EFFECTS OF UNETHICAL MARKETING PRACTICES ON CONSUMER PURCHASES

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ABSTRACT

The research topic was based on unethical marketing practices on consumer purchases, and the empirical data were derived from 246 customers/respondents who patronized the three different filling stations. Texaco, Nacott, and Conoil in the research area using the specific objectives to ascertain if really marketers were involved in unethical marketing practices that provoke and add to customer’s dissatisfaction. The major findings of the research study showed that marketers (Fuel pump attendants) were seriously involved in compromising the volume or contents of fuel sold to customers, deceit and often pump air as fuel to unsuspected customers. When the only hypothesis that was formulated for the study was tested using chi-square ($\chi^2$) statistical tool, it confirmed the earlier findings to be positive i.e. H1 was accepted and Ho rejected. The findings are in line or agreement with the work of earlier scholars like Kotler and Keller (2009), Siham (2013) and Jones, et. al (1998) who all discussed the ills of unethical marketing practices in totality. In conclusion, it was recommended that fuel attendants should be a call to order, punish offenders, government agencies responsible for instilling control measures must –sit up to do their job and code of ethics in marketing must be encouraged in all the fuel selling centres or stations.

Keywords: Unethical Marketing, Customers, Fuel, Dissatisfaction, Marketers and Fuel Attendants.

1.0 INTRODUCTION

The end result in every manufacturing firm effort is to market the products to prospective buyers. Companies do not produce goods for the fond of production but to serve and fill a need using different outlets or marketing intermediaries. In the course of doing that marketers use all forms of strategies and practices to market their products, some which are ethical and others unethical. Hence ethical marketing may be conceptualized as beliefs pertaining to what is right or good in actual marketing practices. And further stress conformity to generally accepted social norms as regards to beneficial behaviour or actions in an exchange transaction and relationship. According to Creyer and Ross (1997), the level of the company’s ethical behaviour is an important consideration during purchase. Often attempts to sustain ethical marketing conducts are sometimes difficult due to conflict and disparity between individual value system and firm goals (Inyang 2000). The urge to make an excess profit to the detriment of professional ethics and consumer satisfaction is becoming overwhelming. Consequently, unethical marketing practices have been traced and reported in...
most functional fields of business, such as production, finance/account, administration, personnel, etc. Walker and Stanton (1975) observed that marketers are responsible to a variety of groups, namely; customers who depend on them for need satisfaction, employers with sales and profit expectations, suppliers and distributors anticipating continuity of business relationship and the general public who expects them to do business with all amount of sincerity. The divergent interests of these groups create a wide variety of ethical marketing challenges for marketers. As earlier said most unethical marketing practices are perpetuated by businesses and groups for the purpose of profit maximization to the detriment of suspected or unsuspected customers or buyers. There are situations were canvassers face the dilemma of making a choice between disclosing the truth about the product to customers and risk losing the sale, or mislead the customers to clinch the sales. In most cases, the second option is preferred from the unscrupulous marketer’s perspectives and at the end of the sale, the customer or buyers remains dissatisfied. Thus unethical marketing often sends wrong signals about the company’s products or services, and destroy the company’s brand reputation which may further result in legal actions. This, of course, explains why companies should avoid such acts as a plague.

Kotler and Keller (2009) observed that prior studies have revealed many incidences of unethical marketing practices in marketing research, selling, advertising, product and promotion. Thus, the widespread of unethical marketing practices by marketing practitioners as a means of achieving reasonable sales and profit in order to cope within the harsh business environment demands urgent attention (Nwodo, et.al, 2017). In marketing parlance, each of the four (Ps) raises ethical marketing questions as articulated by (Babbic, 1986). Who is responsible for harms caused by products? Who suffers the loss of the compromised volume of products? Does the buyer or consumer demand decide what is to be produced? Bartels, (1968) described the unethical behaviour amongst marketers to include; adulteration of products exaggerated and misleading advertisements, hoarding, predatory pricing, etc have, their foundation on the undue desire to make huge/abnormal profits, all these are to the detriment of customers. The remaining part of the study includes; specific objectives, research questions and hypothesis, review of related literature, the methodology of the study, others are data analysis and discussion, the test of hypothesis, summary and conclusion, recommendation, and suggestion for further research.

2.0 SPECIFIC OBJECTIVES OF THE STUDY

While assessing the effect of unethical marketing practices on consumers purchase, the specific objectives were formulated thus;

1. To ascertain if really marketers often involve in unethical marketing practices that make customers dissatisfied.
2. To also ascertain if air is served as fuel in pretence.
3. To confirm if marketers were really deceptive in their actions.

2.1 RESEARCH QUESTIONS

1. Do marketers of petrol in filling stations often compromised the content or volume of the product to unsuspected customers?
2. Do you experience situations where the air is pump into vehicles in pretence for fuel?
3. Do fuel pump attendants deliberately deceive unsuspected customers?
2.3 RESEARCH HYPOTHESIS

The research hypothesis encapsulates the first two research questions above while the third research question was only analyzed quantitatively. Thus;

Ho: Marketers of Petrol product do not often engage in unethical marketing practices that give consumers dissatisfaction.
H1: Marketers of petrol product often engage in unethical marketing practices that give consumers dissatisfaction.

3.0 REVIEW OF RELATED LITERATURE

Based on the current trend businesses are often under attack because most business Organizations activities pose tough ethical dilemmas. Therefore at the heart of marketing ethics are decisions that marketing practitioners make regarding ethical marketing practices and compulsorily try as much as possible to discourage unethical marketing practices, especially were litigation is prevalent. Also, ethical questions most often arise in marketing when a stakeholder group or particular segment of the consumers feels that the actions, taken by marketers are judged morally inappropriate (Kotler, 2003).

In most circumstances, if marketing practices depart from standards that society consider acceptable the entire market process becomes less efficient as a result of the gross misdemeanour. Often companies and marketers that engage in unethical marketing practices experienced dissatisfied responses from their consumers, unacceptable public image, lack of trust, lost of reasonable market share and the tendency to face legal action or litigation. Thus, contemporary firms in developed countries are more sensitive to the needs and opinions of their customers and create all possible avenues to maintain a long-lasting exchange relationship in every transaction they engage. Consequently, the activities of firms have been subjected to both state and federal regulations designed to protect consumer rights and stimulate the growth of satisfactory business amongst consumers and sellers (Siham, 2013). Furthermore, major corporations increasingly fear the damage to their image associated with press revelations of unethical marketing practices, especially in developed countries. Gurus in the marketing profession have resolved that marketing practices are deceptive only if customers hold the notion that they will get more value from products or services than they actually received, and some of these deceptive behaviors range from compromised volume of pump fuel products, deliberate pumping of air as fuel, omission and misleading practice to mention but a few (Siham 2013).

It is important to note that consumers are exposed to a great deal of information about products and firms. Which often result to their Skepticism of marketing claims and selling techniques, these situations more or less than not lead customers to the next level of cogitation and the likely decision on their tentative scale of unsatisfied wants.

If we decide to move a step further to more stringent areas of unethical marketing dealings, surfaces in pricing practices perpetrated on customers as a result of smartness of marketers-so it is. Their attitudes make customers believe that the price they pay for some units of value in a product or service is lower than its real price. Which range from false price comparisons, misleading suggested selling prices, omitting important condition of sales, etc. In conclusion, some promotional practices are equally unethical marketing by virtue of their deceptive nature and premised on sellers’ or marketers’ intentional miss-stating a products’ performance or failure to disclose information regarding pyramid sales i.e. sales techniques.
which individuals are recruited into a plan and then expect to generate more money by recruiting other individuals. In order circumstances, firms may employ bait and switch selling techniques which include firms selling products or services at lower prices in order to increase market shares and eventually induced customers to purchase more expensive products. Equally false and greatly exaggerated products or services claims are regarded unethical marketing behavior from firms, which customers sometimes unknowingly contain with. The more reason consumers are perceived as innocent souls with little or no knowledge of the expected outcome of their purchases. The practices that are critically and unreasonably manipulating consumers buying behavior are prevalent. Most often petrol station dealers at will and quite daringly overlook the ethical standard and put behind the obligations to deliver to the society rather than taking the undue advantage and increasing their profit ratio by sacrificing the free will of customers. From their perspectives to see nothing wrong with their actions, hence they appear to be well justified for making smart sales at the expense of unsuspected buyers, Practices like pumping air as fuel or petrol to customers compromised the content of petroleum product in some filling stations, refusing to disclose vital information regarding market conditions, creating unnecessary needs are unappealing and place consumers in precarious situation. The moment consumers realized they are being manipulated using unethical marketing antics, there is every tendency that such companies will lose reasonable market share and profitability, talk less of repeat purchases. Jones, et.al (1998) made us understand that marketers’ actions that are illegal or morally unacceptable to a larger community are unethical marketing practices, such frequency of complaints by consumers, negative words of mouth, etc, meant a lot.

3.1 Ethical marketing covers the following framework:

- Values Oriented Framework: This may be used to analyze unethical marketing practiced based on the values it infringes and the dissatisfaction created by the company to the consumer or customer
- Stakeholders Oriented Framework: This also may be used to analyzed unethical marketing practices based on who suffers the unfair treatment, such as consumers, employees, society, Competitors, etc
- Process Oriented Framework: This framework is more focused on practitioners in marketing, it borders on analyzing unethical marketing practices based on the weapon used by marketers to manipulate purchase decisions from consumers. Could it be through distribution outlets, production price weapon, promotion strategy, etc?

3.2 Source of Unethical Marketing Conduct

It is interesting to note that the most challenging ethical issues in most organization, companies and businesses is how to develop and sustain consistent ethical marketing practices by the actors.
This of course gave Cooke (1991) the impetus to indentify some factors and sources responsible for unethical practices amongst businesses and marketers. They include;

- Excessive emphasis on short term revenue over long term benefits.
- The unwillingness to take an ethical standard that may impose financial cost.
- Refusal to establish a written ethical marketing code.
- Presume that ethical practices are more or less use for legal issues or public relation tool.
- Lack of clear procedures for handling ethical problems.
- Responding to the demands of shareholders at the expense of other considerations.

The fact remains that it has been enshrined by law that consumers should be protected from questionable products that are hazardous, protected against fraudulent deceitful attitude or grossly misleading information or other practices, to have access to a variety of products satisfactory quality and to be assured that consumers interest will be given full and sympathetic consideration in the formulation of policies (Adebayo, 1980). For example, in Pakistan, deceptive marketing practices are prohibited by the competition ordinance of 2009. Section 10 of the ordinance states “no undertaking shall enter into deceptive marketing practices.

4.0 ETHICAL VALUES IN MARKETING

The under listed are few marketing ethics expected of practitioners and the entire business community.

- Honest: It is envisaged that marketers be forth right in their business dealings and offer values and integrity.
- Fairness: Try to balance customers or buyer needs and seller interest fairly in order to avoid manipulation in all forms while protecting the customer’s end result satisfaction.
- Transparency: Marketers and businesses must create a spirit of openness in the practices of marketing.
- Respect: Practitioners should acknowledge basic human dignity of all the people involved in an exchange transaction, through efforts to communicate, understand and meet needs and appreciate contributions of each others.
- Responsibility: Accept consequences of marketing practices and serve the needs of customers of all types and consider environmental protection as an integral part of the firm or business responsibility.
- Citizenship: It is important to fulfill all legal, economic, philanthropic and societal responsibility to all stakeholders.

Furthermore, Douglas, (2012) in his quest to solve the problem of unethical marketing came up with seven preventive measures to curb the unwholesome practices by businesses and marketers.

1. Create Policies and Practices. Organizations must research, develop and document policies and processes around defining, identifying and reporting ethics violations. These policies should be articulated in the employee handbook and protections should be put in place for those who raise ethical issues. However, having a policy is not enough. You must practice what you preach.
2. Hire Right. Selecting quality people from day one can make a huge difference in the ethics of the organization. This may help curb unethical behaviour in marketing.
3. Develop People’s Understanding. Most Human Resource Professionals will tell you that training people to act “ethically” will not have much of an impact, but developing a process for reporting ethics violation and building staff understanding about ethics expectations is important.

4. Incent the Right Things. Some in the education community are asking “do states and school districts incent people to cheat or act unethically by giving more weight to certain measures over others” of course schools and states will not support unethical behaviour both in business and otherwise.

5. Put Controls in Place. Risk management professionals will tell you that even with all the proper policies and processes in place and a staff that understand them; it is also wise to perform regular audits to help reduce opportunities to act unethically. Incent individuals who may act unethically to reconsider, help catch issues that have occurred by accident and mitigate risk all around.

6. Build a Culture of Transparency, Openness and Communication. Cultural management work is difficult. To ensure true success when it comes to organization ethics, people must see and hear what is going on as well as feel comfortable to stand up and speak out if they see something occur that is not right.

7. Leadership Must Walk and Talk. Leaders can talk about the importance of policies and processes, incentives, communication and openness all day, but if they turn around and act unethically, it can be like throwing a large stone into the pond of ethics tranquillity. It doesn’t take long for staff at all levels of an organization to recognize a leader who talks the talk but doesn’t walk the walk when it comes to ethics. This can breed suspicious and destroy trust.

4.1 Methodology of the Study

Considering the study, the researcher taught it important to select the sample size based on reflecting the characteristics of interest following a holistic perspective and the main objectives of the study. The most appropriate formula that was adopted for the study was Topman, thus

\[ n = \frac{Z^2 \cdot P \times Q}{E^2} \]

Where

- \( n \) = sample size;
- \( Z = 1.96 \)
- \( P \) = Probability of positive response;
- \( Q \) = Probability of negative response
- \( E = 0.05 \), which represent amount of error that can allowed.

Anyanwu (2000) noted that sample size is only determined based on the circumstances and convenience, while taking into consideration time, cost, and precision .therefore using inferential judgment and convenience, \( P \) is represented as 80%

Quantitatively it will be

\[ n = \frac{(1.96^2) \times 0.80 \times 0.20}{0.05^2} \]

\[ n = \frac{0.614656}{0.0025} = 245.9 \]

The result can be approximated as 246, which represent the sample size. Furthermore, the researcher developed questions and answers in the form designed by Likert in questionnaire
and administered to 246 customers of three (3) different filling stations in Ogoja, Cross River state, Nigeria. All the questionnaires were answered and returned according to expectations. The model specification for the test of hypothesis formulated was chi-square ($x^2$) which is represented as $x^2 = \frac{(O - E)^2}{E}$

Figure 1: Conceptual Framework of the Study, Developed by the researcher, 2017
Where S, represent sample size for individual filling stations customers, TCPS represent the total customers purchases that were used as primary data for the purposes of the study. Broken lines represent unwillingness to buy from the three filling stations.

4.2 Data Analysis and Discussion
Table 1: Distribution According to Customers in the three Filling Stations

<table>
<thead>
<tr>
<th>Filling Stations</th>
<th>No. of Questionnaire</th>
<th>% of Questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texaco</td>
<td>90</td>
<td>36.58</td>
</tr>
<tr>
<td>Nacott</td>
<td>80</td>
<td>32.5</td>
</tr>
<tr>
<td>Conoil</td>
<td>76</td>
<td>30.90</td>
</tr>
<tr>
<td>Total</td>
<td>246</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Field Survey 2017

In Table 1 above it was discovered that Texaco filling station had 90 (36.6%) respondents who also represent customers that bought fuel on the experimented day. Nacott filling station had 80 (32.5%) customers who gave their responses within the stipulated hours, while the remaining 76 (30.9%) were from conoil filling station. The analysis given clearly depicts that the customers almost had a balance of patronage amongst the three filling stations. The small difference in patronage is inconsequential. It further showed that they had similar experiences while being sold the product (petrol).

Table 2: Distribution According to Characteristics of Customers

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Texaco customers</th>
<th>Nacott customers</th>
<th>Conoil customers</th>
<th>Total No: of respondents</th>
<th>% of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial</td>
<td>35</td>
<td>30</td>
<td>40</td>
<td>105</td>
<td>42.7</td>
</tr>
<tr>
<td>Private cars</td>
<td>25</td>
<td>24</td>
<td>26</td>
<td>75</td>
<td>30.5</td>
</tr>
<tr>
<td>Motor Cycles</td>
<td>20</td>
<td>23</td>
<td>0</td>
<td>43</td>
<td>17.5</td>
</tr>
<tr>
<td>Others</td>
<td>10</td>
<td>3</td>
<td>10</td>
<td>23</td>
<td>9.3</td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
<td>80</td>
<td>76</td>
<td>246</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Field Survey 2017

The characteristics distribution of respondents showed that 105 (42.7%) respondents were commercial vehicles owners/drivers. Private owners of vehicles were 75 (30.5%) respondents; while motor cycle users of fuel were 43 (17.5%) respondents. 23 (9.3%) respondents were categorized as other users of fuel in the three (3) different filling stations. The result above indicated that majority of petrol users in the different filling stations were commercial vehicles users, followed by private vehicles owners. These two major groups of consumer classification must have formed habitual consumption pattern, since the product must be purchased to enable the vehicles move from one point to another. Hence they were able to notice some of the unethical marketing practices that were often melted on them. This of course affects the performance level of the vehicles in terms of break-even and cause dissatisfaction to the buyers. This situation also increased the number of complaints received on a routine basis.

Table 3: Fuel/Petrol Attendant Deliberately Deceive Unsuspected Customers

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Responses in Table 3 clearly indicated that majority of the respondents, 210 (85.4%) that is the combination of strongly agreed and agreed responses/customers in the three filling stations confirmed the research question to be true. The undecided respondents/customers were 4 (1.6%) and 32 (13%) respondents/customers who also buy petrol in the aforementioned filling stations claimed that the research question was not true. The above result depicts and substantiates the fact that most fuel pump attendants use deceptive marketing strategy to market their products to unsuspected customers. This could be in the form of allowing the meter readings of earlier sales made and include such meter sales to the next customer making a purchase of the product. It would have been more ethical for the attendant or marketer of the product to wipe the readings on the meter and, start afresh to ascertain the true quantity or volume of fuel that is sold to the next customer. The result and finding as mentioned above is in line with the work of Siham (2013) that anchored on deceptive marketing practices; such as shortage in the number of products, reduced quality of products and making customers believe what is not correct or true.

Table 4: Unethical Marketing Practices Perpetrated on Consumers by Petrol Dealers in Filling Stations

<table>
<thead>
<tr>
<th>Filling Stations Compromised content/volume Deliberate Pumping of air as fuel. Responses</th>
<th>Texaco customers</th>
<th>Nacott customers</th>
<th>Conoil customers</th>
<th>Total No: of respondents</th>
<th>% of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agreed</td>
<td>40</td>
<td>30</td>
<td>46</td>
<td>116</td>
<td>47.2</td>
</tr>
<tr>
<td>Agreed</td>
<td>30</td>
<td>20</td>
<td>20</td>
<td>70</td>
<td>28.5</td>
</tr>
<tr>
<td>Undecided</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>7</td>
<td>2.8</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2017
Table 4 was specifically concerned with questions based on the phenomenon or core of the study. The result indicated that majority of the respondents/customers, 186 representing 75.7% affirmed that the unethical marketing practices being perpetrated on customers ranges from compromised content/volume of petrol to deliberate pumping of air to customers by pump fuel attendants in pretence to be supplying fuel to unsuspected buyers in order to make extra gains. Seven respondents/customers, representing 2.8% were not really sure of their position, hence they were undecided. The remaining response rate came from 53 customers, also representing 21.5% who did not accept the fact that marketers compromised the content of their product as well as the negative attitude of pumping air as petrol products to customers.

The result above gave credence to Inyang (2000) work on why it is difficult to sustain ethical marketing, due to conflict and disparity between individual value system and firm goals. It also substantiate and agreed with Kotler and Keller (2009) earlier work on some of the unethical marketing practices perpetrated by firms to customers. Jones, et.al (1998) equally made their contributions, that actions that are illegal or morally unacceptable to customers are unethical marketing practices.

4.3 Test of Hypothesis

The hypothesis is stated both in the null (Ho) and alternative (H1) form.

Ho: Marketers of Petrol product do not often engage in unethical marketing practices that gives consumers dissatisfaction.

H1: Marketers of petrol product often engage in unethical marketing practices that gives consumers dissatisfaction.

### Table 5: Computation of $X^2$ Value Using Data from Table 4

<table>
<thead>
<tr>
<th></th>
<th>O</th>
<th>E</th>
<th>O-E</th>
<th>(O-E)$^2$</th>
<th>$(O-E)^2/E$</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>42.4</td>
<td>-2.4</td>
<td>5.8</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>25.6</td>
<td>4.4</td>
<td>19.4</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2.6</td>
<td>2.4</td>
<td>5.8</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>-1</td>
<td>1</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>12.4</td>
<td>-3.4</td>
<td>11.6</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>37.7</td>
<td>-7.7</td>
<td>59.3</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>22.8</td>
<td>-2.8</td>
<td>7.8</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2.3</td>
<td>-0.3</td>
<td>0.1</td>
<td>0.0</td>
<td></td>
</tr>
</tbody>
</table>
### Source: Research's Calculation of $X^2$ Value, 2017

\[
DF = (R - 1) \times (C - 1) \rightarrow (\text{Rows} - 1) \times (\text{Columns} - 1)
\]

\[
DF = (5 - 1) \times (3 - 1) = 4 \times 2 = 8 \text{ at } 0.05 \text{ level of significance.}
\]

Decision: The calculated value 21.8 is greater than the critical table value 15.5, which implies the rejection of $H_0$ and the acceptance of $H_1$. This invariably sufficed to say that marketers of petrol often engaged in unethical marketing practices such as compromised content/volume of the product and deliberate pumping of air to serve as fuel or petrol to prospective customers in their vehicles, which often result to dissatisfied customers.

### 5.0 SUMMARY AND CONCLUSION

The study was carried out in three servicing filling stations in Ogoja, Cross River State of Nigeria. The respondents/customers who were distributed questionnaires attended to all issues raised. These customers include commercial vehicles operators, private car owners, motorcycle riders, and other users. But the majority were commercial vehicle users. The major discovery of the study was more or less centred on the unethical marketing practices of all the three fuel selling companies that were used to solicit responses based on phenomenon data. The rate of deceit amongst the marketers seeking customers patronage was equally on the increase. When the only hypothesis of the study was tested it was confirmed that marketers of petroleum products were frequently involved in unethical marketing manners that provoke and add to customers dissatisfactions. And sometimes unsuspected customers are deceived using unpredicted marketing gimmicks. In conclusion, petrol dealers in filling stations should Endeavour to inculcate and imbibe ethical marketing behaviour in their marketing policies to reduce the currently experienced unwelcome practices customers and buyers of the products are suffering.

### 5.1 Recommendations

1. As a matter of urgency the three filling stations must call their employees (fuel attendants) to order and discourage the bad attitudes.
2. Companies (filling stations) must put in place punitive measures for every offender in order to correct all abnormalities melted on buyers or customers to avoid future occurrences.
3. Government agencies saddled with the responsibilities of controlling the activities and excesses of petrol dealers and marketers must rise up to the occasion and make sure offenders are brought to book according to the specification of the law.
4. Print and paste code of ethics that guide marketing operations of the stations or centers and all and sundry should be acquainted with the development to ensure total compliance.

6.0 SUGGESTION FOR FURTHER RESEARCH

The empirical evidence of the concluded study was derived from a very small sample size. Further researchers are encouraged to explore a broader spectrum, both in scope and empirical validation.

7.0 REFERENCES


Table 6: Computation of Expected Frequency $E = \frac{TR \times TC}{GT}$

<table>
<thead>
<tr>
<th></th>
<th>Texaco</th>
<th>Nacott</th>
<th>Conoil</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 x 116</td>
<td>42.4</td>
<td>80 x 116 37.3</td>
<td>76 x 116 35.8</td>
</tr>
<tr>
<td>90 x 70</td>
<td>25.6</td>
<td>80 x 70 22.8</td>
<td>76 x 70 21.6</td>
</tr>
<tr>
<td>90 x 7</td>
<td>2.6</td>
<td>80 x 7 2.3</td>
<td>76 x 7 2.2</td>
</tr>
<tr>
<td>90 x 19</td>
<td>7</td>
<td>80 x 19 6.2</td>
<td>76 x 19 5.9</td>
</tr>
<tr>
<td>90 x 34</td>
<td>12.4</td>
<td>80 x 34 11.1</td>
<td>76 x 34 10.5</td>
</tr>
</tbody>
</table>

Source: Researcher's Calculation, 2017

Table 7: Operational Computation of $X^2$ Value $[X^2 (0-E)^2\over E]$ 

<table>
<thead>
<tr>
<th></th>
<th>Taxaco</th>
<th>Nacott</th>
<th>Conoil</th>
</tr>
</thead>
<tbody>
<tr>
<td>(40 – 42.4)^2 = 0.1</td>
<td>(30 –37.7)^2 = 1.6</td>
<td>(46 –35.8)^2 =2.9</td>
<td></td>
</tr>
</tbody>
</table>
\[
\begin{array}{ccc}
\frac{(30 - 25.6)^2}{25.6} = 0.8 & \frac{(20 - 22.8)^2}{22.8} = 0.3 & \frac{(20 - 21.6)^2}{21.6} = 0.1 \\
\frac{(5 - 2.6)^2}{2.6} = 2.2 & \frac{(2 - 2.3)^2}{2.3} = 0.0 & \frac{(0 - 2.2)^2}{2.2} = 2.2 \\
\frac{(6 - 7)^2}{7} = 0.1 & \frac{(8 - 6.2)^2}{6.2} = 0.5 & \frac{(5 - 5.9)^2}{5.9} = 0.1 \\
\frac{(9 - 12.4)^2}{12.4} = 0.9 & \frac{(20 - 11.1)^2}{11.1} = 7.1 & \frac{(5 - 10.5)^2}{10.5} = 2.9 \\
\end{array}
\]

Source: Researcher’s Calculation, 2017