

Emergence of Search Engine Optimization as an Advertising Tool

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Abstract

SEO considers how search engines work, what people search for, the actual search terms typed into search engines and which search engines are preferred by their targeted audience. Optimizing a website may involve editing its content and HTML and associated coding to increase its relevance to specific keywords and to remove barriers to the indexing activities of search engines. Promoting a site to increase the number of back links, or inbound links, is another SEO tactic. The initialism 'SEO' can refer to 'Search Engine Optimizers,' a term adopted by an industry of consultants who carry out optimization projects on behalf of clients, and by employees who perform SEO services in-house. Search engine optimizers may offer SEO as a stand-alone service or as a part of a broader marketing campaign. This paper evaluates the impact of SEO on the advertisement of firm. The sample size for the research is 100 managers from different IT companies of North India. The paper uses analytical tools including Correlation, Regression, Anova and Chi Square.

Keywords: SEO, Marketing, Advertisement, Chi Square.

1. Introduction

Search Engine Optimization (SEO) is the process of improving the visibility of a website or a web page in search engines via the natural or unpaid ('organic' or 'algorithmic') search results. Other forms of Search Engine Marketing (SEM) target paid listings. In general, the earlier (or higher on the page), and more frequently a site appears in the search results list, the more visitors it usually receives from the search engine's users. SEO may target different kinds of search, including the image search, local search, video search and industry-specific vertical search engines. This gives a website web presence.

As an Internet marketing strategy, SEO reckons the working of the search engine; consider what people are searching, the definite search terms typed into search engines and which search engines are favored by their beleaguered addressees. Optimizing a website may engross bowdlerization of its matter and HTML and coupled coding for amplifying its significance to precise keywords and to get rid of barriers to the indexing actions of search engines. Endorsing a site to enhance the quantity of associated links, or inbound links, is an additional SEO method.

SEO is an idiom espoused by an industry of consultants who perform the work of project and service optimizations for their

client base, supported by the in-house employees who execute SEO. The service of SEO tenders as an impartial service or as a component of a larger marketing campaign. Since effective SEO may require changes to the HTML source code of a site and site content, SEO tactics may be incorporated into website development and design. The term "Search Engine Friendly" may be used to describe website designs, menus, content management systems, images, videos, shopping carts, and other elements that have been optimized for the purpose of search engine exposure.

Another class of techniques, known as Black Hat SEO, uses methods such as link farms, keyword stuffing and article spinning that degrade both the relevance of search results and the quality of user-experience with search engines. Search engines look for sites that employ these techniques in order to remove them from their indices.

Webmasters and content providers began optimizing sites for search engines in the mid-1990s, as the first search engines were cataloging the early web. Initially, all webmasters needed to submit the address of a page, or URL, to the various engines which would send a 'Spider' to 'Crawl' that page, extract links to other pages from it, and return information found on the page to be indexed. The process involves a search engine spider downloading a page and storing it on the search engine's own server,

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where a second program, known as an indexer, extracts various information about the page, such as the words it contains and the location of those words, as well as any weight for specific words, and all links the page contains, which are then placed into a scheduler for crawling at a later date.

Some search engines have also reached out to the SEO industry, and are recurrent sponsors and visitors at SEO conferences, chats, and seminars. With the beginning of paid insertion, nowadays few search engines indulge in the vested interest of the strength of the optimization community. Foremost search engines endow with information and guidelines to help with site optimization. Google has sitemaps program to help webmasters learn, if Google is having any troubles indexing their website and also offers data on Google traffic to the website. Google Guidelines are a list of recommended practices, Google has presented as guidance to webmasters. Yahoo! Site Explorer provides a way for webmasters to submit URLs, establish how many pages are in the Yahoo! index and view link information. Bing Toolbox provides a way for webmasters to submit a sitemap and web feeds, allowing users to determine the crawl rate, and how many pages have been indexed by their search engine.

SEO may not be the suitable strategy for every website. There may be other Internet Marketing Strategy that may be better and efficient, depending upon the goal of the website owner. The ATO (Ad Text Optimization) may be a technique, which is paid search promotion. A triumphant Internet promotion campaign may force organic traffic, accomplished with the help of optimization techniques and unpaid promotion, to web pages, but it could employ the paid advertising on web-pages and search engine. Other techniques such as construction of top quality web pages to connect and influence, attending technical issues which might keep search engines from swarming and indexing those sites, setting up analytics programs to facilitate site possessors to gauge their triumphs, and improving a site's conversion rate.

The SEO may produce a return on investment. Search engines do not get paid for organic search traffic, their algorithms modification, and further there are no assurances of sustained referrals. (A few trading sites i.e., eBay may be a particular case for this; it will proclaim how and when the standing algorithm will alter a few months ahead of altering the algorithm). Because of uncertainty and non-guarantee, the business which depends solely on the search engine traffic may face major loss if the operations of the search engine discontinue sending guests.

2. Objectives of the Study

- To know the effect of Search Engine Optimization (SEO) on the advertisement.

- To find out the customer's perception about SEO as an advertisement tool.
- To compare SEO with other advertisement tools.

3. Review of Literature

A number of researchers studied about the SEO. The research about Search Engine Optimization has grown only in recent times. Vascellaro¹, Bharat², Elliot³, McAfee and Lazzara⁴, Thomases and Ghanadan⁵, Rognerud⁶, Eren⁷, Comscore World Metrix⁸, Sezgin⁹ focussed on search engine optimization in their studies.

Vascellaro¹ reveals that Search Engine Marketing is the fastest growing advertising medium in the world, projected to become 10 times more powerful and influential than traditional media outlets such as: network television, cable television, local television, network radio, local radio, satellite radio, national newspapers, local newspapers, magazines, billboards, direct mail, telemarketing and more. Bharat² analyzed experienced users who questioned about the search engines' complex behavior. They explore many topics in parallel, experiment with query variations, consult multiple search engines, and gather information over many sessions. In the process they need to keep track of search context-namely useful queries and promising result links, which can be hard. Elliot³ found that relationship between advertising expenditure and sales are stable. McAfee and Lazzara⁴ exposed that there are certain things to watch out for when selecting a firm to help you with your search engine optimization project Google offers page of tips to Webmasters regarding use of SEO firms. Thomases and Ghanadan⁵ exposed that it's hard to think of reasons why life science companies wouldn't embark on Search Engine Optimization activities as part of their overall marketing strategies. Eren⁷ reveals that as a result of increasing popularity of the Internet, a crowd, which is also named as 'Electronic Community' was introduced. Marketers, who try to reach customers in a fast and effective way with direct marketing method and also reduce customer reaching-costs, aim to reach electronic communities that have big potentials. Comscore World Metrix⁸ evaluate that Turkey has 7th biggest Internet population in Europe and furthermore, it also has users who spend most time on the Internet in Europe, and it is easy to introduce power of a web site in a country like Turkey. Sezgin⁹ unearthed the fact that it must be suitable to some technical conditions. A typical search engine optimization has a process that can be performed to move up a web site.

According to the research studies, number of web sites on the Internet is above 156 million. According to a study conducted in July 2009, 81 percent of Internet users enter to the Internet Environment via search engine web pages. For instance, 80 per-

cent of people, who want to buy car, search for a car by using search engines. A research study in February 2009 revealed that Google is the most widely used search engine. Fathom Online report states that, keyword cost has risen to 19% in one year since September 2004. It has been realized that organic results are more appealing to searchers because they are considered more objective and unbiased than sponsored results. An online survey conducted by Georgia Tech University reports that, over 70% of the search engine users prefer clicking organic results to sponsored results.

Researchers have studied the effect of advertisement on sales through the SEO and on other components regarding to this. However, not much research has been undertaken on the impact of SEO on advertisement and sales as well as in the case of Indian companies. The present study will investigate the aforesaid relationship and effect with respect to the companies listed at Indian bourses. Though the researchers study about the advertisement and SEO, it is not in relation with each other but as a separate topic. The present research will explore the above said topic.

4. Research Methodology

The sampling techniques used in this study: Probability and Non Probability, is a hybrid technique which includes both. In Probability, we select the respondents by chance, whereas in Non Probability we select by choice.

The following tools are used for Analysis of data:

The **Mean** is a particular informative measure of the 'Central Tendency' of the variable, if it is reported along with its confidence intervals.

$$\text{Mean} = (\sum x_i)/n$$

Usually we are interested in statistics (such as the mean) from our sample only to the extent to which they can infer information about the population. The confidence intervals for the mean give us a range of values around the mean where we expect the "true" (population) mean is located (with a given level of certainty).

The **Standard Deviation** is a commonly used measure of variation and for a population of values it is computed as:

$$s = [S(x_i - m)^2/N]^{1/2}$$

where, m is the population mean and N is the population size.

The sample estimate of the population *standard deviation* is computed as:

$$s = [S(x_i - \bar{x})^2/(n-1)]^{1/2}$$

where, \bar{x} is the sample mean and n is the sample size.

The *variance* of a population of values is computed as:

$$s^2 = S(x_i - m)^2/N$$

where, M is the population mean and N is the population size.

The unbiased sample estimate of the population variance is computed as:

$$s^2 = S(x_i - \bar{x})^2/n-1$$

where, \bar{x} is the sample mean and n is the sample size.

Skewness measures the deviation of the distribution from symmetry. If the skewness is clearly different from 0, then that distribution is asymmetrical, while normal distributions are perfectly symmetrical.

$$\text{Skewness} = n * M_3 / [(n-1) * (n-2) * s^3]$$

where:

M^3 is equal to: $S(x_i - \text{Mean}_x)^3$

s^3 is the standard deviation (sigma) raised to the third power

N is the valid number of cases.

Kurtosis measures the 'Peak' of a distribution. If the kurtosis is clearly different than 0, then the distribution is either flatter or more peaked than normal; the *kurtosis* of the normal distribution is 0. *Kurtosis* is computed as:

$$\text{Kurtosis} = [n * (n+1) * M_4 - 3 * M_2 * M_2 * (n-1)] / [(n-1) * (n-2) * (n-3) * s^4]$$

Where,

M_j is equal to: $S(x_i - \text{Mean}_x)^j$

N is the valid number of cases

s^4 is the standard deviation (sigma) raised to the fourth power

The general purpose of multiple regressions is to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable.

A line in a two-dimensional or two-variable space is defined by the equation $Y = a + b * X$; in full text, the Y variable can be expressed in terms of a constant (a) and a slope (b) times the X variable. The constant is also referred to as the intercept, and the slope as the regression coefficient or B coefficient. Multiple regression procedures will estimate a linear equation of the form:

$$Y = a + b_1 * X_1 + b_2 * X_2 + \dots + b_p * X_p$$

The regression line expresses the best prediction of the dependent variable (Y), given the independent variables (X). However, nature is rarely (if ever) perfectly predictable, and usually

there is substantial variation of the observed points around the fitted regression line. The deviation of a particular point from the regression line (its predicted value) is called the Residual Value.

The **Standardized Residual Value** is given as the Observed minus Predicted divided by the Square Root of the Residual Mean Square.

The **Mahalanobis Distance** is the distance of a case from the centroid in the multidimensional space, defined by the correlated independent variables (if the independent variables are uncorrelated, it is the same as the simple Euclidean Distance). Thus, this measure provides an indication of whether or not an observation is an outlier with respect to the independent variable values.

The **Deleted Residual** is the residual value for the respective case, had it not been included in the regression analysis, that is, if one would exclude this case from all computations. If the *deleted residual* differs greatly from the respective standardized residual value, then this case is possibly an outlier because its exclusion changed the regression equation.

Cook's Distance is another measure of impact of the respective case on the regression equation. It indicates the difference between the computed B values and the values one would have obtained, had the respective case been excluded. All distances should be of about equal magnitude; if not, then there is reason to believe that the respective case(s) biased the estimation of the regression coefficients.

Further, **Chi Square Test** is used to check the feasibility of the variables. Chi-square is a statistical test commonly used to compare observed data with data we would expect to obtain according to a specific hypothesis. For example, if, according to Mendel's laws, you expected 10 out of 20 offsprings, from a cross to be male and the actual observed number was 8 males, then you might want to know about the "goodness to fit" between the observed and expected. Were the deviations (differences between observed and expected) the result of chance, or were they due to other factors? How much deviation can occur before you, the investigator, must conclude that something other than chance is at work, causing the observed to differ from the expected. The chi-square test is always testing what scientists call the **Null Hypothesis**, which states that there is no significant difference between the expected and observed result.

5. Findings and Analysis

5.1 Descriptive Statistics

In Tables 1 to 4 we calculated the mean, medium, mode, std. deviation, variance, skewness and kurtosis for the variable effect and the values were found to be 4.03, 4.00, 4, 0.797, 0.635, -1.275 and 3.237 respectively and for sales the values were 3.74, 4.00, 4, 0.928, 0.861, -1.003 and 1.078 respectively. The values for others

like online, attract, time and beneficial can be obtained from the descriptive state tables.

CORRELATION: After descriptive state I, correlation test was used on the sample responses. The table for the correlation is as follows:

Table 5 shows the relation of one question-keyword with other factors, that is the relationship of one question-keyword with all other keywords. For example, in the table, the relation value of the effect and sale is 0.32, effect with online is 0.34, with attract is 0.11, with time is 0.05 and with beneficial is -0.00 respectively. The other correlation values of the effect with other keywords can be seen in the table.

REGRESSION: In Regression, we calculate the Model Summary, Anova, and Coefficients which is as follows

In Table 6 the dependant variable is sale. The R square is 0.464 and the value of R is 0.681. The value of Std. Error of Estimate is 0.756.

In ANOVA Table 7, the value of sum of squares for Regression is 39.515, residual is 45.725 and total is 85.240. The value of df for regression is 19, for residual is 80 and the total is 99, and the other values of Mean Square, F, Sig. is as shown in Table 7.

In Table 8, Coefficient of the values of B, Std. Error, Beta, t, Significance under the un-standardized coefficients and standardized coefficients are computed. The value of the standard error under the un-standardized coefficient is 0.117 for effect, 0.134 for online and other values are given in table. The values of beta are for effect 0.268, for online -0.113 and for attract 0.125 respectively. Remaining values are presented in the table.

5.2 Residual Table

In Table 9, the observed value for 1st respondent is 4.000; predicted value is 2.986001 and residual is 1.01400. For this, Std. Error is 0.286110 and the Mahalanobis Distance is 13.18883. For the 2nd respondent, the values for Residual and Mahalanobis Distance is 0.22077 and 25.28979 respectively. The other values for the predicted, observed, residual and Mahalanobis Distance are given in the table.

5.3 Chi-Square Test

The Chi-Square is significant at .050 and shows a positive significance.

In Tables 10 to 12, the Chi Square value and asymptotic significant value is shown. When the asymptotic significant value is less than 0.05 (<0.05), there is low variance, which means sample is a good sample and can be generalized for the whole universe. If the value of asymptotic significant is more than 0.05 (>0.05),

Table 1. Descriptive Statistics 1

	Statistics					
	Effect	Sale	Online	Attract	Time	Beneficial
Mean	4.03	3.74	3.94	3.66	3.86	4.09
Median	4.00	4.00	4.00	4.00	4.00	4.00
Mode	4	4	4	4	4	4
Std. Deviation	.797	.928	.722	.901	.876	.922
Variance	.635	.861	.522	.813	.768	.850
Skewness	-1.275	-1.003	-.730	-.535	-.364	-1.049
Std. Error of Skewness	.241	.241	.241	.241	.241	.241
Kurtosis	3.237	1.078	1.975	.340	-.115	.849
Std. Error of Kurtosis	.478	.478	.478	.478	.478	.478

Table 2. Descriptive Statistics 2

	Statistics					
	1st Out	Required	1st Result	Use	Satisfied	Never Go
Mean	3.62	3.31	3.41	3.37	3.26	2.83
Median	4.00	3.00	4.00	4.00	3.00	3.00
Mode	4	3	4	4	3	2
Std. Deviation	.951	.992	1.102	1.098	1.021	1.092
Variance	.905	.984	1.214	1.205	1.043	1.193
Skewness	-.388	-.027	-.506	-.409	.036	-.034
Std. Error of Skewness	.241	.241	.241	.241	.241	.241
Kurtosis	-.430	-.641	-.292	-.501	-.569	-.910
Std. Error of Kurtosis	.478	.478	.478	.478	.478	.478

Table 3. Descriptive Statistics 3

	Statistics					
	My Work	Adverse	Universal	Tool	Batter	Companies
Mean	3.93	3.17	3.55	3.89	3.06	3.41
Median	4.00	3.00	3.00	4.00	3.00	4.00
Mode	4	3	3	4	4	4
Std. Deviation	.756	1.055	.925	.815	1.081	1.065
Variance	.571	1.112	.856	.665	1.168	1.133
Skewness	-1.030	-.243	-.149	-.593	-.219	-.580
Std. Error of Skewness	.241	.241	.241	.241	.241	.241
Kurtosis	2.285	-.450	-.087	.127	-.828	-.249
Std. Error of Kurtosis	.478	.478	.478	.478	.478	.478

Table 4. Descriptive Statistics 4

	Statistics	
	Costly	Every SE
Mean	3.59	3.69
Median	4.00	4.00
Mode	4	4
Std. Deviation	1.016	.907
Variance	1.032	.822
Skewness	-.279	-.668
Std. Error of Skewness	.241	.241
Kurtosis	-.530	.451
Std. Error of Kurtosis	.478	.478

Table 5. Coefficient(s) of Correlation

Effect	Correlations																		
	Sale	Online	Attract	Time	Beneficial	1st Out	Required	1st Result	Use	Satisfied	Never Go	My Work	Adverse	Universal	Tool	Batter	Companies	Costly	Every SE
Effect	1.00	0.32	0.34	0.11	0.05	-0.00	0.02	0.08	-0.04	0.25	0.06	-0.12	-0.03	0.22	0.00	0.04	0.16	-0.10	0.14
sale	0.32	1.00	0.25	0.27	0.23	0.24	0.37	0.15	-0.10	0.29	0.10	-0.21	0.18	-0.02	0.13	0.15	0.21	0.03	0.07
online	0.34	0.25	1.00	0.36	0.29	0.22	0.20	0.11	0.02	0.28	0.01	-0.09	0.16	0.04	0.23	0.21	0.22	0.10	-0.02
attract	0.11	0.27	0.36	1.00	0.46	0.21	0.10	0.21	0.18	0.20	0.25	-0.01	0.28	-0.08	0.23	0.21	0.04	0.25	0.03
time	0.05	0.23	0.29	0.46	1.00	0.19	0.26	0.36	0.33	0.24	0.32	-0.17	0.14	0.07	0.20	0.19	0.24	0.25	-0.04
beneficial	-0.00	0.24	0.22	0.21	1.00	0.20	0.20	0.27	-0.11	-0.02	-0.11	-0.21	0.04	-0.08	-0.02	0.28	-0.06	0.04	0.03
1st out	0.02	0.37	0.20	0.10	0.26	1.00	0.38	0.38	0.24	0.13	0.12	-0.27	0.08	0.05	0.02	0.19	0.17	0.31	0.03
required	0.08	0.15	0.11	0.21	0.36	0.27	1.00	1.00	0.46	0.25	0.46	-0.23	0.22	0.08	0.12	0.29	0.04	0.28	0.12
1st result	-0.04	-0.10	0.02	0.18	0.33	-0.11	0.24	0.46	1.00	0.23	0.44	-0.03	0.16	0.17	0.16	0.06	0.20	0.34	0.03
use	0.25	0.29	0.28	0.20	0.24	-0.02	0.13	0.25	0.23	1.00	0.45	-0.14	0.10	0.06	0.34	0.12	0.36	0.08	-0.31
satisfied	0.06	0.10	0.01	0.25	0.32	-0.11	0.12	0.46	0.44	0.45	1.00	-0.11	0.29	0.08	0.24	0.16	0.21	0.11	-0.20
never go	-0.12	-0.21	-0.09	-0.01	-0.17	-0.21	-0.27	-0.23	-0.03	-0.14	-0.11	1.00	-0.00	0.13	0.07	-0.08	0.15	0.06	0.04
my work	-0.03	0.18	0.16	0.28	0.14	0.04	0.08	0.22	0.16	0.10	0.29	-0.00	1.00	0.03	0.21	0.20	0.08	0.15	-0.04
adverse	0.22	-0.02	0.04	-0.08	0.07	-0.08	0.05	0.08	0.17	0.06	0.08	0.13	0.03	1.00	-0.08	-0.00	-0.00	-0.01	0.22
universal	0.00	0.13	0.23	0.23	0.20	-0.02	0.02	0.12	0.16	0.34	0.24	0.07	0.21	-0.08	1.00	0.27	0.19	0.16	-0.20
tool	0.04	0.15	0.21	0.21	0.19	0.28	0.19	0.29	0.06	0.12	0.16	-0.08	0.20	-0.00	0.27	1.00	0.27	0.29	0.13
batter	0.16	0.21	0.22	0.04	-0.06	0.17	0.04	0.20	0.20	0.36	0.21	0.15	0.08	-0.00	0.19	0.27	1.00	0.35	-0.17
companies	0.16	0.26	0.10	0.25	0.04	0.31	0.28	0.34	0.34	0.08	0.11	0.06	0.15	-0.01	0.16	0.29	0.35	1.00	0.18
costly	-0.10	0.03	-0.02	0.03	-0.04	0.03	0.12	0.03	0.03	-0.31	-0.20	0.04	-0.04	0.22	-0.20	0.13	-0.17	0.18	1.00
every SE	0.14	0.07	0.11	0.08	0.06	-0.03	0.17	0.29	0.10	0.03	-0.03	0.09	0.23	0.41	0.06	0.28	0.11	0.35	0.42

Table 6. Regression (Model Summary)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.681 ^a	.464	.336	.756

a. Predictors: (Constant), every SE, use, beneficial, my work, never go, 1st result, Effect, universal, 1st out, attract, batter, adverse, tool, online, costly, time, companies, satisfied, required

b. Dependent Variable: sale

Table 7. Regression (Sum of Squares)

ANOVA ^b						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	39.515	19	2.080	3.639	.000 ^a
	Residual	45.725	80	.572		
	Total	85.240	99			

a. Predictors: (Constant), every SE, use, beneficial, my work, never go, 1st result, Effect, universal, 1st out, attract, batter, adverse, tool, online, costly, time, companies, satisfied, required

b. Dependent Variable: sale

Table 8. Regression Coefficients

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig
1 (Constant)	-.413	.950		-.434	.665
Effect	.312	.117	.268	2.677	.009
online	-.146	.134	-.113	-1.088	.280
attract	.129	.111	.125	1.161	.249
time	.062	.113	.059	.549	.584
beneficial	.139	.101	.138	1.372	.174
1st out	.323	.096	.331	3.364	.001
required	-.032	.117	-.034	-.272	.786
1st result	-.286	.092	-.340	-3.100	.003
use	.197	.092	.233	2.138	.036
satisfied	.002	.109	.002	.014	.989
never go	-.072	.082	-.085	-.879	.382
my work	.216	.115	.176	1.875	.064
adverse	.001	.092	.001	.014	.989
universal	.096	.097	.095	.983	.329
tool	-.118	.114	-.104	-1.030	.306
batter	.101	.092	.117	1.089	.280
companies	.131	.095	.150	1.372	.174
costly	.198	.095	.217	2.085	.040
every SE	-.152	.120	-.149	-1.265	.209

which means the data varies to a great extent and the result cannot be generalized to the whole universe.

In the table, the asymptotic value of all the variables is less than 0.050 which is significant. All the asymptotic values less than 0.05 can be generalized to the whole universe.

6. Conclusion

Search Engine Optimization affects the Advertisement and Sales to a great length. In the present era most people use search engines like Google, MSN, Altavista etc., for searching the prod-

uct or services and more than 90% people select the product from first page only and in that 90% more than 80% select the product or services from first three or four. The companies who are using the SEO for the purpose of advertisement are getting new customers than the companies using the other methods. After the application of Statistical Tools like Regression, Correlation and Chi Square, it shows that the objectives of the research is very much true and there is a visible effect of the SEO on the advertisement of companies and companies using SEO for the advertising are generating more revenue than the other companies.

Table 9. Predicted & Residual Values

Predicted & Residual Values (Dependent variable: sale)									
	Observed-Value	Predicted-Value	Residual	Standard-Pred. v.	Standard-Residual	Std. Err.-Pred.Val	Mahalanobis-Distance	Deleted-Residual	Cook's-Distance
1	4.000000	2.986001	1.01400	-1.19345	1.34124	0.286110	13.18883	1.18350	0.017549
2	4.000000	3.779233	0.22077	0.06210	0.29201	0.389514	25.28979	0.30055	0.002098
3	4.000000	3.825453	0.17455	0.13526	0.23088	0.387950	25.07918	0.23694	0.001293
4	4.000000	3.891959	0.10804	0.24053	0.14291	0.233641	8.46523	0.11945	0.000119
5	4.000000	3.954861	0.04514	0.34009	0.05971	0.324098	17.20401	0.05530	0.000049
6	4.000000	4.313696	-0.31370	0.90806	-0.41493	0.281599	12.74527	-0.36423	0.001610
7	4.000000	3.611043	0.38896	-0.20412	0.51448	0.330385	17.91676	0.48077	0.003862
8	4.000000	4.102071	-0.10207	0.57310	-0.13501	0.317375	16.45698	-0.12391	0.000237
9	4.000000	3.692870	0.30713	-0.07460	0.40625	0.323155	17.09832	0.37579	0.002257
10	4.000000	4.095999	-0.09600	0.56349	-0.12698	0.277556	12.35370	-0.11095	0.000145
11	4.000000	4.216836	-0.21684	0.75475	-0.28681	0.344140	19.52377	-0.27351	0.001356
12	4.000000	3.856295	0.14370	0.18408	0.19008	0.242253	9.17517	0.16015	0.000230
13	4.000000	3.736944	0.26306	-0.00484	0.34795	0.292505	13.82982	0.30937	0.001253
14	4.000000	3.782186	0.21781	0.06677	0.28811	0.289712	13.54812	0.25531	0.000837
15	5.000000	3.883566	1.11643	0.22724	1.47674	0.318032	16.52929	1.35648	0.028485
16	1.000000	2.835797	-1.83580	-1.43120	-2.42826	0.396818	26.28461	-2.53389	0.154742
17	3.000000	3.327909	-0.32791	-0.65227	-0.43373	0.269164	11.55897	-0.37551	0.001564
18	3.000000	3.401255	-0.40125	-0.53618	-0.53075	0.295608	14.14592	-0.47367	0.003001
19	3.000000	3.327909	-0.32791	-0.65227	-0.43373	0.269164	11.55897	-0.37551	0.001564
20	3.000000	3.211455	-0.21146	-0.83660	-0.27970	0.255521	10.31916	-0.23873	0.000570
21	4.000000	3.827423	0.17258	0.13838	0.22827	0.463242	36.17996	0.27632	0.002508
22	4.000000	3.570558	0.42944	-0.26820	0.56803	0.497067	41.80634	0.75644	0.021639
23	2.000000	3.143266	-1.14327	-0.94453	-1.51223	0.365745	22.18040	-1.49260	0.045614
24	4.000000	3.601052	0.39895	-0.21993	0.52770	0.364177	21.98205	0.51949	0.005478
25	4.000000	3.332361	0.66764	-0.64522	0.88310	0.321092	16.86814	0.81458	0.010471
26	5.000000	3.203320	1.79668	-0.84947	2.37652	0.452135	34.41885	2.79711	0.244797
27	4.000000	4.579547	-0.57955	1.32886	-0.76658	0.356400	21.01144	-0.74515	0.010795
28	4.000000	4.081192	-0.08119	0.54005	-0.10739	0.302256	14.83430	-0.09664	0.000131
29	5.000000	4.465205	0.53479	1.14788	0.70739	0.299859	14.58438	0.63463	0.005543
30	4.000000	3.723709	0.27629	-0.02579	0.36546	0.447304	33.66617	0.42510	0.005534
31	4.000000	3.228368	0.77163	-0.80983	1.02066	0.289686	13.54552	0.90442	0.010506
32	3.000000	3.824595	-0.82460	0.13390	-1.09072	0.227836	8.00123	-0.90697	0.006535
33	4.000000	3.275834	0.72417	-0.73470	0.95787	0.286080	13.18591	0.84519	0.008948
34	4.000000	2.873678	1.12632	-1.37124	1.48982	0.420189	29.59202	1.62978	0.071779
35	4.000000	4.120355	-0.12036	0.60204	-0.15920	0.230459	8.20951	-0.13268	0.000143
36	4.000000	3.524395	0.47561	-0.34127	0.62910	0.284378	13.01772	0.55399	0.003799
37	4.000000	3.540382	0.45962	-0.31596	0.60795	0.219718	7.37196	0.50202	0.001862
38	4.000000	4.164238	-0.16424	0.67150	-0.21724	0.229098	8.10116	-0.18085	0.000263
39	4.000000	3.601580	0.39842	-0.21910	0.52700	0.251951	10.00535	0.44820	0.001952

(Continued)

Table 9 (Continued)

Predicted & Residual Values (Dependent variable: sale)									
Observed-Value	Predicted-Value	Residual	Standard-Pred. v.	Standard-Residual	Std. Err.-Pred.Val	Mahalanobis-Distance	Deleted-Residual	Cook's-Distance	
40	4.000000	3.573061	0.42694	-0.26424	0.56472	0.277619	12.35977	0.49348	0.002873
41	4.000000	3.687076	0.31292	-0.08377	0.41391	0.249012	9.75026	0.35100	0.001169
42	4.000000	4.208575	-0.20858	0.74167	-0.27589	0.292635	13.84298	-0.24533	0.000789
43	3.000000	2.728685	0.27131	-1.60074	0.35888	0.278372	12.43227	0.31387	0.001168
44	3.000000	3.103707	-0.10371	-1.00714	-0.13718	0.356764	21.05641	-0.13342	0.000347
45	2.000000	2.757664	-0.75766	-1.55487	-1.00218	0.357558	21.15462	-0.97597	0.018639
46	3.000000	3.701080	-0.70108	-0.06160	-0.92734	0.299813	14.57960	-0.83191	0.009522
47	3.000000	3.549026	-0.54903	-0.30228	-0.72621	0.307927	15.43373	-0.65822	0.006288
48	3.000000	2.220750	0.77925	-2.40471	1.03074	0.420389	29.62115	1.12805	0.034420
49	2.000000	3.044649	-1.04465	-1.10062	-1.38179	0.266332	11.29630	-1.19266	0.015443
50	4.000000	3.127643	0.87236	-0.96926	1.15389	0.299329	14.52935	1.03453	0.014677
51	4.000000	3.623806	0.37619	-0.18391	0.49760	0.247868	9.65182	0.42150	0.001671
52	5.000000	4.274914	0.72509	0.84668	0.95909	0.276559	12.25800	0.83711	0.008203
53	4.000000	3.156606	0.84339	-0.92341	1.11558	0.342118	19.28347	1.06058	0.020151
54	4.000000	3.910798	0.08920	0.27034	0.11799	0.281018	12.68871	0.10350	0.000129
55	5.000000	4.151167	0.84883	0.65081	1.12277	0.321977	16.96664	1.03691	0.017060
56	4.000000	3.984692	0.01531	0.38731	0.02025	0.224425	7.73406	0.01679	0.000002
57	5.000000	4.612339	0.38766	1.38076	0.51277	0.375838	23.47678	0.51492	0.005732
58	4.000000	4.354314	-0.35431	0.97235	-0.46866	0.262500	10.94530	-0.40289	0.001712
59	5.000000	4.225537	0.77446	0.76852	1.02440	0.343111	19.40131	0.97536	0.017142
60	5.000000	4.781701	0.21830	1.64883	0.28875	0.378256	23.79261	0.29119	0.001857
61	4.000000	3.200598	0.79940	-0.85378	1.05739	0.537144	48.98554	1.61431	0.115082
62	4.000000	4.720212	-0.72021	1.55151	-0.95264	0.281797	12.76465	-0.83642	0.008503
63	5.000000	3.305665	1.69433	-0.68748	2.24114	0.252087	10.01723	1.90628	0.035345
64	4.000000	5.098418	-1.09842	2.15014	-1.45291	0.383509	24.48577	-1.47902	0.049243
65	4.000000	4.198076	-0.19808	0.72506	-0.26200	0.311751	15.84419	-0.23866	0.000847
66	5.000000	4.723824	0.27618	1.55723	0.36531	0.290888	13.66646	0.32417	0.001361
67	4.000000	4.289639	-0.28964	0.86999	-0.38311	0.303395	14.95381	-0.34524	0.001679
68	4.000000	4.201547	-0.20155	0.73055	-0.26659	0.436536	32.01770	-0.30236	0.002666
69	4.000000	4.289639	-0.28964	0.86999	-0.38311	0.303395	14.95381	-0.34524	0.001679
70	5.000000	4.692039	0.30796	1.50692	0.40735	0.347425	19.91726	0.39041	0.002816
71	5.000000	4.870285	0.12972	1.78905	0.17158	0.254422	10.22205	0.14628	0.000212
72	5.000000	4.682561	0.31744	1.49191	0.41988	0.211496	6.75783	0.34439	0.000812
73	4.000000	3.965199	0.03480	0.35645	0.04603	0.364213	21.98661	0.04532	0.000042
74	5.000000	5.028406	-0.02841	2.03933	-0.03757	0.333161	18.23583	-0.03525	0.000021
75	3.000000	4.107606	-1.10761	1.46586	-1.46506	0.377128	23.64501	-1.47453	0.047330
76	3.000000	3.156173	-0.15617	-0.92410	-0.20657	0.323089	17.09089	-0.19107	0.000583
77	3.000000	3.372952	-0.37295	-0.58097	-0.49331	0.407730	27.80527	-0.52592	0.007038
78	4.000000	3.778678	0.22132	0.06122	0.29275	0.262690	10.96260	0.25171	0.000669
79	2.000000	3.153658	-1.15366	-0.92808	-1.52598	0.289380	13.51488	-1.35170	0.023418
80	3.000000	2.423643	0.57636	-2.08357	0.76236	0.308487	15.49349	0.69149	0.006965
81	4.000000	4.409656	-0.40966	1.05995	-0.54186	0.433741	31.59640	-0.61066	0.010738
82	4.000000	4.852406	-0.85241	1.76075	-1.12750	0.326003	17.41851	-1.04711	0.017835
83	5.000000	4.329935	0.67006	0.93377	0.88631	0.297912	14.38271	0.79324	0.008547
84	4.000000	3.080402	0.91960	-1.04403	1.21638	0.242149	9.16640	1.02472	0.009424
85	3.000000	3.575515	-0.57551	-0.26035	-0.76125	0.345111	19.63977	-0.72701	0.009635
86	4.000000	3.964926	0.03507	0.35602	0.04639	0.296546	14.24209	0.04145	0.000023
87	4.000000	3.873413	0.12659	0.21117	0.16744	0.369519	22.66097	0.16632	0.000578
88	3.000000	4.094246	-1.09425	0.56071	-1.44739	0.359292	21.36996	-1.41349	0.039476
89	3.000000	3.294107	-0.29411	-0.70577	-0.38902	0.411554	28.34792	-0.41797	0.004529
90	4.000000	4.186670	-0.18667	0.70700	-0.24691	0.441510	32.77427	-0.28329	0.002394
91	5.000000	4.559784	0.44022	1.29758	0.58229	0.371008	22.85199	0.57986	0.007084
92	2.000000	2.801473	-0.80147	-1.48553	-1.06013	0.461983	35.97811	-1.27911	0.053447
93	2.000000	3.022961	-1.02296	-1.13495	-1.35310	0.416507	29.05842	-1.46876	0.057279
94	1.000000	2.064183	-1.06418	-2.65253	-1.40762	0.467178	36.81430	-1.72159	0.099010

(Continued)

Table 9 (Continued)

Predicted & Residual Values (Dependent variable: sale)									
	Observed-Value	Predicted-Value	Residual	Standard-Pred. v.	Standard-Residual	Std.Err.-Pred.Val	Mahalanobis-Distance	Deleted-Residual	Cook's-Distance
95	4.000000	3.454870	0.54513	-0.45131	0.72106	0.344335	19.54701	0.68781	0.008585
96	4.000000	4.496264	-0.49626	1.19704	-0.65642	0.473703	37.87767	-0.81703	0.022927
97	2.000000	2.997938	-0.99794	-1.17456	-1.32000	0.366912	22.32851	-1.30542	0.035114
98	1.000000	2.674382	-1.67438	-1.68669	-2.21475	0.381341	24.19853	-2.24577	0.112256
99	4.000000	3.451933	0.54807	-0.45596	0.72494	0.404174	27.30520	0.76740	0.014724
100	2.000000	3.263929	-1.26393	-0.75354	-1.67183	0.402211	27.03100	-1.76290	0.076951
Minimum	1.000000	2.064183	-1.83580	-2.65253	-2.42826	0.211496	6.75783	-2.53389	0.000002
Maximum	5.000000	5.098418	1.79668	2.15014	2.37652	0.537144	48.98554	2.79711	0.244797
Mean	3.740000	3.740000	-0.00000	-0.00000	-0.00000	0.330848	18.81000	-0.00796	0.017570
Median	4.000000	3.757811	0.06717	0.02819	0.08885	0.319562	16.69871	0.07940	0.005004

Table 10. Chi-square test 1

Test Statistics							
	Effect	Sale	Online	Attract	Time	Beneficial	1st out
Chi-Square	112.900 ^a	87.700 ^a	112.200 ^a	61.700 ^a	58.400 ^a	73.800 ^a	49.200 ^a
Df	4	4	4	4	4	4	4
Asymp. Sig.	.000	.000	.000	.000	.000	.000	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 20.0.

Table 11. Chi-square test 2

Test Statistics							
	Required	1st result	Use	Satisfied	Never go	My work	Adverse
Chi-Square	36.700 ^a	31.400 ^a	29.300 ^a	34.900 ^a	25.700 ^a	125.300 ^a	32.000 ^a
df	4	4	4	4	4	4	4
Asymp. Sig.	.000	.000	.000	.000	.000	.000	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 20.0.

Table 12. Chi-square test 3

Test Statistics						
	Universal	Tool	Batter	Companies	Costly	Every SE
Chi-Square	56.500 ^a	49.200 ^b	31.300 ^a	42.500 ^a	35.100 ^a	67.500 ^a
df	4	3	4	4	4	4
Asymp. Sig.	.000	.000	.000	.000	.000	.000

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