2012), (2012). At present, most studies have been limited to examining the information itself (2017) and its cognitive effects on the recipient (2017); there is still a lack of research and discussion on whether the recipient's psychological status and locus of control when false information is received would have an impact on their authenticity judgment and behavioral reactions.

This study is an exploratory investigation. The researchers believe that the ability to judge the authenticity of fake news and the subsequent behavioral reactions are subject to interference from the recipient's current psychological status. This study hypothesizes that the recipient's perception, of whether the treatment they receive meets their expectations, would affect their judgment of fake news. In other words, when individuals are subjected to treatment that does not meet their expectations, their negative (or positive) emotions will in turn influence their ability to judge the authenticity of information and their subsequent purchase intentions. In addition, this study aims to observe whether an outcome that meets or does not meet the individual's expectations is due to themselves or to others.

2. Literature Review

2.1 Reputation Warfare

Allcott and Gentzkow (2017) found that more than half of Americans believe in fake news. Individuals may change the way they think about a particular topic after reading new information on SNS regardless of whether it is authentic or fake. Berinsky (2017) found that people tend to believe in misinformation when it is reiterated in several different sources. Once fake news is accepted as truth, people are bound to take action such as refusing to interact with the subject of negative fake news.

This phenomenon has led to several problems in the era of the Internet. Gaines-Ross (2010) proposed the concept of "reputation warfare". Reputation management refers to the influencing and controlling of an individual's or group's reputation. Thus, reputation warfare it is a war between corporate and misinformation. Fierce and malicious attacks in the form of misinformation distributed over SNS against certain influential organizations and corporations can change consumers' perceptions of them. Failure to retaliate or offer explanations at the proper time would lead to consumers believing such false information and gradually losing their confidence in these organizations, severely affecting their reputation and causing major damages.

In Taiwan, slanderous information begin its dissemination through PTT, Facebook, or Line, which are the most frequently used SNS in the country (2016). In the past, several food safety crises have occurred in Taiwan and have caused serious unease and panic among the public. As a result, a high amount of food safety news has been disseminated in the community; thus, the researchers chose food safety as the source of misinformation for this study.

The first hypotheses of this study are based on the concept of "reputation warfare." If consumers believe the negative fake news about food safety found on SNS, their distrust towards a company will have a negative impact on the organization's reputation

(H1-1), eventually causing consumers to refuse interacting with the company; thus, changing their purchase intentions (H1-2).

For the purpose of this research, "news authenticity" is described as people's perception of the information as being true or fake, "corporate reputation" as the people's perception of the corporation or organization being targeted in the misinformation, and "consumer's purchase intention" as the people's willingness to buy products from the company or organization.

H1-1: News authenticity will positively influence corporate reputation.

H1-2: Corporate reputation will positively influence consumer's purchase intention.
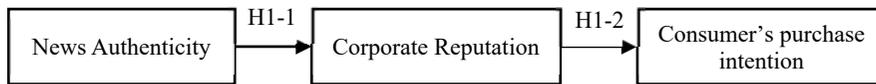
Figure 1: Model of H1

2.2 The Impact of Emotions on Behavior

Studies by Ariely (2006, 2009) have observed that when individuals are under extreme emotions, they are most likely to make wrong decisions that may have never occurred under normal circumstances. Kahneman and Tversky (1974) emphasized the psychological biases under the anchoring effect. In the experiment, a spinning wheel was used to obtain a hypothetical number representing the percentage of African countries in the United Nations. Participants were asked if the actual percentage is higher or lower than the number obtained from the spinning wheel, followed by what their perceived actual percentage is. The results showed that participants who had smaller numbers from the spinning wheel gave smaller perceived actual percentages; whereas, those who obtained larger numbers gave larger percentages. This experiment demonstrated the anchoring effect and showed that people often overemphasize the earliest piece of information they receive; once they learn that the real answer is different from the earliest information, they then react differently.

This study hypothesizes that the anchoring effect will have an influence in the individual's judgment of news authenticity, corporate reputation, and consumer's purchase intention; and proposes that individuals will use the earliest information acquired as a reference. When they encounter a different treatment, they will compare it with the earliest anchoring point which will lead to a perceived difference. Different emotional states may cause different judgments about the online news received; thus, producing psychological biases.

This research divided "emotions" into three kinds of moods: (1) higher than the expectation; (2) same as the expectation; and (3) under or below the expectation. This study believes that these three kinds of moods will elicit different influences on the individual's perception of news authenticity, corporate reputation, and purchase intention (H2-1). Aside from the direct influence of emotions on the three variables, this study believes that it may also affect the pairwise correlations between the three variables, and that different correlation results may be obtained for different emotions (H2-2).

H2-1: Under the anchoring effect, the different emotions induced by different treatments will influence an individual's judgment of news authenticity, corporate reputation, and consumer's purchase intention.

H2-2: Under the anchoring effect, the different emotions induced by different treatments will influence the pairwise correlations among news authenticity, corporate reputation, and consumer's purchase intention.
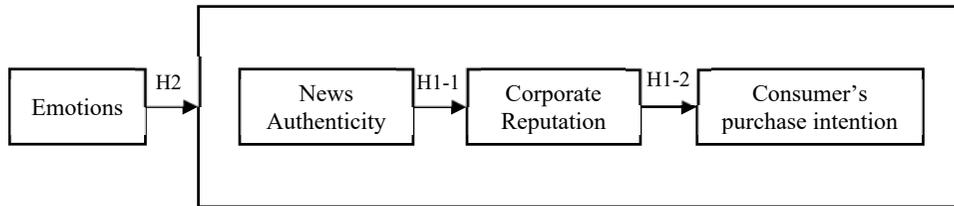
Figure 2: Model of H2

2.3 Locus of Control

Kuei-Hsiang (2012) designed a scenario-based experiment to examine the different targets of attribution during a performance failure. In the experiment, the participants were required to present a report on stage but were embarrassed to perform due to their own lack of preparation or deliberate difficulties caused by others. The results showed that if the situation was due to their own lack of preparation, the resulting feeling of shame was significantly more intense than if the situation was due to deliberate difficulties caused by others. If the situation was caused by the fault of others, the participants reported greater feelings of anger and hostility than if the situation was due to their own doing. This indicates that an individual's emotions will vary depending on whether the negative outcome is induced by self or others. Negative scenarios or event outcomes that attributed to others will evoke anger and hostility. Conversely, shame and depression are attributed to the individual's own mistake. The emotional evaluation of cognitive attribution illustrates that the source of personal emotions may be influenced by different subjective evaluations caused by differences in others or by the individual himself under a specific situation. This is especially true when individuals perceive that they have been treated unreasonably by others making them experience anger.

This study divided "locus of control" into two kinds of situations, controlled by themselves, and controlled by others. The researchers believe that participants will have different emotions when they encounter treatment that meets or does not meet their expectations which will influence their evaluation of news authenticity, corporate reputation, and purchase intention. The locus of control serves as a moderator between emotions and the individual's evaluation of the three variables.

H3: The effects of emotions on news authenticity, corporate reputation, and consumers' purchase intention will be subject to interference from the locus of control.
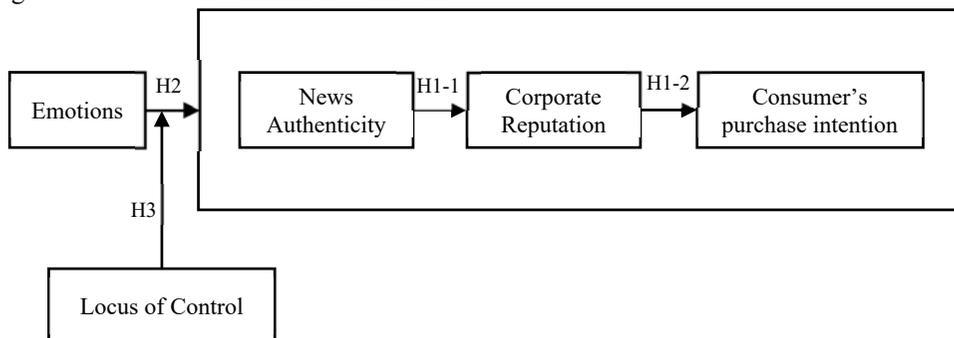

Figure 3: Model for H3

3. Research Methods

3.1 Participants

A total of 100 university students were recruited for this study (52 males, 48 females) with a mean age of 21. The experiment was performed in a specific laboratory.

3.2 Pilot Study

The researchers selected 32 genuine online food safety news articles on the Internet for the pilot study to ensure that the news articles to be used in the actual study will be representative of online news. All 32 news contain negative information about food safety, i.e. unsafe food protocols being done by companies.

A total of 20 participants were included in the pilot study. They were asked to identify whether the news is fake or not based on the title of the online food safety news. Out of 20 news articles, 4 were selected because none of the participants were able to judge them correctly; this means that almost an equal number of participants voted true or fake in the same news.

3.3 Procedures

Before the start of the experiment, the researchers informed the participants that they will receive a NT$100 reward for participating in this experiment in order to set the participants' anchoring point. After the participants accepted this information, they were asked to enter the laboratory where the experiment will be conducted. After entering the venue, the participants were informed that to make the experiment more fun, the actual reward they will receive will depend on their luck in drawing lots. Those who are unlucky may not receive any reward, those with average luck will receive the basic NT$100 reward, and those who are very lucky may receive a NT$200 reward. The participants were randomly divided into two groups. In one group, a research assistant was responsible for drawing the lots, and the participants passively received the reward outcomes. In the other group, the participants drew the lots themselves and controlled the reward outcomes.

After the reward outcomes were presented, the participants received their cash rewards immediately and were asked to fill out the questionnaires. The questionnaire consisted of four food safety news articles. After reading each food safety news, the participants were required to respond to three questions: (1) *"How authentic do you think this online news is?"*; (2) *"If you were a customer of this company, what is your evaluation of them"*; and (3) *"If you were a previous customer of this company, will you continue to buy products from this company in the future?"*. These three questions were designed by researchers to represent the participants' judgment of news authenticity, corporate reputation, and consumers' purchase intention. Their responses were scored using a 7-point Likert scale, with 7 representing that they fully believed the news article, they felt that the company's actions were completely unacceptable, and they will refuse to buy product from this company again.

4. Research Findings

4.1 Consumer's Purchase Intention Patterns

In H1-1, this study hypothesized that consumers' judgment of the authenticity of online news will influence the reputation of the company. Regression analysis was performed to test the correlation between news authenticity and corporate reputation. In H1-2, it was hypothesized that corporate reputation will influence the consumers' purchase intention. Regression analysis was performed to test the correlation between corporate reputation and consumer's purchase intention (Figure 4).

$* p < 0.1, \quad ** p < 0.05, \quad *** p < 0.01$
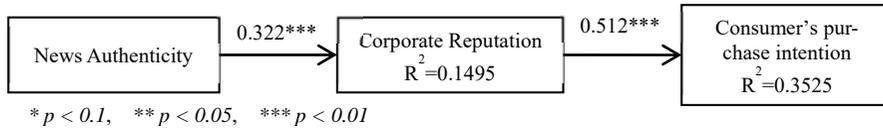
Figure 4: Regression Analysis of Overall Values

The results support H1 indicating that consumers' own judgment about news authenticity will influence their views of the company involved (H1-1), which will ultimately affect their consumer's purchase intention (H1-2). Further, it can be observed that regardless of the situation, the slope between news authenticity and corporate reputation was less steep than that between corporate reputation and consumer's purchase intention. It is speculated that when consumers believed that a particular piece of information is true, reading the news would alter their perception of the company. Also, consumers' evaluation of corporate reputation reflected, to a large extent, their purchase intention, as to whether to continue purchasing products being sold by this company. Hence, corporate reputation is extremely important, and companies must always strive for a good reputation to maintain consumer support and to ensure that consumers are willing to continue purchasing products from this company.

In summary, if the consumers believe the news, it may affect the company's corporate reputation, which is extremely likely to influence the consumers' purchase intention.

4.2 Anchoring and Cognitive Bias

In H2-1, this study hypothesized that under the anchoring effect, the different emotions induced by different treatments (reward) will influence the participants' judgment of news authenticity, corporate reputation, and consumer's purchase intention. It was observed that the mean value of news authenticity increased with higher rewards; however, this phenomenon was not observed in corporate reputation and consumer's purchase intention. The values are shown in Table 1.

An analysis of variance (ANOVA) was also conducted using emotion as the independent variable. The results show that there was a significant difference between the consumers' purchase intention groups. Post-hoc analysis indicated that there were significant differences between the NT\$0/NT\$100 groups and the NT\$100/NT\$200 groups; therefore, it can be inferred that when individuals are given a reward that does not fit their expectations, their consumers' purchase intention become more intense (increased consumers' purchase intention), and they will have a different choice compared to participants who got the reward they expected. The ANOVA results are shown in Table 2 and Post-hoc analysis results are shown in Table 3.

Table 1: Mean Values and Standard Deviation of Each Variable under Different Rewards

	News Authenticity		Corporate Reputation		Consumer's purchase intention	
	Mean	**StdDev**	**Mean**	**StdDev**	**Mean**	**StdDev**
NT\$0	4.66	1.06	4.96	1.42	4.74	1.47
NT\$100	4.68	1.33	4.71	1.55	4.24	1.89
NT\$200	4.79	1.15	5.02	1.25	4.72	1.50

Table 2: ANOVA with Emotion as the Independent Variable

		Sum of Squares	df	Mean square	F	Sig.
News Authen-ticity	Between groups	1.229	2	0.614	0.436	0.647
	Within groups	559.549	397	1.409		
	Total	560.778	399			
Corporate Reputation	Between groups	6.879	2	3.440	1.706	0.183
	Within groups	800.281	397	2.016		
	Total	807.160	399			
Consumer's purchase in-tention	Between groups	22.347	2	11.173	4.176	0.016
	Within groups	1062.331	397	2.676		
	Total	1084.678	399			

Table 3: Post-hoc Analysis

		(I) emotion	(J) emotion	Mean differ-ences	Std. error	Sig.	95% confidence interval	
							Lower bound	Upper bound
Con-sumer's purchase intention	**LSD**	**NT$0**	**NT$100**	0.507*	0.196	0.010	0.12	0.89
			NT$200	0.026	0.204	0.898	-0.37	0.43
		NT$100	**NT$0**	-0.507*	0.196	0.010	-0.89	-0.12
			NT$200	-0.481*	0.204	0.019	-0.88	-0.08
		NT$200	**NT$0**	-0.026	0.204	0.898	-0.43	0.37
			NT$100	0.481*	0.204	0.019	0.08	0.88

The results support H2-1 which indicates that under the anchoring effect, the different emotions induced by different treatments (reward) have an impact on news authenticity, corporate reputation and consumers' purchase intention. The data results show that when the reward was not NT$100, consumers' purchase intention was significantly higher than those who received the expected NT$100 reward.

When the reward was not NT$100, consumers' purchase intention was especially high. The researchers speculated that this was because when consumers received treatments that did not fit their expectations, their criteria became more stringent, and they refused to continue purchasing products from the company with low reputation. Meanwhile, when consumers received treatments that met their expectations, they were not easily influenced by the company's reputation and were more willing to continue purchasing product from them; thus, a lower or higher reward that do not fit consumers' expectations will both reduce their desire to purchase from the company subjected to misinformation. It can be concluded that when companies are subjected to reputation warfare, consumers who receive treatment that does not meet their expectations are more inclined to refuse to buy products from this company.

In H2-2, the different emotions induced by different treatments under the anchoring effect had an impact on the pairwise correlations among news authenticity, corporate reputation, and consumer's purchase intention. As the reward increased, the slope between news authenticity and corporate reputation decreased, indicating that news authenticity was less able to reflect corporate reputation. The slope between corporate reputation and consumer's purchase intention decreased as well, indicating that corporate reputation was less able to reflect consumer's purchase intention. The results are shown in Figure 5.

The data above supports H2-2 indicating that the relationships among news authenticity, corporate reputation, and consumer's purchase intention were influenced by different emotions induced by different treatments under the anchoring effect. As the reward increased, news authenticity was less able to reflect corporate reputation; similarly, corporate reputation was less able to reflect consumer's purchase intention.

As the reward increased, the influence among the three variables (news authenticity, corporate reputation, and consumer's purchase intention) decreased. This means that when the reward was lowered, the consumers became more stringent, and their news judgment was directly reflected in their views of the company, which continued to influence their purchase intention; therefore, once consumers believe in an online news article, it is very likely that it will influence their behaviors. Conversely, it will be less likely for online news to influence the consumers' views of the company and their own behaviors if the reward is high.

NT$0:

| News Authenticity | 0.358*** → | Corporate Reputation R^2=0.2332 | 0.597*** → | Consumer's purchase intention R^2=0.3784 |

NT$100:

| News Authenticity | 0.352*** → | Corporate Reputation R^2=0.1674 | 0.482*** → | Consumer's purchase intention R^2=0.3467 |

NT$200:

| News Authenticity | 0.217*** → | Corporate Reputation R^2=0.0557 | 0.471*** → | Consumer's purchase intention R^2=0.3183 |

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
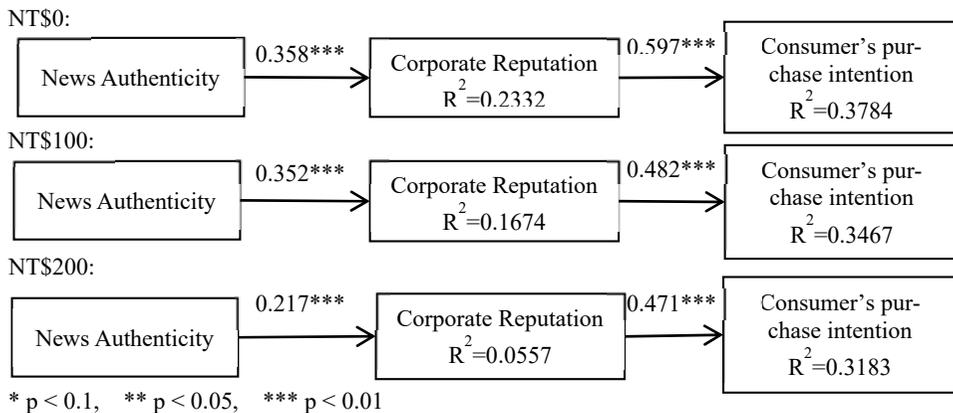
Figure 5: Regression Analysis Categorized Based on Reward

4.3 Interference from Locus of Control

In H3, this study hypothesized that the effects of emotions on news authenticity, corporate reputation, and consumers' purchase intention will be subject to interference from the locus of control. The mean values and standard deviations are shown in Table 4. When the sample was divided according to whether the lots were drawn by others or by the participants themselves, differences were observed between the two groups; however, MANOVA indicated that there were no significant differences between the two. Only emotion and control with emotion groups showed significant differences (Table 5). This means that the locus of control is not a moderator of emotion and news authenticity, corporate reputation, and consumers' purchase intention. The data does not support H3.

The researchers speculated that news authenticity, corporate reputation, and consumers' purchase intention will only be influenced directly by emotion in this study's model (H2). Although the participants were divided into two groups using locus of control, the data indicated that there was no difference between them.

Table 4: Mean Values and Standard Deviations in 2x3 (locus of control x reward)

		News Authenticity		Corporate Reputation		Consumer's purchase intention	
		Mean	StdDev	Mean	StdDev	Mean	StdDev
Lot drawn by others	NT$0	4.68	1.06	4.77	1.71	4.38	1.52
	NT$100	4.99	1.22	4.72	1.53	4.15	1.82
	NT$200	4.92	1.18	5.12	1.29	4.82	1.57
Lot drawn by self	NT$0	4.65	1.06	5.08	1.19	4.99	1.38
	NT$100	4.39	1.38	4.71	1.57	4.32	1.96
	NT$200	4.67	1.11	4.92	1.21	4.62	1.43

Table 5: MANOVA Analysis

Effect		Value	F	Hypoth-esis fd	Error df	Sig.
Control	Wilks' Lambda (λ)	0.977	3.114[b]	3.000	392.000	0.026
Emotion		0.979	1.371[b]	6.000	784.000	0.223
control * emotion		0.980	1.307[b]	6.000	784.000	0.251

5. Conclusion

In this exploratory study, the results supported the observations of past researches on the influence of fake news. This study found that consumers' judgment of news authenticity had an impact on their evaluation of a company's reputation, which in turn further influenced consumer's purchase intention. In addition, when examining the data results, the following phenomena were observed, which warrant further confirmation by follow-up studies:

(1) Consumers who receive rewards that meet their expectations will continue purchasing product from the company subject to misinformation.

When consumers received rewards that met their expectations, they were more inclined to continue purchasing products from the company; however, when consumers received rewards that did not meet their expectations, regardless of whether the reward was high or low, they became more stringent and were more inclined to discontinue purchasing product from this company.

(2) When consumers feel the reward is below their expectations, online news will have an impact on their purchase intention.

The results of this study showed that as the reward increased, news authenticity was less able to reflect corporate reputation; and corporate reputation was less able to reflect purchase intention. In brief, when consumers receive low rewards, online news will have a greater impact on their purchase intention than when they receive high rewards. Consumers who receive lower rewards are more susceptible to the influence of online news on their purchase intention.

(3) Locus of control does not influence news authenticity, corporate reputation, and consumers' purchase intention

Locus of control did not have any influence on consumers' judgment of news authenticity, corporate reputation and purchase intention. This result did not support this study's hypothesis; therefore, further research in the future may use this study as a reference.

6. Implications

Companies in the modern age are faced with reputation warfare. Online information affects a company's reputation, ultimately affecting consumers' decision on whether to continue purchasing products from this company.

The researchers of this study believe that the rewards received by participants for joining the experiment are similar to the remunerations received by the general public in exchange for their efforts and labor. When people in a society are able to receive the expected remuneration in exchange for their efforts and labor, then fake news will have minimal impact on a company or organization; however, when the majority of people in a society believe that they do not receive the expected remuneration in exchange for their efforts and labor, then receiving more or less than the expected remuneration will reduce their intention to purchase from a company that is subject to misinformation. In brief, fake news will cause greater harm to a company or organization in a society where remunerations received by consumers are not the same as expected.

This study also found that consumers who received rewards that were lower than expected were more likely to be influenced by online news. This continued to influence

their evaluation of the company and ultimately influenced their purchase intention. In this case, the company was more susceptible to damage by online news.

In conclusion, the exploratory data examined in this study indicates that companies must pay attention to ongoing changes in their customers' emotional status. The impact of online news will vary according to the level of remuneration. Even if remuneration is unrelated to the company, consumers' reactions to fake news are still subject to its influence enabling online news to affect their evaluation of the company and their purchase intention; thus, giving fake news a chance to take advantage of the situation.

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About Authors

Shu-Ting Liu is a graduate student of the Department of Information Management at NCU in Taiwan. Her current research interests focus on social media and fake news.

Su-Houn Liu is a Professor of the Department of Information Management at CYCU in Taiwan. His recent publications can be found in Computers & Education, Social Behavior and Personality, International Jounal of Technolgy Management, Issues in Information Systems, and other Chinese management journals.

Hsiu-Li Liao is an Associate Professor in the Department of Information Management at CYCU. She has published refereed papers in Computers & Education, Social Behavior and Personality, Lecture Notes in Computer Science, Issues in Information Systems, and other Chinese management journals. She is also a reviewer of six IS international journals.

Development of Smart Retail Services in Taiwan Industries

Yung-Yi Li[1], Yun-Wei Hung[2], Wei-Hung Hsiao[3],
Tsung-Sheng Chang[4*], and Feng-Chen Huang[5]
Institute of Industrial Engineering, National Taiwan University, Taiwan[1]
Service Systems Technology Center, Industrial Technology Research Institute, Taiwan[2,3]
Department of Information Management, Da-Yeh University, Taiwan[4,5]
d05546002@ntu.edu.tw[1], joyce_h@itri.org.tw[2], well.hsiao@itri.org.tw[3],
china@mail.dyu.edu.tw[4], hfcheng_7788@yahoo.com.tw[5]
*Corresponding Author

Abstract

Smart retail services (SRSs) help enhance customer retail shopping experience by means of information communication technology (ICT) applications. There are many smart retail solutions, but identifying which one is effective and applicable remains to be a challenging task. To compete effectively with other businesses, companies must be able to determine the appropriate SRSs to be used. This study explored the current attitude of industries in Taiwan in terms of adopting an SRS. A total of 417 samples were chosen for this study. The results showed that most retailers are willing to accept programs such as shopping navigator (assistant), mobile pay, and mobile marketing. This study also discussed some of the benefits and possible problems that can be encountered when adopting these SRSs applications. Possible academic and practical contributions of this study are also discussed.

Keywords: Smart retail services (SRSs), retail industries attitude, information communication technology (ICT), customer behavior, Taiwan

1. Introduction

In recent years, information communication technology (ICT) has expanded and has been integrated in both virtual and real environments. This enriched the practice of enterprise marketing planning and considered the integration of ICT as an effective method. Bertolini et al. (2007) stated that the use of ICT tools will efficiently save a significant amount of time for both suppliers and buyers. Burgess and Paguio (2016), using semi-structured interviews, explored the adoption of ICT applications by home-based businesses (HBB) in Australia. The study observed that the main benefit from the adopted online system was that it was quick and convenient; they also found that ICT varied profoundly across different applications and noted that some domains (industries) may have better efficiency, while others may not. At present, retailers are increasingly realizing that consumer experience management is important not only for enhancing satisfaction and performance (Grewal, Levy, & Kumar, 2009) but also for providing a unique and hedonistic experience that shoppers may not be able to obtain elsewhere (Evanschitzky et al., 2015). Rigby (2011) introduced the future of shopping by developing Smart Retail Services (SRSs) which transformed analog retailing into digital formats providing an effective technique and solution for retail problems. The SRSs help enhance customers' retail shopping experience and makes workers more productive (Pantano & Migliarese, 2014). Retail enterprises implement ICT to change their work and service process in both virtual and real worlds.

Based on product sales, retailers design special smart retail solutions to attract more customers. Dacko (2017) argued that mobile augmented reality (MAR) are popular apps in retail since this have been observed to change consumer behavior; but it still needs an innovative customer experience model. Gubbi et al. (2013) noted that cloud-centered Internet of Things (IoT) can support logistics management, and that autonomic management system can tightly integrate retail inventories. De Rivera et al. (2014) presented a prototype system that can integrate dynamic product pricing updates based on previous set of rules allowing supermarket managers to recognize   trends in product sales and price, and providing them with an intelligent decision-making system. The abovementioned studies have observed that some gains due to sales growth can be attributed in using SRSs. Later studies have considered different applications in different industries.

Currently, there is much confusion in relation to the definition of SRSs strategies. Whilst it is clear that the use of SRSs is beneficial to the customer, the practice itself is less straightforward. Moreover, it was found that some industries practicing SRSs are also confused with the practical applications of SRSs. There are many smart retail solutions, but identifying which one is effective and most applicable for a particular industry remains to be a challenging task. Most studies regarding the relationship between customer satisfaction and performance had focused on measuring the behavior attitude. For example, Kim and Yoo (2014) studied the behavior of QR code virtual stores in the Korean market. The results showed that perceived QR code technological attributes consist of eight factors which are: m-accessibility, location-based information, instant interactivity, scanner/reader, data storage, ubiquity, wireless infrastructure, and digital signage. Consequently, Pantano and Timmermans (2014) proposed six smart technologies for emerging retailers which are: developing ad-hoc capabilities, changes in

knowledge management, changes in salesperson's jobs, creation of smart partnership, changes in service access, and changes in consumption. Its features are based on a smart city by extending its technological issues; however, it failed to allow retailers to understand which of the services are useful. The authors of this study therefore, believes that SRSs should have two implementation concepts namely, platform and content. The SRSs must both have technological factors, and business strategy for customer experience. Inman and Nikolova (2017) suggested two factors that can impact on retailer technology. These are increased revenue, and decreased costs; a retailer can consider these two factors when designing their services but it will not help retailers in creating a sustainable application. Overall, this study aims to address the following research questions: (1) *what type of SRSs will attract retailers which will lead to its adoption and utilization?*; and (2) *what kind of service categories is important for retailers?*

The findings may help both academics and practitioners to gain insights into the link between adoption and utilization of SRSs and service planning. This study discusses how smart retail applications react to changes in retailer operations and marketing activities.

2. Methodology

The research process is shown in Figure 1. During Step 1, the objectives and the underlying principles behind the relationship between SRSs and retailers' acceptance level were discussed. In Step 2, the data set was developed. In Step 3, the results of the statistical analysis were discussed, and this study's conclusion, implications, and suggestions for future studies were discussed in Step 4.

This study collected data from the "2017 Business Services Industry Development" report by the government of Taiwan, which presented the recent developments and challenges in Taiwan's retail industry. This study noted that almost all retail enter-

prises' annual revenue were under one hundred million NT$ dollars (1 NT$ = 0.03303 US$). These retailers mainly consist of department stores, supermarkets, business retailing, auto-part retailing, general wholesale, and non-store retailing.

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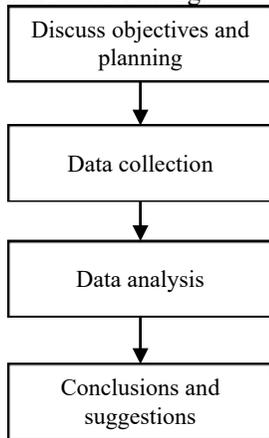
Figure 1: Research Process

Although some retailers are starting to become aware of the importance of developing new technology, some are still unsure about the steps to be taken. Pantano and Viassone (2014) proposed 3 main categories of SRSs based on technical characteristics namely: (1) touchscreen displays/in-store totems which are automated, interactive interfaces intended to improve the quality of service efficiency, e.g., self-picking (Lin & Hsieh, 2011); (2) mobile applications which

allow users to access information using a mobile app; and (3) hybrid systems, example of which is the autonomous shopping cart in E-mart, South Korea (Koreaherald, 2018).

This study's survey questionnaire was first developed through experts discussions with several SRSs owners and experts in Taiwan. Based on recent technology available in Taiwan, the SRSs methods were divided into the following six categories: (1) mobile pay; (2) shopping navigator (assistant); (3) self-picking; (4) shopping bonus points; (5) quick checkout; and (6) mobile marketing. This was done to determine which among these methods retailers are willing to adopt. The categories 1 and 6 correspond to mobile applications, categories 2 and 4 represent the hybrid systems, and categories 3 and 5 belong to in-store self-service technologies (SSTs).

3. Statistical Analysis and Discussion

3.1 Industrial Characteristics

The survey data ($N = 417$) was collected from a secondary data. This study classified and summarized this data. Approximately 28% of the firms had annual revenues of 101-500 NT$ dollars, 24% had annual revenues of 1,001-5,000 NT$ dollars, 20% had fewer than 100 NT$ dollars, and 16% had 501-1000 NT$ dollars (see Figure 2).
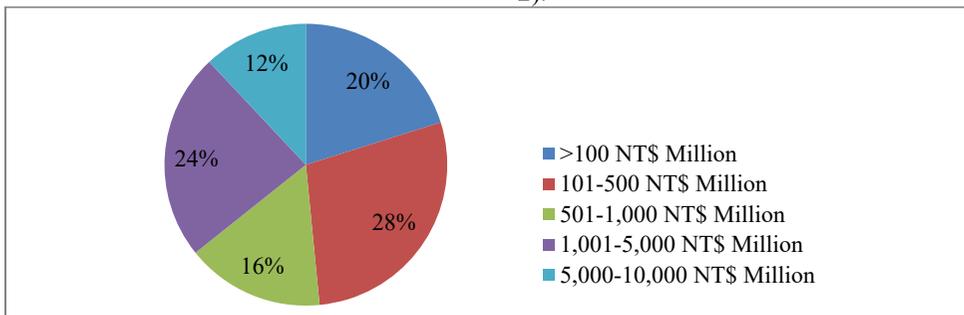
Figure 2: Annual Revenue of the Sample Distribution (1 NT$ = 0.03303 US$)

Table 1 presents the characteristics of the industries included in the survey data. Among the companies, 77.5% have been established for more than 10 years, and 22.5% for 10 years or less. Around 46% have 5 to

49 retail employees, and only 1 % has over 500 employees. In terms of the number of sales of goods, food outweighs the others, accounting for 23.5%, followed by furniture (18.7%), house application (15.6%) and

consumer electronics (10.3%). Regarding sales channel, 75.3% of the respondents have a physical store, 24.7% of the respondents have both physical and virtual stores, and none applied the Internet as the only channel.

3.2 Retailers' Attitude in Adopting SRSs

In order to identify whether retailers are willing to adopt SRSs, the six categories mentioned previously were explored. As shown in Table 2, more than 60% of retailers are willing to use shopping navigator (assistant), mobile pay, and mobile marketing. Meanwhile, shopping bonus points have a 50/50 percent interest of being accepted by retailers indicating that they might have different voices about this method; it is possible that collecting bonus points is viewed by the consumers as something that is complicated. Also, the use of bonus points in the quick checkout has been criticized. Sometimes, however, the give-away gifts could

also be incorporated to increase the checkout efficiency.

This study notes that mobile marketing might be the key to increasing sales. Piotrowicz and Cuthbertson (2014) pointed out that mobile marketing is growing; therefore, it should be included in the omni-channel strategy. Retailers can offer value-added services and products through mobile channels. In addition, integrating social media into the retailer's mobile app and website may help boost business' overall digital marketing strategy. Social media can be used to position the marketing plan, making sure that customers will see a flurry of activity from fan pages.

Moreover, when the two categories of sales channel (physical, and both physical and online) were compared, the ratio of accepting SRSs is almost the same; however, most physical stores are in support of adopting mobile pay since it is important for them that cash payments be made in a timely manner.

Table 1: Characteristics of the Industries

Item	Variable	Frequency	Percentage (%)
Established	$\leq$ 1	2	0.5
(Year)	1-3	26	6.2
	4-6	35	8.4
	7-10	31	7.4
	$\geq$ 10	323	77.5
Number of employees	$\leq$ 5	171	41.0
	5-49	192	46.0
	50-99	32	7.7
	100-199	13	3.1
	200-499	5	1.2
	$\geq$ 500	4	1.0
Main sales product	Food	98	23.5
	House application	65	15.6
	Personal cleansers and health care	20	4.8
	Consumer electronics	43	10.3
	Furniture	78	18.7
	Sport and toy	7	1.7
	Machinery	21	5.0
	Outfits	38	9.1
	Auto parts	9	2.2
	Wholesale retail	19	4.6
	Other	19	4.6
Sales channel	Physical store (real)	314	75.3
	Online (virtual)	0	0.0
	Both	103	24.7
	Others	0	0.0

Table 2: Retailers' Attitude in Using SRSs

Dimensions	Variable	Frequency	Percentage (%)
Mobile pay	Strongly agree	51	12.2
	Agree	225	54.0
	Disagree	120	28.8
	Strongly disagree	21	5.0
Shopping navigator	Strongly agree	55	13.2
(assistant)	Agree	249	59.7
	Disagree	102	24.5
	Strongly disagree	11	2.6
Self-picking	Strongly agree	25	6.0
	Agree	164	39.3
	Disagree	183	43.9
	Strongly disagree	45	10.8
Shopping bonus points	Strongly agree	28	6.7
	Agree	176	42.2
	Disagree	175	42.0
	Strongly disagree	38	9.1
Quick checkout	Strongly agree	31	7.4
	Agree	166	39.8
	Disagree	188	45.1
	Strongly disagree	32	7.7
Mobile marketing	Strongly agree	52	12.5
	Agree	247	59.2
	Disagree	97	23.3
	Strongly disagree	21	5.0

4. Conclusions and Suggestions

Smart retail services are becoming increasingly important tools in sustaining competitive advantage in retail. Retailers should design smart retail solutions for their target population. These solutions can be highly curated and moderated by businesses to provide consumers with the best experience in marketing content. As noted in previous sections, prices of computer hardware and software have dropped in both relative and absolute terms, which make it easier for retailers to implement SRSs. Considering the results, several managerial implications are proposed which are discussed in detail below.

(1) Among the six categories, mobile application (mobile pay and mobile marketing) has the highest acceptance rate among retailers. This study suggests that companies choose cash flows-related applications as SRSs. Investing in SRSs still sees no specific returns; for example, providing consumer payment using Apple pay, Android pay or digital cash card are good choices. In addition, retailers may apply location-based service (LBS) to support their mobile marketing strategy.

(2) The findings of this study indicate that customers have less support on quick check-out, which shows that retailers must not follow Amazon Go since some gaps and issues have not yet been resolved. It is therefore, recommended that retailers design SRSs that will enable customers to use these functionalities in an interactive way.

(3) Retailers that are currently using SRSs should not neglect the importance of the marketing plan. Most of the existing ideas are only imitations of other ideas by different companies. In designing an SRS, retailers should assume that consumers have never had any previous SRSs experiences.

(4) This study proposes two SRSs implementation concepts, platform and content. Platform refers to the system;

the design of the system must be innovative, fresh, and interesting. The concept of content emphasizes the service, process, product quality, price, and other important factors. Retailers should consider their resources during planning, and should focus on making an innovative plan. In addition, for start-up retailers, the content will still be guided mostly by "price wars" that quickly attract customers; providing special services can be included in order to further entice the customers. For example, consumers will be tasked to pack their own products and a free shopping bag or gift will be provided by the retailer.

(5)   For company management, a benchmark analysis should be carried out in order to efficiently adjust the least-performing SRSs.

Due to rapid changes in the business environment, the business industry faces challenges in operation, funds, labors, and technologies. The data of this study showed that 87% of businesses have at least or fewer than 49 employees; this means that Taiwanese retailers are mostly small-medium enterprises (SMEs). A small number of employees will not be able to perform all the tasks that a certain business will require. Even those with ICT readiness and resources will find that those are not enough; therefore, SRSs is an important development that can be utilized in retailing operations. Furthermore, it can be used to combat with increasing market competition. In order to provide a more explicit marketing plan to increase sales efficiency, constructing SRSs is necessary.

The results of this study might be useful in the retailing industry; however, some limitations can be noted. For one, this study utilized secondary data. Although the researchers of this study finds that the secondary data is legitimate for the purpose of this research due to the credible and professional survey experience of the original survey institute, the reliability of the study data is grounded in the original sample. It is suggested that future studies compare customer samples and adopt academic theory to estimate results.

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About Authors

Yung-Yi Li is a doctoral student at Institute of Industrial Engineering from National Taiwan University in Taiwan. His primary research interests are in the areas of smart retail, smart logistics, and ICT applications.

Yun-Wei Hung is a manager at the Industrial Technology Research Institute in Taiwan. She received a Ph.D. in Industrial Engineering and Management from National Chiao Tung University. She has published a number of papers in International Journal of Production Research, Journal of Mathematical Modelling and Algorithms, and others. Her primary research interests are in the areas of smart retail, smart logistics, and ICT applications.

Wei-Hung Hsiao is a project manager at Industrial Technology Research Institute in Taiwan. He received a Ph.D. in Management Information Systems from National Chung Cheng University. He has published a number of papers in Behaviour & Information Technology, International Journal of Mobile Communications, and others. His primary research interests are in the areas of smart retail, smart logistics, and ICT applications.

Tsung-Sheng Chang is an Assistant Professor in the Department of Information Management at Da-Yeh University in Taiwan, ROC. He holds an PhD from Department of Information Management, National Chung Cheng University, Taiwan. His current research interests are in the areas of e-business, infotainment system and behavior, and information management issue. His articles appeared in the Technological Forecasting & Social Change, Behaviour & Information Technology, Production Planning & Control, and other journals.

Feng-Chen Huang currently is a master's student, a Graduate Institute of Information Management at the Day-yeh University. He is a senior system manager at GSK Group of R&D testing center, in Taiwan.

The Antecedents of Brand Loyalty Building in a Facebook Fan Page

Guan-Lin Chen[1] and Shu-Chen Yang[2*]
Department of Distribution Management, Shu-Te University, Taiwan[1]
Department of Information Management, National University of Kaohsiung, Taiwan[2]
glchen@stu.edu.tw[1], henryyang@nuk.edu.tw[2]
Corresponding Author

Abstract

The contents and the interactions that occur within Facebook fan pages are critical to the cultivation of positive customer attitudes toward brands. The objective of this study is to investigate the positive and negative impacts of fan page attitude and word-of-mouth on brand loyalty using the perspective of uses and gratifications theory. Another focus of this study is to examine whether the relationships between fan page attitude and word-of-mouth, and loyalty are different in experience-oriented and search-oriented products. The results of this study showed that the positive perceptual experiences namely, informativeness, utilitarianism, and leader enthusiasm, have a positive influence on human-message interaction in fan pages; whereas, the negative perceptual experience including boredom, has a negative influence. In addition, the positive perceptual experiences namely, entertainment and utilitarianism, have a positive influence on human-human interaction; while the negative perceptual experience including boredom, has negative influence. In addition, this study found that both human-message interaction and human-human interaction have positive effects on fan page attitude, which leads to the formation of brand loyalty. Also, positive word-of-mouth exerts a positive influence on brand loyalty. Lastly, this study observed that the effects of fan page attitude and word-of-mouth on brand loyalty vary depending on the orientation of the product. It is hoped that the results of this study can serve as the foundation for future research and provide corporations and brands with a reference for the management strategies of fan pages.

1. Introduction

The recent popularization of the Internet has deeply impacted people's consumption behavior since it allows individuals to receive and transmit new information through many different channels. Majority of people who are interested in a certain product will first actively search the Internet for related word-of-mouth, purchase experience, and other relevant information before actually buying the product. Additionally, they may consult with friends and relatives and ask for their comments before making a final decision on whether to buy the product of interest or not. Brand reputation is an important factor that impacts brand loyalty (Pan, Sheng, & Xie, 2012); thus, many companies rely on word-of-mouth marketing. It has been observed that word-of-mouth, whether positive or negative, impacts customers' subsequent attitudes and behaviors (Armstrong & Kotler, 2007). Companies in recent years have created word-of-mouth with increasing focus on developing direct communication channels with customers via online community platforms, such as Facebook Fan Pages. According to the 2012 survey results of Lab 42, a market research firm, 50% of the respondents believed that fan pages are more useful than a brand's official

website, and 82% asserted that fan pages are an appropriate alternative place to interact with the brand.

Consumers must only subscribe to the fan pages that pique their interest to regularly receive information from related companies; they can use the fan page to exchange information with fellow fans and the brand's social manager, commonly known as the social network editor. This effectively shortens the distance of the brand to its potential customers, and even allows consumers to express encouragement, recommendations, and critiques the way regular friends do (Lipsman, Mudd, Rich, & Bruich, 2012). As the fans continue to participate and include their circle of friends as potential customers, a diffusion effect is created which attracts more fan support to the brand. In contrast, if a fan page is not well-managed and negative experiences are generated, consumers will become bored or even irritated; such negative experiences will also rapidly spread.

The present study's research target is the fan page. In addition to studying the impact of word-of-mouth on brand loyalty, this study aims to investigate the impact of perception created by fan pages on its fans' attitudes and brand loyalty using the *uses and gratifications theory*. This study proposes that brand loyalty can be simultaneously developed from word-of-mouth and the perceptions created on fan pages. Additionally, Reimer, Rutz, and Pauwels (2014) believed that the product type is crucial when adjusting online operating strategies. The current study also aims to determine whether the factors that impact fans' brand loyalty vary among different brand types.

2. Theoretical Framework

2.1 Uses and Gratifications Theory

Bauer (1964) posited the "obstinate audience" concept, which argued that the media communication process should be bidirectional. This means that during media exchange and interaction, the audience must actively select the media and information content that will satisfy their individual

needs, rather than passively receiving such information. Katz, Blumler, and Gurevitch (1974) proposed the uses and gratifications theory which suggests that a purpose exists in the audience's active media usage. This purpose primarily involves satisfying his or her psychological or social needs through media usage. Williams, Phillips, and Phillips (1985) argued that new advances in communications technology have provided more opportunities and satisfaction channels for the audience; the study also applied the uses and gratifications theory in explaining the effectiveness of new communications technology.

The Internet's rapid development and popularization has generated many Internet service applications, such as online communities, blogs, micro-blogs, and others, which address the audience's needs via various network community services. Applying the uses and gratifications theory, this means that individuals actively select the social media that meets their individual needs, and the perceptions created in these communities can be used to influence an individual's attitude and preference for social media (Krause, North, & Heritage, 2014; Whiting & Williams, 2013). This study, therefore, argues that the perceptions (both positive and negative) mentioned above will have effects on the interactions that occur within the Facebook fan page, which will then lead to attitude formation.

2.2 Interaction between Users and Media

Ko, Cho, and Roberts (2005) classified online interaction modes into two: (1) interaction between people and information or "human-message interaction", wherein users can control and edit information content, can search via media interaction (Ariely, 2000), and can click or download software and play games at will when prompted by online ads (Cho & Leckenby, 1999); and (2) interaction among people or "human-human interaction", which represents the bidirectional relationship between the information transmitter and receiver. Massey and Levy (1999) argued that human interaction in-

volves users communicating with other users to exchange views and discuss topics through various Internet channels such as chat rooms, message boards, or forums.

2.3 Attitude toward Fan Pages

The attitude toward a brand's page includes the fans' responses towards its operation. Kotler (1991) referred to this type of attitude as the individual's long-lasting emotional feeling, perceived evaluation, and action intention, such as likes and dislikes, towards certain targets or concepts. Ko et al. (2005) believed that through human-message and human-human interactions, website usage rate could be enhanced while creating a positive attitude toward the website; thus, when fans express higher intentions in human-message and human-human interactions, this may generate better fan's attitudes toward the fan page (Kang, Tang, & Fiore, 2015). This is reflected through their intention to engage in various information transmissions and exchange types on the fan page, such as interacting with various information content types, clicking links, or using online messaging to instantly share the contents with other fans. The following hypotheses are then proposed:

H1a: Human-message interaction intention is positively related to attitude toward the fan page.

H1b: Human-human interaction intention is positively related to attitude toward the fan page.

2.4 Perceptual Experience

Ducoffe (1996) employed the uses and gratifications theory to evaluate the value of advertising by exploring customers' three perceptual experiences namely, informativeness, entertainment, and irritation. The customers were asked to evaluate online advertisements based on the three perceptual experiences. The study also explored the impact of these perceptions on customers' attitudes toward online advertisements. A study by Haney (1967) defined perception as the process of obtaining meaning from experience. The results noted that informativeness and entertainment had a positive impact on

advertising value, whereas irritation had a negative impact. Luo (2002) also explored the impact of informativeness, entertainment, and irritation on online customer behaviors. The study found that in addition to providing useful information and entertainment value, website information content should be free of confusion, deception, and irritation to customers; otherwise, customers would stop browsing the website.

Brand pages, which aim to provide fans with the best user experience, should have a brand manager who must not only understand fans' needs and suggestions, but must also foster an interactive atmosphere to effectively motivate fan interaction and to promote fans' brand affinity. Koh and Kim (2003) mentioned that passionate leaders in virtual communities could promote various activities and business interactions within the communities, which can further enhance member engagement. The succeeding paragraphs specifically describe the positive and negative perceptions of individuals on fan pages, and discuss their relationship with fan page interactions.

2.4.1 Positive Perceptual Experience

Informativeness is based on the uses and gratifications theory, and is described as the enriched posts and useful information provided to the customers in order to meet their need for information (Luo, 2002). Hagel and Armstrong (1997) mentioned that the key for virtual communities' attraction is to provide a wealth of information to attract viewers to enter the community. Only good content can attract customer participation, which may further impact the formation of online loyalty (Rodgers, Negash, & Suk, 2005). Shopping sites offer a wealth of product information enabling customers to obtain various data to satisfy their information needs which makes customers more willing to shop online (Kim, Kim, & Park, 2010). If fans feel that they can use the fan page to satisfy their needs for current information, they will be more likely to click on posts, images, and videos, and will consider the fan page an important shopping infor-

mation source reflecting higher human-message interaction intention. Additionally, these fans are more likely to utilize the fan page with fellow fans, to click "like," or to share reviews and experiences reflecting higher human-human interaction intentions. With these in mind, the following hypotheses are proposed:

H2a: Perceived informativeness is positively related to human-message interaction intention.

H2b: Perceived informativeness is positively related to human-human interaction intention.

Luo (2002) noted that in the uses and gratifications theory, the extent of *entertainment* can effectively improve the attitude towards a website. Many studies proposed that pleasant experiences have a significant and positive impact on both attitude and intention in customer behavior (Chen, 2011; Choi, Kim, & McMillan, 2009; Peters, Amato, Hollenbeck, 2007). Alternatively, Moon and Kim (2001) proposed that perceived playfulness directly impacts website participation and usage; thus, fan page content can present information related to products and activities, and can also share other interesting things that are not product-related. For instance, video reposts and images can be used to create a pleasant feeling for fans when browsing, hence promoting the sharing and discussion of interesting topics. The following hypotheses are then proposed:

H3a: Perceived entertainment is positively related to human-message interaction intention.

H3b: Perceived entertainment is positively related to human-human interaction intention.

Utility is regarded as the overall benefit evaluation of a certain product, and the customer's attitude and perception of its economic value (Zeithaml, 1988). Customers shopping online will browse through websites to search for product-related information as a pre-purchase reference to help

them alleviate the risk inherent in the shopping task (Choi, Lee, & Hwang, 2005; Park, Kim, Funches, & Foxx, 2012).

Pöyry, Parvinen, and Malmivaara (2013) suggested that the higher the customer's sense of utility, the higher their intention in browsing Facebook. Additionally, Cotte, Chowdhury, Ratneshwar, and Ricci (2006) regarding website usage, found that customers' degree of utility has a positive impact on their site search interaction behaviors; thus, many fan pages occasionally offer various exclusive promotions that allow fans to obtain better bargains for products, or rewards through participation in fan page information activities. Furthermore, fans can also exchange information and discuss topics with their fellow fans to acquire more product reviews and recommendations, which assist them in choosing a product that best fits their interest. In other words, when a fan page offers customers with many utilitarian perception experiences, it results in increased fans' participation in various types of interactions. The following hypotheses are then proposed:

H4a: Perceived utility is positively related to human-message interaction intention.

H4b: Perceived utility is positively related to human-human interaction intention.

Every brand community's operation relies on the manager whose business strategies are the key to the brand community's success. Whether in a physical organization or virtual community, the leader's enthusiasm will motivate community members to participate in the various organized activities, or will drive the community's overall positive atmosphere while taking care of its members (Kim, 2000). Additionally, Koh and Kim (2003) suggested that members are integrated better within the virtual community when the leader is passionate and is actively involved in the operation. Koh, Kim, Butler, and Bock (2007) believed that the leader's active involvement and participation are conducive to virtual community members' knowledge-sharing and browsing

interactions. When a fan page is under a leader's active management, fans are more willing to click on the fan page's news and interact with others; thus, enthusiastic leadership can easily stimulate fans' interactive fan page behavior. With this, the following hypotheses are proposed:

H5a: Perceived leaders' enthusiasm is positively related to human-message interaction intention.

H5b: Perceived leaders' enthusiasm is positively related to human-human interaction intention.

2.4.2 Negative Perceptual Experience

Geiwitz (1966) argued that *boredom* refers to the feeling of unpleasantness, constraint, repetitiveness, and low social arousal. Alternatively, Iso-Ahola and Weissinger (1990) proposed the leisure boredom concept which revealed that when an individual's needs are not satisfied with leisure activities, his or her perceptual experience cannot be activated; this results in boredom leading to the individual's lack of interest with the activities because they are deemed meaningless.

In the present study, the process of browsing through the fan page is considered as a leisure activity. When participating in a fan page, the lack of stimulus or attractive information to drive fan participation results in fans feeling bored which will lead to fans gradually quitting browsing. For example, reposting long or boring information that lacks content will lead to boring, negative emotions, resulting in lowered interaction behavior in searching for information content or activity news, or lack of interest in interactive exchanges such as topic discussion and experience sharing. The following hypotheses are therefore proposed:

H6a: Perceived boredom is negatively related to human-message interaction intention.

H6b: Perceived boredom is negatively related to human-human interaction intention.

Luo (2002) noted that *irritation* results from the presentation of confusing, deceptive, or overly frequent content while browsing. Once customers receive these negative experiences, they will discontinue any interaction with the website. Huang, Chou, and Lin (2010) mentioned that when using the online community platform as a marketing tool, companies should be mindful that excessive advertising will lower content authenticity and perceived credibility, create negative psychological effects in customers, and decrease online platform interaction. The following hypotheses are then proposed:

H7a: Perceived irritation is negatively related to human-message interaction intention.

H7b: Perceived irritation is negatively related to human-human interaction intention.

2.5 Brand Loyalty

The *brand* is a name or symbol with unique features, used to differentiate a certain product or company from its competitors. It is conducive to market segmentation, through which brand value and innovativeness can be enhanced in market competition, hence forming a group of loyal customers (Allender & Richards, 2012). Zeithaml, Berry, and Parasuraman (1996) posited that brand loyalty measures customers' repeated intentions to purchase a brand, as well as their willingness to recommend the brand to others. Oliver (1999) also supported the assertion that a brand with loyal customers is less vulnerable to impact from external factors that result in brand-switching behavior; this increases the probability of future repeat purchase behaviors.

Müller, Florès, Agrebi, and Chandon (2008) posited that when customers feel satisfaction with a brand site, this will positively impact their brand loyalty to a certain extent. Further, attitude is an important factor in studying consumer behavior. When customers are provided a comfortable and pleasant online environment, this will not only increase their attitude toward the fan page (Kudeshia, Sikdar, & Mittal, 2016), but

could also enhance their brand loyalty. The following hypothesis is then proposed:

H8: Attitude toward the fan page is positively related to brand loyalty.

2.6 Word-of-Mouth

Hennig-Thurau, Gwinner, Walsh, and Gremler (2004) described *word-of-mouth* as a collection of any positive and negative statements made by potential, current, and former customers regarding a product or company, which is made available to people and institutions worldwide through the Internet. Leisen and Prosser (2004) found that if the service process results in customer satisfaction, even customers who have paid a substantial amount for a product will still convey positive word-of-mouth. Brown, Broderick, and Lee (2007) mentioned that customers regard electronic word-of-mouth (eWOM) as a reliable source of word-of-mouth information. Brown and his colleagues also argued that eWOM significantly impacts customers' information search, product evaluation, and final purchase decisions. When customers receive more positive than negative word-of-mouth about the product of interest, they become more loyal to the brand, making customers less willing to switch to other homogeneous brands (Gruen, Osmonbekov, & Czaplewski, 2006). Past studies have also indicated that customers' repeat purchase intentions are expressions of loyalty that are also subject to significant influence from word-of-mouth (Molinari, Abratt, & Dion, 2008). The following hypotheses are then proposed:

H9a: Perceived positive word-of-mouth is positively related to brand loyalty.

H9b: Perceived negative word-of-mouth is negatively related to brand loyalty.

2.7 Product Category

Nelson (1974) mentioned that information asymmetry easily occurs, as the ease of obtaining product information varies among customers; thus, different types of information will be needed for comparison when handling products with different attributes. The present study therefore, classified products based on the ease of collecting

product information and the products' attributes into two major types namely, search goods and experience goods. *Search goods* refer to products with primary information that can be easily obtained through information collection; an evaluation of the product can be made prior to purchase. Examples of search goods include gardening products and furniture. Alternatively, *experience goods* refer to products that can only be evaluated from personal use experience after purchase, such as food and books. Moreover, search goods' attributes can be more objectively compared, whereas product evaluations for experience goods rely on personal and subjective sensory experiences (Mudambi & Schuff, 2010).

2.8.1 Search Goods-Oriented Fan Pages

Batra and Sinha (2000) argued that if a certain brand of a search good can fully satisfy consumers' need for information regarding its product functions and quality, the brand can easily acquire customers' trust which increases purchase intention. The risks involved are relatively lower in search goods than in experience goods; when sufficient product-related information is obtained, brand selection can be more objective, and the purchase intention toward a certain brand can be enhanced (Kwon, Lee, & Kwon, 2008). Brand loyalty for a certain search good is likely impacted by fans' attitudes toward the fan page; therefore, the following hypothesis is proposed:

H10: The brand loyalty of search goods-oriented fan page is developed mainly through consumers' attitude toward the fan page.

2.7.2 Experience Goods-Oriented Fan Pages

The present study's positive and negative word-of-mouth is denoted by the comprehensive word-of-mouth experienced by consumers. Regardless of the word-of-mouth's origins, such as online platforms, communication media, or exchanges with others in daily life, word-of-mouth is an important information collection channel for

consumers prior to buying a product. Regarding products that require post-purchase judgment for evaluation, although insufficient product information can be gathered for a pre-purchase product evaluation, related word-of-mouth from others' experiences can still be collected which can further impact fans' brand loyalty. Gelb and Johnson (1995) mentioned that when consumers are unable to perform pre-evaluations of a certain product's quality, such as with service-oriented products (e.g. medical, legal, and auto maintenance services) they will often search for various word-of-mouth opinions as references; which are found to have more significant effects on purchase intention over other sources (Buttle, 1998). The fan page of experience goods-oriented brands is primarily comprised of information provided by the brand's social manager, and fan responses are regarded only as secondary information. Potential customers are unlikely to form brand loyalty merely from the fan page's information, but rather rely on other channels for positive and negative word-of-mouth. The following hypothesis is then proposed:

H11: The brand loyalty of experience goods-oriented fan page is developed mainly through word-of-mouth.

The research model is shown in Figure 1.

3. Research Method

3.1 Data Collection

The target samples of this study are users who have participated in Facebook fan pages. Taiwan's popular electronic bulletin board system (PTT BBS) using its Facebook page, and questionnaire and sweepstakes interfaces was employed to ask participants who have previously used Facebook fan pages to participate and complete an online survey questionnaire for this study.

Respondents' participation behavior on Facebook fan pages was accurately measured by identifying Taiwan's top 50 most popular commercial fan pages (Socialbakers, 2013); then, 20 fan pages were randomly selected. As mentioned, this study classified product type into search goods and experience goods; the 20 randomly selected brand pages were then accordingly categorized into two groups based on the definition of search and experience goods, then random sequencing was performed. Respondents were then asked to select 1 out of the 20 randomly selected fan pages to work on. This minimized the probability of respondents choosing the same fan page due to their habitual selection behaviors which would result in an inaccurate variance measurement. Finally, respondents with no prior experience in participating in any of the 20 randomly selected fan pages were omitted and withdrawn from the study.

The questionnaire's validity was ensured by only allowing a one-time log-in for each e-mail address. Additionally, respondents were actively reminded not to miss any questions to minimize the possibility of generating invalid questionnaires. Moreover, to increase respondents' willingness to complete the questionnaire, a lottery incentive was employed, such that each respondent would have the opportunity to win a FamilyMart convenience store gift card worth NT$100 or NT$200.

Ultimately, 494 questionnaires were collected but only 276 (55.87%) were considered valid. A total of 203 questionnaires were completed by respondents who have never participated in any commercial fan pages or in any of the present study's selected fan pages, thus were eliminated; another 15 questionnaires were rendered invalid due to inconsistent responses and were also removed. From the 276 valid questionnaires, 44.6% were male and 55.4% were female. About 70% of all respondents were 20 to 30 years old, and over 97% followed more than 2 commercial fan pages.
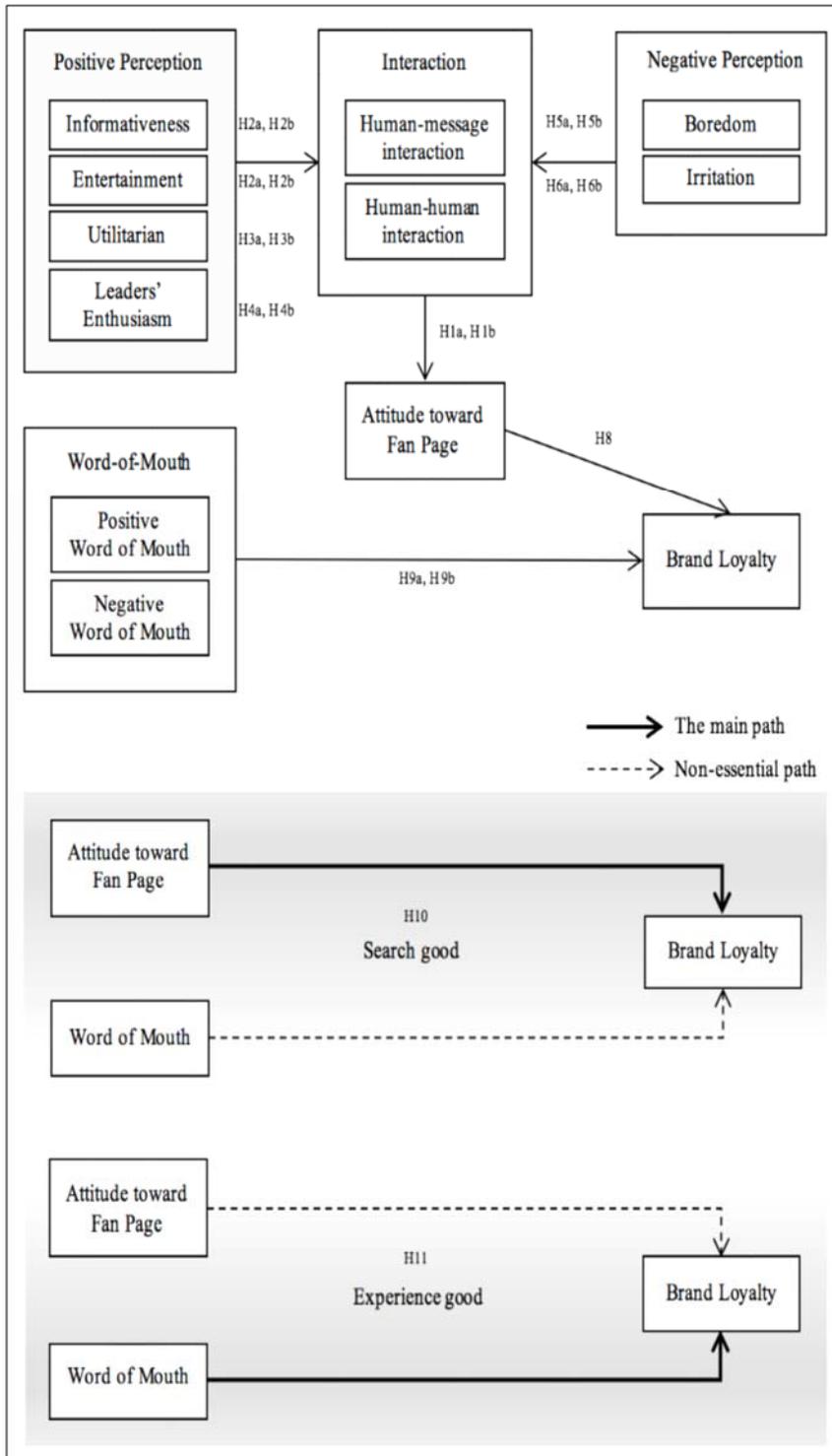
Figure 1. Research Model

3.2 Measurement Used for Research Variables

All the variables in the survey questionnaire were evaluated using measurement scales with good reliability and validity (as shown in Table 1) adopted from past literature. Additionally, each question in the measurement scale was expanded and the wording was modified based on the fan page's specific set-up. Multiple discussions, revisions, and pre-tests were conducted before administering the final survey questionnaire. Two professors from the Department of Information Management and three PhD students in relevant fields were asked to review the survey questionnaire to minimize errors from questions' inaccurate expressions and word use after translation. Thirty freshmen and sophomore college students who frequently visit fan pages were then provided ten minutes of class time to pretest the questionnaire, which was then revised as per their comments.

Table 1: The References of the Measurement Scales

Variables	Reference
Informativeness	Rodgers et al., 2005
Entertainment	Rodgers et al., 2005
Utilitarian	Park et al., 2012
Leaders' Enthusiasm	Koh and Kim, 2003
Boredom	Iso-Ahola and Weissinger, 1990
Irritation	Luo, 2002
Human-Message Interaction	Ko et al., 2005
Human-Human Interaction	Ko et al., 2005
Attitude toward Fan Page	Ko et al., 2005
Positive Word-of-Mouth	Leisen and Prosser, 2004
Negative Word-of-Mouth	Leisen and Prosser, 2004
Brand Loyalty	Zeithaml et al., 1996

4. Data Analysis

4.1 Reliability and Validity Analysis

This study adopted Smart PLS 2.0 statistical software (Ringle, Wende, & Will, 2005) to analyze the measurement scales' reliability and validity. The study used 12 variables and a total of 49 questions were constructed. The questions were divided into 2 major types, formative and reflective indicators. As the human-human interaction construct is a formative indicator, it was eliminated from reliability and validity testing (Cohen, Cohen, Teresi, Marchi, & Velez, 1990). A confirmatory factor analysis was also performed which revealed that the factor loading for one of the questions in the human-message interaction construct (Hmi4) was less than the suggested value of 0.6 (Sharma, 1996); therefore, this construct was eliminated leaving 11 variables and a final total of 44 questions for construct analysis.

If the construct's Cronbach's α is between 0.663 and 0.912, the threshold requirement of more than 0.6 is satisfied (Hair, Anderson, Tatham, & Black, 1998). Further, a factor loading value between 0.661 and 0.911 indicates that the scale has good convergent validity (Hair et al., 1998). All constructs' composite reliability (CR) is greater than the suggested threshold of 0.7 (Fornell & Larcker, 1981). Regarding validity, all scales' average variance extracted (AVE) are above the threshold of 0.5 (Fornell & Larcker, 1981), which also indicates that the scales have good convergent validity. Further, the square root of all variables' AVE is greater than their correlation coefficients, indicating that the scales in the have good discriminant validity (Fornell & Larcker, 1981). The present study also tested the correlation coefficients between the independent variables to determine the impacts of the multicollinearity effects on the study results. If the correlation coefficient between two

independent variables is less than 0.80, based on Pedhazur's (1982) recommendations, multicollinearity effects may not exist. The correlation coefficients for this study indicate that multicollinearity effects do not threaten the study results. The results of the reliability and validity testing are shown in Table 2.

Table 2: Reliability and Validity Test Results

	AVE	CR	INF	ENT	UTI	LED	HMI	BOR	IRR	WMP	WMN	ATT	LOY
INF	0.627	0.870	**0.792**										
ENT	0.686	0.897	0.482	**0.828**									
UTI	0.518	0.843	0.488	0.451	**0.720**								
LED	0.795	0.921	0.532	0.444	0.420	**0.892**							
HMI	0.596	0.816	0.513	0.463	0.539	0.491	**0.772**						
BOR	0.791	0.929	-0.369	-0.475	-0.253	-0.343	-0.389	**0.889**					
IRR	0.739	0.934	-0.358	-0.440	-0.297	-0.285	-0.347	0.738	**0.860**				
WMP	0.732	0.891	0.335	0.428	0.341	0.391	0.451	-0.265	-0.224	**0.856**			
WMN	0.774	0.911	-0.179	-0.230	-0.135	-0.113	-0.177	0.423	0.386	-0.074	**0.880**		
ATT	0.606	0.902	0.485	0.634	0.547	0.541	0.517	-0.427	-0.386	0.518	-0.305	**0.778**	
LOY	0.590	0.878	0.414	0.392	0.399	0.383	0.439	-0.305	-0.347	0.532	-0.179	0.495	**0.768**

Diagonal elements in bold type are the square roots of AVE.

Consequently, Harman single-factor test was performed to check for possible influence of common method biases. The total variance for the single factor in which all scale items are loaded into is only 32.3%. This suggests that common method bias does not affect the data collected from the questionnaires.

4.2 Direct Effect

The present study's model used partial least squares (PLS) statistical analysis. Compared to other statistical tools for structural equation models (SEMs) such as LISREL, PLS is not restricted by the variables' form and sample size, and can handle both reflective and formative indicators with good predictive and explanatory power (Anderson & Gerbing, 1998; Wold, 1982). SEM analysis requires the sample size to be at least five times greater than the number of parameters to be estimated; the present study have a total of 49 questions and 276 valid samples, which satisfies the definition of a small sample size. Additionally, formative type questions were included in the constructs; therefore, PLS was adopted as the primary analysis tool.

The PLS method was utilized for path analysis to estimate path coefficients and their significance. Based on Bollen and Stine's (1992) recommendation, a bootstrap method was adopted for hypothesis verification (Chin, 1998). The present study's hypothesis verification was divided into two parts, the direct effect and moderating effect. Verification of the former was performed by analyzing the structural model; the results show that out of 17 direct effects, 13 are statistically significant (shown in Figure 2).

Additionally, the variance explanatory power of the independent variables relative to the dependent variables is between 0.198 and 0.458 which indicates that the independent variables demonstrated certain degrees of explanatory power relative to its dependent variable.

4.3 Moderating Effect

The moderating effect was assessed in by comparing the differences in coefficients between the two major paths. For the search goods-oriented fan page cluster, the path coefficients of fan page attitude and the positive and negative word-of-mouth were compared to assess their impact on brand loyalty. This comparison revealed that fan page attitude's path coefficient is 0.372, greater than that of positive word-of-mouth (0.243) and negative word-of-mouth (-0.080); thus, fans' brand loyalty in the search goods-oriented fan page was primarily developed from fan page attitude. The path coefficients of both

positive and negative word-of-mouth are relatively weaker.

Similarly, for the experience goods-oriented fan page cluster, the path coefficients of fan page attitude as well as positive and negative word-of-mouth were compared to assess their impact on brand loyalty. The results of the comparison revealed that the path coefficient of positive word-of-mouth is 0.531, which is greater than that of fan page attitude (0.273); thus, fans' brand loyalty in the experience goods-oriented fan page primarily developed from positive word-of-mouth. The path coefficient of fan page attitude was relatively weaker.

Based on the verification of the mediating effects demonstrated in the aforementioned 2 fan page clusters (search-oriented and experience-oriented), H10 was supported, and H11 was partially supported.
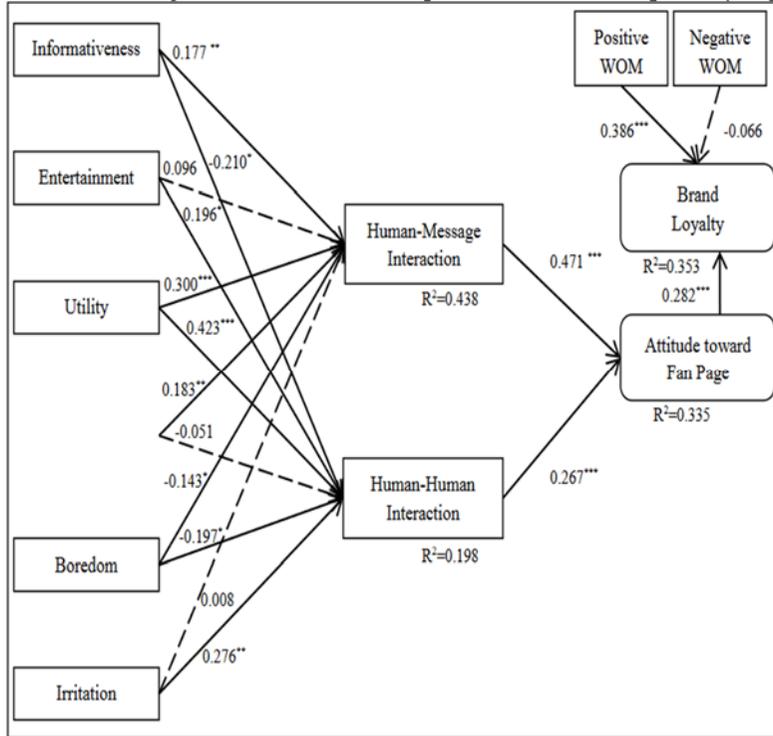

Figure 2: Direct Effect

5. Conclusion

5.1 Research Results and Implications

When fans feel that a fan page's product information is up-to-date, complete, and robust, they are likely to use the messages, images, and videos available on the fan page to engage in high levels of human-message interaction (H1a was statistically supported). Additionally, when the various product information provided on fan page can satisfy fans' needs, fans tend to spend longer time interacting with the various kinds of information available on the fan page instead of engaging in human-human interaction, leading to a negative impact on the latter (H1b was not statistically supported).

As fan page participation primarily aims to obtain product information, when more entertainment content is available on a fan page, fans' human-message interactions will not be significantly impacted (H2a was not statistically supported). In contrast, a higher tendency will exist for human-human interaction (H2b was statistically supported) such as showing support or acknowledgement to fellow fans or to the fan page editor

by clicking the "like" button or writing responses. When fans observe that exclusive discounts or benefits exist, they will not only be willing to spend more time on human-message interaction (H3a was statistically supported), but are also likely to share their experiences and feelings with fellow fans. They may also provide comments for the fan page editor which results in more engagement in human-human interaction (H3b was statistically supported).

Fan pages rely on the page editor to increase fans' product affinity and understanding; thus, when fans feel the editor's enthusiasm, their brand perception experience increases stimulating them to become more curious about various product information, which results in more human-message interaction (H4a was statistically supported). As more attention is devoted to product information however, the impact on human-human interaction becomes insignificant (H4a was not statistically supported).

The higher the fans' boredom level when visiting a fan page, the lower their human-message and human-human interaction. Boredom significantly and negatively impacts both interaction types (H5a and H5b were both statistically supported); thus, fans' boredom experiences must be decreased to effectively increase interaction. When fans feel that some of the fan page's information content is offensive or confusing, no significant negative impact was observed on human-message interaction (H5a was not statistically supported); however, when fans feel irritated or the posts as misleading, fans are likely to post complaints or negative comments reflecting their negative personal emotions, thereby mutually impacting fellow fans or the page's editor (H5b was not statistically supported).

Analysis results indicate that when fans have high human-message and human-human interaction, this will positively impact the fan page attitude (H7a and H7b were both statistically supported). In other words, a positive fan page attitude can be promoted if fans' human-message and human-human interaction is strengthened.

The higher the fans' positive fan page attitude, the higher their brand loyalty (H8 was statistically supported). Additionally, the transmission of positive and negative word-of-mouth critically impacts brand loyalty; thus, a positive word-of-mouth has a significant and positive impact on brand loyalty (H9a was statistically supported), but a negative word-of-mouth does not have any significant impact on brand loyalty (H9b was not statistically supported). The current study's discussion of negative word-of-mouth having no significant impact on brand loyalty suggests that even when a fan page consists of negative information, this will not dampen its fans' brand loyalty regardless of media type, as the fans will search for further verification. Additionally, results of this study suggest that when fans have good impressions of or attitudes toward a certain brand, the fans might blame themselves or other factors for encountering negative word-of-mouth (Lau & Ng, 2001). These results are worthy of further study.

Regarding fans' brand loyalty on search goods-oriented fan pages, the current study treated fan page attitude as the primary path, whereas the path impact of positive and negative word-of-mouth was found to be weaker (H10 was statistically supported). In experience goods-oriented fan pages, positive word-of-mouth was treated as the primary path which impacted brand loyalty while the fan page attitude's path impact was found to be weaker (H11 was only partially supported).

5.2 Implications

As Facebook fan pages have become popular, the uses and gratifications theory as a basis to explore fan page customers' usage behaviors is conducive to analyzing the impact effects created by uses and gratifications scenarios. Additionally, few past studies have involved discussions based on positive and negative perception experiences; thus, the current study did not only integrate positive and negative experiences, but also considered human-message and human-human interaction in incorporating the traditionally and commonly discussed word-of-

mouth with fan page operation into the same research model for investigation. The current study hopes to effectively explore the depth and breadth of impact factor research on brand loyalty, and to serve as an important foundation for future studies.

Presently, there have been little to no studies on fan pages that have classified fan page products or services based on product orientation. The current study built on a research foundation of past product classifications to explore the differences in brand loyalty formed between different product fan page types. The current study also hopes to apply the generated analysis results to expand the scope of application, and to serve as an important reference for future academic research in related disciplines.

A brand page's business goal is to promote an enterprise's brand image, which serves as a type of live business card. Through this interaction, instant communication and browsing are made possible, as well as instant forwarding of messages to share with others, making this virtual business card more convincing than a physical one.

Further, perceptions of experiences create a multi-dimensional impact on interactions. First, from a positive perception experience perspective, informativeness, in addition to being the latest, most comprehensive, and product-related, the content of product information and marketing propaganda posted on a fan page can be presented in a non-advertising manner which emphasizes comfort and conversational communication with fans, rather than in a non-interactive, blunt script. In terms of entertainment, fan pages can discuss its private label's success stories and development processes, supplemented by product introduction in a micro-movie format, to create a better impression on fans and to promote the brand. Additionally, fan pages can use current affairs and post images, music, or videos to stimulate fans' sentiment, imagination, and inspiration. These can enhance fans' enjoyment when browsing the fan page. In terms of utility, fan pages can be

generous in its promotions or in offering discounts to its fans, and be mindful that fans are the key to impacting word-of-mouth. Moreover, this study recommends organizing a chart that summarizes various product-related information allowing fans to effectively understand products and enhance positive feelings toward the fan page. In terms of the editor's enthusiasm, the editor, in addition to providing the best effort to actively operate the fan page, can also discuss the latest information about its private label from an expert's perspective, while demonstrating his or her professionalism as a leader and editor and fostering more fans' trust toward the brand. Moreover, the editor should encourage feedback and sharing of related articles from fans to foster exchange of views and further promote the brand. These recommendations primarily aim to foster fans' willingness to interact and exchange with the brand as naturally and energetically as chatting with friends, rather than interacting through a structured product information announcement or advertising.

Further, in terms of promoting a positive relationship between fan page attitude and brand loyalty, the current study suggests that the fan page could organize some online or offline activities, in addition to providing positive experiences, to promote interaction. For example, fans can physically visit the brand's retail stores to receive a stamp on a collection card for a surprise gift, food tasting, shows, charity activities, or tours. Fans are likely to bring friends and family members to join these highly interactive events.

Second, regarding boredom, from a negative perception experience perspective, many companies have swarmed to build fan pages for their enterprise brands just to keep up with the trend, without expending much effort or thoughts on how to properly manage the fan page. These fan pages often only contain product information or advertising propaganda, or simply repost articles, but have no interesting posts or follow up on fans' messages. This type of fan page operation is bound to negatively impact fans' participation and interaction, resulting in

fans gradually becoming disappointed and eventually leaving the fan page. Regarding irritation, research results indicate that boredom significantly impacts human-human interaction. This also implies that a fan page should seriously study fans' resulting human-human interaction due to such negative experiences as negative emotional responses, complaints, or recommendations for improvement. Companies should immediately devise measures to minimize damage and provide a sincere proposal to resolve and compensate for mistakes and regain good will.

Finally, regarding the mediating effects of search goods and experience goods orientation, the current study believes that for search goods, the fan page can focus on its operational performance to create various well-planned perception experiences, such that these can foster pleasant browsing experiences. Fan pages may further extend and integrate their official website and other social media accounts, such as blogs, to bring comprehensive information to the fans and customers, and promote brand affinity.

Regarding the experience goods orientation, the current study suggests that fan pages can organize sporadic fan activities or offer rewards to motivate feedback from loyal customers, such that they may compel more customers to join the fan page. Hence, creating a more positive word-of-mouth and promote brand loyalty. Without these motivating factors, even satisfied customers may not be willing to refer the brand to others (Wirtz & Chew, 2002).

Regarding negative word-of-mouth, the current study recommends that the fan page must honestly address any negative word-of-mouth. For example, negative comments should not be removed from social media, but should be handled professionally and communicated truthfully. When the incident is over, the negative discussion should naturally dissipate and the incident should be handled as a growth experience. Further, during a brand crisis, the negative comments and discussions from customers can be seen as recommendations

for the company's improvement. This is a valuable opportunity for the company to not only compensate for its mistakes and learn a lesson, but also for the brand to interact with customers and leave a good impression on both new and existing customers. Only a brand that is serious about its operation will be able to perpetuate positive word-of-mouth in the minds of customers.

5.3 Research Limitations

This study made every effort to remain strictly objective throughout the entire research process; however, several factors such as manpower, time, and costs limited the research study. Consequently, the major limitation of this study is the questionnaire's setup. The respondents were based only from the randomly selected 20 commercial brand pages out of the top 50. The authors of this study feel that a more comprehensive fan page collection was both restricted and impossible; thus, further study could be done to verify if the current model is applicable in other brand pages' operations.

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About Authors

Guan-Lin Chen is an assistant professor in Department of Distribution Management, Shu-Te University in Taiwan, where he teaches electronic commerce, brand management, advanced data analysis, and internet marketing. He received his Ph.D. in In-

formation Management from National Yunlin University of Science and Technology. His research interests include electronic commerce and human behaviors in emerging social media. He has published in in several referred journals and international conferences.

Shu-Chen Yang is an associate professor in Department of Information Management, National University of Kaohsiung, Taiwan. Professor Yang received his Ph.D. and M.S. in Information Management from the National Central University, Taiwan. He is also a visiting professor in Rangsit University, Thailand. He has published in several referred journals (e.g., Psychology and Marketing, International Journal of Information Management, International Journal of Innovation in Management, Journal of Management, Journal of Business Ethics, Asia Pacific Management Review, Journal of Information Management, Journal of e-Business, Management Review, Managing Service Quality, Internet Research, and others) and international conferences. His current research interests are in Internet marketing, supply chain management, and e-business.