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INTRODUCTION

REVIEW OF LITERATURE

NEED/IMPORTANCE OF THE STUDY

STATEMENT OF THE PROBLEM

OBJECTIVES

HYPOTHESES

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

CONCLUSIONS

SCOPE FOR FURTHER RESEARCH

ACKNOWLEDGMENTS

REFERENCES

APPENDIX/ANNEXURE

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- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.
- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio," Ohio State University.

CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

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- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

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WEBSITE

- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on December 17, 2011 http://epw.in/user/viewabstract.jsp

ROUGH SET THEORY IN ANALYSING THE CONSUMER AWARENESS ABOUT FACE WASH PRODUCTS IN CHENNAI CITY

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ABSTRACT

One of our daily chores in the morning is washing our face. There are many face washes in the market of which some are herbal and would be very useful to safeguard you from any side effects. Face wash is an important part of facial care and could easily see the benefits if one should do it regularly. Many studies proved that the consumers have become more demanding and the knowledge about the products used by them is very high. Under this pretext an attempt was made by this study to know the consumers' expectation about the face wash products. A new mathematical tool, Rough Set Theory (RST), is used to analyse the data collected from the women respondents in Chennai city. Unlike other tools used for data mining, RST analyse the data and predicts the various patterns in the form of decision rules. Decision rules are used by the managers to understand the data pattern, as well as, customers' expectations about the face wash. ROSE2 is the software used for pruning the attributes and to generate the decision rules based on the data. In the out come the study, it was observed that 'Middle Income' group of Chennai city respondents feels that 'Natural Ingredients', 'Feel Fresh' and 'Brand Name' are important attributes in selecting a good face wash.

KEYWORDS
Consumer Expectation, Face Wash, ROSE2, Rough Set Theory.

INTRODUCTION
Customers are value maximisers. They form an expectation of value and act on it. Now a days customers eagerness to know about the products they use as increased many folds. In the last few years, it is not only the urban consumers who wants to know about the products they use but also the rural consumers' awareness about the products they use have increased. As the awareness of the consumers increases it has become more difficult for the firm managers to understand and meet their expectations. Likewise customer awareness, change in customer expectations also grows day by day. Customers are more demanding and meeting their expectation is a real challenge for the firms.

IMPORTANCE OF FACE WASH
Face speaks volumes about one's self image and a well looked after face can attract attention and build self confidence in a person. Therefore, cleansing your face properly is basic to a good body care routine. It is a daily routine chore for all of us to wash our face first thing in the morning. Face wash helps in clearing away all the dust particles as well as by the moisturizer in the face wash helps in keeping the skin smooth and supple. With the use of your face wash you could also do many other things which would help in keeping you fresh all time. Have a regular clean up which would help in lessening your black heads and white heads. Use morning cream after your bath to keep your skin tender. The use of sun screen is a must and should be applied everyday, even when you are at home. Just take necessary care according to the weather and your skin would be beautiful as always. With the increasing awareness on personality conscious, there are many face washes which has come into the market which would suit according to your skin texture. It not only give a face lift to ones personality but also helps in fighting the harshness provided by the sun and many other chemical pollutants which causes damage to our skin. Wrong selection of face wash may lead to skin allergies. A cleanser or face wash is a facial care product that is used to remove make-up, dead skin of the face. This helps to unclog pores and prevent skin conditions such as acne. Using a cleanser to remove dirt is considered to be a better alternative to bar soaps. Considering the market potential of skin care products, especially face wash market share, an attempt is made to study the current trend in the expectations and general awareness of the face wash users.

INTRODUCTION TO ROUGH SET THEORY
Rough Set Theory (RST) can be approached as an extension of the Classical Set Theory, for use when representing incomplete knowledge. Rough Set Theory represents a different mathematical approach to vagueness and uncertainty. Definition of a set in the rough set theory is related to our information (knowledge about the domain) and perception about elements of the universe.

The rough set methodology is based on the premise that lowering the degree of precision in the data makes the data pattern more visible, whereas the central premise of the rough set philosophy is that the knowledge consists in the ability of classification.(R.Slowinski ,1992)[11] . In other words, the rough set approach can be considered as a formal framework for discovering facts from imperfect data. (Massart et al)[11].

Rough set theory has an overlap with many other theories dealing with imperfect knowledge, e.g., evidence theory, fuzzy sets, Bayesian inference and others. Nevertheless, the theory can be regarded as an independent, complementary - not competing discipline, in its own rights.

The main objective of this study is to explore the feasibility of applying the Rough Set Theory (RST) approach in understanding the consumer awareness and their expectations in face wash or cleanser usage. The result of this study can be helpful as a guiding tool for the marketing and sales managers in understanding their customers' expectations and to serve them better.

This research paper is organised as follows: section 2 reviews about the available literatures on face wash and about importance of Rough Set Theory (RST). In section 3, the mathematical model applied in the study is briefly explained with illustration. Study methodology is discussed in section 4. Study review and discussion is covered in the section 5. Conclusion is section 6.

LITERATURE REVIEW
Data mining is widely used in many researches, and various soft computing methodologies have been applied to handle different challenges posed by the data mining. Current researches find conventional data mining methods still have weak points. Those methods, as per Shinya Imai et al,2008 [8], focus on discovering algorithm and visualizing techniques. But through data mining it is easy to find out a huge number of patterns in a database, where most of these patterns are actually useless or uninteresting to the user.

Rough set theory can be regarded as a new mathematical tool for imperfect data analysis. The theory has found applications in many domains, such as Decision Support, Engineering, Environment, Banking, Medicine and others. Pawlak, 2002 [3].

Rough set theory (RST), proposed by Zdzislaw Pawlak in 1982 to analyse the classification of uncertain or incomplete data, has a number of advantages. The RST is suitable for identifying relationships that might not be found using statistical methods.

This approach seems to be of fundamental importance to artificial intelligence and cognitive sciences, especially in the areas of machine learning, knowledge acquisition, decision analysis, decision support systems, inductive reasoning and knowledge discovery from databases, expert systems and pattern recognition (Pawlak & Slowinski, 1994)[4]. The Advantages of rough set theory is that it does not need any preliminary or additional information about data, such as probability distribution in statistics, basic probability assignment in the Dempster-Shafer theory, or grade of membership or the value of possibility in fuzzy set theory.

In real time studies, it is possible that inconsistency, defined by objects with the same conditional attribute values yet have opposite consequences (decision), exists.(Tung-Kuang Wu; et al 2011) [10]. Rough Set Theory can deal with inexact, uncertain, and vague datasets (Walczak & Massart, 1999) [11].

Both Fuzzy Set Theory and Rough Set Theory are used with the indiscernibility relation and perceptible knowledge. The major difference between them is that Rough Set Theory can avoid pre-assumption and one-sided information analysis. The rough sets theory is of fundamental importance in artificial intelligence (AI) and cognitive science, especially in the areas of machine learning, knowledge acquisition, and decision analysis, knowledge discovery inductive reasoning, and pattern recognition in databases, expert systems, decision support systems, Shinya Imai et al [8]. The RST is a model of approximate reasoning, which can be used to manage vague and uncertain data or problems related to information systems, indiscernibility relations and classification, attribute dependence and approximation accuracy, reduct and core attribute sets, and decision rules.

A special cleanser or face wash meant for face should be used for regular face wash in place of normal soap. A study by, Sauermann et al,1986 [6], identified that the constant use of normal soaps as face wash leads to increase in permeability of skin as does the maintenance of both alkaline and strongly acid pH values at the skin surface. Therefore the assumption seems quite logical that the irritation potential of soap solutions applied in excess to the skin surface causes more damage to the skin.

A literature by Ejere et al 2009 [1], about the growth in awareness and importance of using face wash concludes that "We note with interest that the percentage of participants with clean faces increased in both intervention and control groups over 12 months, even though the increase was higher in the intervention group. However, a statistically significant difference in the percentage of clean faces between the intervention and control groups at 12 months suggests a benefit of face washing using face wash products.

To prove that better face look will improve ones self confidence, a study by Seyed Reza Mousavi 2010,[7] reveals that, to improve the compensation for fat atrophy and making the face look young, improves the mental and emotional conditions of patients. Though not many studies were available about the consumer expectations on face wash and in particular to Chennai city, an attempt was made to study about the awareness and expectations of the face wash users in Chennai.

OVERVIEW OF THE ROUGH SET THEORY

Rough Set Theory is a mathematical approach to manage vague and uncertain data or problems related to information systems, indiscernibility relations and classification attribute dependence. Rough set philosophy is founded on the assumption that with every object of the universe of discourse some information (data, knowledge) is associated. Objects characterized by the same information are indiscernible (similar) in view of the available information about them. The indiscernibility relation generated in this way is the mathematical basis of rough set theory Pawlak, 2002 [3]. The goal of Rough set is to enumerate good attribute subsets that have high dependence, discriminating index and significance.

BASIC DEFINITIONS

ELEMENTARY SET

Any set of all indiscernible (similar) objects is called an **elementary set**, and forms a basic granule (atom) of knowledge about the universe.

CRISP AND ROUGH SET

Any union of some elementary set is referred to as a **crisp set** (also called as precise set. Otherwise, the set is **rough set** (imprecise or vague set).

Each rough set has boundary-line cases, i.e., objects which cannot be certainly classified as crisp set, by employing the available knowledge, as members of the set or its complement. Hence rough sets, in contrast to precise sets, cannot be characterized in terms of information about their elements.

APPROXIMATIONS

Approximations are fundamental concepts of rough set theory. With any rough set a pair of precise sets, called the lower and the upper approximation of the rough set, is associated. The lower approximation consists of all objects which surely belong to the set and the upper approximation contains all objects which possibly belong to the set. The difference between the upper and the lower approximation constitutes the **boundary region** of the rough set.

The computation of accurate approximations is very important in decision rule extraction. The intersection of conditions and decision classes yields both the lower and upper approximations.(Jhieh-Yu Shyng et al 2007)[2]

DECISION TABLE

Rough set based data analysis starts from a data table called a **decision table**, columns of which are labelled by attributes, rows – by objects of interest and entries of the table are attribute values. Attributes of the decision table are divided into two disjoint groups called condition and decision attributes, respectively.

CORE AND REDUCT OF ATTRIBUTES

The concepts of core and reduct are two fundamental concepts of the rough sets theory. The reduct is the essential part of an Information System, which can discern all objects discernible by the original Information System. Reduct can minimize subset and make the object classification satisfy the full set of attributes. Reduct attributes can remove the superfluous attributes and give the decision maker a simple and easy information. There may be more than one reduct attributes. If the set of attributes is dependent, we are interested in finding all possible minimal subsets of attributes which have the same number of elementary sets. The reduct attribute set affects the process of decision making, and the core attribute is the most important attribute in decision-making (Walczak and Massart ,1999)[11].

The core is the common part of all reducts. To compute reducts and core, the discernibility matrix is used. The discernibility matrix has the dimension n x n, where n denotes the number of elementary sets and its elements are defined as the set of all attributes which discern elementary sets. If the set of attributes is indispensable, the set is called the **core** (Walczak and Massart, 1999) [11].

DECISION RULES

Each row of a decision table induces a decision rule, which specifies decision (action, results, outcome, etc.) if some conditions are satisfied. If a decision rule uniquely determines decision in terms of conditions – the decision rule is certain. Otherwise the decision rule is uncertain. Decision rules are closely connected with approximations. Roughly speaking, certain decision rules describe lower approximation of decisions in terms of conditions, whereas uncertain decision rules refer to the boundary region of decisions.

CERTAINTY AND COVERAGE

With every decision rule two conditional probabilities, called the certainty and the coverage coefficient, are associated. The certainty coefficient expresses the conditional probability that an object belongs to the decision class specified by the decision rule, given it satisfies conditions of the rule. The coverage coefficient gives the conditional probability of reasons for a given decision.

DECISION-MAKING USING ROUGH SET ALGORITHM

Given an Information system model IM as,

IM = (U,A,V,ρ)

Where U = { x_1,x_2 ,x_4,x_5,....., x_n}; the Universal set,

and A = {a_1,a_2,...,D} ;A is a finite set of attributes and D is the decision attribute.

AN ILLUSTRATION

TABLE 1: DECISION TABLE

U	a_1	a_2	a_3	D
x_1	1	3	1	1
x_2	2	2	1	1
x_3	1	2	2	1
.	.	.	.	.
.	.	.	.	.
x_4	1	1	3	2
x_5	1	1	3	1

Source: An Example

$V a_1 = \{1,2\}$, $V a_2 = \{1,2,3\}$, $V a_3 = \{1,2,3\}$ and D = {1,2} then $V = \bigcup_{a \in A} V_a$

The information model function, ρ, is given by Table 1, where U is the universal object set of IM;

A represents the model attribute sets, consisting of attributes $\{a_1, a_2, a_3\}$;

$V a_1$ represents the domain (value sets) of attribute a_1;

$V (= \bigcup_{a \in A} V_a)$ is a set of values of the attributes;

$Ds(x) = \{f(x, a_1), f(x, a_2), \ldots, f(x, ak)\}$ is the description of each object, x, of U (Greco et al., 2001)[9], and

$f (x, a) \in Va$ is called the information model set of object x.

We call the above table the "Decision table", and attributes are divided into condition attributes and decision attributes (Pawlak, 2002)[3].

INDISCERNIBILITY RELATION AND CLASSIFICATION

Let objects $x_1, x_2 \in U$ be indiscernible by the set of attributes B in A. Any subset B of A determines a binary relation, IND (B), on U, which we call an indiscernibility relation, and define it as $a \in B$, if $\rho x1 (a) = \rho x_2 (a)$ for every $a \in A$. The equivalence class of IND (B) is called an elementary set (atoms) in IM. Thus, any xi of U can be induced so that the value sets of attributes represented in B are in the same class. Objects grouped in the same class are called elementary sets, and the process is called classification.

INDEPENDENCE OF ATTRIBUTES

It is possible that inconsistency, defined by objects with the same conditional attribute values yet have opposite consequences (decision), exists.(Tung-Kuang, 2011) [10]. For example, in the above illustration x_4 (1,1,3) and x_5 (1,1,3) have the same set of conditional attributes but their decisions are different. For x_4 it is 2 and for x_5 it is 1

In order to check, whether the set of attributes is independent or not, one checks for every attribute whether its removal increases the number of elementary sets in the IM or not. If IND (A)=IND(A-a) then the attribute a_i is called a superfluous attribute. Otherwise, the attribute a_i is indispensable in A.

This helps to identify the superfluous attributes and to reduce the number of unwanted attributes which do not have any impact on the data pattern. By reducing the number of unwanted attributes, the decision rules thus generated will be of less complex and more efficient.

APPROXIMATION ACCURACY

If X is U's subset, x_i expresses objects $x_1, x_2, \ldots, x_n$ where i is 1 to n, then

$L_{app} (x_i) = \{x_i \in U \mid x_i \subseteq X\}$ - represents the **lower approximation**.

$U_{app} (x_i) = \{x_i \in U \mid \{x_i \cap X \neq \emptyset\}$ - Object x_i may, or may not, belong to the elementary sets contained in X that have non-empty intersections. This is called the **upper approximation**.

$Bnd (x_i) = U_{app} (x_i) - L_{app} (x_i)$ - called the **boundary region** of X, indicating that the objects are inconsistent or vague.

To sum up, the objects of L_{app} (xi) $\subseteq$ Objects of U_{app} (xi).

The **approximation accuracy rate** is derived from the computation of the intersection rate between the lower and upper approximations, which are used to evaluate the classification's accuracy. In short,

Approximation accuracy rate μ = cardinal L_{app} (xi)/ cardinal U_{app} (xi).

REDUCT AND CORE ATTRIBUTE SETS

Reducts are the most precise way of discerning object classes, which are the minimal subsets provided that the object classification is the same as with the full set of attributes. The core is common to all reducts. The reduct attribute set affects the process of decision-making, and the core attribute is the most important attribute in decision making.

RED (B) $\subseteq$ A and

COR(C) = $\cap$ RED(B)

METHODOLOGY

The study is restricted to Chennai city only. All the respondents were female in the age group of 15 to 45 years. A questionnaire has been framed based on the parameters gathered from the oral interviews of female respondents of all age group having in mind about the consumers' expectations and their awareness about the face wash. 100 respondents were selected at random covering different parts of Chennai city and 82 valid respondents' questionnaire was taken for study. Respondents' options were collected through the nominal scale with numerals. Various parameters, with attribute name, attribute values and value sets, used to capture the respondents' awareness and expectation are listed in Table 3.

Approximations and accuracy were generated using the RST software. Table 2 shows the lower and upper approximations obtained by a rough set analysis. This result has accuracy 1.000. This means the target set is definable on the basis of an attribute set (Pawlak et al., 1994, 1998)[4].

TABLE 2: APPROXIMATIONS AND ACCURACY

Class	Number of Objects	Lower Approximation	Upper Approximation	Accuracy
1	16	16	16	1.00
2	37	37	37	1.00
3	19	19	19	1.00
4	8	8	8	1.00
5	2	2	2	1.00

Source: From the data collected (ROSE2)

TABLE 3: ATTRIBUTES BEFORE PRUNING

Sno	Attribute Name	Attribute Value	Value Set
1	Age	15 to 25, 26 to 35 and Above 36	[1,2,3]
2	Income	10000-20000 , 21000-30000 and 31000 and above	[1,2,3]
3	Clear face	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
4	Fresh feel	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
5	Natural ingredients	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
6	Fragrance	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
7	Pack look	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
8	Brand name	Yes and No	[1,2]
9	Expected price (Rs)	30-40, 41-50, 51-60, 61-70 and above 70	[1,2,3,4,5]
10	Performance	Highly satisfied, Satisfied, Neutral, Dissatisfied; Highly Dissatisfied	[1,2,3,4,5]

Source: Questionnaire

In the study, 10 attributes were identified based on the discussion, as shown in the Table 3. After the data was collected, the REDUCTS was generated using the Software ROSE2 and Heuristic Reduct Search algorithm, it was understood that some of the attributes are not necessary as per the concept of 'Independence of attribute'. Also having more attributes without its contribution in decision making will make the process of decision rule generation more complex.

It was found that out of ten attributes only 8 were having the actual impact on the decision making. So the superfluous attributes are pruned down and the process is repeated using the 8 attributes. The details of these attributes before and after pruning are shown in Table 3 and Table 4 respectively.

Based on the Heuristic Reduct Search, the following reducts were generated.

1: {Income, Fresh_feel, Pack_look}

2: {Income, Natural_ingredients, Brand_name}

3: {Fresh_feel, Pack_look, Expected_price}

4: {Natural_ingredients, Pack_look, Expected_price}

Core: No core is created. That is, there is no common attribute among the reducts.

From the above, it is clear that the attributes 'Fragrance' and 'Clear face', mentioned in the table 3, were not having any considerable impact on the decision attribute 'Performance'. In the second phase, these two attributes were removed and Reducts were generated again. It was observed that there was no difference in the Reducts. The pruned new set of attributes is shown in Table 4.

TABLE 4: ATTRIBUTES AFTER PRUNING

Sno	Attribute Name	Attribute Value	Value Set
1	Age	15 to 25, 26 to 35 and Above 36	[1,2,3]
2	Income	10000-20000 , 21000-30000 and 31000 and above	[1,2,3]
3	Fresh feel	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
4	Natural ingredients	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
5	Pack look	Highly Important, Important, Neutral, Unimportant and Highly Unimportant	[1,2,3,4,5]
6	Expected price (Rs)	30-40, 41-50, 51-60, 61-70 and above 70	[1,2,3,4,5]
7	Brand name	Yes and No	[1,2]
8	Performance	Highly satisfied, Satisfied, Neutral, Dissatisfied; Highly Dissatisfied	[1,2,3,4,5]

Source: Questionnaire

REVIEW AND DISCUSSION

Using the software ROSE2 and the LEM2 algorithm different possible decision rules were generated. Decision rules with a relative strength of 80 and above were selected for discussion. 17 Decision rules were generated. Out of 17 rules 12 are shown in the Table 5.

TABLE 5: DECISION RULES

Sno	Decision Rules	Decision	Number of respondents	Relative Strength
1	Natural_ingredients = 1	Performance = 1	16	100
2	Pack_look = 1	Performance = 1	16	100
3	Pack_look = 2	Performance = 2	37	100
4	Expected_price = 3	Performance = 3	17	94.74
5	(Income = 2) & (Fresh_feel = 2)	Performance = 3	18	100
6	(Income = 2) & (Natural_ingredients = 2)	Performance = 3	19	100
7	(Income = 2) & (Brand_name = 2)	Performance = 3	19	100
8	(Fresh_feel = 2) & (Expected_price = 3)	Performance = 3	16	84.21
9	(Natural_ingredients = 2) & (Expected_price = 3)	Performance = 3	16	84.21
10	(Age = 3) & (Fresh_feel = 2)	Performance = 4	7	87.50
11	(Age = 3) & (Natural_ingredients = 2)	Performance = 4	7	87.50
12	(Fresh_feel = 2) & (Expected_price = 4)	Performance = 4	8	100

Source: ROSE2 decision rules

INTERPRETATIONS OF THE DECISION RULES

1) From rules 1 and 2, it is observed that respondents with a relative strength of 100 and performance 'Highly Satisfied' opine that 'Natural ingredients' and 'Package look' are 'highly important' for the face wash cream.
2) Respondents who feel that performance is 'Satisfied' with a relative strength of 100 opine that package look is just 'Important' from rule 3.
3) With a relative strength of 94.74, whose performance level is 'Neutral' feels that price of the product should be in the range of 51-60, from rule 4.
4) From rule 5 it is inferred that, respondents who feel that the performance is 'Neutral' are in the income level of Rs 21000-30000 and think that 'fresh feel' is 'Important'.
5) Similarly, rules 6 and 7 depicts that 'Brand Name' and 'Natural Ingredients' are Important for respondents who are in the income band of Rs 21000-30000 and have 'Performance level' as 'Neutral'.
6) Rules 8 and 9 suggests that with performance level has 'Neutral', respondents feel that 'Expected_price' can be 'Rs 51- 60' whereas 'Fresh feel' and 'Natural Ingredient' are important.
7) Respondents in the age group of above 35 years and 'Dissatisfied' with the performance feel that 'Fresh feel' and 'Natural Ingredient' are important, inferred from the rules 10 and 11.

8) From rule 12, 'Fresh feel' is 'Important' for the respondents who are ready to give a price in the range 61-70 opine that the performance level is 'Dissatisfied'.

CONCLUSION

Respondents who feel that the performance is highly satisfactory expect that natural ingredients and pack look are very important in deciding the face wash. In general, women above 35 years in Chennai city are not much satisfied with the existing face washes. This may be because Chennai women above 35 years of age are not that much health conscious as compared with the younger generation. Also women are ready to spend an amount of Rs 50 to 60 for a face wash cream. This study may help mangers to design their face wash accordingly and work out their future strategy to increase their sales. The simplicity in understanding the decision rules generated using the Rough set theory proves that this mathematical tool is more efficient in helping the managers to understand the voice of consumers in a simpler language as decision rules. Interpretation of the decision rules can be done according to the requirements of the managers.

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