



Department of  
Management Studies  

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NALSAR University of Law

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**TRIMESTER-III**

**MARKETING RESEARCH**

**PROJECT-CUSTOMER PERCEPTION OF DECATHLON**

**SUBMITTED TO PROF. MAHENDRA SHUKLA**

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## **RESEARCH OBJECTIVES AND QUESTIONS**

**RESEARCH OBJECTIVE 1:** To identify factors influencing customer loyalty towards Decathlon.

Research Question 1: What specific aspects of Decathlon's products or services contribute to customer loyalty?

Research Question 2: How frequently do customers return to Decathlon for their sporting goods needs?

**RESEARCH OBJECTIVE 2:** To evaluate customer perceptions of the quality of Decathlon products.

Research Question : What factors contribute to positive or negative perceptions of Decathlon product quality?

## **RESEARCH DESIGN**

<b>PARADIGM</b>	<b>POSITIVIST</b>
<b>RESEARCH DESIGN</b>	<b>DESCRIPTIVE</b>
<b>UNIT OF ANALYSIS</b>	<b>People owned/owning Decathlon Products</b>
<b>POPULATION</b>	<b>People interested in Athletics</b>
<b>SAMPLING FRAME</b>	<b>People owned/owning Decathlon Products</b>
<b>SAMPLING TECHNIQUE</b>	<b>STRATIFIED/CLUSTER</b>
<b>DATA COLLECTION METHOD</b>	<b>PRIMARY(SURVEY)</b>
<b>RESEARCH INSTRUMENT</b>	<b>QUESTIONNAIRE</b>
<b>SAMPLE SIZE</b>	<b>72</b>

## **CHI-SQUARE TEST**

Test of Association between two categorical variables

Testing whether age group and frequency of purchase are dependent or independent of each other.

Variable 1- Age Group

Variable 2-How often do you make purchases at Decathlon for your sporting goods needs?

**Null Hypothesis-** Age group and Frequency of Purchase are independent of each other, proportions of the populations are the same

**Alternate Hypothesis-**Frequency of Purchase is Dependent on Age Group, proportions of populations are different.

**Rejection Rule-**Reject the null hypothesis when chi-square calculated is greater than chi-square critical or p-value is less than alpha.

Assume Alpha is 0.05

After conducting chi-square test using R-studio

Pearson's Chi-squared test

```
data: Purchase
```

```
X-squared = 21.702, df = 9, p-value = 0.009873
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```
P-value = 0.009873
```

As  $P\text{-value} < \text{Alpha}$  ( $0.009873 < 0.05$ )

We Reject Null hypothesis

Therefore, Frequency of Purchase is dependent on Age Group.

## ANOVA

Test of significance of difference among more than two populations or sample means

Does product quality rating depend on frequency of exercise?: The assumption here is that the more a person exercises the more they will be able to gauge the quality of the product. However, if they do not use the product, they will not be able to understand the product quality.

Independent variable-Frequency of Exercise (Categorical variable-Daily, Weekly, Monthly, Rarely, Never) (in SPSS V16)

Dependent Variable-Product Quality Rating (Continuous Variable) (V11)

**Null Hypothesis-** Product Quality Rating is Not Dependent on Frequency of Exercise, there is no difference in mean rating of product quality for the different frequencies of exercise.

**Alternate Hypothesis-**Product Quality Rating is Dependent on Frequency of Exercise, here is a difference in mean rating of product quality for the different frequencies of exercise.

**Rejection Rule-** Reject Null Hypothesis when F calculated is greater than F critical value or P-value is less than Alpha

Assume alpha = 0.05

After conducting ANOVA in SPSS

P-value = 0.006, F Calculated = 3.95

ANOVA					
V11					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17.385	4	4.346	3.950	.006
Within Groups	73.726	67	1.100		
Total	91.111	71			

As  $P\text{-Value} < \alpha$  ( $0.006 < 0.05$ ) We reject the null hypothesis

Therefore, there is a significant difference in mean rating of product quality for different frequency of exercise.

## **CORRELATION**

Test of measuring strength, direction of a relationship between two variables and if that relationship is significant.

### **Pearson's Product Moment Correlation**

How are materials used and product design related in determining perception towards product quality? If decathlon wants to create quality products, is there a relationship between materials used and product design?

Variable 1-Product Design (V5)-Please rate the following factors in terms of their impact on your perception of Decathlon product quality (Scale: 1 to 5, where 1 is very low impact and 5 is very high impact): - Product Design

Variable 2-Materials Used (V6)-Please rate the following factors in terms of their impact on your perception of Decathlon product quality (Scale: 1 to 5, where 1 is very low impact and 5 is very high impact): - Materials Used

**Null Hypothesis**-There is no significant correlation between Product Design and Materials Used in creating a perception of quality product.

**Alternate Hypothesis**-There is a significant correlation between product design and materials used in creating a perception of quality product.

**Rejection Rule**-Reject Null Hypothesis is P-value is less than alpha

Assume  $\alpha = 0.05$

Correlations			
		V5	V6
V5	Pearson Correlation	1	.697**
	Sig. (2-tailed)		<.001
	N	72	72
V6	Pearson Correlation	.697**	1
	Sig. (2-tailed)	<.001	
	N	72	72

\*\* . Correlation is significant at the 0.01 level (2-tailed).

As P-value is less than  $\alpha$  ( $0.00 < 0.05$ ) correlation is significant

Correlation coefficient is 0.697

This implies that there is a strong, positive significant correlation between product design and materials used in creating a perception of quality product.

### **Partial Correlation**

Brand Reputation may create a spurious correlation between materials used and product design as people may believe that a good brand will always have good materials and good product design while a brand with bad reputation will use low quality materials and weak product design. Therefore if people believe that Decathlon has a good brand reputation then they may believe that they will use good materials and have good product design inevitably.

Now when conducting partial correlation analysis-

Variable 1-Product Design (V5)-Please rate the following factors in terms of their impact on your perception of Decathlon product quality (Scale: 1 to 5, where 1 is very low impact and 5 is very high impact): - Product Design



Variable 2-Materials Used (V6)-Please rate the following factors in terms of their impact on your perception of Decathlon product quality (Scale: 1 to 5, where 1 is very low impact and 5 is very high impact): - Materials Used

Spurious Variable-Brand Reputation (V7)-Please rate the following factors in terms of their impact on your perception of Decathlon product quality (Scale: 1 to 5, where 1 is very low impact and 5 is very high impact): - Brand Reputation

**Null Hypothesis**-There is no significant relationship between product design and materials used after controlling for brand reputation in determining the perception that Decathlon has a good quality product.

**Alternate Hypothesis**-There is a significant relationship between product design and materials used after controlling for brand reputation in determining the perception that Decathlon has a good quality product.

**Rejection Rule**-Reject Null Hypothesis is P-value is less than alpha

Assume alpha = 0.05

Correlations			V5	V6
Control Variables				
V7	V5	Correlation	1.000	.636
		Significance (2-tailed)	.	<.001
		df	0	69
	V6	Correlation	.636	1.000
		Significance (2-tailed)	<.001	.
		df	69	0

As P-value is less than alpha ( $0.00 < 0.05$ ) correlation is significant

Correlation coefficient is 0.636

This implies that there is a strong, positive significant correlation between product design and materials used in creating a perception of quality product even after controlling for brand reputation.

## **REGRESSION ANALYSIS**

1. Determines whether independent variable/variables explain significant variance in dependent variables.
2. Determines how much of the variance in the dependent variable is explained by the independent variable/variables
3. Determines Structure and form of relationship between independent and dependent variables.
4. Can be used to predict or forecast values of dependent variables

## **SIMPLE REGRESSION ANALYSIS**

Does perception of exceptional product design depend on the quality of materials used in Decathlon?

Dependent Variable-Product Design (V5)

Independent Variable-Materials Used (V6)

**Null Hypothesis-** Rating of Product Design is not dependent on the quality of materials used.

**Alternate Hypothesis-**Rating of Product Design is not dependent on the quality of materials used.

**Rejection Rule-**Reject Null Hypothesis when P-value is less than alpha

<b>Model Summary</b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.697 <sup>a</sup>	.486	.478	.675

a. Predictors: (Constant), V6

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.231	.318		3.867	<.001
	V6	.673	.083	.697	8.129	<.001

a. Dependent Variable: V5

Assume Alpha = 0.05

P-Value = 0.000

Slope = 0.673

Constant = 1.231

Standard Error of Slope = 0.083

Standard Error = 0.675

R-Square =0.486

As P-value<Alpha (0.000<0.05) we reject the null hypothesis.

Therefore, perception of Product Design is Dependent on Materials Used. This implies that if Decathlon wants to be known for their product design they should not only have good designs but also quality materials to be able prove that their design is exceptional.

The Regression Equation is Product Design = 1.231 + 0.673(Materials Used)

As R-Square = 0.486, Materials Used Explain 48.6% of the Variance in perception of product design.

## **MULTIPLE REGRESSION ANALYSIS**

To determine what are the factors that significantly impact the perception of product design, multiple regression analysis needs to be conducted.

The variable chosen were

V6-Materials Used

V7-Brand Reputation

V8-User Reviews

V9-Warranty/ Guarantee

The Backward Method was used in SPSS to determine which model was significant.

Assume Alpha = 0.1

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.731 <sup>a</sup>	.534	.506	.661
2	.725 <sup>b</sup>	.525	.504	.662

a. Predictors: (Constant), V9, V6, V7, V8

b. Predictors: (Constant), V6, V7, V8

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.300	.407		3.192	.002
	V6	.651	.091	.674	7.142	<.001
	V7	.175	.101	.182	1.734	.088
	V8	-.277	.112	-.296	-2.469	.016
	V9	.108	.096	.123	1.126	.264
2	(Constant)	1.413	.395		3.572	<.001
	V6	.649	.091	.672	7.102	<.001
	V7	.176	.101	.183	1.745	.085
	V8	-.203	.091	-.217	-2.228	.029

a. Dependent Variable: V5

At Alpha = 0.1

Model 2 is significant as all the P-values of the slopes are less than alpha (0.000,0.085,0.029<0.1)

The Regression Equation is

Product Design =  $1.413 + .649(\text{Materials Used}) + .176(\text{Brand Reputation}) - .203 \text{ User Reviews}$

Adjusted R-Square = 0.504

This implies that this multiple regression model explains 50.4% of the variance in perception of product design

The Standard Error of the Model is 0.662

### **FACTOR ANALYSIS**

Factor Analysis is used to uncover the latent structure (dimensions) of a set of variables. Reduces attribution space from a large number of variables to a smaller number of latent factors. It is a non dependent procedure.

To conduct Factor Analysis the Following Variables measured in the metric scale were chosen. When Survey was conducted the respondents were asked to indicate the degree of importance on a 5-point scale where 1 is low importance and 5 is high importance of the following variables on how Loyal the customer is. The variables were as follows

V11-What is the importance of Product Quality on Loyalty of Customer

V12-What is the importance of Customer Service on Loyalty of Customer

V13-What is the importance of Price and Value on Loyalty

V14-What is the importance of Brand Reputation on Loyalty

V15- What is the importance of Variety of Products on Loyalty

### **Sample Size**

The number of respondents is 72-as it is more than 10 times the number of variables it is an adequate sample size.

## KMO-Bartlett Test

### KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.706
Bartlett's Test of Sphericity	Approx. Chi-Square	126.861
	df	10
	Sig.	<.001

As  $KMO = 0.706$  the sample size is adequate to conduct factor analysis.

As the Bartlett's Test of Sphericity has a significance level of 0.000 which is less than alpha (0.001), the sample size is significant to conduct Factor Analysis

## Common Method Bias

### Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.646	52.911	52.911	2.646	52.911	52.911	2.365	47.293	47.293
2	1.154	23.075	75.985	1.154	23.075	75.985	1.435	28.693	75.985
3	.567	11.349	87.335						
4	.415	8.298	95.633						
5	.218	4.367	100.000						

Extraction Method: Principal Component Analysis.

- There are two factors (not a single factor)
- The first factor explains 47.29% which is less than 50% of the variance

As this meets the requirements of Hermann's Single Factor Test, there is no Common Method Bias

The two factors explain 75.985% of the variance in the variables.

## Factors

**Rotated Component Matrix<sup>a</sup>**

	Component	
	1	2
V11	.927	.010
V12	.854	.227
V13	.824	.185
V14	.310	.747
V15	-.005	.890

Extraction Method: Principal Component Analysis.  
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

The rotated component matrix is checked for factor loadings as it has been corrected for cross loading.

**Factor 1- V11, V12, V13**

**Factor 2-V14, V15**

The names for the two factors are

**Factor 1- CUSTOMER EXPERIENCE FACTOR-** As product quality, customer service and price and value are all variables that determine the loyalty of the customer based on the satisfaction they derive from using the product.

**Factor 2- PRESTIGE FACTOR-**As brand reputation and variety of products are variables that determine loyalty due to the prestige the customer feels by owning or valuing the large number of

offerings of Decathlon. It is loyalty derived from being able to show off Decathlon Products to others and pride in owning reputed brand products as well as pride in the fact that the brand offers a huge variety of products.

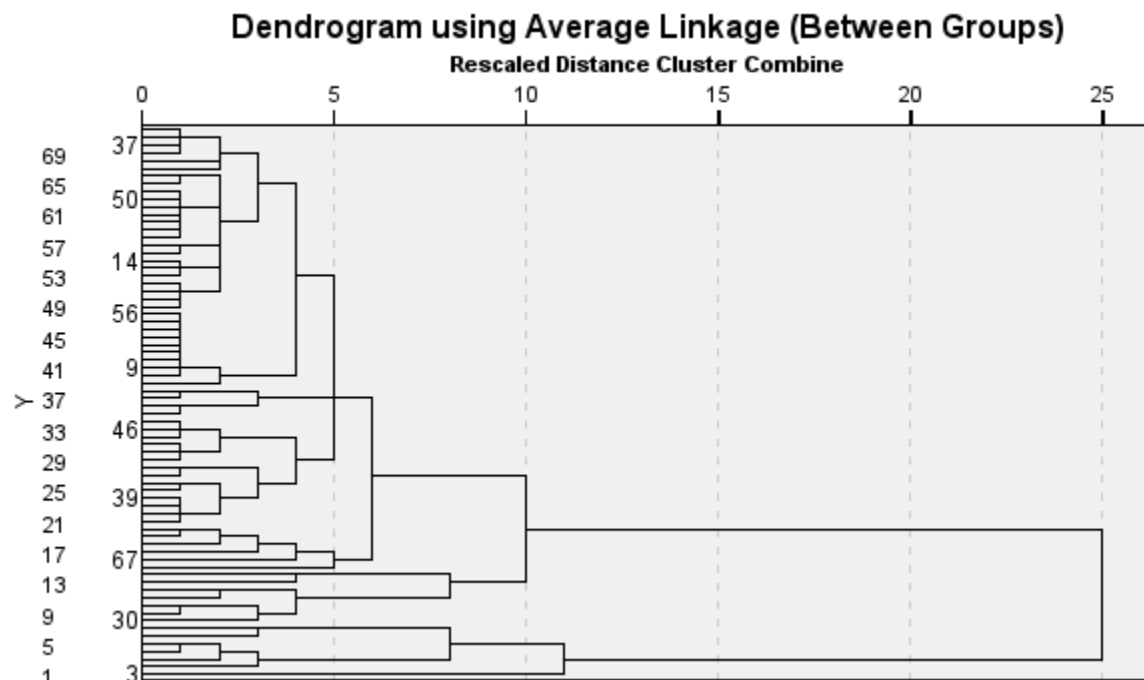
## **CLUSTER ANALYSIS**

Cluster Analysis Identifies groups of individuals or objects similar to each other but different from other groups to tailor marketing strategies such as segmentation, targeting and positioning.

**Sample Size-**The Sample size is 72 and the number of variables are the same as those used for Factor Analysis which is 5. The sample size is more than ten times the number of variables, therefore cluster analysis can be conducted.

### **Hierarchical Analysis**

After conducting the hierarchical analysis, the resulting dendrogram is as follows.



Cutting an Imaginary line between 10 and 15 will result in 2 clusters.

### **K-Mean Analysis**



After knowing the number of clusters is 2, K-Mean analysis is conducted resulting in the following ANOVA table

<b>ANOVA</b>						
	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
V11	58.469	1	.466	70	125.387	<.001
V12	45.508	1	.562	70	80.919	<.001
V13	51.270	1	.639	70	80.236	<.001
V14	1.451	1	.759	70	1.910	.171
V15	.004	1	.771	70	.006	.940

The F tests should be used only for descriptive purposes because the clusters have been chosen to maximize the differences among cases in different clusters. The observed significance levels are not corrected for this and thus cannot be interpreted as tests of the hypothesis that the cluster means are equal.

As V14, V15 are not significant at  $\alpha=0.01$

K-mean Analysis is conducted again with only significant variables.

<b>ANOVA</b>						
	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
V11	58.469	1	.466	70	125.387	<.001
V12	45.508	1	.562	70	80.919	<.001
V13	51.270	1	.639	70	80.236	<.001

The F tests should be used only for descriptive purposes because the clusters have been chosen to maximize the differences among cases in different clusters. The observed significance levels are not corrected for this and thus cannot be interpreted as tests of the hypothesis that the cluster means are equal.

Now all the variables are significant for cluster analysis

## Cluster Membership

### Cluster 1-

1,2,4,5,6,7,8,9,11,12,13,14,15,16,17,18,19,21,22,23,24,25,26,27,28,29,30,31,32,33,35,36,37,38,39,40,41, 43,44,45,46,47,48,49,50,51,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72

### Cluster 2-

3,10,20,34,42,52,53

#### Final Cluster Centers

	Cluster	
	1	2
V11	4	1
V12	4	1
V13	4	1

High- >3

Low-<3

### Cluster 1

High on variables-11,12,13

### Cluster 2

Low on variables-11,12,13

### Names of Clusters

**Cluster 1- Discerning Customers**-Discerning customers are those customers who carefully evaluate and prioritize, product quality, customer service, price and value of commodities when making purchasing decisions

**Cluster 2-Irrational Customers**-Customers whose loyalty does not depend on product quality, customer service, price and value. They are indifferent to the qualities that determine loyalty or rather their loyalty is not determined by rational factors

