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Exploring the Relationship between Customer Equity and Satisfaction: An Empirical Study of Mongolian Gas Station Channels

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Abstract—**To survive in the highly competitive markets, many firms strive to make fundamental changes and differentiate itself from competitors in the industry. The firms` success depend on customer perception toward the products and services of a company. This study aims to explore relationships between customer equity, which represents value equity, brand equity, relationship equity, and to customer satisfaction. We present the results of our research work conducted through marketing channels of the Petrovis Limited Liability Company, a petroleum company of Mongolia, as the case firm in this study. The findings show customer equity leads to satisfaction.**

Index Terms—**Customer Equity, Customer Satisfaction, Customer Relationship Management, Value Equity, Brand Equity, Relationship Equity.**

I. Introduction

Most studies of customer equity and channel marketing theories started from the Western world rather than from Asian countries. Since the second half of the twentieth Century, bi-polar political systems had dominated the world as capitalist and communist that adopted centralised economic systems.

Perceiving what a customer wants is more difficult than listening to a customer. However, it is more difficult to establish the database of a consumer`s lifelong purchase by conducting a monthly customer behaviour survey. In order to understand the consumer requirements, a firm has to find the factors that motivate the customer to start a transaction with the firm, and proceed doing business with that firm in the future. According to the theory, customer equity is defined as: "the sum of the discounted lifetime values of all of its consumers." Therefore, acting more in a relevant way in response to customers based upon understanding about customers to cultivate their loyalty.

After being a communist country for seventy years, there has been only twenty years since Mongolia stepped into market oriented economy. Comparing with other countries that have passed many decades, there still need to survive the Mongolian market as seen from capitalist standards.

Consequently, the author is very fascinated to do research in this field. The researcher conducted this study to find out how customer equity model impact on loyalty in the Mongolian market. Thus, regarding the framework of marketing channels and market share, the research work conducted through distribution channels of Petrovis Limited Liability Company (LLC), the largest petroleum company in Mongolia,which has been operating as a importer and retailer of oil products, in Ulaanbaatar. According to the statistics, 161,989 vehicles had been operating in Mongolia, and 92,706 vehicles in Ulaanbaatar by 2008.

Thus, research had been more centralised in Ulaanbaatar.

Research Objectives. The study has the following research questions, which appears as the main base of research objectives, to reveal how customer satisfaction has been established, and in what the customers to be satisfied: (1) What is the relationship between value equity and satisfaction? (2) What is the relationship between brand equity and satisfaction?, and (3) What is the relationship between relationship equity and satisfaction?

II. Study Design

1) Methodology Framework

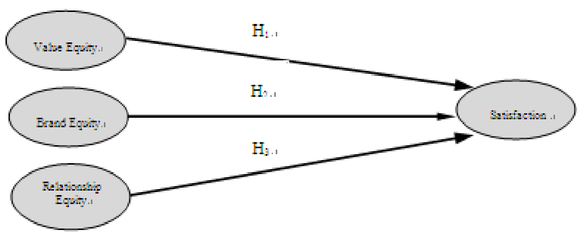

Figure 1. Methodology Framework

2) Research Variable Measurement and Hypothesis Development

The items for measuring the constructs of the research had been developed, drawing on prior scientific papers and literatures. The initial items and constructs were tested by fifty five managers of the case company, and a pre-test within 60 customers. The procedure led to the final survey instrument for the research. The five-point categorical Likert scales (Strongly agree, Agree, Uncertain, Disagree, Strongly disagree) employed to measure each construct of both stages. Related to the conceptual model, shown in the Figure 1, the following four constructs were of primary interest: *Value equity, Brand equity, Relationship equity, and Satisfaction.*

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The research variables and measurements are stated as the following:

Value equity. According to the researchers` findings, value equity is the consumers' objective assessment of the usage of a brand based on understanding of things that is given up for what is received. Brand equity is more subjective and emotional. It has a tight connection with the intangible assessment of a brand, above and beyond its objectively perceived value *(Luo et al, 2008)*. Value equity, the first driver of loyalty, can be understood as the perceived ratio between what is received and what has to be sacrificed. Value equity is consisted of the following three drivers*: quality, price, convenience*. Furthermore, researchers pointed out that value equity has an impact on a customer's switching propensity, a measure similar to satisfaction and loyalty intentions *(Lemon et al, 2000)*. In our study it is hypothesized that,

H_1: *Perceived value equity has a positive impact to customer satisfaction.*

Brand Equity. According to literature *(Kevin Lane Keller et al, 2000)*, brand equity is the subjective estimation of a customer's choice. Brand equity is defined as a financial assessment of the value of a brand identity that a customer is willing to pay price premium to a certain brand identity versus others. A strong brand can be an umbrella under which to launch new products existing ones, a resiliency to survive crisis situations, and protection from competitive attack periods of lack of corporate support or shifts in consumer tastes *(Pao-Long et al, 2006)*. Rust (2000) states that brand equity is hopefully to influence customer willingness staying, considering repurchases, or to recommend the brand. Brand equity is consisted of the following drivers: (1) customer brand awareness, (2) customer attitude toward the brand, and (3) customer perception of brand ethics. Our study hypotheses that,

H_2: *Perceived brand equity has a positive impact to customer satisfaction.*

Relationship Equity. According to Monle Lee (2005), relationship equity is a customer`s tendency to stick with the brand, above and beyond objective and subjective assessment of the brand. It resulted from the elements that link a customer to a brand or a company. If the perceived relationship equity is high, the consumers will be satisfied and it would lead to repurchase *(Rust et al, 2001)*. If the perceived relationship equity is high, the consumers will feel well treated and handled with special care *(Kristof et al, 2001)*. Relationship equity results from the following drivers: (1) *Loyalty,* (2) *Special Recognition and Treatment Programs*, (3) *Affinity/Community Programs*, (4) *Knowledge Building Programs.* Our study hypotheses that,

H_3: *Perceived relationship equity has a positive impact on customer satisfaction.*

Satisfaction. The topic of 'customer satisfaction' has held a significant position in the marketing literature over from decades since satisfied customers can generate long-term benefits for companies, including customer loyalty and sustained profitability. Researchers (*Luo et al, 2007*) have explained the mechanism of customer satisfaction with a number of distinct theories, such as expectancy-disconfirmation theory, contrast theory, assimilation or cognitive dissonance theory, equity theory, and value-percept theory. Among them, the most widely accepted theory is the expectancy disconfirmation theory. In this context, marketing literature consistently identifies customer satisfaction as a key antecedent to loyalty and repurchase (*Drago et al,* 2001).

Method. Descriptive statistics, regression analysis, and reliability analysis are utilized in our study.

Sample. The study was conducted in two stages of pretesting and real survey. The survey questionnaire was subsequently pre-tested by 55 managers as well as 60 customers of the case company. Their feedbacks were used to modify the questionnaire before the real investigation. In this study, 146 respondents from the customers of gasoline industry of Mongolia were involved. The data collection for this study was done by using quota sampling techniques.

III. Data Analysis

Based on process assessment, the author used the following steps to run the operations. The author distributed 146 copies of the questionaire, to the public, each consisting of 14 questions. We collected received 146 valid responses.

Reliability analysis. In this study reliability is constructed by Construct reliability, (CR) and variance extraction (VE). The author tried to construct the reliability model and examine the reliability of the variables. According to Fornell & Larcker (1981), the dimensions of the internal CR and VE are acknowledgeable if the internal consistency threshold is above .7. CR value is the examined model which used to observe all of the variables and measure the reliability from all of those indicators. The proposed value was raised by (Fornell & Larcker, 1981). (Jöreskog and Sörbom 1989) provides the calculation of CR-type for the CR = (Σ standardized factor loading)2 / ((Σ standardized load factor)2 + (Σ measurement variables of the measurement error)).

VE is the calculation of the potential variables from the measurement variables. The latent variables can explain the variation of those variables, and if the VE values are higher, the potential variables will have higher reliability and convergent validity. Jöreskog and Sörbom (1989) provide the research related to these calculations. The calculation of VE-type is: VE = Σ (load factor)^2 / ((Σ load factor^2)+ (Σ measurement variables of the measurement error)).

The study dimensions of variables are larger than the CR values of .7, indicates that the model of this study reached the level of dimensions.

TABLE 1. Construction of Model Reliability And Variance Extracted Aggregate Volume Table

	Load factor	CR	VE

PART A Understand customer's perception towards value, price and convenience offered by the brand (the company)				
Value	A1. I prefer to buy gasoline from the company, which represents good quality	.716	.922	.704
	A2. I perceive the speedy service job offered by gas station workers	.908		
	A3. I perceive the product quality of this brand channel as higher than other company`s	.900		
	A4. I perceive it as convenient that buying at the gas station close to my home or working place	.880		
	A5. I prefer to buy gasoline from a gas station which has mini market facilities	.774		
PART B Understand customers` perception towards brand awareness, brand attitude, and brand ethics				
Brand	B1. This company is well known company in oil product industry	.608	.895	.748
	B2. By my experience I trust this company compared to others	.968		
	B3. I know this company always campaign about environmental friendly	.968		
PART C Understand customers` perception towards the relationship with company (Brands)				
Relationship	C1. Company manages club activities	.961	.972	.919
	C2. Company will consult with me about how to make improvement	.957		
	C3. I will be informed if new products are newly available	.958		
PART D Understand the degree of customers` satisfaction towards company`s offerings				
Satisfaction	D1. I am highly satisfied with the value of offerings in product quality, service	.820	.905	.760
	D2. I am satisfied with the price of offerings	.915		
	D3. I am satisfied with the convenience company renders	.878		

We can see from Table 1, the study dimensions are larger than .7, indicating the model of this study was to observe the variables measuring the potential to reach the level of dimensions. Therefore, this study observed variables and latent variables are reliability to meet construction standards.

*Demographic Data Analysis by ANOVA analysis***.** The demographic data of this study is divided into *Gender, Age, Education, Number of children, Vehicle type, Cylinder capacity, Occupation, Annual income and Location. Gender* aspects in order to female most customers, a total of 110 accounted for 75.3%; in the *Age*, in terms of 40-49 years most of the customers, a total of 55 accounted for 37.7%; in *Education*, the high school in the majority of customers, a total of 66 accounted for 45.2%; in the *Number of children* have, in order to most customers two children, a total of 66 accounted for 37.7%; in the *Vehicle type*, in order to most customers sport, a total of 63 accounted for 43.2%; in *Cylinder capacity*, in order to 40 litter most customers, a total of 36 people accounted for 24.7%; in the *Occupation*, the customers most of the workers living in the industry, a total of 65 accounted for 44.5 percent; in the *Annual income*, the customers for the 2001-2500 USD and 2501-3000 USD, a total of 82 accounted for 57.6%; in *Location*, the majority of customers for the central, a total of 55 accounted for 37.7%. None of the dimensions, except value, reached a significant level.

The Various Dimensions of the ANOVA

Gender

Gender of the customer-Part A ~ E for T-test, the results shown in Table 2, such as, Brand, Relationship, Satisfaction are less than significant level, showing them in the face of no significant impact on *Gender*. The Value of a significant level, showing them in the face of *Gender* has a significant impact.

TABLE 2. GENDER DIMENSIONS OF ALL THE DIFFERENCES BETWEEN

	F value	P value	Has reached a significant level?
Value	6.889	.010	Yes
Brand	1.872	.173	No
Relationship	3.385	.068	No
Satisfaction	0.240	.625	No

Age

Age to customers on the Part A ~ E for T-test, the results shown in Table 3, such as, Value, Brand, Relationship, Satisfaction did not reach significant level, showing them in the face of no significant impact of Age.

TABLE 3. AGE OF THE DIFFERENCES BETWEEN THE VARIOUS DIMENSIONS

	18-29 years	30-39 years	40-49 years	50-59 years	F-value	P-value	Duncan
Value	4.06	4.21	3.97	4.14	1.016	.388	Not significant
Brand	4.07	4.01	3.85	3.94	0.470	.703	Not significant
Relationship	3.96	4.19	4.15	4.35	4.23	.737	Not significant
Satisfaction	4.03	4.01	3.81	4.04	.682	.564	Not significant

Education

Education to customers on the Part A ~ E for ANOVA analysis, the results as shown in Table 4, in addition to the standard of no significant Satisfaction.

TABLE 4. EDUCATION OF THE DIFFERENCES BETWEEN THE VARIOUS DIMENSIONS

	Below High school	High school	College	Above University	F-value	P-value	Duncan
Value	3.96	4.06	4.34	3.95	2.159	.096	Not significant
Brand	3.82	3.90	4.18	3.76	1.740	.161	Not significant
Relationship	4.00	4.23	4.39	3.91	1.229	.302	Not significant
Satisfaction	3.98	3.94	3.95	3.82	.109	.955	Not significant

Children

Children of the customer's Part A ~ E for ANOVA analysis, the results as shown in Table 5, did not reach significant level, indicating *Children* between the various dimensions have no significant effect.

TABLE 5. CHILDREN OF THE DIFFERENCES BETWEEN THE VARIOUS DIMENSIONS

	No	One	Two	Three	Above Three	F value	P value	Duncan
Value	4.31	4.08	4.03	4.24	3.86	.891	.471	Not significant
Brand	4.22	3.93	3.86	4,08	3.57	1.304	.271	Not significant
Relationship	4.37	4.14	4.08	4.55	4.95	1.082	.368	Not significant
Satisfaction	4.06	3.90	3.84	4.23	3.86	.878	.479	Not significant

Vehicle Type

Vehicle type to customers on the Part A ~ E for ANOVA analysis, the results as shown in Table 6, did not reach significant level, indicating *Vehicle type* among the various dimensions have no significant effect.

TABLE 6. VEHICLE TYPE ON THE DIFFERENCES BETWEEN THE VARIOUS DIMENSIONS

	Sedan	Sport	Van	Light truck	Heavy truck	F value	P value	Duncan
Value	4.52	3.98	4.16	4.20	4.14	1.011	.404	Not significant
Brand	4.33	3.77	4.07	4.06	3.97	1.584	.182	Not significant
Relationship	4.40	3.97	4.34	4.19	4.63	1.635	.169	Not significant
Satisfaction	4.14	3.75	4.11	3.97	4.04	1.435	.225	Not significant

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Cylinder Capacity

Cylinder capacity to customers on the Part A ~ E for ANOVA analysis, the results as shown in Table 7, did not reach significant level, indicating *Cylinder capacity* among the various dimensions have no significant effect.

TABLE 7. CYLINDER CAPACITY OF THE DIFFERENCES BETWEEN THE VARIOUS DIMENSIONS

	30L	40L	50L	60L	Above 60L	F Value	P Value	Duncan
Value	4.44	3.95	4.10	4.13	4.14	.993	.414	Not significant
Brand	4.33	3.67	4.03	3.93	4.05	2.079	.087	Not significant
Relationship	4.63	3.85	4.21	4.35	4.33	1.790	.134	Not significant
Satisfaction	4.10	3.76	3.95	4.06	3.95	.622	.647	Not significant

Occupation

Occupation of the customer-Part A ~ E for ANOVA analysis, the results as shown in Table 8, did not reach significant level, indicating *Occupation* between the various dimensions have no significant effect.

TABLE 8. OCCUPATION OF THE DIFFERENCES BETWEEN THE VARIOUS DIMENSIONS

	Agriculture	Industry	Government	Businessman	Non-employed
Value	4.35	4.04	4.09	4.07	4.10
Brand	4.09	3.87	3.89	4.20	3.95
Relationship	4.33	4.06	4.25	4.40	4.26
Satisfaction	3.42	3.85	4.08	4.10	3.96
	F value	P value	Duncan		
Value	.614	.653	Not significant		
Brand	.774	.544	Not significant		
Relationship	.549	.700	Not significant		
Satisfaction	.904	.464	Not significant		

Annual Income

Annual income of the customer on the Part A ~ E for ANOVA analysis, the results as shown in Table 9, did not reach significant level, indicating *Annual income* between the various dimensions have no significant effect.

TABLE 9. ANNUAL INCOME OF THE DIFFERENCES BETWEEN THE VARIOUS DIMENSIONS

	1000-1200 USD	1200-2000 USD	2000-2500 USD	2500-3000 USD	Above 3000 USD
Value	3.79	4.33	4.16	4.10	3.96
Brand	3.65	4.28	3.98	3.90	3.76
Relationship	4.02	4.44	4.26	4.14	3.96
Satisfaction	3.84	4.21	3.95	3.79	4.00
	F value	P value	Duncan		
Value	1.855	.122	Not significant		
Brand	2.295	.062	Not significant		
Relationship	.824	.512	Not significant		
Satisfaction	1.038	.390	Not significant		

Frequent Buying Location

Location of the customer-Part A ~ E for ANOVA analysis, the results as shown in Table 10, did not reach significant level, showing *Frequent Buying Location* of the structure had no significant impact on surface.

TABLE 10. LOCATION OF THE DIFFERENCES BETWEEN THE VARIOUS DIMENSIONS (DISTRICTS)

	Songino/D.	Khan-Uul/	Chingeltei	Sukh.	Bayanzurkh.
Value	4.42	3.95	4.10	4.12	4.08
Brand	4.26	3.73	3.93	4.08	3.84
Relationship	4.41	4.01	4.14	4.32	4.28
Satisfaction	4.28	3.69	3.96	4.02	3.90
	F value	P value	Duncan		
Value	.999	.410	Not significant		
Brand	1.441	.224	Not significant		
Relationship	.590	.671	Not significant		
Satisfaction	1.244	.295	Not significant		

Correlation Analysis. This study used Pearson correlation analysis to verify the correlation between dimensions. The correlation coefficient between variables are positively established, as p<.001, to illustrate the point.

TABLE 11. PEARSON CORRELATION COEFFICIENT TABLE

	Value	Brand	Relationship	Satisfaction
Value	1.000			
Brand	.840***	1.000		
Relationship	.753***	.792***	1.000	
Satisfaction	.706***	.699***	.700***	1.000

Note: *** P <.001 highly significant correlation

Regression Analysis.

In this study, the dimensions and variables to regression analysis to explore the impact of between dimensions: value, brand, and relationship equities to satisfaction, and to verify whether the hypothesis of this study was established, it is the empirical results are as follows:

TABLE 12. BRAND, VALUE, RELATIONSHIP EQUITIES TO SATISFACTION OF THE REGRESSION ANALYSIS

Satisfaction						
	R^2	$\triangle R^2$	FTest	P value	Standardized coefficient β distribution	Durbin-Watson
Value	.499	.495	143.379	.000	.706	2.290
Brand	.488	.485	137.345	.000	.699	2.283
Relationship	.495	.487	138.677	.000	.700	2.067

It can be seen from Table 12, that the regression analysis of the F values and p values reached a to significant level; Durbin-Watson values located within a reasonable range that errors exist between the non-self-related.

IV. DISCUSSIONS AND IMPLICATIONS

This research proposed and tested a model of relationships through customer relationship management activities, involving four constructs: value equity, brand equity, relationship equity, and satisfaction. Overall, we found that all three independent variables have a direct and significant influence on customer satisfaction.

The results of the research work suggest that the limited budget of marketing activities should be spent on optimal actions and programs to increase or maintain value, brand, and relationship equity.

First, value equity impacts the customer satisfaction. Our finding that value equity is of primary importance in establishing future sales suggests that a firm must meet the expectation of the customers which can be seen as an objective assessment of the utility the firm's products and services offer. It is a customer's balancing of what is given up (price) and what is received in return (satisfaction). Our case company should focus on offering the customers various aspects of value including quality service, quality product, price, and convenience. In doing this way, managers have to be aware that, treating all customers similarly, has the potential to misrepresent the relationship between value equity and satisfaction.

According to the study the brand equity impacts the customer satisfaction. When a brand is perceived as attractive and unique, customers feel less likely to switch to another brand. Subsequently, managers have to consider on building brand equity in order to establish customer satisfaction. In order to ensure that managers focus on building brand awareness, improving brand image and assuring consistency of delivery of brand's promise at a level above the customers' expectations. Our study results revealed the relationship between value and gender. Thus, managers have to avoid the practice of introducing price promotions with the goal of achieving short-term financial gains. Because, it could cause the value of the brand to decrease.

Finally, the relationship equity impacts positively on customer satisfaction. Hopefully, it suggests that the firm has to foster relationship equity by maintaining relationship with customers that will help customers stick to the firm. In order to develop relationship equity, our case company has to consider setting up initiatives such as community activities, loyalty programs that provide "aspirational values," and establishing learning relationships with customers. Relationship equity relates purely to how a firm makes customers feel. A firm could motivate customers to build a community, which rest upon a structured set of relationships among "fans" of a brand. They should also ensure that members of loyalty programs who are engaged in the brand's community, are more loyal than those who are not offered this relationship benefit. Due to the post-transition period from centralized economy into the free market, the Mongolian business environment and culture have not yet shaped as to employ theories of developed free markets.

We have following limitations in our study: (1) Due to the difference of consuming behavior in Mongolia from the western shaped markets` behavior, we tested the simple model of customer equity; (2) According to the dimensions of the customer classifications this research was covered customers in city.

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