Comparing Brand Equity of Digital Single Lens Reflex (DSLR) Camera

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Abstract

The objective of this study is to compare brand equity of Digital Single Lens Reflex (DSLR) cameras among users. Questionnaire was the instrument used for data collection via Internet. There were 400 respondents. Both descriptive and inferential statistics at significant level of 0.05 were used for analysis.

Most of respondents were males, age between 26-30 years old, Bachelor degree, company employee, income less than 20,000 Baht/month, used Canon, and amateur level, experienced photography around 1-2 years.

From research findings, Canon has the highest brand equity, followed by Nikon, Sony, and Olympus, respectively. For brand awareness, perceived quality and brand association perspectives, Canon has the highest score, followed by Nikon, Olympus and Sony, respectively. However, for brand loyalty perspective, Nikon has the highest score, followed by Canon, Olympus, and Sony, respectively.

The attitudes of users toward perceived quality among the four brands were different. Attitudes toward brand association were indifferent between Canon and Nikon users and between Sony and Olympus users. For brand loyalty, there were indifferent in attitudes of Canon, Sony and Olympus users.

Keywords: Brand, Brand Equity, Digital Single Lens Reflex (DSLR) Camera

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Introduction

DSLR (Digital Single Lens Reflex) digital cameras in the market had expanded continuously. Several analysts predicted that DSLR camera market will grow 9 % per year, in the next 4 years. Several companies manufactured DSLR cameras competed in taking the market share intensively. Several main brands, such as Canon, Nikon, Olympus, and Sony, owned more than 90 percent of the market share. This led to an intense competition, where each brand used several market strategies (TelewizMall.com, 2007).

The market focused on product differentiation by technology innovation. However, this was not enough because naturally products could be copied very quickly (Clow and Baack, 2002). The examples were the sensitive image sensor, image stabilization system, Live View system, etc. Marketing experts shifted their attention to increase the quality for consumers through branding (Kotler, 2000),which supposedly can create differentiation and competitiveness to the brand. Branding could add value and product uniqueness which can be linked with quality and functions of the products or services. Consumers perceived that products can be easily copied because of technology advancement, but having strong brands could be the solution for copy in technology (Randall, 2000).

Brand building requires investment, planning, management, and consistent brand maintenance (Morrison, 2001). The process also involves continuous development with attention over a long period of time (Campbell, 2002). To get consumers to appreciate a brand, it involves communications to allow consumers to recognize and be aware the brands (Hague and Jackson, 1994). When there is brand awareness, it

would be easier to make a decision to buy. The cost for finding product information was thus reduced, because consumers already have brand knowledge (Keller, 1998). In addition, the risk in making decision to buy was also reduced, since the brand promise is similar to an agreement between the company and consumers guaranteeing satisfaction on the products (Ambler, 1997, cited in Wood, 2000; Clow and Baack, 2002).

Consumers' past experience helped consumers to build credibility and trust on the brand that it will meet their needs (Keller, 1998), which consequently leads to brand loyalty among its customers (Campbell, 2002). Brand loyalty benefited the owners of the brands because it ensures that there will be repeat purchase in the future. When well-established brands launch new product introduction or brand extension, their products will be supported and requested by trades and distribution channels (Campbell, 2002; Keller, 1998). In the case where there were product defects or other mistakes made, they were more likely to be excused and forgiven by consumers (Campbell, 2002).

The four key brands in DSLR camera market have invested in all kinds of marketing campaigns. This involved not only the development on latest technology, but several strategies, for example, advertising and public relations in conventional media, websites, introducing products in computer games, supporting sports events, organizing promotional activities, organizing photography courses, improving their after sale services, etc. All of the above was done to raise brand awareness which encourages product trial, and finally brand loyalty. The purpose of this research was to study the level and compare the brand equity in consumers' perspective toward DSLR cameras from Canon, Nikon, Olympus, and Sony.

Literature Review

Brand is a fundamental concept originated from the fact that manufacturers needed to create one in order to show ownership and differentiation in their products (Keller, 1998). Also, it was easy for consumers to remember (Farquhar, 1990), since having a brand is creating something tangible (Kotler, 2000), for example, name, term, sign, symbol, and design, as well as other intangible values (Wood, 2000), such as product image and status reflection on product users.

Ambler (1997) (Wood, 2000) has defined brand, from consumers' perspective, that it was like a promise from the sellers to consumers on the expectation and satisfaction on product attributes. The attributes of the brand could be real and tangible or they could be emotional and intangible. Blackston (1992) stated that brand was the awareness or perception of consumers toward a particular product, regardless of the physical product itself. This discrepancy caused the consumers to be willing to pay as well as evaluate the products and remember the evaluation easier.

Brand is a long term asset, longer than patents or copyrights, which had limited validity period. With thorough planning and management, the brand could always stay valuable and answer to consumer needs, consequently allowing it to remain in the market for good (Kotler, 2000).

Several researchers and marketing experts (Farquhar, 1990; Aaker, 1991; Keller, 1998) defined brand equities in many different ways. It can be concluded that brand equity is the added value to any particular products, exceeding the actual value of the physical product. It is one of the factors causing consumers to be aware, satisfied, fond of, and confident in the product. It also motivates consumers to be willing to pay higher price for a product, which leads to higher sales revenue and profit for the brand owners, rather than selling no name products.

Aaker (1991) mentioned that the analysis of brand equity from the consumer's perspective can help consumers to easily interpret, process, and store information about the products and brands. Brand equity affected the confidence of the consumers when making a decision to buy the products. Thus the framework in this research involves the 4 components through which marketers can develop their brand equity: Brand Awareness, Perceived Quality, Brand Associations, and Brand Loyalty.

Research Methodology

This research was the survey research using questionnaire as a tool to collect the data from 400 digital camera users. This was conducted with self-questionnaire method, where respondents voluntarily completed the questionnaire over a website. The data was collected during January - March 2008. The questionnaire was divided into 3 sections. The first section involved demographic data, while the next section involved brand equity data of digital DSLR cameras. The details of the second section consisted of: brand awareness, perceived quality, brand associations, and brand loyalty. Brand awareness was measured by asking the respondents to rank 4 brands they had in mind. On the other hand, perceived quality, brand associations, and brand loyalty were measured by asking the respondents to rank their preference in regard to each brand (Likert Scale); 5 for Highest, 4 for High, 3 for Medium, 2 for Low, and 1 for Lowest. The third section of the questionnaire involved the preference toward each brand and the attributes that the respondents thought of in each brand.

Descriptive statistics was used for analysis, e.g. percentage, mean, and standard deviation. Inferential Statistics were also used, which involved the Test

of Homogeneity and One-way Repeated-measures ANOVA, at 0.05 level of significance. If the test results were significantly different, the test would be done in pairs to determine the difference between each pair. The method used was the Fisher's Least Significant Difference (LSD).

Research Results

The result from the research which represented the brand equity of digital DSLR cameras was divided into 4 parts as followed:

- Demographic Data of the samples
- Measuring Brand Equity
- Measuring Preference toward the brands and product attributes
- Hypothesis Testing

Demographic data

There were 400 respondents involved in the research, of which 87% were male and 13% were female. Most of the respondents were between 21-35 years old (78.8%). For education and profession, 83.8% received Bachelor's or Master's Degree while 50.3% worked for private companies. Considering the incomes, most of the respondents (40%) earned less than 20,000 Baht per month, whereas 32% earned 20,000-40,000 Baht per month.

As for the brand preference, 209 respondents chose Canon (52.3%), 137 chose Nikon (34.3%0), 30 chose Sony (7.5%), and 24 chose Olympus (6.0%).

The model most respondents, 188 people or 47%, used was in an Amateur level, while 101 people (25.3%) used those in a Serious Amateur level, 88 people (22.0%) used those in a New Entry level, and only 23 people (5.8%) used those in the Semi Professional and Professional level.

The respondents can be divided into groups according to their experiences on photography. There were 141 people (35.3%) with experience ranging from 1-2 years, 116 people (29.0%) had less than 1 year experience, 73 people (18.3%) had 3-4 years of experience, and 70 people (17.5%) had over 5 years of experience.

Measuring Brand Equity

According to Table 1, the total point on 4 attributes of the brand equity involved brand awareness, perceived quality, brand association, and brand loyalty. Canon had the highest total average point, which was 4.15, followed by Nikon with 4.14 points. Olympus had 2.99. Sony had the least point of 2.87. Considering each attribute, Canon had the highest point in 3 attributes, which were brand awareness (4.29), perceived quality (3.88), and brand association (4.30). Nikon had the highest brand loyalty at 4.44.

Table 1. Points for Brand Equity of each brand

Brand	Brand awareness*	Perceived quality	Brand association	Brand loyalty	Total Point
Canon	**4.29**	**3.88**	**4.30**	4.16	**4.15**
Nikon	4.18	3.67	4.29	**4.44**	4.14
Sony	1.87	2.89	2.84	3.88	2.87
Olympus	2.15	3.04	2.87	3.90	2.99

* The points were transformed by weighted ranking

Brand awareness

The question asked to the respondents was which brand they had in mind when thinking of DSLR camera. According to the result in Table 2, it was revealed that Canon was the first brand in mind for most people, 207 people or 51.8%. There were 164 people thinking of Nikon, or 41.0%. There were 17 people thinking of Sony, or 4.2%. And 12 people were thinking of Olympus, or 3.0%. However, considering the total point of No.1 and No.2, Nikon was the brand that people thought of the most; 382 people, or 95.5%, followed by Canon with 373 people or 93.9%. There were 26 people thinking of Sony, or 6.4%. Lastly, there were 19 people thinking of Olympus, or 4%.

Table 2. Frequency and Percentage for the Ranking of Brand Awareness.

Brand	No. 1	No. 2	No. 3	No. 4	Total
Canon	207	166	21	6	400
Percentage	(51.80)	(41.50)	(5.20)	(1.50)	(100)
Nikon	164	218	11	7	400
Percentage	(41.00)	(54.50)	(2.80)	(1.80)	(100)
Sony	17	9	130	244	400
Percentage	(4.20)	(2.20)	(32.50)	(61.00)	(100)
Olympus	12	7	238	143	400
Percentage	(3.00)	(1.80)	(59.50)	(35.80)	(100)
Total	400	400	400	400	
Percentage	(100)	(100)	(100)	(100)	

Perceived Quality

The brand equity on perceived quality of 4 brands was shown in Table 3. It revealed that Canon had the highest point on 4 attributes, which were 4.41 on the ability to reduce/prevent the noise in the picture, 3.95 on the reasonable camera price, 4.05 on the speed in product repair service, and 3.71 on the reasonable price of the spare parts. Nikon had the highest point on 4 attributes, which were 4.41 on the contrast, 4.05 on the color correctness, 4.26 on the durability of the material used to produce the camera body, and 4.27 on the handy body design. There was no attributes for Sony and Olympus with number 1 point.

When considering the average total point on the perceived quality, Canon had the highest average point of 3.88, followed by Nikon at 3.67, Olympus at 3.04, and the last Sony at 2.89.

Table 3. Comparison of the Average Point on Perceived Quality.

Quality	Canon	Nikon	Sony	Olympus
Contrast	4.04	**4.41**	3.26	3.33
Color correctness	4.01	**4.05**	3.12	3.19
Ability to reduce/prevent the noise in the picture	**4.41**	3.58	2.93	2.75
Durability of the material used to produce the camera body	3.41	**4.26**	3.07	3.30
Handy body design	3.51	**4.27**	3.12	3.13
Suitable price in each model	**3.95**	3.14	2.50	3.20
Speed in product repair service	**4.05**	2.87	2.74	2.70
Suitable price on the spare parts	**3.71**	2.84	2.41	2.74
Average total point	**3.88**	3.67	2.89	3.04

Brand Association

Table 4 suggested that Canon, with 4.61 points, was distinctive for being the brand that professional photographer chose. On the other hand, Canon, with 4.09 points, was recognized for being manufactured in the countries with reliability. Nikon had the highest point, which was 4.36, for having premium product. When considering the average total point, Canon had the highest point, which was 4.30. Followed by Nikon with average point of 4.29; Olympus with 2.87; and finally Sony with 2.84.

Table 4. Comparison of the Average Point for Brand Association.

Quality	Canon	Nikon	Sony	Olympus
Chosen by professional photographer to use	**4.61**	4.51	2.08	2.46
Premium quality	4.21	**4.36**	2.99	2.82
Manufactured in countries with reliability	**4.09**	4.02	3.46	3.34
Average total point	**4.30**	4.29	2.84	2.87

Brand Loyalty

The analysis result when comparing the brand equity on brand loyalty was shown in Table 5. Nikon had highest points in all perspective: 4.71 for Repeat purchase of the same DSLR brand; 4.51 for Introduce the brand to other people; 4.12 for Willing to pay higher price. When considering average total point, Nikon had the highest point, with the average point of 4.44. Canon received 4.16 average point, while Olympus received 3.90 average point. Finally, Sony received 3.88 average point.

Table 5. Comparison of the Average Point for Brand Loyalty.

Quality	Canon	Nikon	Sony	Olympus
Repeat purchase of the same DSLR brand	4.17	**4.71**	4.13	4.21
Introduce brand to other people	4.31	**4.51**	3.87	4.25
Willing to pay higher price	4.03	**4.12**	3.67	3.25
Average total point	4.16	**4.44**	3.88	3.90

Brand & Attributes Preference

Brand Preference

When asking the sample group about the level of personal preference toward each brand, Nikon had the highest vote from 193 respondents (48.2%), while 145 respondents gave Canon the highest score (36.2%). Sony received the highest preference from 19 respondents, which was 4.8%. Olympus had the highest preference from 17 respondents, which was 4.2%. When comparing the level of preference in Highest and High preference among the samples, Nikon was voted by the total of 342 respondents or 85.4%. This followed by Cannon with 306 respondents or 76.4%. Number 3 was Olympus with 75 respondents or 18.7%t. Last was Sony with 65 respondents or 16.3%.

Table 6. Quantity and Percentage for the Preference toward Each Brand.

Quality	Highest	High	Average	Low	Lowest	Total
Canon	145	161	75	16	3	400
Percentage	(36.20)	(40.20)	(18.80)	(4.00)	(0.80)	(100)
Nikon	193	149	50	2	6	400
Percentage	(48.20)	(37.20)	(12.50)	(0.50)	(1.50)	(100)
Sony	19	46	152	106	77	400
Percentage	(4.80)	(11.50)	(38.00)	(26.50)	(19.20)	(100)
Olympus	17	58	159	102	64	400
Percentage	(4.2)	(14.5)	(39.8)	(25.5)	(16.0)	(100)

Brand-Related Attributes

The top two attributes that the sample group thought of when referring to each brand of DSLR camera can be concluded. When referring to Canon, the sample group thought of picture quality and good after sales service. When referring to Nikon, they thought of picture quality and colorful image. When referring to Sony, they thought of modern technology and stylish body. When referring to Olympus, they thought of picture quality and reasonable price. The conclusion was shown in Table 7.

Table 7. The Top Two Brand-Related Attributes In Mind

Brand	Quality number 1	Quality number 2
Canon	Picture quality	Good service after sales
Nikon	Picture quality	Colorful image
Sony	Modern technology	Stylish body
Olympus	Picture quality	Reasonable price

Hypothesis Testing

Hypothesis used to test the comparison of the brand equity for each brand can be concluded as follows:

Hypothesis 1:

H_o: Photographers using digital cameras were aware of the indifference among the brands.

H_a: Photographers using digital cameras were aware of the difference among the brands.

Hypothesis 2:

H_o: Different brands did not received different scores regarding brand equity, in terms of perceived quality.

H_a: Different brands received different scores regarding brand equity, in terms of perceived quality.

Hypothesis 3:

H_o: Different brands did not received different scores regarding brand equity, in terms of brand association.

H_a: Different brands received different scores regarding brand equity, in terms of brand association.

Hypothesis 4:

H_o: Different brands did not received different scores regarding brand equity, in terms of brand loyalty.

H_a: Different brands received different scores regarding brand equity, in terms of brand loyalty

Hypothesis 1 was tested using Test of Homogeneity at the significant level of 0.05. The result was x^2=301.78, d.f.=3. Sig.=0.000. Thus, it can be concluded that photographers were aware of the differences in brands. The brand with highest brand awareness was Canon, and the lowest was Olympus. The detail was shown in Table 2.

Hypotheses 2 to 4 were tested at the significant level of 0.05. This was to compare the average point of brand equity for each brand in each area. It involved perceived quality, brand association, and brand loyalty. The test was to determine if there was any difference. One-Way Repeated-Measures ANOVA was used. This included comparing the average point of brand equity for each pair of brands in each aspect using Fisher's Least Significant Difference (LSD) as shown in Table 8.

Table 8. The Test Result on the Difference of Brand Equity in Each Aspect.

Brand equity	Average point of each brand				Sig. value from F-test	Test the difference of average point for a pair of brand by LSD
	Canon	Nikon	Sony	Olympus		
						(α=0.05)
Perceived Quality	3.88	3.67	2.89	3.04	0.000*	Canon > Nikon; Canon > Sony; Canon > Olympus; Nikon > Sony; Nikon > Olympus; Olympus > Sony
Brand association	4.30	4.29	2.84	2.87	0.000*	Canon > Sony; Canon > Olympus; Nikon > Sony; Nikon > Olympus
Brand loyalty	4.16	4.44	3.88	3.90	0.000*	Canon < Nikon; Canon > Sony Nikon > Sony; Nikon > Olympus

* Significant Level of 0.05

The result from hypothesis testing on perceived quality with n = 400 was Sig. = 0.000. It can be concluded that different brands received different score on perceived quality perspective, at significant level of 0.05. When testing the hypothesis on the difference of brand equity on a pair of products, it was found that Canon had higher perceived quality than that of Nikon, Sony, and Olympus, while Nikon had higher perceived quality than that of Sony and Olympus. Olympus had higher perceived quality than that of Sony.

The result from hypothesis testing on perceived quality with n = 400 was Sig. = 0.000. It can be concluded that different brands received different score on brand association perspective, at significant level of 0.05. When testing the hypothesis on the difference of brand equity on a pair of products, it was found that Canon had higher brand association than that of Sony and Olympus. Nikon had higher brand association than that of Sony and Olympus. The brand equity on brand association from Canon and Nikon was indifferent.

The result from hypothesis testing on brand loyalty with n = 400 was Sig. = 0.000. It was concluded that different brands received different score on brand loyalty perspective at significant level of 0.05. When testing the hypothesis on the difference of brand equity

on a pair of products, it was found that Nikon had higher brand loyalty than that of Canon, Sony, and Olympus. Canon had higher brand loyalty than that of Sony.

Conclusion & Suggestion

According to consumers' overall point of view, Canon had the highest brand equity, followed by Nikon, Olympus, and Sony, respectively. Considering each perspective of brand equity, Canon was the highest in all 3 perspectives: brand awareness, perceived quality, and brand association. For brand loyalty, Nikon was the highest, while Sony was the lowest in all perspectives.

Suggestions to increase brand equity in each brand can be concluded that Canon had the higher brand equity in all perspective than that of other brands. However, when considering perceived quality, Canon should improve the material durability in manufacturing camera body and the design on camera body to be handier. In addition, continuous loyalty programs should also be considered. Nikon still need to continue the investment in the marketing activities to maintain the outstanding loyalty among their customers. After sale service should also be improved. Price of the spare parts should be reasonable. This was because Nikon's

score was much lower compared to Canon's. For Sony and Olympus, the overall brand equity was average. Nevertheless, Sony should consider improving the camera price in each model. Price of the spare parts should be more reasonable, according to the survey. In addition, the after sale service should be improved to be much quicker. Olympus should analyze and develop their technology to improve the capacity of the camera to reduce/prevent the noise in the picture. In addition, the after sale service should be improved to be much quicker and exceed customer's expectation.

The research on brand equity of digital DSLR camera should be done periodically and continuously, because the manufacturing technology in digital camera changed rapidly. Also, each brand constantly introduces new products or new models to the market. There should be a research regarding the integrated marketing communications in other areas, such as advertising, marketing events, etc. This was to determine their impacts on the increased brand equity, thus marketers can use this data to plan their marketing strategy accordingly and effectively.

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