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The Impact of Corporate Social Responsibility on Brand Equity via Structural Modeling: A Case Study of Mobile Phone Users in Laghouat.

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Keywords

Brand Equity; Structural Equations; Corporate Social Responsibility Brand Capital; Ooredoo Company.

Abstract

This study aimed to determine the impact of corporate social responsibility on the brand equity of mobile phone users. Structural equations served as a primary methodology and experimental approach, employing various advanced methods and techniques within the humanities domain. The study delineated its parameters through an independent variable encompassing corporate social responsibility to stockholders, the environment, customers, and the local community, while brand equity served as the dependent variable. To fulfill these objectives, a questionnaire was formulated and distributed to a sample comprising 354 subjects. The gathered data underwent analysis using SMARTPLS software. The findings revealed a significant effect of corporate social responsibility, accounting for approximately 32.2%, on the brand equity of the Ooredoo company. Consequently, the study recommends that companies invest in CSR activities to foster a sustainable brand and attain enhanced brand equity.

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تأثير المسؤولية الاجتماعية على بناء قيمة العلامة التجارية باستخدام النمذجة الهيكلية
دراسة حالة لمستخدمي الهاتف المحمول بالأغواط

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الكلمات المفتاحية

العلامة التجارية، المعادلات البنائية، المسؤولية الاجتماعية للشركات، رأسمال العلامة التجارية، مؤسسة أوريدو.

الملخص

سعت هذه الدراسة إلى تحديد أثر تبني مؤسسة الجزائرية لمفهوم المسؤولية الاجتماعية على بناء قيمة علامتها التجارية لدى الزبون، وذلك باستخدام المعادلات البنائية التي أصبحت تمثل محور منهجي وتجريبي وعدل تطوير العلوم الإنسانية خاصة، من خلال مجموعة من الأساليب والتقنيات المتقدمة، قد تحددت الدراسة بمتغير مستقل يمثل في المسؤولية الاجتماعية بمختلف أبعادها (مسؤولية اتجاه أصحاب المصالح، البيئة، العملاء، والمجتمع المحلي)، أما المتغير التابع فيتمثل في رأسمال العلامة ، ولتحقيق أهداف المداخلة تم تطوير استبانة لغرض جمع البيانات من أفراد العينة لمؤسسة الاتصالات أوريدو وبلغ عددها (338) مفردة، حيث استخدمنا البرنامج الاحصائي (SMARTPLS) لتحليل بيانات الاستبانة، وقد توصلت الدراسة إلى أنه يوجد أثر لتبني مؤسسة أوريدو لمفهوم المسؤولية الاجتماعية بنسبة (32.2) % على بناء قيمة علامتها التجارية. وتوصي الدراسة بضرورة تبني مفهوم المسؤولية الاجتماعية لمؤسسة أوريدو لها دور في بناء قيمة العلامة التجارية وترسيخها في أذهان أفراد المجتمع.

المؤلف المرسل: هاجر بوعكاز

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1- Introduction:

The progress of science relies on advancing methodologies and approaches, while staying attuned to every detail and current events. Among various disciplines, social and management sciences have undergone remarkable evolution since adopting scientific methods. Notably, the treatment of their phenomena has become highly precise, thanks in part to the application of statistical techniques. One such powerful method that sheds light on complex phenomena is Structural Equation Modeling (SEM). As a statistical methodology, SEM encompasses multiple regression, factor analysis, and analysis of variance, allowing researchers to test theoretical models through a series of regression equations. This provides a robust tool for analyzing interpretative models related to social, economic, and intricate phenomena involving multiple variables.

Causal modeling techniques, especially Structural Equation Modeling, have gained widespread popularity among researchers in the humanities since the early 1980s. The meticulous development of SEM, including the incorporation of latent variables, has found practical applications in various fields, including social sciences, management, and marketing.

To underscore its significance, we conducted a case study that combines social science with marketing, centering on the impact of social responsibility in enhancing the image of the communication company "Ooredoo." This company is committed to promoting social responsibility to foster customer loyalty to its brand. Our findings revealed a strong connection between the company's profitability and sustainability with improvements in its brand equity.

- Statement of Problem

The objective of this study was to assess the influence of corporate social responsibility on brand equity using Structural Modeling. Corporate social responsibility was examined through its four dimensions: responsibility to stockholders, to the environment, to customers, and to the local community. The study addressed the following inquiries:

. The main question

Is there a significant impact of corporate social responsibility on Brand Equity of Ooredoo Telecommunication Company.?

This main question gives rise to the following sub-questions:

- *Is there an effect of Responsibility to Stockholders on the Brand Equity of Ooredoo Company?*
- *Is there an effect of Responsibility to Environment on the Brand Equity of Ooredoo Company?*

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- *Is there an effect of Responsibility to Customer on the Brand Equity of Ooredoo Company?*
- *Is there an effect of Corporate Social Responsibility to Local Community on the Brand Equity of Ooredoo Company?*

- Research Hypotheses

The main research hypotheses that highlight the relationship between corporate social responsibility and the brand equity is:

There is a significant impact of Corporate Social Responsibility on the Brand Equity of Ooredoo Telecommunication Company.

The main hypothesis is based on a set of sub-hypotheses, which are:

- *There is a significant effect of Corporate Social Responsibility to Stockholders on the Brand Equity of Ooredoo Company at a level of 5%.*
- *There is a significant effect of Corporate Social Responsibility to Environment on the Brand Equity of Ooredoo Company at a level of 5%.*
- *There is a significant effect of Corporate Social Responsibility to Customer on the Brand Equity of Ooredoo Company at a level of 5%.*
- *There is a significant effect of Corporate Social Responsibility to Local Community on the Brand Equity of Ooredoo Company at a level of 5%.*

2- Theoretical Framework

2-1- The Definition of Corporate Social Responsibility:

The origins of CSR can be dated back to the 1950s, and over the years, ongoing research has greatly influenced the theory, research, and implementation of the CSR concept. Bowen, often considered the trailblazer of corporate social responsibility, articulated CSR in 1953 as a way for businesses to proactively regulate and observe their conduct voluntarily, independent of governmental enforcement. Subsequently, there has been substantial progress in endeavors to define and comprehend CSR. (Hong, Ismail, & Yin, 2004)

The essence of CSR can be grasped through its three components: "Corporate," which encompasses a wide range of businesses, "Social," referring to the local community they engage with, and "Responsibilities," which are inherent in the relationships between them. Therefore, CSR encompasses the entirety of corporate activities and extends to all stakeholders and groups that have an enduring interest in the organization's operations, as well as the society in which it operates. (Selarka, 2016)

The term "social responsibility" is a highly evocative one, as its interpretation can vary among individuals. For some, it implies legal responsibility or liability; for others, it denotes ethical behavior aligned with social responsibility. To certain individuals, it signifies being "responsible for" something in a causal manner, while for

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many, it equates to making charitable contributions. Some associate it with social consciousness, while fervent supporters view it as a synonym for "legitimacy," implying adherence to proper and valid standards. (Carroll, 2015).

Corporate social responsibility (CSR) is a concept in which companies choose to incorporate social and environmental considerations into their business operations and interactions with stakeholders voluntarily. Essentially, CSR involves companies proactively deciding to contribute to the betterment of society and the environment. (Dahlsrud, 2008)

2-2- The Definition of Brand Equity:

Brand equity is the value attributed to a brand due to the strong and enduring relationship established between the brand and its customers and other stakeholders over time. (Krishnan & Hartline, 2001)

Brand equity signifies a situation where consumers are well-acquainted with the brand and can recall favorable, strong, and distinctive brand associations. As a result, there is a discernible impact of brand knowledge on how consumers respond to the brand's marketing efforts.(Wood, 2000)

2-3- The Definition of Structural Equation Modeling

The Structural Equation Modeling refers to the foundational set of statistical methods used in empirical research to test hypothesized relationships between variables of interest includes first-generation multivariate data analysis techniques like multiple regression, logistic regression, and analysis of variance. These methods have been extensively utilized across diverse scientific fields, contributing to substantial progress in our knowledge of the world. (Haenlein & Kaplan, 2017)

Structural Equation Modeling is a method that enables the analysis of intricate interactions between variables and presents them in visual representations. Its primary advantage lies in the ability to evaluate the effectiveness of the model. When the fit of the model is deemed satisfactory, it indicates that the hypothesized relationships between variables are acceptable (Nachtigall, Kroehne, Funke, & Steyer, 2003).

2-4- Differences between traditional statistical analysis and structural equation modeling

Structural Equation Modeling surpass traditional analysis methods in terms of comprehensiveness and flexibility. This versatile approach is applicable to various research areas, including the examination of economic trends, achievements, family and peer dynamics, health issues, self-efficacy, self-concept, depression, exercise, and psychotherapy. Unlike traditional methods that often rely on default model-based practices, SEM allows for the formulation of models based on specific requirements, avoiding any rigid default methodologies(Suhr, 2006).

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Table N°1

Difference between structural equation modeling and traditional statistical analysis

Traditional Methods	*Structural Equation Modeling*
Less flexible	**Characterized by flexibility and comprehensiveness**
Follows a default model practice.	**Allows the freedom to formulate models without adhering to defaults**
Incorporates only measured variables	**Takes into account both measured and unobserved variables**
Measurement error not considered.	**Focuses on measurement error.**
Simplistic approach to model fitness	**Methodology of resolving Multicollinearity.**

***Source**: (Suhr, 2006)*

Furthermore, structural equation modeling serves as a multivariate analysis technique, enabling the discovery of relationships between both measured and unobserved variables. In this context, 'unobserved variables' pertain to variables that must be derived from other known variables. On the contrary, traditional approaches are limited to handling only measured or observed variables. While SEM acknowledges the imperfect nature of these measurements by incorporating measurement errors into the model, traditional methods lack such provisions. As a result, traditional approaches may encounter challenges in assessing model fitness due to issues like multicollinearity; In contrast, SEM not only allows for a thorough examination of model fitness but also provides the capability to address multicollinearity problems effectively.(Larsson, Plonsky, & Hancock, 2020)

2-5- Advantages of Structural Equation Modeling (SEM):

Structural equation modeling (SEM) comprises a set of statistical procedures designed to test hypotheses involving multiple constructs that may have both direct and indirect relationships within linear and nonlinear models. One of its distinguishing features is the ability to assess numerous associations while also accounting for measurement errors.

One notable advantage of SEM over traditional multiple regression studies is its enhanced statistical power, referring to the increased likelihood of correctly rejecting a false null hypothesis.

SEM allows researchers to explore latent variables and their interrelationships, enabling the investigation of dependencies between psychological constructs without the interference of measurement errors.

Additionally, SEM can examine correlated measurement errors to understand how unknown factors influence shared error among variables. This capacity can impact the model's predicted parameters positively. Furthermore, SEM effectively handles missing

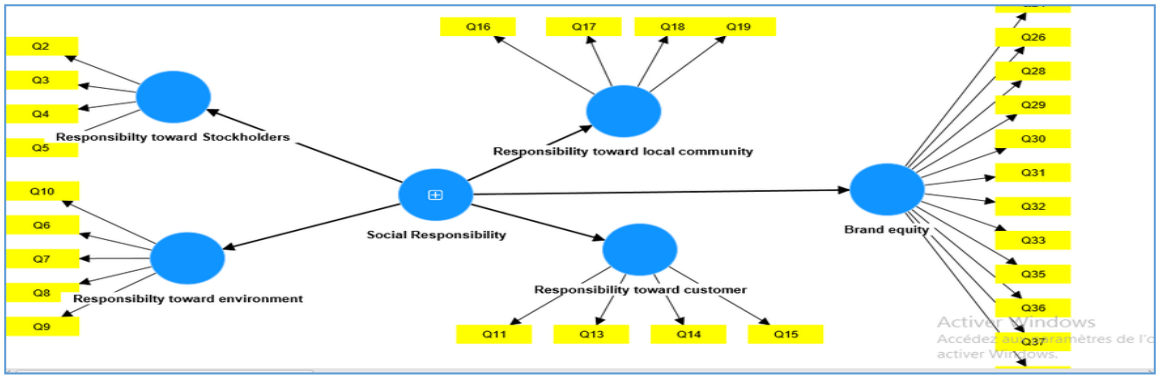
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data by directly fitting raw data rather than relying on summary statistics (Beran & Violato, 2010)

3-Research analytical framework

Figure N° 1
Research analytical framework

3-1- The study model



Source: *Developed by the researchers based on SMARTPLS outputs*

3-2- The Rational for employing Partial Least Squares Structural Equation Modeling (SEM-PLS) in our study instead of Covariance-Based Structural Equation Modeling (SEM-CB):

In our research, the choice of Partial Least Squares Structural Equation Modeling (SEM-PLS) instead of Covariance-Based Structural Equation Modeling (SEM-CB) is substantiated by several factors, which can be summarized as follows:

Table N°2
The reasons for employing Partial Least Squares Structural Equation Modeling (SEM-PLS)

The reason	*The explanation*
In terms of the study's objective	The objective of our study is to investigate the potential relationships between two variables and make predictions, specifically, to pinpoint the variables impacting the dependent variables and to explore the relationships between the independent and dependent variables. mediator, and moderating variables are causal, where each variable causes the occurrence of the others, either as a predictor, mediator, or moderator. As a result, our study favors the use of Structural Equation Modeling with Partial Least Squares (SEM-PLS) as the preferred analytical method. since our

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	research goal is to explain variance and predict variables. SEM-PLS operates on a variance-based approach
In terms of the complexity of the study's model	According to(J. hair, & M.sarstedt, 2014) , estimating complex models with numerous latent variables and Obtaining accurate indicators is frequently difficult when utilizing Covariance-Based Structural Equation Modeling (CB-SEM). Conversely, Partial Least Squares Structural Equation Modeling (SEM-PLS) can be applied in such situations. According to(W.Chin & Newsted, 1999), SEM-PLS can handle models consisting of 100 latent variables and 1000 indicators, while CB-SEM is more suitable for models of lower to moderate complexity. In our study, the model includes a measurement model related to independent latent variables measured by their indicators, a measurement model related to dependent latent variables measured by their indicators, a measurement model related to mediator latent variables measured by their indicators, and a measurement model related to moderated latent variables measured by their indicators. These models intersect and are interconnected through paths, forming a complex structural model. Therefore, SEM-PLS is the preferred method for analysis in our study .
In terms of the distribution of the study variables	Structural Equation Modeling (SEM-CB or SEM-PLS) only requires the researcher to differentiate between normal and non-normal distributions, with normal distributions typically preferred, particularly when employing Covariance-Based Structural Equation Modeling (SEM-CB). In contrast, Partial Least Squares Structural Equation Modeling (SEM-PLS) does not necessitate any pre-existing assumptions. the data distribution. (Sarstedt, Ringle, & Hair, 2021) Therefore, to justify the choice of SEM modeling (-CB or PLS) in our research, we need to identify the distribution type of the study variables. After collecting the data, it was analyzed in SPSS using the Kolmogorov-Smirnov test to determine whether it follows a normal distribution or not. The results indicated that the data distribution of the study variables is not normal, which justifies our use of SEM-PLS, as it does not require normal data distribution, unlike SEM-CB.

Source: *Developed by the researchers according to (J. hair, & M.sarstedt, 2014) , (W.Chin & Newsted, 1999),and . (Sarstedt et al., 2021)*

3-3- Model Quality Test: *Before proceeding with the hypothesis testing, it is crucial to evaluate the standard and structural study model's quality. The quality test of the standard model for the study is illustrated in the following table:*

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Table N°3

Reliability and Convergent Validity, displays the values for reliability and convergent validity

Construct Reliability and Validity						
ALPHA	*AVE*	*CR*	*Factor loding*	*items*	*constructs*	The Axes
0,759	0,584	0,806	The value 0.551 has been excluded	Q1	To Stockholders	Corporate Social Responsibility
			The value 0.144 has been excluded	Q2		
			0,714	Q3		
			The value 0.539 has been excluded	Q4		
			0,685	Q5		
0,817	0,578	0,872	0,880	Q6	To Environment	
			0,690	Q7		
			The value 0.586 has been excluded	Q8		
			0,804	Q9		
			0,768	Q10		
0,779	0,513	0,807	0,754	Q11	To Customer	
			0,780	Q12		
			0,658	Q13		
			The value 0.567 has been excluded	Q14		
			The value 0.421 has been excluded	Q15		
0,760	0,524	0,814	0,818	Q16	To Local Community	
			0,733	Q17		
			0,643	Q18		
			0,712	Q19		
			The value 0.550 has been excluded	Q20		
0,907	0,688	0,929	0,759	Q21	Brand Equity	
			The value 0.591 has been excluded	Q22		
			0,762	Q23		
			0,656	Q24		
			0,669	Q25		
			0,809	Q26		
			0,751	Q27		
			0,882	Q28		
			0,915	Q29		
			0,921	Q30		
0,795	0,540	0,854	The value 0.203 has been excluded	Q31		

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0,742	Q32
The value 0.410 has been excluded	Q33
The value 0.227 has been excluded	Q34
0,694	Q35
0,795	Q36
0,780	Q37
0.652	Q38
The value 0.281 has been excluded	Q39

Source: *Developed by the researchers based on SMARTPLS outputs*

The five major first-order variables in this study were Brand Equity, corporate social responsibility to stockholders, environment customer, and community. In this study, convergent and discriminant validity were used to assess the measurement model. The convergent validity research looks at the composite reliability, average variance extract (AVE), and factor loading. As a consequence, Table (04) summarizes the findings. As can be seen, each item had a loading greater than 0.5, AVE values greater than 0.5, and CR values greater than 0.7.

3-4- Variable Correlation (VC): *is a measure that indicates the extent of dissimilarity and separation between the axes. The results are shown in the following Table*

Table N°4
Variable Correlation (VC) Index

Responsibility Brand Equity	*Responsibility To Local Community*	*Responsibility To Customer*	*Responsibility To Environment*	*Responsibility To Stockholders*	
				0,764	**Responsibility To Stockholders**
			0,724	0,379	**Responsibility ToEnvironment**
		0,735	0,266	0,341	**Responsibility To Customer**
	0,760	0,335	0,494	0,403	**Responsibility To Local Community**
0,830	0,165	-0,346	0,116	0,098	**Brand Equity**

Source: *Developed by the researchers based on SMARTPLS outputs*

3-5-Adjusted R2 and R-Squared Test:

R-Square (R2) is a measure of the extent to which the observed results are replicated in the model, based on the proportion of the total variance of the results

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explained by the model. It represents the ability to explain the variation in the dependent variable by the independent variables. (Al-hammouri & Abu-shanab, 2018)

Table N°5
R-Square (R2) Indicators

R Square Adjusted	*R Square*	
0,429	0,441	**Responsibility To Stockholders**
0,597	0,605	**Responsibility To Environment**
0,675	0,681	**Responsibility To Customer**
0,655	0,662	**Responsibility To Local Community**
0,020	0,040	**Brand Equity**

Source: Developed by the researchers based on SMARTPLS outputs

The model explains approximately 42.9% (adjusted) to 44.1% (unadjusted) of the variation in the "Responsibility to Stockholders" construct. The predictors included in the model contribute to explaining this percentage of variance, around 59.7% (adjusted) to 60.5% (unadjusted) of the variance in the "Responsibility to Environment" construct. The included predictors have a substantial impact on this variance, roughly 67.5% (adjusted) to 68.1% (unadjusted) of the variance in the "Responsibility to Customer" construct. The predictors have a strong influence on this variance, about 65.5% (adjusted) to 66.2% (unadjusted) of the variance in the "Responsibility to Local Community" construct. The predictors contribute significantly to this variance, approximately 2.0% (adjusted) to 4.0% (unadjusted) of the variance in the "Brand Equity" construct. The predictors have a weak influence on this variance, suggesting that other factors not included in the model may play a more significant role in determining brand equity.

3-6- The Goodness of Fit (GOF) index: *is a measure of the extent to which the study model is reliable in integrating the questions and all the axes to obtain the model's reliability result, according to the following equation*

$$\text{Gof} = \sqrt{\overline{AVE} \quad \times \quad \overline{R^2}}$$

If the GOF index falls into the following ranges; Less than 0.1: Unacceptable, Between 0.1 and 0.25: Weak, Between 0.25 and 0.36: Moderate, and Greater than 0.36: High(Wang & Li, 2012)

The Goodness of Fit (GOF) index, which evaluates the model's quality, is calculated as follows:

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First, we calculate the average R-Square (¯R^2) by summing the determination coefficients of the latent variables and dividing by the total number of latent variables:

¯R^2 = (0.441 + 0.662 + 0.401 + 0.605 + 0.040 + 0.681) / 6 = 0.472

Next, the average Average Variance Extracted (¯AVE) is calculated using the same method

¯AVE = (0.584 + 0.578 + 0.513 + 0.524 + 0.688 + 0.540) / 6 = 0.517

Finally, the value of the Goodness of Fit index is obtained as

GOF = √ (0.472 × 0.517) = 0.493

This is a high value, indicating that the quality of the study model is good.

The obtained value is high, which suggests that the study model exhibits good quality.

***3-7-Discriminant Validity Test according to the Heterotrait-Monotrait Ratio of Correlations (HTMT) criterion**: Through this test, we aim to verify the presence of discriminant validity between latent variables, meaning that they are distinct from each other. If the HTMT values are less than the threshold level of 0.9, it indicates the sound discriminant validity between the latent variables in the measurement model (Henseler, Ringle, & Sarstedt, 2015)*

Table N°6
Discriminant Validity Test according to the Heterotrait-Monotrait Ratio of Correlations (HTMT) Criterion:

Brand Equity	*Responsibility To Local Community*	*Responsibility To Customer*	*Responsibility To Environment*	*Responsibility To Stockholders*	
				0.45	**Responsibility To Stockholders**
				0.333	**Responsibility To Environment**
			0.50	0.52	**Responsibility To Customer**
		0.53	0.39	0.61	**Responsibility To Local Community**
033	0.22	0.25	0.39	0.25	**Brand Equity**

Source: *Developed by the researchers based on SMARTPLS outputs*

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HTMT ranged from 0.22 to 0.61 the findings are summarized in Table (07). As a consequence, each latent concept assessment in this study was exclusively discriminatory vs the others.

3-8- Testing the main Hypotheses and sub-Hypotheses:

Table N°7

Primary Direct Path Model

P Values	*T Statistics (|O/STDEV|)*	*Standard Deviation (STDEV)*	*Sample Mean (M)*	*Original Sample (O)*	*Responsibility To*
0,001	3,238	0,158	0,527	0,511	**Brand Equity <- Corporate Social Responsibility**
0,000	10,597	0,065	0,712	0,691	**Brand equity <- stockholders**
0,000	10,855	0,074	0,811	0,801	**Brand equity <- Environment**
0,441	0,771	0,244	0,191	0,188	**Brand equity <- customer**
0,000	16,420	0,049	0,819	0,805	**Brand equity <- local community**

Source: *Developed by the researchers based on SMARTPLS outputs*

- Hypothesis Testing

The statistical findings from the preceding table indicate a noteworthy impact at the α level of 0.05 for the independent variable (corporate social responsibility) on the dependent variable (brand equity of Ooredoo company). This is supported by a p-value of 0.001 and a T-Statistic of 3.238, which, when divided by the Standard Deviation of 0.158, results in a significant value, suggesting a robust relationship. The sample mean (M) is 0.527, while the original sample (O) is 0.511. Consequently, the null hypothesis is rejected in favor of the alternative hypothesis, confirming a substantial influence of CSR on the Brand Equity of Ooredoo Telecommunication.

As depicted in the preceding table, there is no notable impact at the α level of 0.05 for the dimension of Responsibility to the Environment on the Brand Equity of Ooredoo Company. However, the calculated p-value of 0.000 signifies a highly statistically significant relationship between Brand Equity and the Environment. The T-Statistic of 10.855, in relation to the standard deviation of 0.074, indicates a robust relationship. With a sample mean (M) of 0.811 and an original sample (O) of 0.801, the null hypothesis is rejected, and the alternative hypothesis is accepted. This confirms that Brand Equity indeed has a significant impact on the perception of Responsibility to the Environment.

As indicated in the preceding table, there is no discernible impact at the α level of 0.05 for the dimension of Responsibility to Customers on the Brand Equity of Ooredoo Company. The calculated p-value of 0.441 signifies that the relationship between Brand Equity and Customers lacks statistical significance at conventional levels (e.g., 0.05). With a T-Statistic of 0.771 in relation to the standard deviation of 0.244, the relationship

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appears weaker. The sample mean (M) is 0.191, and the original sample (O) is 0.188, suggesting that the influence of Brand Equity on the perception of Responsibility to Customers may not be substantial. This confirms the acceptance of the third null hypothesis.

As evident in the preceding table, there is a notable impact at the α level of 0.05 for the dimension of Responsibility to the Local Community on the Brand Equity of Ooredoo Company. The calculated p-value of 0.000, along with a T-Statistic of 16.420 relative to the standard deviation of 0.049, signifies a robust relationship. With a sample mean (M) of 0.819 and an original sample (O) of 0.805, the fourth null hypothesis is rejected, and the alternative hypothesis is accepted. This confirms that Brand Equity indeed has a significant impact on the perception of Responsibility to the Local Community.

4- Conclusion:

Structural equation modeling is one of the modern statistical methods where the phenomenon under study is examined by constructing a standardized model that includes a set of indicators and testing the validity of this model. The process involves identifying the relationships of influence and interaction among the variables of the study. In this context, I use this method in the field of management in general and marketing research in particular. Certain conditions and requirements must be considered and followed by the researcher.

This method was applied as a case study in the field of marketing, with the aim of studying the role of social responsibility in improving the brand image of the mobile phone company "Ooredoo." It sought to clarify the existing and influential relationships between the variables constituting social responsibility and the brand equity of the mobile phone company. Also, the impact of mobile phones was examined. After this empirical study, the main hypothesis and the subsidiary hypotheses were accepted, except for the third hypothesis, where we did not find a significant effect of social responsibility to customers on the brand equity.

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