Assessing Farmers' Satisfaction of Agronomic Services Received in Ghana Using the SERVQUAL Model- a Case Study of Kumasi Metropolis

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Abstract

Purpose: *The study's objectives were in three folds: to find out whether the SERVQUAL model can be used to assess the quality of service delivered to farmers by agrochemical input dealer, to identify the extent to which farmers are satisfied with the services received and to estimate the impact of each of the dimensions on the overall service quality.*

Design/Methodology/Approach: *Research approach was principally quantitative. A pre-study was conducted (through focused group discussions) found out that the original SERVQUAL questionnaire is useful (with little modification) in the assessment of service quality of agronomic input sector. Two hundred (200) farmers were selected*

Findings: *It was found out that the SERVQUAL model can be applied when assessing the quality of agronomic services. It was also found out that customers (farmers) or users of agrochemical inputs were highly not satisfied (overall weighted SERVQUAL score of -0.86) with the services received from the agrochemical input dealers within the Kumasi Metropolis.*

Originality/value: *The study has demonstrated that the SERVQUAL model can be used in assessing quality of agronomic services and that Ghanaian Agribusiness firms are not satisfied with the quality of service they receive.*

Keywords: Quality, SERVQUAL, Agronomic Services, Farmers, Satisfaction, Ghana

1.0 Introduction

Managers of various firms in the service sector are under pressure to show that the services they provide are customer-focused. That is, services are provided to satisfy customers. With these firms given the needed resources for production activities, it is quite expedient that customers' expectations and perceptions are well understood and measured to meet the needs of these customers. The measurement of the expectations and perceptions of customers will help to identify the service quality gaps. The information from the measurement will assist the manager in finding some cost-effective ways of closing the gaps and also know which gap is of priority in taking critical decisions.

Service quality measurement involves a comparison of expected with perceived performance. It is a measure of how well a delivered service matches the customer expectations. In other words, service quality is a measure of customers' satisfaction regarding a particular service received. Also, the delivery of service quality means conformance to customer expectations on the basis of consistency (Lewis and Booms, 1983). Service is something a customer cannot see but could only experience (Zeithaml et al., 1992). In light of this, service quality continues to receive considerable attention from most (service) organizations and has therefore become an integral part of their policies as customer satisfaction cannot be ignored if firms are to remain competitive. To help understand and measure the quality of services delivered by firms in traditional service industries such as banking, health care, hotels, restaurants etc. and subsequently determine the degree to which the customers are satisfied, a framework known as SERVQUAL was developed by Parasuraman et al., (1985, 1988).

This model has been used and found to be helpful in measuring the service quality and customer satisfaction in the above industries.

The SERVQUAL instrument has been the predominant method for measuring customers' perceptions of service quality. There are five dimensions or factors of service quality as suggested by Parasuraman et al., (1990). These dimensions are as follows;

1. *Tangibles:* Physical facilities, equipment and appearance of personnel.
2. *Reliability***:** Ability to perform the promised service dependably and accurately.
3. *Responsiveness:* Willingness to help customers and provide prompt service.
4. *Assurance*: Knowledge and courtesy of employees and their ability to inspire trust and confidence.
5. *Empathy* (including access, communication, understanding the customer): Caring and individualized attention that the firm provides to its customers.

Generally, what is not known is whether the SERVQUAL model can be applied to the Agribusiness sector to measure the quality of agricultural related services and how users of agronomic inputs assess the quality of service they receive from the input dealers using the SERVQUAL model.

1.1 Research questions
In view of this, the study would seek to answer the following questions;
1. Can the SERVQUAL model be used to measure the quality of service delivered to farmers by agrochemical input suppliers?
2. To what extent are customers satisfied with the services they receive from agrochemical input suppliers?
3. What is the impact of each of the dimensions on the overall service quality?

1.2 Justification/relevance of the study
Satisfying customers' needs is very important for the survival of firms. Having the objective of establishing and maintaining a long term relationship with customers, most firms have changed their strategic measures of retention of customers (Peng and Wang, 2006). This study is designed to understand how to meet customers' needs while remaining economically competitive at the same time. After testing the relevance of the SERVQUAL framework, a comprehensive model for measuring customers' satisfaction in the agribusiness sector would be obtained**.** The assessment by the farmers would enable the input suppliers identify the dimensions where the most deficient and where customers or farmers value most. By knowing this they can then improve their services in these areas, thus, better satisfying the customers. Improved services from the input suppliers would enable farmers get value for their money thus improving on the efficiency of their activities. This study will again serve as a grounded basis for future scholarly work on service quality in agronomic inputs in Ghana.

The rest of the paper is organized as follows; section two reviews literature relevant to this study whiles the research methodology is presented in section three. Section four presents and discusses the results/findings of the study whiles the conclusions and recommendations are presented in the last section, five.

2.0 Literature Review

2.1 Service Quality
Service quality is a concept that has caused considerable interest and debate in literature because of the difficulties in both defining and measuring it with no overall consensus emerging on either (Wisniewski, 2001). There are a number of different 'definitions' as to what is meant by service quality. Service quality is commonly defined as the extent to which a service meets customers' needs or expectations (Asubonteng et al*.,* 1996). Service quality can thus be defined as the difference between customer expectations of service and perceived service. If expectations are greater than performance, then perceived quality is less than satisfactory and hence customer dissatisfaction occurs (Parasuraman et al., 1985).

Lewis and Booms (1983) pioneered service quality research by defining service quality as a "measure of how well the service level delivered matches the customer's expectations". This was further advanced by Parasuraman et al., (1985), who conceptualized service quality as the gap between consumers' expectations and perceptions of the actual service performance. To date substantial research attention has been devoted to defining, modeling, and measuring service quality. Services scholars have thus far developed various definitions of services. In the 1990s, it was proposed that services differ to goods as they are more often performances or experiences provided via equipment or personnel (Furrer et al., 2000).

More recently, Vargo and Lusch (2004) argue that there is an inseparable relationship between goods and services which makes it extremely difficult to precisely define any of them. As a result, Vargo and Lusch (2004), define services as "the application of specialized competences (knowledge and skills) through deeds, processes, and performances for the benefit of another entity or the entity itself". Such definition is compatible with the previous works by Gronroos (2000) and Lovelock (1991).

2.2 Measurement of Service Quality

Always, there exists an important question: why should service quality be measured? Measurement allows for comparison before and after changes, for the location of quality related problems and for the establishment of clear standards for service delivery. Edvardsen et al., (1994) state that the basis of developing quality in service industries is analysis and measurement. The SERVQUAL approach, which is studied in this paper, is one of the most common methods for measuring service quality.

In 1988 Parasuraman, Zeithaml, and Berry developed a generic instrument called SERVQUAL to measure service quality based on input from focus groups. Although SERVQUAL was developed within the marketing sector, it is also used in a variety of organizational settings, including libraries and information centers (Kettinger et al., 1994). Since 1988 Parasuraman, Zeithaml, and Berry have made numerous changes to SERVQUAL, some in response to problems identified by other researchers. For instance, in 1994 they reported on three different SERVQUAL formats; they recommended that researchers use a format that separated customer expectation scores into tolerance zones.

Researchers have continued to use SERVQUAL instruments. In 1997, Van Dyke, Kappelman, and Prybutok employed SERVQUAL in an Information System (IS) context, while in 2002 Banwet and Datta measured Information Technology (IT) service quality in a library service, as did Landrum and Prybutok in 2004. Still, some researchers question the appropriateness of using SERVQUAL in an IS or IT context; others disagree about whether the service quality should be the difference between expected and perceived service. Parasuraman, Zeithaml, and Berry (1988) stated that since service quality depends on the relationship of customer expectations with customer perceptions, it is appropriate to calculate service quality by subtracting expected from perceived service. One then achieves an overall measure of service quality by averaging the scores of all items (Brown et al., 1993).

However, this procedure gives also rise to two issues: the first is disagreement over what really is being measured in SERVQUAL with expectations and the second is the problematic nature of the resulting difference scores.
These two issues are resolved if one follows Cronin and Taylor (1992), and Teas (1993), who recommended that expectation ratings be eliminated altogether. In addition, Liljander (1994) states that there is more support for performance only models than for the disconfirmation model of service quality. Bolton and Drew (1991) stated that assessments of overall service quality are affected only by perceptions of performance levels. They suggested that direct measures of disconfirmation are more important than expectations. Boulding et al., (1993) also suggested that perceptions alone influence overall service quality.

Furthermore, other studies suggested that SERVQUAL has unstable dimensions. For example, Jiang, Klein, and Carr (2002) used four dimensions in their study, while Landrum and Prybutok (2004) used five. Nitecki (1996) proposed a three-dimensional SERVQUAL model, as opposed the five dimensions proposed by Zeithaml, Parasuraman, and Berry in 1990. As we have noted, these issues are all resolved if customer expectations are eliminated from the model. This notwithstanding, the SERVQUAL model has also been proven useful in the measurement of service quality and the thus customer satisfaction.

Many scholars and service marketers have explored consumers' cognitive and affective responses to the perception of service attributes in order to benefit by providing what consumers need in an effective and efficient manner. Consumer satisfaction (e.g. Cadott et al., 1987) and Perceived Service Quality (e.g. Zeithaml et al., 1996) have been considered the primary intervening constructs in the area of service marketing because ultimately they lead to the development of consumer loyalty or re-patronization of a product or service.

2.3 SERVQUAL Model

Consumer perception of service quality is a complex process. Therefore, multiple dimensions of service quality have been suggested (Brady and Cronin, 2001). One of the most popular models, SERVQUAL, used in service marketing, was developed by Parasuraman et al., (1985, 1988). SERVQUAL is based on the perception gap between the received (perceived) service quality and the expected service quality, and has been widely adopted for explaining consumer perception of service quality.

2.3.1   Dimensions of SERVQUAL

Originally 10 dimensions of service quality were proposed (reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding the consumer, and tangibles). Later these were reduced to five (reliability, responsiveness, empathy, assurances and tangibles). Table 1 below shows the ten original dimensions of service quality that were later merged into five.

SERVQUAL is based on the proposition that service quality can be measured as the gap between the service that customers expect and the performance they perceive to have received. Respondents rate their expectations of service from an excellent organization, and then rate the performance they perceive they received from a specific organization. Service quality is calculated as the difference in the two scores where better service quality results in a smaller gap (Landrum et al., 2008).

2.4 Customer Satisfaction

There are two principal interpretations of satisfaction within the literature of satisfaction as a process and satisfaction as an outcome (Parker and Mathews, 2001). Early concepts of satisfaction research have typically defined satisfaction as a post choice evaluative judgment concerning a specific purchase decision (Oliver, 1980; Churchill and Suprenant, 1992; Bearden and Teel, 1983; Oliver and DeSarbo, 1988).

The most widely accepted model, in which satisfaction is a function of disconfirmation, which in turn is a function of both expectations and performance (Oliver, 1997). The disconfirmation paradigm in process theory provides the grounding for the vast majority of satisfaction studies and encompasses four constructs; expectations, performance, disconfirmation and satisfaction (Caruana et al., 2000). This model suggests that the effects of expectations are primarily through disconfirmation, but they also have an effect through perceived performance, as many studies have found a direct effect of perceived performance on satisfaction (Spreng and Page, 2001). Swan and Combs (1976) were among the first to argue that satisfaction is associated with performance that fulfills expectations, while dissatisfaction occurs when performance falls below expectations. In addition, Poisz and Von Grumbkow (1988) views satisfaction as a discrepancy between the observed and the desired. There is general agreement that: Satisfaction is a person's feelings of pleasure or disappointment resulting from comparing a product's perceived performance (or outcome) in relation to his or her expectations (Kotler, 2003). Based on this review, customer satisfaction is defined as the result of a cognitive and affective evaluation, where some standard is compared to the actual perceived performance. If the perceived performance is less than expected, customers will be dissatisfied. On the other hand, if the perceived performance exceeds expectations, customers will be satisfied. Otherwise, if the perceived expectations are met with performance, customers are in an indifferent or neutral stage.

Customer satisfaction is defined as a customer's overall evaluation of the performance of an offering to date. This overall satisfaction has a strong positive effect on customer loyalty intentions across a wide range of product and service categories (Gustafsson, 2005). The satisfaction judgment is related to all the experiences made with certain business concerning its given products, the sales process, and the after- sale service. Whether the customer is satisfied after purchase also depends on the offer's performance in relation to the customer's expectation. Customers form their expectation from past buying experience, 'friends and associates' advice, and marketers' and competitors' information and promises (Kotler, 2003).

3.0 Research Methodology

The area of study for this project was Kumasi Metropolis. The Kumasi metropolis is the second largest city in Ghana and the administrative capital of the Ashanti Region. Kumasi lies within the forest zone of Ghana. The location of Kumasi is on the latitude ($6^{\circ}35'$-$6^{\circ}40'$N) 1'30W and longitude ($1^{\circ}30'$-$1^{\circ}35'$W) 6'40N.

3.1 Data Collection

In this study, both primary and secondary data were used. The primary data were from farmers' responses and the secondary data from the Ministry of Food and Agriculture (MoFA) of the Kumasi metropolis. The target population for this study was all users of agrochemical receiving services from registered agrochemical input suppliers within the Kumasi Metropolis. The study was divided into two main phases; the phase 1 (pre-study) to determine the usefulness of the five dimensions and the twenty-two variables (statements) of service quality in relation to the agribusiness sector (agrochemical input dealers) and phase 2 (the actual) to determine farmers satisfaction of the services received and the impact of each of the service quality dimension on overall customer satisfaction.

3.1.1   Phase 1 (Pre-study)

The pre-study was conducted to determine the usefulness of the five dimensions and the twenty-two variables (statements) of service quality in relation to the agribusiness sector (agrochemical input dealers).

In view of that, focus group discussions with five groups consisting of five members each were conducted. It was explained to participants that the aim was to test users of agrochemical inputs understanding to the (original) service quality variables (statements) and the importance of the statements in assessing the service quality of agrochemical input dealers. Using a five-point Likert's scale (1=very important, 2=important, 3=neutral, 4= not important 5=not important at al.), participants were asked to individually respond to the original 22 statements contained the SERVQUAL instrument after which each group member was asked to explain the reason to choosing a particular scale or number to his/her group members. Each group was asked to arrive at a consensus after deliberation. Again, the consensus arrived at by each of the 5 groups were presented and defended before all groups. A very final consensus was arrived at and a well-improved questionnaire was developed for the final data collection of the phase 2 (actual study) of this research.

3.1.2   Phase 2 (Actual study)

The result of the pre-study was used to develop the questionnaire for this phase (see appendix 1 for the modified SERVQUAL questionnaire). The respondents were asked to indication their level of agreed to the 20 statements (of the particular agrochemical input dealer) using a five-point Likert's scale.

The simple random sampling was used to select twenty (20) input dealers from a list of 103 registered agrochemical dealers in the study area. Ten (10) farmers were then selected systematically from each of the 20 selected input dealers.

3.2 Data Analyses

The outcome of the discussions of the pre-study answers the first research question.

The extent of farmers/customers satisfaction with the services received from agrochemical input dealers was determined by calculated the service quality using the procedure below (steps 1-7).

1. Using the modified SERVQUAL questionnaire (based on the results of the group discussions) the score for each of the 20 expectation statements as well as each of the 20 perception statements were obtained from each respondent.
2. The Gap Score for each of the statements was then calculated where the Gap Score = Perception – Expectation (see Table 2 below).
3. An average Gap Score for each dimension of service quality was obtained by assessing the Gap Scores for each of the statements that constitute the dimension and dividing the sum by the number of statements making up the dimension (see Table 2 below).
4. The calculated average for each of the five dimension were summed and the resulted divided by 5 (total number of dimensions) to obtain an average SERVQUAL score. This core represents the unweighted measure of service quality for the agronomic input dealers in the study area.
5. The respondents were also asked to allocate 100 points among the five service quality dimensions. This gives an indication of the relative important weights of each of the five dimensions making up the SERVQUAL scale. (See Table 3 below).
6. The weighted average SERVQUAL score for each of the five dimensions of service quality is calculated by multiplying the averages calculated in step 3 above by the weighted scores calculate in step 5 above (see Table 4 below).

7. The sum of the scores calculated in step 6 above gives the weighted SERVQUAL score of service quality of the agrochemical input dealers in Kumasi-Ghana and this gives an indication of the farmers'/customers' satisfaction.

Regression analysis would be used to estimate the dimensions influencing service quality.

4.0 Results and Discussion

4.1 Phase 1 (Pre-study)
After discussions and upon deliberations by group members, all the five dimensions were deemed appropriate whiles 20 out of the 22 statements were considered suitable. Statements 2 and 3 were eliminated outright from the set of statements in the original SERVQUAL questionnaire. The reason for eliminating statement 2 was that, farmers claimed they were not interested the beauty of the building of the agro-shop. Again, the reason for the elimination of statement 3 was that, farmers were not very much interested in the neat appearance of the employees because the employee at a point in time may be required to carry or fetch fertilizer and other inputs which will naturally make them dirty.

Also, statement 1 was changed to "...up-to-date product" from the original "...modern looking equipment". The reason was that, farmers were interested in the latest product in the market that can help with their production and not the equipment at the place.

The final results of the focused group discussion found all five dimensions appropriate whiles 20 out of the 22 statements were considered suitable and therefore used for the final SERVQUAL questionnaire for primary data collection. By extension, this means that the original SERVQUAL questionnaire is still useful (with little modification) in the assessment of service quality of agronomic input sector.

4.2 Measuring service quality using Gap score
The service quality of agrochemical input dealers was calculated and the result provided in the table below.
The gap score is calculated by finding the difference between perception and expectation. Thus, gap score is perception minus expectation (gap score = perception - expectation).

From table 2, it is seen that reliability is the dimension with the highest gap score (-1.06), followed by empathy (-0.95) and tangibles with the least gap score (-0.63). This means that reliability is most deficient or lacking, followed by empathy and tangibles been the least deficient. Again, using the gap score analysis, it means that farmers are most dissatisfied with the dimension of reliability, followed by empathy and tangibles been least dissatisfied.

In order to obtain weighted SERVQUAL score, respondents were asked to allocate points summing up to 100 among the five dimensions according to the relative importance they place on each of them. Table 3 below shows the allocation of the points among the dimensions.

From table 3, it was seen that empathy was deemed very important by the respondents since it had the highest weight (24%), followed by assurance (22%), then responsiveness (19%), tangibles (18%) and with reliability given the least weight (17%).

The weighted SERVQUAL score is achieved by multiplying the average scores of each dimension (in table 2) by their weights (in table 3). The weighted SERVQUAL score for the various dimensions really explains the degree and magnitude of satisfaction or dissatisfaction as compared to the gap score since the respondent is given the opportunity to include his or her points in order of importance to the dimensions.

With the weighted SERVQUAL score, empathy (-0.23) is most deficient followed by reliability and assurance (-0.18 each) and tangibles been least deficient (-0.11). The values for the SERVQUAL weighted score show how much each dimension was deficient in contributing to the satisfaction of agrochemical input users. The overall weighted SERVQUAL score is -0.86. This means that farmers who receive services from agrochemical input suppliers within the Kumasi Metropolis are highly dissatisfied with the services received.

In solving the situation of dissatisfaction, the dimension which is most deficient (empathy) should be tackled first and the other dimensions should follow suit.

4.3 Regression Analyses

The regression analysis was done to examine the impact of each of the five dimensions of SERVQUAL on the overall satisfaction (SQL) of agrochemical input users.

The results of the multiple regressions are shown in table 5. The results show that all the five dimensions of SERVQUAL were positively related to the overall satisfaction derived by the agrochemical input users. This means that as each of the dimensions is improved, overall agrochemical input users' satisfaction would also be improved. However, at $p<0.01$ level, all the five dimensions were significantly related to overall satisfaction (SQL): tangibles, reliability, responsiveness, assurance and empathy. Meaning that, these five dimensions played a major role in the contribution of satisfaction to agrochemical input users, and thus need attention and improvement.

The adjusted R-Squared for the model was 0.6760 indicating that all the 5 dimensions together contributed to about 67% of the customers' overall satisfaction. Thus, 33% of the farmers'/customers' overall satisfaction with the services they receive from the agronomic input dealers cannot be explained by the 5 dimensions of the SERVQUAL model.

However, the multiple regression model had an *F* value of 83.931 and a *p* value of 0.000.
Below was the estimated representation of the model;

$$\hat{Y} = 0.431 + 0.010X_1 + 0.021X_2 + 0.012X_3 + 0.010X_4 + 0.025X_5$$

Where;
$\hat{Y}$ = overall satisfaction of agrochemical input user
X_1, X_2, X_3, X_4 and X_5 = tangibles, reliability, responsiveness, assurance and empathy respectively.

The magnitude of change for a unit change in the overall satisfaction per dimension was less than 4%. Taking into consideration a unit improvement in the overall satisfaction ($\hat{Y}$) will require about 3% improvements in empathy (X_5) which is the largest magnitude, followed by the reliability, then responsiveness, assurance and tangibles dimensions.

Also to note was that, without the SERVQUAL dimensions (technically with the absence of all the dimensions) the overall satisfaction of agrochemical input user was about 43%.

5.0 Summary and Conclusion

With the following objectives of; "…the usefulness of all the five dimensions identified under SERVQUAL model…" and "…the usefulness of all the twenty-two variables under the five dimensions for the agrochemical input suppliers", all the five dimensions and twenty out of the twenty-two statements, in the SERVQUAL questionnaire were useful for this study (from the group discussion).

An overall weighted SERVQUAL score of – 0.86 was recorded. Thus, respondents were highly not satisfied with the services received from agrochemical input dealers within the Kumasi Metropolis. The summary scores for each dimension (tangibles- -0.11, reliability- -0.18, responsible- -0.16, assurance- -0.18 and empathy- -0.23) were shown in Table 4, with the weighted average scores per each dimension having been totalled to achieve the overall SERVQUAL score.

As can be seen from Table 2, the highest gap scores were for Reliability and Empathy. Respondents allocated to Reliability the lowest weighting, indicating it to be of least importance to them, yet they expect most from this service dimension.

Furthermore, the regression analyses showed that all the five dimensions of SERVQUAL were positively related to the overall satisfaction and significant at 1% as derived by the agrochemical input users. This means that the five dimensions played a major role in the contribution of satisfaction to agrochemical input users, and thus need attention and improvement.

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Table 1: Dimensions of Service Quality

5 Dimensions	10 Dimensions
Tangibility	Tangibility
Reliability	Reliability
Responsiveness	Responsiveness
Assurance	Competence Courtesy Credibility Security
Empathy	Access Communication Understanding customer

Source: Parasuraman et al., (1990).

Table 2: Calculation of Gap score and unweighted average SERVQUAL score

Dimension	Statement	Perception score	Expectation score	Gap score (P-E)	Mean for Dimension
Tangibles	1	3.87	4.54	-0.67	**-0.63**
	2	4.09	4.68	-0.59	
Reliability	3	3.10	4.20	-1.1	**-1.06**
	4	3.29	4.36	-1.07	
	5	3.23	4.41	-1.18	
	6	2.88	4.37	-1.49	
	7	4.29	4.76	-0.47	
Responsiveness	8	3.25	4.47	-1.22	**-0.84**
	9	3.57	4.44	-0.87	
	10	4.02	4.49	-0.47	
	11	3.71	4.49	-0.78	
Assurance	12	3.58	4.47	-0.89	**-0.81**
	13	3.14	4.43	-1.29	
	14	3.73	4.36	-0.63	
	15	4.21	4.62	-0.41	
Empathy	16	3.45	4.46	-1.01	**-0.95**
	17	3.78	4.56	-0.78	
	18	3.43	4.54	-1.11	
	19	3.68	4.64	-0.96	
	20	3.77	4.65	-0.88	
Unweighted Average SERVQUAL score:					**-0.86**

Table 3: Percentage point allocation for dimensions

Dimension	Percentage points (weight)
Tangibles	18
Reliability	17
Responsiveness	19
Assurance	22
Empathy	24
Total	**100**

Table 4: Weighted SERVQUAL score

Dimension	Average Score	Weight	Weighted Score
Tangibles	-0.63	0.18	-0.11
Reliability	-1.06	0.17	-0.18
Responsiveness	-0.84	0.19	-0.16
Assurance	-0.81	0.22	-0.18
Empathy	-0.95	0.24	-0.23
Total			**-0.86**

Table 5: Multiple regression results, dependent variable: overall agrochemical input user satisfaction (SQL)

Dimensions	Coefficients	t Stat	P-value
Tangibles	0.010	3.011	0.003
Reliability	0.021	5.152	0.000
Responsiveness	0.012	2.481	0.014
Assurance	0.010	2.538	0.012
Empathy	0.025	5.045	0.000

F value=83.931, p (0.000) < 0.01   constant = 0.431
Adjusted R-squared=0.676