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ON
MEASUREMENT OF ATTITUDE

SCALES TO MEASURE ATTITUDE TOWARDS VARIOUS COMPONENTS OF RURAL & AGRICULTURAL DEVELOPMENT

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PART - I: ATTITUDE

INTRODUCTION

One of the most important steps you can take toward achieving your greatest potential in life is to learn to monitor your attitude and its impact on your work performance, relationships and everyone around you.

An attitude is an approach or avenue of life. We have a choice everyday regarding the attitude we embrace for the day. As they say, the only difference between a good day and a bad day is your attitude. We cannot change our past, or change the way certain people think. We cannot change what's predictable. However, the only thing we can change to deal with situations better is our attitude.

Attitude reflects behaviour. One's attitude towards the other determines the other's attitude towards him. If one smiles at the other, the other may smile back; while if one acts hard-nosed with the other, the other is likely to snap at him.

Attitude determines the outcome. This truth is accepted by most of the successful people of the world, whether it is a doctor going for surgery, or a businessman launching a new venture. It is an attitude that provides them the winning edge. Thus, a correct and a willful attitude is the key to success.

The man is the master of his destiny. He can very well manipulate his grief or happiness, by choosing the correct attitude. With a positive outlook, an individual can overcome grief with ease and follow the pursuit of happiness. This can be justified with a famous quote:

"He who has so little knowledge of human nature, has to seek happiness, by changing anything but his disposition, will waste his life in fruitless efforts and multiply the grief he purposes to remove."

Hence, attitude is more important than facts. It is more important than the past than education than money than circumstances than failures than successes or reality.

Attitude is feeling of an individual towards or against something. The things can be a person, object, institution, method, subject, thought, idea, situation, event or any other objects. Psychologists describe attitude as a learned tendency to evaluate things in a certain way. Such evaluations are often positive or negative, but they can also be uncertain at times. For example, you might have mixed feelings about a particular person or issue.

To make a genuine progress in life attitude should be a correct one, friendly, constructive, cheerful, positive and helping others.

Also, attitude is a positive or negative feeling one has towards any psychological object. Attitudes are based upon values and attitude influences our action positively or negatively. Hence they are covert and not overt.

Facts about attitude

- **Attitude** refers to feelings and beliefs of individuals or group of individuals.
- The feelings and beliefs are directing towards other people, objects or ideas. When a person says, "I like my Job." It shows that he has a positive attitude towards his job.
- **Attitude** often results in and affect the behaviour or action of the people. Attitudes can lead to intended behaviour if there are no external interventions.
- **Attitudes** constitute a psychological phenomenon which cannot be directly observed. However, an attitude can be observed indirectly by observing its consequences. For example, if a person is very regular in his job, we may conclude that he likes his job

very much or he is positive towards his job.

- **Attitudes** are gradually acquired over some period. The process of learning attitude starts right from childhood and continues throughout the life of a person. In the beginning, the family members may have a greater impact on the attitude of a child.
- **Attitudes** are evaluative statements, either favourable or unfavourable. When a person says he likes or dislikes something or somebody, an attitude is being expresed.
- All people, irrespective of their status and intelligence have **attitudes.** It helps to define our identity, guide our actions and influence how we judge people.
- An attitude may be unconsciously held. Most of our attitudes may be about those which we are not clearly aware. For example, prejudee.
- **Attitudes** are a complex combination of things we tend to call personality, beliefs, values, behaviors and motivations.
- **Attitude** helps us define how we see situations, as well as define how we behave toward the situation or object.
- Attitude provides us with internal cognitions or beliefs and thoughts about people and objects.
- Attitude cause us to behave in a particular way toward an object or person.

Components of Attitude: Attitude comprise of three basic components: informational, emotional and behavioural. These three components are described below

Informational or Cognitive Component: The informational component consists of beliefs, values, ideas and other information a person has about the object. It makes no difference whether or not

this information is empirically correct or real. For example, a farmer accepting improved variety of crop may learn from his sources and other farmers or his own relatives or another village that the variety's production and other characteristics are very favourable. In reality, it may or may not be correct. The information that farmer is using is the key to his attitude about that improved variety of crops.

Emotional or Affective Component: The informational component sets the stage for the most critical part of an attitude, its affective component. The emotional component involve the person's feeling or affect positive, neutral or negative about an object. This statement can explain this component or "I like this improved variety of the crop as the prospects of this variety is very good."

Behavioural Component: The behavioural component consists of the tendency of a person to behave in a particular manner towards an object. For example, the concerned individual in the above case may decide to adopt the improved variety because of good prospects. Out of the three components of attitudes, only the behavioural component can be directly observed. One cannot see another person's beliefs (the informational component) and his feelings (the emotional component). These two components can only be inferred. However, still understanding these two components is essential in a study of organizational behaviour or the behavioural component of attitudes.

Characteristics of attitude

Attitude can be characterized by

1. **Affective Cognitive Consistency:** The degree of consistency between the affective and cognitive components influences the attitude behavior relationship. That is, the greater the consistency between cognition and evaluation, the greater the strength of the attitude-behavior relation.

2. **Strength:** Attitudes based on direct experience with the object may be held with greater certainty. Certainty is also influenced by whether affect or cognition was involved in the creation of the attitude. Attitudes formed based on affect are more certain than attitudes based on cognition.

3. **Valence:** It refers to the degree or grade of likeness or unlikeness toward the entity/incident. If a person is fairly unconcerned toward an object, then his attitude has low valence.

4. **Direct Experience:** An attitude is a summary of a person's experience; thus, an attitude is grounded in direct experience predicts future behavior more accurately. Moreover, direct experience makes more information available about the object itself.

5. **Multiplicity:** It refers to a number of features creating the attitude. For example, one may show interest in becoming an agricultural scientist, but another not only shows interest but also works hard, is sincere and serious.

6. **Relation to Needs:** Attitude vary in about requirements they serve. Attitude of an individual toward the pictures serve only entertainment needs, but attitudes of an employee toward task may serve strong needs for security, achievement, recognition and satisfaction.

Strength of Attitude

The strength with which an attitude is held is often a good predictor of behavior. The stronger the attitude, the more likely it should affect behavior.

Importance / personal relevance refers to how significant the attitude is for the person and relates to self-interest, social identification and value. If an attitude has a high self-interest for a person (*viz.* it is held by a group the person is a member of or would like to be a member of, and is related to a person's values), it is going to be extremely important.

As a consequence, the attitude shows very strong influence upon a person's behavior. By contrast, an attitude will not be important to a person if it does not relate in any way to his life.

The knowledge aspect of attitude strength covers how much a person knows about the attitude object. People are more knowledgeable about topics that interest them and are likely to hold strong attitudes (positive or negative) as a consequence.

Attitude based on direct experience are more strongly held and influence behavior more than attitudes formed indirectly for example, through hear-say, reading or watching television.

Importance of Attitude

Usually, when education is designed, there are two categories of outcomes in mind: those aimed at cognitive goals and those related to the attitudes of the learner. There is little necessity to argue the importance of the acquisition of knowledge by a student as a result of instruction. Achievement is the paramount objective of most instructional activities; however, it may also be important to recognize the need for establishing attitudinal goals and for planning activities designed to facilitate effective outcomes in learners as a consequence of an instructional situation. In fact, it has become increasingly

noticeable to those involved in educational technology research that one of the major and possibly unique, consequences of instructional situations connecting education is the probability of the development of positive attitudinal positions in learners.

The most influential justification for the need to promote attitude positions in learners would be to express a direct relationship between attitudes and achievement or liking and learning. Several research workers have identified such a relationship. Though, most educational and psychological researchers are hesitant to claim that there is any cause-effect linkage between these two learner variables. There are too many intervening forces likely to influence the relationship between how a person feels and how he or she behaves.

The significance of attitude on learning is only one reason for interest in attitudes. There are other view points that explain why attitude of learners are significant. First, most educationalists would agree that there are time when it is valid and important, for learners to accept the truth of certain ideas in other words, to accept an attitudinal position.

Second, while the power of the relationship between attitudes and achievement is unclear, it seems logical that learners are more likely to remember information, seek new ideas and continue studying when they react favorably to an instructional situation or like a certain content area. Learners, who like chemistry will tend to stay after class to work on experiments, read about chemistry outside of class and be more likely to elect to take a chemistry course than will those who do not like chemistry. Learners tend to do what they like, not what they do not like. They gravitate toward their interests.

Third, there are some examples, when influencing learner's attitudes is not desirable, so educators should be aware of which techniques affect attitudes. In this way, possible bias can be recognized and eliminated. The gender biases found in textbooks are considered partially responsible for gender biases in people. For example, the

use of the generic 'he' was long considered appropriate by textbook authors and publishers. Now it is clear that the use of this term helped form an inappropriate attitude position in both boys and girls that 'males' were more important.

Last, learners' attitudes toward a situation can tell the teacher a great deal about the impact of that situation on the learning process. Obviously, attitudes need to be measured to know if they have been influenced. As a result of quantitatively and qualitatively assessing the opinions of students toward the learning activities in which they are participating, it may be possible to improve the quality of procedures. One of the most important techniques of evaluation is to ascertain attitudes toward some event, object or person. At the end of the course evaluation is done knowing attitude towards course and course content is a standard activities in schools and training centers.

In summing up, attitudes are complex phenomena. They have been studied for decades by social scientists and educators and are beginning to be understood as organizers related to learning processes and outcomes. Attitudes are learned "predispositions to respond" held by individuals that make them likely to act in certain ways. Attitudes are not observable, but they do serve to help construct observable actions in people.

Many social psychologists and others have anticipated some theories of attitude change. Many of the theories are related, so there has been considerable effort to categorize them. Because of the comprehensiveness of the attitude change literature, it is considered important to review the theories of attitude change as a foundation for proposing guidelines for persuasion.

Functions of Attitude

An individual, in his lifetime, is bound to develop some attitudes. These attitudes may be favourable or unfavourable or both. His attitudes colour the personality of a person. Attitudes determine one's personality.

A person can be called good or bad, sociable or unsociable, acceptable or unacceptable depending on his attitude. If a person mostly develops all unfavourable attitudes, his life becomes miserable. He cannot accept or believe or love anybody or anything. He becomes social or antisocial. Conversely, nobody will accept him as this is a reciprocal process.

From the above standpoints, it is well evident that attitude determines one's behaviour, one's personality and one's position in the society. While favourable attitude towards others makes him pleasant, sociable and acceptable, unfavourable attitudes make many enemies and develop hostile feelings and hatred in his mind.

Attitudes have, therefore, significant functions in moulding, influencing and determining one's behaviour in all contexts. As already discussed, by attitude personality can be typed.

Attitudes function as a source of motivation which helps in the adjustment to the environment. There are four different personality functions served by the maintenance and modifications of social attitudes. They are an adjustment, value expression, knowledge and ego-defense.

1. **Adjustment or Utilization Function:** Utilitarian attitudes provide an individual with general tendencies, such as whether to approach or avoid a person, place or thing. The holding of a particular attitude leads to reward or the avoidance of punishment. It is the utilitarian or instrumental function of attitude which motivates the person to adjust to the environment to gain social approval

and the support of family, friends and neighbours. In the case of certain social issues like marriage, death, democracy, religion, sacrifice and helping others, he holds opinions similar to his parents and relations and friends. Further favourable attitudes are developed towards those stimuli which satisfy one's needs and unfavourable attitudes towards those which stand on the fulfillment of his needs and motives.

2. **Value Expression Function:** Value-expressive attitudes express central values or beliefs. By identification with parents and other relatives, the child develops certain personal values and self concepts. These values are integrated into the form of different attitudes. Attitudes help in expressing these values. The individual gets satisfaction by expression of attitudes appropriate to his personal values. Religious, ideological and patriotic beliefs and values normally are based on this function. People get self satisfaction by engaging themselves in social work, care for the aged persons, by helping at the time of flood and famines, by taking care of the orphans or by raising their voice against corruption and social injustice.

3. **Knowledge Function:** Knowledge-related attitudes help individuals to organize and interpret new information. This function of attitude is based on the need to understand, make sense and give adequate structure to the universe. Attitudes have a cognitive function in the sense that they help in understanding things properly for the sake of quick adjustment. Attitudes which prove inadequate dealing with new and changing situations are discarded because, otherwise, they lead to contradictions and inconsistency. The need for cognitive consistency, meaning and clarity is fulfilled by the knowledge function of attitude.

4. **Ego-Defensive Function:** Ego-defensive attitudes help people protect their self-esteem. The ego-defensive function of attitude provides protection against the knowledge and acceptance

of basic unpleasant truths about disease, death, weakness, insecurity, frustration, unemployment, illness and various other harsh realities of life. By rationalizing and distorting attitudes on the above harsh realities of life, the ego tries to defend itself and lead a happy life by avoiding unpleasantness arising out of these unpleasant truths. All these facts lead to believe the tremendous significance of the functions of attitude in human life.

Kinds of Attitude

Attitudes are considered of three types; viz. (1) Positive or Favourable attitude, (2) Negative or Unfavourable attitude and (3) Neutral or Neither favourable nor unfavourable. However, many psychologists explain it in various ways. Here's a list of few of the attitude types that we've put together of what people's actions and perceptions are.

Affectionate	Expansive	Mature	Sensitive
Acceptance	Freedom	Motivated	Serious
Aspiring	Faith	Not jealous	Sincere
Ambitious	Flexible	Open minded	Social
Candid	Forgiving	Optimistic	Sympathetic
Caring	Frugal	Positive	Self-esteem
Change	Friendly	Perseverance	Self-giving
Cheerful	Focused	Practical	Thoughtful
Considerate	Generous	Punctual	Tolerant
Cooperative	Gloomy	Responsive	Thoughtful
Courageous	Goodwill	Responsible	Trusting
Decisive	Grateful	Reliable	Self-reliant
Devoted	Hard working	Responsibility	Unpreten-tiousness
Determined	Honest	Realistic	Unselfish
Distant	Humble	Self-confident	Willingness
Embraces	Interested	Self-directed	Work-oriented
Endurance	Involved	Self-disciplined	
Enthusiastic	Kind	Selfless	

Summarizing everything said above, what we think, what we do, and what we feel is what forms our attitude. While sometimes knowledge and experience form our attitude, on other occasions it is based on our assumptions and beliefs.

Formation of Attitude:

1. Attitudes are not biologically inherited but built out of continuous experiences of the world around us. They are the outcome of the complex function of both cultural and functional factors. From birth onwards, every individual is exposed to direct and indirect stimuli of the environment which teach him to hold certain ideas, values and beliefs.

2. Through the process of socialization when one is taught to associate good or bad feelings, dos or don'ts, favorable and unfavorable experiences with certain actions or behaviour patterns, he develops certain consistent attitudes. When, some actions are rewarded one develops a favourable attitude towards it and any action or view which is punished one develops an unfavourable attitude towards it.

3. Attitudes also occur when one follows his parents and other closely accustoms or closely familiars with friends and have relationships with others. Children and adults form attitudes very often based on suggestions and second-hand experiences. Many adults are also found forming attitudes spontaneously based on their own personal and first-hand experiences. Nevertheless, attitudes grow in the mind of individual through the process of socialization.

4. Social attitudes develop out of verbal value judgments, dos and don'ts. But personal attitudes may develop out of one's interaction, contact and experience with the attitudinal objects and other objects related to it. In the case of social attitudes, one is taught to hold a particular attitude towards attitudinal objects

like "Experienced farmer says not to adopt a certain technology.

5. Parents, family members, media and press, peers, teachers and well wishers acquaintances, all play a tremendous role in the formation and growth of attitudes.

6. Through attitudinal socialization experiences, people come to learn appropriate attitudes towards certain people, different types of technology, food, toy, playmates, play materials and develop negative attitudes towards others. According to psychologists, our attitudes are centralized in the objects of values which may be social institutions, individuals, neutral objects, parties, etc.

7. The development of values out of which attitudes formed are the outcome of social traditions, customs learning and social institutions. Initially, the infant being only concerned with the satisfaction of his basic needs like food and care is socially blind and is not concerned about the social sanctions.

8. Through the process of need satisfaction an individual gets a scope to develop an attitude. Those objects and persons which satisfy his needs he develops a favourable attitude towards them. But when an object or person stands in the way of his need satisfaction, unfavourable attitude develops towards it.

9. In the routine behaviour individual never shows the matured direction of attitude up to the very early age may be up to the third or fourth year, the attitude in its proper connotation does not appear. But when an individual goes to school and starts keeping contacts with society by any means, certain values and disciplines are imposed upon him and these values gradually become the core of attitude formation. In the beginning, the child's mental level being less matured, his values are shapeless and the attitude formation is in a completely defused stage. To the

different objects, he will simply say like or dislike, but he cannot discriminate. At this stage, there is no selectivity of perception which is necessary for the formation of attitude. This selectivity of perception and values gradually grow in children out of which attitudes are formed.

10. The differentiation to the different objects or stimuli around an individual grows in the course of years. In the beginning, the child reacts equally say to three different objects, but when differentiation is built up, he becomes sympathetic and protective to the pet or demanding to his mother or appreciates an actor, teacher or leader. These clear-cut differentiations in the course of years indicate that attitude undergoes development in a social context depending upon its existing cultural pattern and social sanctions. After differentiation integration of different value structures and attitudes which encompass them take place.

11. The cognitive clarity is essential to form or give direction to any attitude. Depending upon the value attached to a particular attitudinal object, favourable or unfavourable attitudes develop. As the child or an individual gets maturity by power, prestige, recognition, social approval, rewards and punishment, he gradually attends to the social world.

12. The frame of reference and reference groups often help in supporting or rejecting a particular value, norm or standard. The direction of attitude is based on these. In daily life, many of our attitudes are formed by short-cut values and dictums are coming from other people before we make up our mind through actual contact with the situation, person or object.

13. A standard or norm having an authoritarian source or frame of reference may produce organisation at a higher level. Similarly, a standard carrying with it the sanction of public approval is accepted than when the individual himself evolves the same or a

similar standard.

14. It is also observed that attitudes are formed from radio, news papers and other mass media as well as from norms of the individual membership groups. The cognitive components of the attitude mostly develop out of indirect and second hand information, the communication media. The attitudes may be right or wrong, but undoubtedly the communication network plays a vital role in the formation of attitudes.

15. One's affiliation with the groups helps in the formation of attitude. An individual usually accepts the attitudes developed by such groups, may be his family school, neighbourhood, peer groups, various relations, social and ethnic groups. However, there may be some exception and individual difference depending on the personality of the concerned individual.

16. Personality plays a key role helping in the diversity of attitudes. Many studies indicate how basic personality structure can determine attitudes. Personality characteristics like introversion, extraversion, dominance, submissiveness are related to attitudes like radicalism and conservatism.

17. The role of primary groups such as family, friends and colleagues help in the formation of attitude. Similarity and attraction also help in the formation of attitudes.

18. The attitudes which start growing continuously from childhood may be modified by the time; we are adults, but the process of acquisition and development of attitudes continue.

Measurement of Attitude

The various methods of measuring attitudes have been developed, however possibly the simplest technique of understanding someone's attitudes would be to ask them. The fact is that they may not well say about their true attitudes. Though, attitudes are related to self-image and social acceptance. To preserve a positive self-image, people responses may be affected by social desirability. But they will answer in a way that they feel socially acceptable. Given this problem, However, all of them have limitations. In particular, the different measures focus on different components of attitudes – cognitive, affective and behavioral – and as we know, these components do not necessarily coincide.

The measurement of attitude can be divided into two basic categories viz. Direct Measurement (Likert Scale and Semantic Differential) and Indirect Measurement (Projective Techniques)

1. Direct Measurement

1.1 Likert Scale

Many types of rating scales have been developed to measure attitudes directly. The commonly used method to measure attitude is the Likert Scale. Likert (1932) developed the principle of measuring attitudes by asking people to respond to a series of statements about a topic, regarding the extent to which they agree with them and so tapping into the cognitive and affective components of attitudes. Likert-type or frequency scales use fixed choice response formats and are designed to measure attitudes or opinions (Bowling, 1995; Burns, & Grove, 1997). These ordinal scale measure levels of agreement/ disagreement.

A Likert-type scale assumes that the strength/intensity of the experience is linear, *viz.* on a continuum from 'Strongly-Agree' to 'Strongly-Disagree' and makes the assumption that attitudes can be

measured. Respondents may be offered a choice of five to seven or even nine pre-coded responses with the neutral point being neither agree nor disagree.

In its final form, the Likert Scale is a five (or seven) point scale which is used to allow the individual to express how much they 'Agree' or 'Disagree' with a particular statement.

For example:

I believe that low income in farming is the key issue Indian people face today.

'Strongly agree' / 'Agree' / 'Don't know' / 'Disagree' / 'Strongly Disagree'

Each of the five (or seven) responses would have a numerical value which would be used to measure the attitude under investigation.

Likert Scale Examples:

1. Agreement point of view: 'Strongly Agree', 'Agree', 'Undecided' , 'Disagree' and 'Strongly Disagree'
2. Frequency or regularity point of view: 'Very Frequently', 'Frequently', 'Occasionally', 'Rarely' and 'Never'
3. Importance or Significance point of view: 'Very Important', 'Important', 'Moderately Important', ' of Little Importance' and 'Unimportant'
4. Likelihood or Choice point of view: 'Almost Always True', 'Usually True', 'Occasionally True', 'Usually Not True' and 'Almost Never True'

How to analyze data from a Likert Scale?

1. Summarize using a median or a mode (not a mean); the mode is probably the most suitable for easy interpretation.

2. Display the distribution of observations in a bar chart (it can't be a histogram because the data is not continuous).

Critical Evaluation

Likert Scales have the advantage that they do not expect a simple Yes/ No answer or response from the respondent, but rather allow for degrees of belief and even no belief at all. Therefore quantitative data is obtained, which means that the data can be analyzed with relative ease. However, like all surveys, the validity of Likert Scale attitude measurement can be compromised due to social desirability. It means that individuals may lie to put themselves in a positive light. For example, if a Likert scale was measuring discrimination, who would admit to being racist?

Offering anonymity on self-administered questionnaires should further reduce social pressure and thus may likewise reduce social desirability bias. Paulhus (1984) found that more desirable personality characteristics were reported when people were asked to write their names, addresses, and telephone numbers on their questionnaire than when they told not to put identifying information on the questionnaire.

1.2 Semantic Differential

Semantic differential is a type of a rating scale designed to measure the connotative meaning of objects, events, and concepts. The connotations are used to derive the attitude towards the given object, event or concept. In a semantic differential, the scale is a list of opposite adjectives is used. It is a method invented by C.E. Osgood (1957) to measure the connotative meaning of cultural objects. Semantic differential scales are used in a variety of social science research, but it also is used in marketing and practical, user experience research and therapy. Sometimes semantic differentials are also known as Polarities.

Osgood's semantic differential technique of Osgood *et al.* (1957)

is an application to measure the semantics or meaning of words, particularly adjectives and their referent concepts. The respondent is asked to choose where his or her position lies, on a scale between two polar adjectives for example: "Adequate-Inadequate," "Good-Evil" or "Valuable-Worthless". Semantic differentials can be used to measure opinions, attitudes and values on a psychometrically controlled scale. In this technique, a person is asked to rate an issue or topic on a standard set of bipolar adjectives (*viz.* with opposite meanings), each representing a seven-point scale. For example, to measure attitude towards 'car' participants can be given a variety of adjectives to describe a car that helps to measure the attitude of an individual towards it.

In Osgood's original research, factor analysis shows the emergence of three underlying components that have been named (1) Evaluation, (2) Potency and (3) Activity (EPA).

1. Evaluation is concerned with whether a person thinks positively or negatively about the attitude topic. "The Evaluation dimension is tapped by the "good, nice" versus "bad, awful" scale just mentioned.

2. Potency is concerned with how powerful the topic is for the person. This dimension corresponds to a scale that contrasts "powerful, big" with "powerless, little."

3. Activity is concerned with whether the topic is seen as active or passive. A scale for assessing the activity dimension contrasts "fast, noisy, active" with "slow, quiet, inactive." Pan-cultural multivariate analyses have demonstrated that these EPA dimensions are clearly recognizable in multiple cultures and a variety of languages.

Using this information we can see if a persons feeling (evaluation) towards an object is consistent with their behavior. For example, a person might like the taste of chocolate (evaluative) but not eat it often (activity). The evaluation dimension has been mostly used by

social psychologists as a measure of a person's attitude because this dimension reflects the affective aspect of an attitude.

Creating the scale

The scale is set up using polar adjectives (opposite-meaning terms) at each end. After examining the connotative meaning of thousands of concepts, as mentioned earlier Charles Osgood and his associates identified three major dimensions of meaning: strength, value, and activity. The first two examples below fit the theme of value (Evaluation). The second two represent strength (Potency), and the last two illustrate activity.

Good	__7__:__6__:__5__:__4__:__3__:__2__:__1__	Bad
Cheap	__7__:__6__:__5__:__4__:__3__:__2__:__1__	Expensive
Strong	__7__:__6__:__5__:__4__:__3__:__2__:__1__	Weak
Decisive	__7__:__6__:__5__:__4__:__3__:__2__:__1__	Indecisive
Active	__7__:__6__:__5__:__4__:__3__:__2__:__1__	Passive
Lazy	__7__:__6__:__5__:__4__:__3__:__2__:__1__	Industrious

The respondent is asked to rate an object, person or any concept, by putting a mark on one of the seven spaces along each dimension. The blanks are numbered from 1 to 7 and then the responses are averaged for each dimension. The average is plotted on the form and provides a profile of the connotation of the target concept. Attitude towards two objects can be compared for all the six considerations (as seen in above figure). The selected sample respondents and average scores for all the six considerations can be marked by two different colours may be red and blue and the results can be presented in a figure, or you can list the average scores on each dimension, and then draw conclusions. This way attitude towards two objects can be compared. Attitude towards one object can also be seen in each dimension (viz. good to bad, cheap to expensive and so on).

2. Indirect Methods

2.1 Projective Techniques

To avoid the problem of social desirability, various indirect measures of attitudes have been used. Either people are unaware of what is being measured (which has ethical problems), or they are unable consciously to affect what is being measured.

Indirect methods typically involve the use of a projective test. A projective test is involves presenting a person with an ambiguous (viz. unclear) or incomplete stimulus (viz. a picture or words). The stimulus requires interpretation from the person. Therefore, the person's attitude is inferred from their interpretation of the ambiguous or incomplete stimulus.

The assumption about these measures of attitudes is that the person will "project" his or her views, opinions or attitudes into the ambiguous situation, thus revealing the attitudes the person holds. However, indirect methods only provide general information and do not offer a precise measurement of attitude strength since it is qualitative rather than quantitative. This method of attitude measurement is not objective or scientific which is a big criticism. Projective techniques include (1) Thematic Apperception Test (or TAT), (2) Draw a Person Task and (3) House-Tree-Person.

2.2 Thematic Apperception Test

Here a person is presented with an ambiguous picture which they have to interpret. The Thematic Apperception Test (TAT) taps into a person's unconscious mind to reveal the repressed aspects of their personality. Although the picture, illustration, drawing or cartoon that is used must be interesting enough to encourage discussion, it should be vague enough not to give immediately away what the project as about.

TAT can be used in a variety of ways, from eliciting qualities associated with different products to perceptions about the kind of people that might use certain products or services. The person must look at the picture(s) and tell a story. For example: What has led up to the event shown? What is happening at the moment? What the characters are thinking and feeling? and What the outcome of the story was?

2.3 Draw a Person Task

The figure drawings are projective investigative techniques in which individual is initiated to draw a person, an object or a situation so that cognitive, interpersonal or psychological functioning can be judged. The test can be used to evaluate children and adolescents for a variety of purposes (*viz.* self-image, family relationships, cognitive ability and personality).

A projective test is one in which a test taker responds to or provides ambiguous, abstract, or unstructured stimuli, often in the form of pictures or drawings. While other projective tests, such as the Rorschach Technique and Thematic Apperception Test, ask the test taker to interpret existing pictures, figure drawing tests require the test taker to create the pictures themselves. In most cases, figure drawing tests are given to children. Because it is a simple, manageable task that children can relate to and enjoy.

Some figure drawing tests are primarily measures of cognitive abilities or cognitive development. In these tests, there is a consideration of how well a child draws and the content of a child's drawing. In some tests, the child's self-image is considered through the use of the drawings.

In other figure drawing tests, interpersonal relationships are assessed by having the child draw a family or some other situation in which more than one person is present. Some tests are used for the evaluation of child violence. Other tests involve personality interpretation through drawings of objects, such as a tree or a house, as well as people.

Finally, some figure drawing tests are used as part of the diagnostic procedure for specific types of psychological or neuropsychological impairment, such as central nervous system dysfunction or mental retardation.

Despite the flexibility in administration and interpretation of figure drawings, these tests require skilled and trained administrators familiar with both the theory behind the tests and the structure of the tests themselves. Interpretations should be made with caution and the limitations of projective tests should be considered. It is a good idea to use projective tests as part of an overall test battery. There is little professional support needed for the use of figure drawing, so the examples that follow should be interpreted with caution.

2.4 House-Tree-Person (HTP) Test

The House-Tree-Person Test (HTP) is a projective test designed to measure aspects of a person's personality. This test can also be used to assess brain damage and general mental functioning. A test is a diagnostic tool for clinical psychologists, educators, and employers. The subject receives a short, unclear instruction (the stimulus) to draw a house, a tree, and the figure of a person. Once the subject is done, they are asked to describe the pictures that they have done. The assumption is that when the subject is drawing, they are projecting their inner world onto the page. The administrator of the test uses tools and skills that have been established for the purpose of investigating the subject's inner world through the drawings.

This test created by Buck in 1948, provides a measure of a self-perception and attitudes by requiring the test taker to draw a house, a tree, and a person. The picture of the house is supposed to conjure the child's feelings toward his or her family. The picture of the tree is supposed to elicit feelings of strength or weakness. The picture of the person, as with other figure drawing tests, elicits information regarding the child's self-concept. The HTP, though mostly given to children and

adolescents, is appropriate for anyone over the age of three. HTP is given to persons above the age of three and takes approximately 150 minutes to complete based on the subject's level of mental functioning. During the first phase, the test-taker is asked to draw the house, tree, and person and the test-giver ask questions about each picture. There are 60 questions originally designed by Buck, but art therapists and trained test givers can also design their questions, or ask to follow up questions. This phase is done with a crayon. During the second phase of HTP, the test-taker draws the same pictures with a pencil or pen. Again the test-giver asks similar questions about the drawings. **Note:** Some mental health professionals only administer phase one or two and may change the writing instrument as desired. Variations of the test may ask the person to draw one person of each sex or put all drawings on the same page. Examples of follow up questions.

- **After the House:** Who lives here? Is the occupant happy? What goes on inside the house? What's it like at night? Do people visit the house? What else do the people in the house want to add to the drawing?

- **After the Tree:** What kind of tree is this? How old is the tree? What season is it? Has anyone tried to cut it down? What else grows nearby? Who waters this tree? Trees need the sunshine to live so does it get enough sunshine?

- **After the Person is drawn:** Who is the person? How old is the person? What do they like and dislike doing? Has anyone tried to hurt them? Who looks out for them?

Evaluation of Indirect Methods

The major criticism of indirect methods is their lack of objectivity. Such methods are unscientific and do not objectively measure attitudes in the same way as a Likert Scale. There is also the ethical problem of deception as often the person does not know that their attitude is being studied when using indirect methods. The advantages of such

indirect techniques of attitude measurement are that they are less likely to produce socially desirable responses, the person is unlikely to guess what is being measured and behavior should be natural and reliable.

Construction of scale to measure attitude

An attitude is a person's feeling toward any object or event.

Attitudes have two important aspects Direction and Intensity. **(1) Direction:** Attitude may be positive or constructive or negative or unconstructive towards any objects. For example, you might like Gir Cows - thus, your attitude towards Gir Cows has a positive direction. **(2) Intensity:** Attitudes have the strength of feeling. For example, if you are crazy about Gir Cows, your attitude toward them has a high level of intensity. So considering both the aspects of attitude it can be said that you would be intensely positive toward Gir Cow.

Attitudes are so much a part of human behavior; researchers have spent a great deal of time to figuring out ways to measure attitudes. There are numerous attitude scales.

Scale:

1. The scale is a concept, device or procedure used in arranging, measuring or quantifying events, objects or phenomenon in any sequence.

2. The scale is a device by which we can measure object or variables.

3. The scale is a set of numbers or amounts used to measure or compare the level of something.

Various kinds of scales are used for measuring the physical phenomena, while to measure social phenomena we have some facts known as attributes or variables. Variables are those facts that can be measured directly or for which standard scales have already been provided. For

example, the height or weight of a boy can be directly measured, but some facts are qualitative in nature that cannot be measured directly viz. social status, attitudes of a person. In social phenomena, most of the facts are qualitative in nature and may differ person to person. They hardly give any precise or clear cut idea about the state of affairs.

In social sciences, efforts for quantitative measurement are being tried in the form of various kinds of scales. In fact, social phenomena appear to be complex, intangible and therefore, incapable of numerical expression because of our lack of complete knowledge about it. With the improvement of science, we can able to grade, classify and measure independently.

Scale Product Method to develop scale to measure attitude

Attitude refers to the degree of "positive or negative feelings associated with some psychological objects" (Thurstone, 1946). The "Scale Product Method" is one of the important methods extensively used to develop a scale to measure attitude. This method combines Thurston's technique (1928) of equal appearing interval scale for selection of items and Likert's technique (1932) of summated rating for ascertaining the response on the scale as proposed by Eysenck and Crown (1949). The steps to be followed to develop a scale to measure attitude are explained here illustrating an example to develop a scale to measure the attitude of the farmers towards Agricultural Produce Market Committee (APMC) developed by Vinaya and Chauhan (2016).

1. **Item selection**

The first step in developing scale is selection of statements or items. The items making up an attitude scale are known as statements. A statement may be defined as a sentence that says something about a psychological object. As the first step in developing the scale, 30 statements related to Agricultural Produce Market Committee (APMC) were collected from the relevant literature, discussion with experts, extension educationists and social scientists working in

Anand Agricultural University. These chosen 30 statements were processed for refinement. For this, a separate panel of 20 experts was selected. The experts were requested to give their opinion about the competence of each statement to understand positive or negative feelings of farmers towards APMC. This time judges were requested to give their response regarding their agreement or disagreement about the statements to include in the scale to understand positive or negative feelings of farmers towards APMC rather than giving a response regarding the degree of favorableness or unfavorableness or say attitude towards the APMC. Out of 30 items or statements, 21 statements for which 90 or above 90 per cent of judges showed approval were selected for the next step.

The statements were edited by the following criteria suggested by Thurston and Chave (1928), Wang (1932), Likert (1932) and Edward and Kilpatrick (1948).

1. Avoid statement that refers to the past rather than present.
2. Avoid statements that are factual/ numerical.
3. Avoid statements that can be interpreted more than one way.
4. Avoid statements that are irrelevant to psychological aspect under consideration.
5. Avoid statements that are likely to be endorsed by almost everyone/ almost none.
6. Select statements that are believed in covering the entire range of affective scale of interest.
7. Keep the language of statements simple, clear and direct.
8. The statement should be short rarely exceeding 20 words.
9. Each statement should have only one complete thought.

10. Statements containing universal such as All, Always, None & Never often it reduces ambiguity & it should be avoided.

11. Words such as only just, merely and others of a similar nature should be used with care and moderation in writing statement.

12. The statement should be in the straight forward form.

13. Avoid use of words that may not be understood by those who are to be given the completing scale.

14. Avoid the use of double negatives.

Finally following 21 statements were selected for the subsequent procedure of development of scale to measure attitude of the farmers towards Agricultural Produce Market Committee (APMC).

1. I endorse that APMC is farmers' friendly approach to sale farm products. (+)

2. I think APMC system fails in controlling exploitation of farmers. (-)

3. APMC is proper system to secure farmers exploited by intermediaries. (+)

4. APMC is an inadequate system to help farmers to sale farm products appropriately. (-)

5. APMC serves as a system to stop harsh conditions created by traders for farmers. (+)

6. The payment system of farm produces adopted under APMC is inappropriate. (-)

7. APMC is ultimate solution in offering remunerative prices to the farmers. (+)

8. APMC is not a long-term solution to the problems of price inflation. (-)

9. APMC system brings transparency in the marketing of farm

products. (+)

10. APMC system does not ensure farmers in getting expected returns. (-)
11. APMC ensures effective mode of payment for agricultural produce sold by farmers. (+)
12. APMC fails in checking colluding made by brokers in price fixing. (-)
13. APMC prevents distress sale of farm produces. (+)
14. APMC does not help farmers in getting higher returns of produces when consumer prices are high. (-)
15. APMC checks monopoly of agro-traders. (+)
16. APMC does not give a chance to the farmers to access larger markets to get benefits. (-)
17. I think APMC fails practically in preventing farm products trading exploitation. (-)
18. APMC lacks in coordinating line departments. (-)
19. APMC protects price-crash. (+)
20. APMC narrows the gap between farmer's sale price and the price paid by the consumers. (+)
21. APMC system boosts up agricultural export. (+)

2. Judges' rating on attitudinal statements

To judge the degree of 'Unfavourableness' or 'Agreement' to 'Favourableness' or 'Disagreement' of each statement to include in scale to measure feelings of farmers towards APMC on the five-point equal appearing interval continuums, another panel of 50 judges was selected. The judges selected for the study comprised of extension

educationists and other experts of social sciences working in Anand Agricultural University. The judges were visited personally along with a letter of instructions to guide them for rating the statements in the desired manner for each set of the above listed 21 statements. The judges were requested to give their opinion whether the listed statements can be included to construct a scale to measure the attitude of the farmers towards APMC or not. The judges were requested to give an opinion in five point equal appearing interval continuums of agreement viz. strongly agreement, agreement, undecided, disagreement and strongly disagreement with each statement.

3. Determination of Scale Value and Quartile Value

The five points of the rating scale were assigned with a score ranking from 1 for most unfavourable (most disagreement) and 5 for most favourable (most agreement). Based on the judgment of the 50 judges for each statement, the Median value or Scale value (S value) of the distribution and the Quartile (Q) value for the statement were calculated for each statement. Then the interquartile range was worked out by taking the difference between C_{75} (Q_3) and C_{25} (Q_1), that means $Q = C_{75} - C_{25}$ for each statement. After that S value and Q values of each statement were used to decide whether the particular statement should be a part of attitude scale or not.

The median value (S value) of the distribution and the Quartile (Q) value for the statement concerned were calculated with the help of following formulas.

Formula to find out Median or S value

$$S = L + \frac{0.50 - \sum Pb}{Pw} \times i$$

Where,

S = Median or Scale value of statement

L = Lower limit of the interval in which the median falls

$\sum P_b$ = Sum of the proportion below the interval in which the median falls

P_w = Proportion within the interval in which the median falls

i = Width of the interval which was assumed as equal to 1.0 (One).

Formula to find out value of C_{25} or (Q_1)

$$C_{25} = L + \frac{0.25 - \sum Pb}{Pw} \times i$$

Where,

C_{25} = 25th centile value of the statement

L = Lower limit of the interval in which the 25th centile falls

$\sum P_b$ = Sum of the proportion below the interval in which the 25th centile falls

P_w = Proportion within the interval in which the 25th centile falls

i = Width of the interval and is assumed to be equal to 1.0 (one)

Formula to find out value of C_{75} or (Q_3)

$$C_{75} = L + \frac{0.75 - \sum Pb}{Pw} \times i$$

Where,

C_{75} = 75th centile value of the statement

L = Lower limit of the interval in which the 75th centile falls

$\sum P_b$ = Sum of the proportion below the interval in which the 75th centile falls

P_w = Proportion within the interval in which the 75th centile falls

i = Width of the interval and is assumed to be equal to 1.0 (one)

4. Procedure to select or reject each statement to include in scale to measure attitude

To illustrate a procedure for understanding the frequency distribution of judgments made by the judges for the statement no. 3 on five categories is shown here. The data from the 50 judges were arranged in Table. The table 1 indicates that out of 50 judges, 19 judges were strongly agreed and believed that the statement no. 3 (APMC is proper system to secure farmers exploited by intermediaries) should be a part of the scale, while 21, 6 and 4 of them were agreed, undecided, disagreed and none of them were strongly disagreed for the same statement to include in the scale to measure attitude of the farmers towards APMC.

Table 1: Frequency distribution of judgment made by judges in five categories for statement no 3

n=50

Sr. No	Distribution of judges based on an agreement for the statement no. 03		Frequency
1	Strongly agree	𝍸 𝍸 𝍸 IIII	19
2	Agree	𝍸 𝍸 𝍸 𝍸 I	21
3	Undecided	𝍸 I	06
4	Disagree	IIII	04
5	Strongly disagree	-	00
Total			**50**

As shown in Table 2, three rows were used for each statement. The first row gives the Number distribution (f) with which the statement was placed in each of the five categories. The second row shows the proportions (p) of these frequencies, viz. 19/50=0.38, 21/50=0.42, 06/50=0.12, 04/50=0.08 and 00/50=0.00. This way proportions are obtained by dividing each number by a total number of judges (n=50). The third row gives the cumulative proportions (Cp) that are the proportion of the judgments in a given category plus the sum of all the proportions below that category, viz. Cp of category 1 is 0.38, for 2nd it is 0.38+0.42=0.80, for 3rd 0.80+0.12=0.92, for 4th it is 0.92+0.08=1.00 and for 5th it is 1.00+0.00=1.

Table 2: Summary of judgments made by 50 judges in five categories for statement no 3

Statement no. 3	Sorting categories					Scale value	Q Value
	1	2	3	4	5		
f	19.00	21.00	6.00	4.00	0.00	1.786	1.223
p	0.38	0.42	0.12	0.08	0.00		
c_p	0.38	0.80	0.92	1.00	1.00		

If the median of the distribution of the judgment for each statement is taken as the scale value of the statement, than the scale values can be found from the data arranged in Table 2 using the following formula.

$$S=L+\frac{0.50-\sum Pb}{Pw}\times i$$

Substituting in the above formula to find out Scale Value (S) for the statement no. 03 in Table 2, we have

$$S=1.50+\frac{0.50-0.38}{0.42}\times 1$$

$$S=1.50+\frac{0.12}{0.42}\times 1$$

$$S=1.50+0.285\times 1$$

$$S=1.50+0.285$$

$$S=1.786$$

The lower limit (L) of the interval in which the median (1.50) falls, from above example, median falls in the category of 1 and 2.

L= (1+2)/2, thus L=1.50

This way Scale values were found in the same manner for the other statements.

Thurstone and Chave (1928) used the inter-quartile range Q as a

means of the variation of the distribution of the judgments for a given statement. To determine the value of Q, two other values were measured, the 75th centile/ (Q_3) and 25th centile/ (Q_1).

The formula to obtaine the 25th centile or (C_{25})

$$C_{25}=L+\frac{0.25-\sum Pb}{Pw}\times i$$

For the statement no. 03 in Table 2 we have,

$$=0.5+\frac{0.25-0.00}{0.38}\times 1$$

$$= 0.50+0.657$$

C_{25} = 1.157

The following formula used to calculate 75th centile or (C_{75}),

$$C_{75}=L+\frac{0.75-\sum Pb}{Pw}\times i$$

For the statement no. 03 in Table 2 we have,

$$C_{75} =1.50+\frac{0.75-0.38}{0.42}\times 1$$

C_{75} = 1.50 + 0.880

C_{75} = 2.380

Then the interquartile range was worked out by taking the difference between C_{75} (Q_3) and C_{25} (Q_1) thus;Q = C_{75} – C_{25} substituting the values.

Q = 2.380 – 1.157

Q= 1.223

In this manner, the interquartile range (Q) for each statement was worked out for determinations of ambiguity involved in the statements. In the first stage of the selection, only those statements

were selected, whose median values were greater than Q values. In the case of statement no. 3, S = 1.786 and Q = 1.223. Hence the statement no.3 was selected in the first phase of selection of statement to include in the scale to measure attitude towards APMC.

Table 3: Method of selecting the statements for the scale based on scale value and inter-quartile range

Statement Number	Scale value (S)	Inter-quartile range (Q)	Selection
16	3.62	1.48	Selected
14	3.10	2.18	Selected
17	2.96	2.94	Not selected
08	2.96	1.87	Selected
06	2.83	2.11	Selected
04	2.63	1.04	Selected
12	2.63	1.62	Not selected
19	2.44	1.70	Selected
18	2.44	1.93	Not selected
02	2.44	2.03	Not selected
21	2.23	1.85	Not selected
15	2.23	1.75	Selected
05	2.27	1.42	Selected
13	2.10	1.25	Selected
20	2.10	1.47	Not selected
11	1.90	0.94	Selected
09	1.90	1.15	Not selected
07	1.78	1.79	Not selected
03	1.78	1.22	Selected
10	1.67	2.25	Not selected
01	1.62	1.07	Selected

Thurstone and Chave (1928) described another criterion in addition to Q as a basis for rejecting or accepting statement to include in scales constructed by the method of the equal appearing interval.

Accordingly, when a few statements have the same scale values, the statement having lowest Q value should be selected. To understand this procedure, we can examine the statements for the scale in Table 3. Here statement no. 3 and statement no. 7 have equal scale values of 1.78 and 1.83 but Q value in case of statement no 3 is 1.22, is smaller than Q value of statement no. 7, which is 1.79. Thus, statement no. 3 was finally selected in the second phase of selection of statement to include in the scale to measure attitude towards APMC.

5. Final statement for attitude scale

Based on above explained criteria of selection of the statements considering the Median Value (Scale Value) and Q values, 12 statements numbering 1, 3, 4, 5, 6, 8, 11, 13, 14, 15, 16 and 19 of the original list were finally selected to constitute attitude scale. In the present example the scale values were ranged from 1.62 to 3.62. The final format of the scale to measure the attitude of the farmers towards APMC with 12 statements is given here.

Sr. No	Statements	SA	A	UD	DA	SDA
1	I endorse that APMC is farmers' friendly approach to sale farm products. (+)					
2	The payment system of farm produces adopted under APMC is inappropriate. (-)					
3	APMC is proper system to secure farmers exploited by intermediaries. (+)					
4	APMC is an inadequate system to help farmers to sale farm products appropriately. (-)					

5	APMC serves as a system to stop harsh conditions created by traders for farmers. (+)					
6	APMC is not a long-term solution to the problems of price inflation. (-)					
7	APMC ensures effective mode of payment for agricultural produce sold by farmers. (+)					
8	APMC does not help farmers in getting higher returns of produces when consumer prices are high. (-)					
9	APMC prevents distress sale of farm produces. (+)					
10	APMC does not give a chance to the farmers to access larger markets to get benefits. (-)					
11	APMC checks monopoly of agro-traders. (+)					
12	APMC protects price-crash. (+)					

6. Administration of the scale

Twelve statements selected for the final format of the attitude scale were randomly arranged with new serial numbers to avoid response biases, which might contribute to low reliability and detraction from validity of the scale. Out of the 12 selected statements, seven statements were positive and the indicators of the favourable attitude and five statements were negative and the indicators of unfavourable attitude. Against these 12 statements, there were five columns representing five points continuum of agreement and disagreement to the statements as followed by Likert (1932) in his summated rating technique of attitude measurement. The five points on continuum were strongly agreed, agree, undecided, disagree and strongly disagree with respective weights of 5, 4, 3, 2, and 1 for the positive or

favourable statements and of 1, 2, 3, 4 and 5 weights for the negative unfavourable statements.

7. Reliability of the scale

A scale is reliable when it consistently produces the similar results when applied to the same sample. In the present study, a split-half method of testing reliability was used.

Table: 4 Reliability test of scale using Split-half method

Sr. No.	Score of odd Statements (X_o)	Score of Even Statements (X_e)	D ($X_{0-}X_e$)	d^2	T ($X_0 + X_e$)	t^2
1	25	28	-3	9	53	2809
2	26	21	5	25	47	2209
3	27	26	1	1	53	2809
4	19	18	1	1	37	1369
5	19	17	2	4	36	1296
6	30	30	0	0	60	3600
7	24	22	2	4	46	2116
8	24	21	3	9	45	2025
9	17	19	-2	4	36	1296
10	23	24	-1	1	47	2209
11	21	19	2	4	40	1600
12	23	25	-2	4	48	2304
13	20	30	-10	100	50	2500
14	23	21	2	4	44	1936
15	30	30	0	0	60	3600
16	25	23	2	4	48	2304
17	19	22	-3	9	41	1681
18	24	24	0	0	48	2304
19	24	29	-5	25	53	2809
20	21	26	-5	25	47	2209
		Total	**-11**	**233**	**939**	**44985**

Rulon's Formula:

$$rtt = 1 - \frac{\sigma^2 d}{\sigma^2 t}$$

$$\sigma^2 d = \frac{\sum d^2 - \frac{(\sum d)^2}{n}}{n}$$

$$\sigma^2 t = \frac{\sum t^2 - \frac{(\sum t)^2}{n}}{n}$$

where,

rtt = Coefficient of reliability

$\sigma^2 d$ = Variances of differences

$\sigma^2 t$ = Variance of total score

Calculation:

$\sigma^2 d$ = $[233-(11)^2/20] \div 20$

= $[233 -6.05] \div 20$

= $226.95 \div 20$

= $\underline{11.34}$

$\sigma^2 t$ = $[44985-(939)^2/20] \div 20$

= $[44985-44086.05] \div 20$

= $898.95 \div 20$

= $\underline{44.94}$

rtt = $1-[11.34 \div 44.94]$

= $1- 0.252$

= $\underline{0.747}$

Twelve statements were divided into two equal halves with 6 odd numbered in one-half and 6 even numbered statements in the other-half. These were administered to 20 respondents. Each of the two sets of statements was treated as a separate scale and then these two sub-scales were correlated. The coefficient of reliability was calculated by the Rulon's formula (Guilford, 1954), which came to 0.747. Reliability is directly related to the length of the scale when we split to odd and even number items. The reliability coefficient which has been calculated is the value of half size of the original scale. In case of finding reliability using split half method, researcher needs to apply correction factor to consider final value of reliability. In this scale it was found 0.86.

The correction factor can be calculated by using Spearman-Brown formula.

$$rtt = \frac{2roe}{1+roe}$$

Where,

rtt = Coefficient of the reliability of the original test

roe = reliability of coefficient of odd and even score

rrt = 2(0.747)/(1+0.747)

rtt = 0.86

Thus, the scale developed was found reliable. To understand this procedure, we can examine the statements for the scale in Table-4.

The researcher should take note that such correction factor is not needed to apply when reliability is calculated using other than spilt half method.

8. Content validity of the scale

The validity of the scale was examined for content validity by determining how well the contents of the scale were selected by discussing it with specialists of extension and academicians of Anand Agricultural University. The content of the scale was realized applicable to measure the attitude of farmers towards APMC by the experts. Thus the present scale satisfied content validity.

PART-II : VARIOUS SCALES TO MEASURE ATTITUDE

In the subsequent pages, a variety of scales in original forms or with slight modifications developed by various researchers to measure attitude towards different components related to the development of rural, agriculture and allied fields are given for researcher workers to conduct new research.

All the scales have been developed using the 'Scale product method' as explained in the previous pages with an example. 'Scale product method' is one the important methods extensively used to develop a scale to measure attitude. This method combines the Thurston's technique (1928) of equal appearing interval scale for selection of items and Likert's technique (1932) of summated rating for ascertaining the response on the scale as proposed by Eysenck and Crown (1949).

The scales illustrated in the following pages are presented in the order of 'Title of Attitude Scale' followed by 'Names of authors or researchers' who developed scale, 'Statements to be used' and 'Value of the reliability of concerned scales'.

Administration of all the scales illustrated below

The researcher has to make use of the statements to collect the responses from the respondents in five columns to measure attitude viz. strongly agree, agree, undecided, disagree and strongly disagree with respective weights of 5, 4, 3, 2, and 1 for the favourable or positive statements and 1, 2, 3, 4 and 5 weights for the unfavourable or negative statements.

I. Livestock based scales

1. Scale to Measure Attitude of Farmers towards Gir Cow

Authors: Patel, R. C. and Chauhan, N. B. (2013).

Statements

1. GIR cow is a prospective resource of high milk production for farmers. (+)
2. I understand that GIR cow keeping is expensive. (-)
3. I think that there are limited scopes of GIR as compared to foreign breeds. (-)
4. I think that adoption of GIR is a risky venture. (-)
5. I understand that raising GIR cow; animal growers can grow economically. (+)
6. Raising GIR cow is possible in the entire Indian situation. (+)
7. There is more misinformation about GIR than reality. (+)
8. I think that adoption of Gir opens and enhances new export market opportunity. (+)

Value of Reliability: 0.79

2. Scale to Measure attitude of Farmers towards Kankrej Cow

Authors: Patel, B. M. and Chauhan, N. B. (2014).

Statements

1. Adopting Kankrej cow is the wise approach to get better income. (+)
2. I understand that Kankrej cow keeping is expensive. (-)
3. I think that Kankrej is competent cow to get higher milk production. (+)
4. I visualize limited scopes of Kankrej as compared to foreign breeds. (-)
5. I believe that Kankrej is the best dual purpose breed for milch and agricultural work. (+)
6. I think raising Kankrej cow is practical only in the North Gujarat. (-)
7. I think that wise animal keeper is one, who keeps Kankrej cow. (+)
8. I feel that raising Kankrej cow is feasible to even common farmer. (+)

Value of Reliability: 0.76

3. Scale to Measure Attitude of Farmers towards Holstein Friesian (HF) Cow

Authors: Patel, J. K. and Chauhan, N. B. (2013).

Statements

1. I like to adopt Holstein-Friesian (HF) cow as a dairy animal. (+)
2. I think that adopting HF cow farmers can improve their economic condition. (+)
3. I am confident that adopting HF cow is a profitable venture. (+)
4. I think that adoption of HF cow is possible to even an average marginal farmer. (+)
5. I feel that there is bright future for HF cow rearing in India. (+)
6. I dislike advising anyone to be HF cow keeper. (-)

Value of Reliability: 0.84

4. Scale to Measure Attitude of Farmers towards Graded Murrah Buffalo

Authors: Patel, B. M. and Chauhan, N. B. (2013).

Statements

1. I believe that Murrah Buffalo is a good quality milch animal. (+)
2. I think that Murrah Buffalo is not viable for small farmers. (-)
3. There is more propaganda about Murrah buffalo but in reality it is not that valuable breed. (-)
4. I think that Murrah buffalo is most suitable for all types of the farmers. (+)
5. I like Murrah Buffalo because this breed gives high milk at the cost of less fodder. (+)
6. The most successful animal keeper is one, who keeps Murrah Buffalo. (+)
7. I believe that Murrah buffalo is most potential breed in term of productivity of milk. (+)

Value of Reliability: 0.78

5. Scale to Measure Attitude of Farmers towards Use of Mineral Mixture in Cattle

Authors: Patel, J. B and Chauhan, N. B. (2015).

Statements

1. I trust adopting mineral mixture for milch animals. (+)
2. I believe that there is more propaganda about the use of mineral mixture as animal feed than truth. (-)
3. I think that mineral mixture helps to feed crucial minerals to milch animals. (+)
4. I believe that use of mineral mixture helps to boost milk yield in animals. (+)
5. I think use of mineral mixture helps in making animal bones stronger. (+)
6. I would like to advise my children to use the mineral mixture for milch animals. (+)
7. Use of mineral mixture ensures higher fertility rate in milch animals. (+)
8. Use of mineral mixture reduces animal stress. (+)
9. I think that progressive livestock owner is one who uses mineral mixture for animal feed. (+)
10. I believe that health of milch animals can be improved faster using mineral mixture. (+)
11. I believe that vigour of milch animal can be increased using mineral mixture. (+)
12. I think using mineral mixture for milch animals is feasible only to rich farmers. (+)

Value of Reliability: 0.80

6. Scale to Measure Attitude of Farmers towards Dehorning in Cattle

Authors: Patel, B. M. and Chauhan, N. B. and Patel, J. B. (2015).

Statements

1. The dehorning in cattle is advantages method. (+)
2. I dislike purchasing dehorned milch animals for my farm. (-)
3. The dehorning is the healthier approach to improving animal health. (+)
4. I think that dehorning in animals is unreliable practice. (-)
5. I feel that adoption of recommended dehorning practices in animals involves risk but worth taking. (+)
6. I think that dehorning reduces the productivity of milch animals. (-)
7. Dehorning helps in reducing the risk of injury to other animals. (+)
8. I think adoption of dehorning in animals is adoptable only by rich farmers. (-)
9. Dehorning helps in decreasing the danger of injury to cattle keepers. (+)
10. I would dislike advising my children to adopt dehorning in milch animals. (-)
11. I believe dehorning helps animals in behaving advantageously. (+)
12. I think that progressive animal keeper is one who believes in dehorning practices. (+)

Value of Reliability: 0.75

7. Scale to Measure Attitude of Farmers towards Poultry Farming

Authors: Vaidya, A. C. and Chauhan, N. B. (2012).

Statements

1. I like to start poultry farming understanding the current demand of eggs. (+)
2. It is not advisable to spend money on poultry farming. (-)
3. Even though poultry farming needs more investment, it is a profitable business. (+)
4. I do not like to advise anyone to become a poultry farmer. (-)
5. I am confident to start the poultry farming. (+)
6. In my opinion, it is not an easy task to establish a poultry farm. (-)
7. I feel that poultry farming is employment generating occupation for rural people. (+)
8. I think obtaining credit for poultry farming is difficult. (-)
9. Poultry farming is the best option to earn money for small farmers. (+)
10. I feel that poultry farming is economically highly risky business. (-)
11. I think that poultry farming is attractive enterprise. (+)
12. Starting poultry farm is not an easy task. (-)
13. I prefer poultry farming as it gives quick return. (+)
14. Poultry farming helps in enhancing the economic condition. (+)

Value of Reliability: 0.83

8. Scale to Measure Attitude of the Farmers towards Vaccination in Ruminants

Authors: Patel, P. C. and Patel, J. B. (2015).

Statements

1. I believe that adoption of vaccination practices is difficult for poor livestock owners. (-)
2. I think livestock owner should have awareness about vaccination. (+)
3. I believe that vaccination is difficult to adopt. (-)
4. I trust that vaccination is the best way to prevent important diseases in cattle. (+)
5. I think adoption of vaccination is wastage of money. (-)
6. At any cost farmers should adopt vaccination in their ruminants to get many advantages. (+)
7. I think that vaccination is only educated livestock owners' custom. (-)
8. Adoption of vaccination in animals is an instrument to keep animals vigorous. (+)
9. I understand that vaccination in animals is too costly to implement. (-)
10. I think that there is no risk in adoption of vaccination in animals. (+)
11. I believe that there is more misinformation about vaccination in animals than reality. (-)
12. I feel that vaccination helps in prevention of spreading zoonotic diseases. (+)
13. Comprehensive knowledge about vaccination is beyond the capacity of livestock owner. (-)
14. I think that progressive animal keeper is one who believes in vaccination practices. (+)

Value of Reliability: 0.78.

9. Scale to Measure Attitude of Farmers towards Dairy Enterprise

Authors: Durgga, R. V. and Patel, B. B. (2009).

Statements

1. Even if I don't get government aid I have no problem in adopting dairy farming. (+)
2. I dislike advising anybody to adopt dairy farming because it requires high investment. (-)
3. Emergency financial need can be met from selling milch animals. (+)
4. One should not start dairy farm as it causes the problem of harmful insects. (-)
5. Dairy farming provides steady income as it is an all season business. (+)
6. One should not start dairy farm as emerging infectious diseases can cause high economic loss. (-)
7. I like adopting dairy enterprise as it also gives by-products for organic farming. (+)
8. In my opinion starting a dairy enterprise is not an easy task. (-)
9. I prefer to be part of dairy enterprise than any other enterprise. (+)
10. I feel that dairy enterprise is an unprofitable business. (-)
11. I feel that dairy farming can be a source of steady income for low investors. (+)
12. High cost of medical services discourages me from venturing in to dairy enterprise. (-)

Value of Reliability: 0. 75.

10. Scale to Measure Attitude of Goat Keepers towards Goat Farming

Author: Bharwad, A. M. and Vaidya, A. C. (2016).

Statements

1. I am confident that goat farming is a profitable venture. (+)
2. I see limited scope of goat farming as compared to other livestock farming. (-)
3. I feel that goat farming is employment generating occupation for rural area. (+)
4. I think that goat farming does not give more production per unit of investment. (-)
5. I like to say that the initial investment needed for goat farming is low. (+)
6. I think that obtaining credit for goat farming is difficult. (-)
7. I like goat farming as goat is cow of low income group family. (+)
8. I think religious taboo in opposition to goat farming is present in India. (-)
9. I think goat rearing is an insurance against crop failure (+)
10. I believe that no elaborated shelter is required for goat farming (+)
11. I feel that goat farming is economically low risk oriented business (+)
12. I think that farmer should adopt goat farming. (+)

Value of Reliability: 0.78

11. Scale to Measure Attitude of Broiler Farmers towards Broiler Farming

Authors: Joshi, N. H. and Vaidya, A. C. (2017).

Statements

1. I am confident that broiler farming is a profitable venture in livestock sector. (+)
2. I avoid advising anyone to adopt broiler farming. (-)
3. I favor broiler farming to improve economy of small and landless farmers. (+)
4. I think that religious disapproval to broiler farming is present in India (-)
5. As per my opinion broiler farming is the best option to earn money for rural people.(+)
6. I think that broiler farming does not give more production per unit of investment. (-)
7. I think that broiler rearing is an insurance against crop failure. (+)
8. I prefer broiler farming as it gives quick return in terms of investment.(+)
9. I like to start broiler farming understanding the current demand of meat.(+)
10. I think that broiler farming provides sustainable food security. (+)
11. I would like to advise broiler farming as it is prestigious business globally. (+)
12. There is more propaganda about broiler farming but in reality it is not so. (+)

Value of Reliability: 0.77.

12. Scale to Measure Attitude of Farmers towards Dairy Cooperative

Authors: Patel, T. R. and Patel, A. A. (2016).

Statements

1. Cooperative dairy gives benefit only to the big farmers. (-)
2. Cooperative dairy is helpful in economic growth of dairy farmers. (+)
3. Cooperative dairy does not hold prestige in the rural society. (-)
4. Adoption of dairy cooperative increases income of the dairy farmers. (+)
5. I view that management of cooperative dairy is poor. (-)
6. Cooperative dairy is the hope for growing population of India. (+)
7. I experience poor performance of cooperative dairy in our area. (-)
8. Cooperative dairy helps to achieve high stander of living. (+)
9. I feel that cooperative dairy is not reliable for farmers. (-)
10. I realize need of cooperative dairy for my earning. (+)
11. Cooperative dairy is unmanageable for farmers. (-)
12. Cooperative dairy helps in managing safe guards the health of milch animals. (+)
13. Cooperative dairy is an enterprise for overall economical change. (+)

Value of Reliability: 0.86.

II. Crop based scales

13. Scale to Measure Attitude of Farmers towards Cumin Cultivation

Authors: Trivedi, M. K. and Chauhan, N. B. (2009).

Statements

1. Adoption of improved cumin cultivation is complicated process. (-)
2. I prefer advising my relatives to adopt improved cumin cultivation. (+)
3. I think improved cumin cultivation can be adopted only by the big farmers. (-)
4. I believe that improved cumin cultivation helps to take higher economic returns. (+)
5. I am against the approval of improved cumin cultivation. (-)
6. Adoption of improved cumin cultivation is the best use of resources. (+)
7. Traditional methods are more profitable than improved methods in cumin cultivation. (-)
8. I prefer to cultivate cumin adopting modern methods rather than cultivating other crops. (+)
9. Improved cumin cultivation is affordable only by the resourceful rich farmers. (-)
10. I am of the opinion that adopting improved cumin cultivation means invitation to the big loss. (-)

Value of Reliability: 0.79

14. Scale to Measure Attitude towards Scientific Cotton Cultivation

Authors: Zala, P. K. and Chauhan, N. B. (2008).

Statements

1. Scientific Cotton cultivation (SCC) helps in improving economic condition of the farmers. (+)
2. Traditional cotton cultivation is more profitable than scientific cotton cultivation. (-)
3. Though scientific cotton cultivation is complex, it is worth to approve. (+)
4. Despite higher cost of cultivation, SCC is worth to prefer due to higher return. (+)
5. Adoption of scientific cotton cultivation is suitable only for the big farmers. (-)
6. I like scientific cultivation of cotton more than other cash crops. (+)
7. I think scientific cotton cultivation is risky task.(-)
8. In spite of higher use of pesticides, scientific cotton cultivation is more profitable. (+)
9. Scientific cotton cultivation is time consuming process, therefore it is difficult to adopt. (-)
10. Adoption of scientific cotton cultivation means act of contrition ultimately. (-)

Value of Reliability: 0.80

15. Scale to Measure Attitude of Farmers towards Scientific Aonla Cultivation

Authors: Patel, S. R and Chauhan, N. B. (2006).

Statements

1. Scientific aonla cultivation is advisable to apply for the farmers. (+)
2. I prefer growing short duration crops instead of crop like aonla. (-)
3. Scientific aonla cultivation is an instrument for economic change. (+)
4. I avoid scientific aonla cultivation to prevent conflict with neighbour farmers. (-)
5. Taking a risk in adoption of scientific aonla cultivation technology is desirable. (+)
6. Scientific aonla cultivation is technically more difficult to adopt. (-)
7. The income of small farmers can be increased through scientific aonla cultivation. (+)
8. I avoid growing scientific aonla cultivation due to unstable price behaviour. (-)
9. Scientific aonla cultivation increases the employment opportunity in rural area. (+)
10. Scientific aonla cultivation is not advisable for inexperienced youth farmers. (-)
11. Scientific aonla cultivation is a good source to increase income in dry land areas. (+)
12. I prefer scientific aonla cultivation considering necessity of less time to look after in field. (+)

Value of Reliability: 0.80

16. Scale to Measure Attitude of Farmers towards Improved Banana Cultivation Practices

Authors: Patel, H. B. and Patel, K. F. (2005).

Statements

1. Improved banana cultivation is adoptable by most of the farmers. (+)
2. Improved banana cultivation technology gives higher yield. (+)
3. Improved banana cultivation is an instrument for socio-economic change. (+)
4. There is no risk in the adoption of improved banana cultivation technology. (+)
5. Adoption of improved banana cultivation is possible professionally only by big farmers. (-)
6. I like to advice my son to carry on improved banana cultivation. (+)
7. Considering higher system cost, adoption of drip irrigated banana cultivation not preferable. (-)
8. Acceptance of new technology is not a solution of perishable nature of banana fruit. (-)
9. Improved banana cultivation requires more fertilizer makes it economically unaffordable. (-)
10. Adoption of improved banana cultivation is more complicated. (-)
11. Adopting improved banana cultivation one can form an example of a model successful farmer. (+)
12. Improved banana cultivation has prospective to improve economic condition of farmers. (+)
13. Farmers with low income have also chance adopting improved banana cultivation successfully. (+)
14. Improved banana cultivation is achievable adopting tissue culture only. (-)
15. Improved banana cultivation is difficult to adopt by small and marginal farmers. (-)
16. The most successful banana grower is one who gets best return using minimum capital. (+).

Value of Reliability: 0.83.

17. Scale to Measure Attitude of Farmers towards Rose Cultivation

Authors: Parmar K. and Patel S. R. (2015).

Statements

1. Adoption of rose cultivation is quite difficult for small and marginal farmers. (-)
2. The most successful rose grower is one who gets maximum return with minimum cost. (+)
3. It is better to grow other traditional crops than to go for rose cultivation. (-)
4. I think that resource poor people can also grow rose. (+)
5. I consider that rose cultivation is achievable for rich farmers only. (-)
6. Rose cultivation ensures assured income for farmers. (+)
7. In my view, adoption of rose cultivation means inviting risk. (-)
8. Rose cultivation can improve the living standard of growers. (+)
9. I think that production cost of rose cultivation is unaffordable. (-)
10. Rose cultivation is the effective way to utilize family members. (+)
11. Investment on rose cultivation is wastage of money. (-)
12. Scopes are there for rose growers to get good price by adopting post-harvest management practices. (+)
13. I think that rose cultivation is suitable only for those farmers who have irrigation facility. (-)
14. I feel that rose cultivation is like gambling. (-)

Value of Reliability: 0. 83.

18. Scale to Measure Attitude of the Farmers towards Capsicum Cultivation

Authors: Rathod, D. and Desai, C. P. (2014).

Statements

1. I believe that capsicum cultivation helps farmers in getting rational returns. (+)
2. I think that adoption of capsicum is out of the reach of poor farmers. (-)
3. Capsicum cultivation is also possible to implement by untrained farmers. (+)
4. I believe that cultivation of capsicum is more complex. (-)
5. I feel that capsicum cultivation gives better return than traditional chilli cultivation. (+)
6. Cultivation of capsicum is risky venture. (-)
7. Cultivation of capsicum is difficult for non-experienced farmers. (-)
8. I believe that cultivation of capsicum is an adoptable course of action. (+)
9. I feel that capsicum is not advisable due to problems of pests. (-)
10. Even lower educated farmers can cultivate capsicum successfully. (+)
11. I think capsicum cultivation is difficult because of complex plant protection measures. (-)
12. There is no risk in adoption of capsicum cultivation. (+)
13. I feel that capsicum cultivation is like a gambling. (-)
14. Capsicum cultivation gives maximum returns with minimum cost of cultivation. (+)

Value of Reliability: 0. 79.

19. Scale to Measure Attitude of Farmers towards Gujarat Oblong Brinjal-1 (GOB-1) released by AAU

Authors: Patel, D. D. and Patel, M. R. (2015).

Statements

1. I feel that fruit of Cv. GOB-1 Brinjal is attractive due to its good shining. (+)
2. Brinjal Cv. GOB-1 is adoptable only by innovative farmers. (-)
3. Size of Brinjal Cv. GOB-1 fruit is consumer friendly. (+)
4. I believe that Brinjal Cv. GOB-1cultivation practices are more complex in nature. (-)
5. I feel that average seeds in fruit of Brinjal Cv. GOB-1 are less. (+)
6. I feel that cultivation of Brinjal Cv. GOB-1 is more labour consuming. (-)
7. I believe that numbers of fruits per plant are more in Brinjal Cv. GOB-1 than other varieties. (+)
8. I believe that Brinjal Cv. GOB-1 cultivation is only suitable in irrigated area. (-)
9. I believe that Cv. GOB-1 Brinjal is highly preferred by consumers. (+)

Value of Reliability: 0.88.

20. Scale to Measure the Attitude of Rose Growers towards Improved Rose Cultivation Practices

Authors: Patel, D. D. and Patel, B. B. (2007)

Statements

1. Adoption of improved rose cultivation technology helps to get higher yield. (+)
2. Yield of rose is improved more on the God's will than adoption of superior technology. (-)
3. Improved rose cultivation is an instrument for socio-economic change. (+)
4. Only big farmers can execute improved rose cultivation efficiently. (-)
5. There is no risk in adoption of improved rose cultivation technology. (+)
6. Only educated farmers can cultivate rose efficiently. (-)
7. I would like to advise my son to continue improved rose cultivation. (+)
8. Improved rose cultivation is difficult as it requires more technical skill. (-)
9. Adopting improved rose cultivation is prestige as work. (+)
10. Improved rose cultivation requires more labour. (-)
11. Adoption of improved rose cultivation opens the door of progressive aspiration. (+)
12. Improved rose cultivation practices are more complex to follow. (-)
13. Improved rose cultivator becomes successful example for other fellow farmers. (+)
14. Improved rose cultivation is only suitable to the farmers with own irrigation facilities. (-)
15. Farmers with less income can also be successful in improved rose cultivation. (+)
16. Getting higher return by adopting improved rose cultivation is uncertain. (-)
17. Improved rose cultivation provides chance to obtain high economic return. (+)
18. Improved rose cultivation is not easy affair for low resourceful farmers. (-)
19. Improved rose cultivation means getting highest return from minimum investment. (+)
20. Improved rose cultivation is difficult to do for inexperienced farmers. (-)

Value of Reliability: 0.86.

21. Scale to Measure Attitude of Farmers towards Jojoba Cultivation

Authors: Saini, H. and Dangi, K. L. (2008).

Statements

1. Jojoba cultivation is good source to improve farmers' economy. (+)
2. Jojoba cultivation is technically complex to follow. (-)
3. Jojoba cultivation is a rewarding agricultural activity. (+)
4. Jojoba is incompatible for all types of geographical regions. (-)
5. Inputs needed to adopt Jojoba are not very costly. (+)
6. Requisite recommendations are unavailable to adopt Jojoba cultivation. (-)
7. There is high demand of Jojoba in industries. (+)
8. Jojoba is difficult to adopt due to high cost of cultivation. (-)
9. Jojoba cultivation is suitable for all size of land holders. (+)
10. Cultivation of Jojoba is wrong choice to make use of waste land. (-)
11. Motivating Jojoba cultivation is the right step towards development. (+)
12. I avoid Jojoba Cultivation due to high cost of value addition. (-)
13. Jojoba cultivation is easy to accept due to less need of resources. (+)
14. Jojoba cultivation does not flourish well on all types of soils. (-)
15. Jojoba is less fertilizer intensive crop. (+)
16. Jojoba cultivation rarely generates employment opportunities. (-)
17. Jojoba cultivation is profitable venture. (+)
18. Jojoba plants are vulnerable to harmful insects and pests. (-)

Value of reliability: 0.82

III. Crop technology based

22. Scale to Measure Attitude of Farmers towards Integrated Pest Management (IPM)

Authors: Patel, M. C and Chauhan, N. B. (2004).

Statements

1. I think IPM increases profits of agricultural products. (+)
2. I have no trust on IPM strategy. (-)
3. I think IPM makes agricultural producers more competitive. (+)
4. I feel IPM is costly method of pest control. (-)
5. IPM adoption helps in enhancing new export markets. (+)
6. I feel IPM is a complicated method of pest control to adopt. (-)
7. I feel IPM is useful for more rational use of pesticides. (+)
8. I feel that IPM is a risky strategy to adopt. (-)
9. I consider IPM is useful to reduce soil contamination. (+)
10. I think that IPM is difficult to adopt in a real field situation. (-)
11. IPM is useful to reduce pollinators' contamination. (+)
12. I think IPM is not to control all the pests. (-)
13. I think that IPM helps in minimizing pesticide residue problems. (+)
14. IPM is a time-consuming method of pest control so I do not like to adopt it. (-)
15. I would like to advice others to adopt IPM for pest control. (+)
16. I believe that IPM is a sustainable method of pest control. (+)

Value of Reliability: 0.73

23. Scale to Measure Attitude of Farmers towards Agro Processing

Authors: Parmar P. and Patel, M. C. (2013).

Statements

1. I think that the handling of agro-processing unit is difficult. (-)
2. It is worthwhile to spend money on agro-processing. (+)
3. The adoption of agro-processing is very risky for the farming community. (-)
4. I think that it is easy to implement agro processing techniques. (+)
5. In my opinion, agro-processing is not advisable in rural area. (-)
6. In my sense, the adoption of agro-processing helps to improve living standard of farmers. (+)
7. I believe that only progressive farmer can go for agro-processing. (-)
8. In my view agro-processing is a profitable dealing, even though it needs more investment. (+)
9. I like to avoid agro-processing, as it is an expensive technology. (-)
10. Agro-processing helps in yielding higher return. (+)
11. I am not confident to start agro processing unit. (-)
12. In my opinion, the establishment of agro-processing unit damages rural ecology. (-)
13. The agro-processing unit is the best source of employment for irrespective level of educated rural youths. (+)
14. I think that it is difficult to follow legal procedure for agro-processing unit. (-)
15. I think that agro-processing optimizes profits over the long term. (+)
16. I think establishing agro-processing is not within my reach. (-)

Value of Reliability: 0.83

24. Scale to Measure Attitude of Farmers towards Green Manuring

Authors: Pate, K. P. and Patel, M. C. (2013).

Statements

1. Green manuring is potential practice to improve soil productivity. (+)
2. I feel that green manuring is not successful in the field crops. (-)
3. Regular practice of green manuring is effective source to improve structure of the sub soil. (+)
4. I think that green manuring practices are laborious. (-)
5. There are rich chances to advocate farmers to manage integrated cropping through green manuring. (+)
6. I feel that green manuring is a time consuming method. (-)
7. Green manuring is an effective source to promote eco-friendly environment for agricultural development. (+)
8. In my opinion, green manuring is only useful for the progressive farmers. (-)
9. In my belief, green manuring decreases soil erosion. (+)
10. I think that green manuring is not economically viable to enhancing productivity. (-)
11. Green manuring could be the best resource to optimize long term profit. (+)
12. In my opinion, green manuring is not an effective way to conserve plant nutrients. (-)
13. Green manuring is effective approach to increase soil water holding capacity. (+)
14. Green manuring is a perspective source for sustainable agriculture. (+)

Value of Reliability: 0.78

25. Scale to Measure Attitude of Farmers towards Mixed Farming

Authors: Onima V. T. and Chauhan, N. B. (2015).

Statements

1. I feel that mixed farming is a valuable concept to gain higher income mixing crop production and livestock enterprise. (+)
2. I avoid advising anyone to adopt mixed farming. (-)
3. I believe that mixed farming makes the best use of crop residues. (+)
4. I prefer simple crop production to mixed farming. (-)
5. I believe that mixed farming ensures assured income for a farmer. (+)
6. I feel that scopes of mixed farming are limited. (-)
7. I believe that mixed farming is beneficial as it reduces reliance on agro-chemicals. (+)
8. I believe that mixed farming is practically difficult to adopt. (-)
9. I believe that mixed farming gives opportunity to survive in adverse weather conditions. (+)
10. I think mixed farming is not a practical approach for all the farmers. (-)
11. I believe that mixed farming is the most effective way to utilize family members. (+)
12. I believe that mixed farming means inviting the problems. (-)

Value of Reliability: 0.79

26. Scale to Measure Attitude of Banana Growers towards Drip Irrigated Banana Cultivation

Authors: Gulkari, K. D. and Chauhan, N. B. (2014).

Statements

1. I like drip irrigated banana (DIBC) cultivation as it saves water. (+)
2. I believe that DIBC is not viable for illiterate farmers. (-)
3. I favour DIBC as it reduces labour cost. (+)
4. I am not in support of DIBC due to the problems of intercultural operations. (-)
5. I think that irrigated banana cultivation is possible even for average farmers. (+)
6. I believe that DIBC is not possible to continue for longer period. (-)
7. I believe that DIBC helps to produce good quality banana production. (+)
8. I feel that DIBC is unworkable due to mechanical damage caused by rodents. (-)
9. I like DIBC as it helps in maintaining low weed infestation. (+)
10. I hesitate to go for DIBC due to frequent mechanical damage. (-)
11. I feel that DIBC requires less input. (+)
12. Investment on drip irrigation system for banana cultivation is wastage of money. (-)

Value of Reliability: 0.76

27. Scale to Measure Attitude of the Farmers towards Greenhouse Technology (GHT)

Authors: Smitha, S. and Sreeram, V., Onima, V. T. and Gulkari, K. D. (2016).

Statements

1. I am sure that Greenhouse Technology (GT) is a profitable venture. (+)
2. I feel that GT is complicated so it is impractical to adopt. (-)
3. I believe that GT is worth to adopt though it is laborious. (+)
4. I believe that GT is unviable for illiterate farmers. (-)
5. I favour GT as it reduces labour cost. (+)
6. I consider that GT is only possible for rich farmers. (-)
7. I think that GT is possible to adopt even for average farmers. (+)
8. I think GT is difficult to adopt because its operations are tedious. (-)
9. I feel that GT provides year round income. (+)
10. I like to adopt GT because it helps in generating high agricultural return. (+)
11. I believe that GT helps to get maximum benefits from a small piece of land. (+)
12. I believe that GT helps to produce quality crop production.(+)

Value of Reliability: 0.77.

28. Scale to Measure Attitude of Farmers towards Bio-control Measures of Plant Protection

Authors: Bhunwal R. and Patel, J. K. (2011).

Statements

1. I believe that avoidance of biological control methods is a mistake. (+)
2. I believe that bio-control is wastage of resources. (-)
3. I think bio-control method is the most effective of all methods of pest control. (+)
4. I feel that bio-control methods are difficult to adopt without government support. (-)
5. I feel that application of bio-control measures is profitable venture. (+)
6. I feel limited scopes of bio-control measures to control variety of pests. (-)
7. I like to recommend my children to make use of bio-control methods of pest control. (+)
8. I feel that use of bio-control is gambling. (-)
9. I believe that bio-control is useful to improve overall soil health. (+)
10. I avoid bio-control considering huge need of biological agents even to cover small area. (-)
11. I think that bio-control measures are useful to balance nature. (+)
12. I believe that bio-control methods are difficult to understand. (-)
13. I think bio-control is eco-friendly. (+)
14. There is more misleading about efficacy of biological control than reality. (-)

Value of Reliability: 0.79

29. Scale to Measure Attitude of Farmers towards SRI Technique of Paddy Cultivation

Authors: Borole, P. Y. and Patel, A. A. (2010).

Statements

1. In my opinion, SRI technique in paddy cultivation gives higher yield. (+)
2. I think that the application of SRI technique in paddy cultivation is complicated. (-)
3. It is easy to adopt SRI technique in paddy cultivation. (+)
4. I think only skillful experienced person should try SRI technique in paddy cultivation. (-)
5. I think SRI technique of paddy cultivation gives higher yield than conventional method. (+)
6. The application of SRI technique in paddy is very risky. (-)
7. SRI technique is superior way for sustainable agriculture. (+)
8. The use of SRI technique is wastage of money. (-)
9. SRI technique cannot be adopted by the illiterate paddy grower. (-)
10. In my opinion, SRI technique is more laborers. (-)

Value of Reliability: 0.86

30. Scale to Measure Attitude towards Integrated Pest Management Strategy in Pigeon pea

Authors: Patel, A. C. and Patel, K. F. (2005).

Statements

1. IPM is a real boon to the pigeon-pea farmers.
2. IPM is irrelevant to the need of most of pigeon-pea farmers.
3. After all IPM in pigeon-pea is profitable venture.
4. Pest outbreak of secondary pest in pigeon-pea can be avoided by IPM technology.
5. It is worthwhile to adopt IPM in diverse pigeon-pea production technology.
6. I strongly favour IPM in pigeon-pea as it is eco-friendly.
7. I think chemical pest control pigeon-pea is difficult to substitute it by IPM.
8. I think encouragement of IPM in pigeon-pea helps for sustainable agriculture.
9. There is a lot of propaganda about IPM technology than reality.
10. I prefer to adopt IPM in pigeon-pea only after other growers have used it successfully.
11. I advise my son to use IPM in pigeon-pea conserve natural resources.
12. IPM in pigeon-pea is beyond the understanding of ordinary farmers.
13. Progress by pigeon-pea growers is possible using IPM regularly.
14. Use of IPM in pigeon-pea is just like gambling.
15. It is useless, if neighbouring farmers avoid IPM technology.
16. IPM is advisable to get more quickly efficacy against wide-range of pest.
17. Man has nothing to do with the damage caused by pest expect to depend on will of God.
18. Use of IPM in pigeon-pea improves the quality of product.

Value of Reliability: 0.87

31. Scale to Measure Perception of the Farmers towards Good Agricultural Practices.

Authors: Borate H. V. and Patel, A. A. (2015).

Statements

1. Good agricultural practices (GAPs) are profitable for agri-business. (+)
2. Production through GAPs is expensive. (-)
3. GAPs help to raise standard of living of the farmers. (+)
4. Adoption of GAPs increases dependency of farmers on consultants. (-)
5. GAPs facilitate production of export quality farm produce. (+)
6. Farmers lose their autonomy due to adoption of GAPs. (-)
7. Adoption of GAPs helps in developing domestic agricultural markets. (+)
8. Practicing GAPs is a waste of resources. (-)
9. GAPs improve the soil health. (+)
10. Procedure for global GAP certification is time consuming. (-)
11. Farmers having global GAP certification gain respect in the society. (+)
12. Procedure for global GAP certification is beyond the reach of a common farmer. (-)
13. I think having global GAP certification is a matter of pride for an individual. (+)
14. Global GAP certification is available only to the big farmers. (-)
15. Certification process of GAPs is very clumsy. (-)
16. GAPs increase the cost of plant protection measures. (-)
17. Global GAP certification procedure is biased one. (-)

Value of Reliability: 0. 86.

32. Scale to Measure Attitude of Farmers towards Anubhav Liquid Bio-fertilizer Phosphate Culture

Authors: Damor, C. B. and Patel, A. A. (2015).

Statements

1. I would like to apply Anubhav liquid bio-fertilizer phosphate culture as it is eco friendly. (+)
2. I dislike using Anubhav liquid bio-fertilizer phosphate culture as it is unavailable locally. (-)
3. Anubhav liquid bio-fertilizer phosphate culture is one of the best options for sustainable agriculture. (+)
4. I think use of Anubhav liquid bio-fertilizer phosphate culture does not increase soil fertility. (-)
5. I believe that Anubhav liquid bio-fertilizer phosphate culture gives higher yields. (+)
6. In my opinion it is complicated to apply Anubhav liquid bio-fertilizer phosphate culture. (-)
7. I think Anubhav liquid bio-fertilizer phosphate culture use reduces reliance on agro-chemicals. (+)
8. I dislike advising my children to use Anubhav liquid bio-fertilizer phosphate culture. (-)
9. Anubhav liquid bio-fertilizer phosphate culture is cheaper than chemical fertilizer. (+)
10. I feel that use of Anubhav liquid bio-fertilizer phosphate culture is gambling. (-)
11. I believe that Anubhav liquid bio-fertilizer phosphate culture improves taste of farm produces. (+)
12. I feel that use of Anubhav liquid bio-fertilizer phosphate culture for seed treatment is the best option. (+)

Value of Reliability: 0. 85.

33. Scale to Measure Attitude towards Improved Tissue Cultured Banana cultivation Practices

Authors: Patel, K. M. and Patel, K. F. (2007).

Statements

1. Raising tissue cultured banana is a risky task. (-)
2. Tissue cultured banana cultivation is advisable to adopt due to uniform maturity character. (+)
3. Adoption of tissue cultured banana cultivation is only possible by experienced farmers. (-)
4. Adoption of tissue cultured banana increases the social value. (+)
5. Cultivation of tissue cultured banana is like gambling. (-)
6. There is more misinformation about tissue cultures banana than truth. (-)
7. Raising tissue cultured banana plant increases employment opportunity in rural area. (+)
8. Our old days are better than bio- technology oriented banana cultivation. (-)
9. Tissue cultured banana growing helps to flourish banana growers. (+)
10. I feel unwillingness to exercise tissue cultures banana. (-)
11. Tissue cultured cultivation technology helps increasing agricultural production. (+)
12. Tissue culture raised banana in terms of production is more affected by environmental factors. (-)
13. Tissue cultured banana cultivation helps meeting expenditure for running home. (+)
14. Crop production is more dependent on the will of God than managerial ability. (-)
15. Tissue cultured banana cultivation helps in meeting expenditure of farming. (+)
16. Use of bio- technology in agriculture invites ecological imbalances. (-)
17. Tissue culture is the best option for banana growers. (+)
18. Raising tissue cultured banana is more complex in nature. (-)

Value of Reliability: 0.88.

34. Scale to measure the Attitude of The Farmers towards Neem-based Biopesticides

Authors: Kishan, K. and Chauhan, N. B. (2016).

Statements

1. I prefer neem based biopesticides due to their eco-friendly character. (+)
2. I feel that scopes of neem based biopesticides are limited. (-)
3. Neem based biopesticides are environment friendly. (+)
4. I feel that applications of neem based biopesticides are unmanageable. (-)
5. I like using neem based biopesticides due to their nontoxic character. (+)
6. I feel that neem based biopesticides are practically difficult to adopt. (-)
7. I feel that use of neem based biopesticides is valuable for sustainable agriculture. (+)
8. I feel that use of neem based biopesticides means wastage of money. (-)
9. I am sure that use of neem based biopesticides is a profitable practice. (-)
10. I believe neem based biopesticides are the best alternative for chemical pesticides. (+)
11. I trust that neem based biopesticides are competent to control many pests. (+)
12. I support neem based biopesticides due to its preventative pest character. (+)

Value of Reliability: 0.88

IV. ICT based scales

35. A Scale to Measure Attitude of Research Scholars towards Use of Information Technology (IT) For Their Empowerment

Authors: Patel, M. C and Chauhan, N. B. (2008).

Statements

1. IT (Information Technology) helps Agricultural Scholars to develop a carrier in agricultural fields.(+)
2. I think that IT cannot develop Agricultural Scholars to be an important part of Indian agriculture. (-)
3. IT can help Agricultural Scholars to know new areas of Research. (+)
4. IT does not help Agricultural Scholars to be a successful person in Indian condition. (-)
5. IT helps Agricultural Scholars to be a future researcher. (+)
6. IT is not that effective for Indian Agricultural Scholars to improve extension services. (-)
7. IT helps Agricultural Scholars to be an efficient biotechnologist. (+)
8. IT does not help Agricultural Scholars to be a good business manager. (-)
9. IT helps Agricultural to be a good international marketer. (+)
10. IT does not help Agricultural Scholars to be a successful entrepreneur. (-)

Value of Reliability: 0.72

36. Scale to Measure Anxiety/Nervousness towards Computer Applications

Authors: Chauhan, N. M. and Chauhan, N. B. (2006)

Statements

1. I would like to use computer if given the opportunity. (-)
2. I dislike working with computer machine that is smarter than me. (+)
3. The challenge of learning computers is exciting. (-)
4. I have trouble in knowing the technical aspects of computers. (+)
5. I think I will not be able to learn a computer programming language. (+)
6. I hesitate in making use of computer for fear of making blunders that I cannot correct. (+)
7. I am confident that I can learn computer skills. (-)
8. I think that only masterminded person can make use of computers. (+)
9. Anyone can learn to use a computer if they are patiently motivated. (-)
10. I am worried that if I start using computer I will be over dependent in doing some work without it. (+)
11. I think that with time and practice I will be comfortable working with computers. (-)
12. I avoid computer use because it is unapproachable for me. (+)
13. I feel that to get the best result, one should use computer in everyday life. (-)
14. I feel incompetent to work with computers. (-)
15. I feel that computer is necessary tool in work settings. (-)
16. I feel tension in using computers (+)

Value of Reliability: 0.74

37. Scale to Measure Attitude towards e-extension

Author: Patel, M. C. (2014)

Statements

1. I think that e–extension is key agent for sharing knowledge to farmers. (+)
2. E-extension is effective tool for Agro advisory system. (+)
3. E-extension is capable integrated Agro-expert system to address mass. (+)
4. I think e–extension is useful system to demonstrate technology. (+)
5. E-extension creates motivating situation of communication for extension personnel (+)
6. E–extension system has competence to satisfy basic needs of extension personnel. (+)
7. E–extension has tremendous competence to improve credibility of agricultural extension. (+)
8. E–extension demonstrates complex farm technology in easy to understand mode. (+)
9. E–extension provides better opportunity to harness information to improve rural livelihood. (+)
10. E-extension is ineffective for those farmers who are familiar with traditional method of extension. (-)

Value of Reliability: 0.89

NOTE: High score indicates high level of Anxiety/Nervousness towards Computer Applications

38. Scale to Measure Attitude towards the Application of Multimedia in Agricultural Higher Education

Authors: Jat B. L. and Chauhan, N. B. (2010).

Statements

1. I think the use of multimedia in agricultural higher education gives better results.(+)
2. The use of multimedia in agricultural higher education is complicated process.(-)
3. The use of multimedia in agricultural higher education is useful for creating ideal situation for agriculture learning. (+)
4. I am in against of the application of multimedia in agricultural higher education. (-)
5. The use of multimedia in agricultural higher education provides variety in agricultural teaching. (+)
6. I don't like the use of multimedia in agricultural higher education because it requires expertise. (-)
7. The use of multimedia in agricultural higher education improves information retention capacity of learners. (+)
8. I think the use of multimedia use creates body stress problems in learners. (-)
9. The use of multimedia in agricultural higher education offers a creative presentation. (+)
10. The use of multimedia in agricultural higher education is wastage of money. (-)
11. The use of multimedia in agricultural higher education is useful for establishing effective teaching process. (+)
12. I think that it is too early to use multimedia in agriculture higher education. (-)

Value of Reliability: 0.85

39. Scale to Measure Attitude of Agricultural Extension Educationist towards Computer Application

Authors: Joshi, P. J. and Chauhan, N. B. (2013).

Statements

1. Computer helps in creating desire among agricultural learners to learn new subjects. (+)
2. Use of Computer in agricultural extension education is wastage of money. (-)
3. Anyone can learn to use a computer if they are patiently motivated. (+)
4. I get a declining feeling when I think of trying to use a computer for extension education. (-)
5. Computer application is useful to show demonstrated way of doing thing. (+)
6. I avoid computers because they are unfriendly for extension education. (-)
7. Computer helps in explaining complicated topics easily in agricultural education. (+)
8. I prefer getting information in form of hard copy rather than soft copy. (-)
9. The challenge of learning about computers for extension is inspiring. (+)
10. I like to do as little work with computers as possible related to extension education. (-)
11. Gathering useful data for extension work can be simplified by using computers. (+)
12. Computer application is difficult in agricultural extension education. (-)
13. I am sure that with time and practice I will be as comfortable as I am in working by hand for extension education.
14. The frustration created by computer application in extension education is more troublesome than its significance. (-)

Value of Reliability: 0.87

40. Scale to Measure Attitude of Teachers towards Internet Exposure

Author: Shah, U. B. and Chauhan, N. B. (2006).

Statements

1. I always prefer to collect information from the internet. (+)
2. I prefer to learn more from books than the internet. (-)
3. Internet is useful to improve agricultural extension education. (+)
4. I do not like to advise my student to use internet. (-)
5. I understand that internet is useful to make person creative. (+)
6. I don't think internet needs to be popularized in India. (-)
7. Internet exposure improves quality of any teacher. (+)
8. Internet requires regular investment, so I dislike having it at home. (-)
9. I welcome internet in the field of communication. (+)
10. I hate internet learning mode. (-)
11. There are plenty chances of faculty development through internet use. (+)
12. I feel that using the internet is very unproductive work. (-)
13. I feel that each agricultural institute should have internet facilities. (+)
14. I understand that content available on internet is truthful. (+)

Value of Reliability: 0.94

41. Scale to Measure Attitude of woman research scholar towards the use of computer for their empowerment.

Authors: Christian, B. M. and Chauhan, N. B. (2013).

Statements

1. I am sure that Computer affinity accelerates woman scholars to know various job opportunities. (+)
2. I think that inclination with computer is bad activity for woman scholars. (-)
3. I accept that Computer affinity helps woman scholars to develop overall personality. (+)
4. I don't think any woman scholar can reach on the top with the help of computer. (-)
5. I believe Computer affinity gives confidence to woman scholars to be a good research manager. (+)
6. I feel that computer demoralizes woman scholars at work. (-)
7. I consider that Computer affinity is a need of hours for woman scholars to be a good value addition processor of agricultural product. (+)
8. I believe that each woman scholar should learn computer. (+)
9. The computer motivates woman scholars in self-learning. (+)
10. The computer improves the quality of work. (+)

Value of Reliability: 0.94

42. Scale to Measure the Attitude of Extension Educationists towards Application of Mobile Technology in Transfer of Agricultural Innovations

Authors: Shukla, A. P. and Chauhan, N. B. (2016).

Statements

1. I believe that mobile phone is smart system to transfer agricultural technology. (+)
2. I think mobile is prompt system of TOT. (+)
3. I feel that mobile application in TOT is misuse of money. (-)
4. I think that mobile phone is key system to create awareness among farmers. (+)
5. I feel that mobile application in TOT provides chance to explore information from any locations. (+)
6. I believe that application of mobile system means inviting unwanted public interference in developmental efforts. (-)
7. I think TOT by mobile provides chance to explore information round the clock. (+)
8. I think that application of mobile is effective way of managing agricultural labors. (+)
9. I think bringing mobile in development efforts is impractical step. (-)
10. I think that mobile application helps in knowing availability of labors for agriculture efficiently. (+)
11. I feel that application of mobile helps remarkably in connecting women stakeholders with developmental efforts. (+)
12. I believe that mobile is amazing resource of exchanging information. (-)
13. I think mobile applications help farmers in trade agreement. (+)
14. I believe that mobile helps in motivating people for productive work. (+)

Value of Reliability: 0.84

V. Programme based scales

43. Scale to Measure Attitude of the Extension Functionaries towards Agricultural Technology Management Agency (ATMA)

Authors: Patel, J. B. and Chauhan, N. B. (2015).

Statements

1. I think that ATMA is the perfect platform to coordinate agricultural research and extension activities at district level. (+)
2. I think that ATMA is impractical way to develop rural India. (-)
3. I believe ATMA is in real sense bottom-up approach to develop rural India. (+)
4. I believe that ATMA means too many cooks spoil the broth. (-)
5. I feel that ATMA is an ideal instrument for the development of the district. (+)
6. I feel that ATMA creates conflicts among neighboring farmers. (-)
7. ATMA in a real sense is a decentralized model of development. (+)
8. I feel that ATMA is more theoretical and less practical approach. (-)
9. I believe that ATMA is the best agency to encourage farmer's interest groups. (+)
10. I feel that ATMA is effective approach to join all the stakeholders to develop the district. (+)

Value of Reliability: 0.89

44. Scale to Measure Attitude of Farmers towards Training Programme Organized by SAUs

Authors: Patel, M. C. (2012).

Statements

1. Training programme organized by SAUs helps in increasing confidence among farmers. (+)
2. Literature provided during training programme is difficult to understand. (-)
3. Training programmes provide needful information on improved agricultural practices. (+)
4. Training programmes are proved as wastage of time to the progressive farmers. (-)
5. Off campus training programmes are beneficial to rural farmwomen. (+)
6. Farmers' training programmes are not advantageous to the experienced farmers. (-)
7. Visits of the successful organizations organized during training provide adequate information to fellow farmers. (+)
8. Vocational training programmes are competent to develop skilled entrepreneurs. (+)
9. Information given during training programmes builds innovative ideas among farmers. (+)
10. Training programmes create interest among farmers about modern farming technologies. (+).

Value of Reliability: 0.74

45. Scale to Measure Attitude of Rural Youths towards Agriculture as an Occupation

Authors: Ramjiyani, D. B. and Patel S. R. (2013).

Statements

1. Agriculture can provide sustainable livelihood to rural youths. (+)
2. I feel that Agriculture is not remunerative enterprise. (-)
3. I feel pride to engage in agriculture occupation. (+)
4. Agriculture makes the person bankrupt. (-)
5. I feel that Agriculture is the best occupation for rural youths. (+)
6. It is better to do job with less salary than to adopt agriculture as an occupation. (-)
7. Agriculture is our ancestral occupation so I would like to continue it. (+)
8. I avoid Agriculture as it a tedious job. (-)
9. I prefer Agriculture as an occupation. (+)
10. I feel that Agriculture is an effective occupation to earn more money from the agricultural land. (+)
11. Agriculture is the best way of earning money using creativity. (+)
12. I think that Agriculture is an effective way to utilize natural recourses. (+)
13. Villages can't prosper unless rural youth adopt agriculture occupation. (+)
14. I feel sorry for those who migrate to cities for a small job abandoning agriculture. (+)

Value of Reliability: 0.79

46. Scale to Measure Attitude towards Agricultural Education

Author: Ajit, C. and Trivedi, M. S. (2004).

Statements

1. Agricultural education (AE) prepares individuals for solving the field problems of farmers. (+)
2. AE breeds only theoretical knowledge. (-)
3. AE provides enough practical experience to students to tackle real field situation. (+)
4. AE does not develop confidence in students to accept agriculture as a profession. (-)
5. AE nurtures positive attitude in students towards agricultural learning. (+)
6. AE develops clinical ability to solve farmers' problems. (-)
7. AE develops affection for community life. (+)
8. AE creates socially disinclined degree holders. (-)
9. AE creates positivism to start agribusiness center at village level. (+)
10. AE does not provide good employment opportunity. (-)
11. AE motivates the graduates even from non-farming family to start farming. (+)
12. AE does produce confident graduates. (-)
13. AE encourages graduates to improve traditional methods of crop cultivation. (+)
14. AE does not help in developing competent agricultural personality. (-)

15. AE develops favorable attitude towards rural living. (+)
16. AE does not succeed in promoting co-operative efforts. (-)
17. AE facilitates the graduates to launch own agro-enterprises. (+)
18. AE promotes malpractices in agricultural enterprises. (-)
19. AE provides knowledge to help in improving the farmers' economy. (+)
20. AE does not produce practically skillful farm managers. (-)
21. AE kindles love towards nature. (+)
22. AE does not generate capable human resources for variety of agro-organizations. (-)
23. In India, agriculture has been learning informally so it is irrelevant to offer formally. (-)
24. AE in India does not match with the needs of actual field situations. (-)
25. AE is wastage of resources. (-)

Value of Reliability: 0.86

47. Scale to Measure Attitude towards Application of Distance Learning in Agricultural Education

Author: Patel, M. C and Chauhan, N. B. (2012).

Statements

1. I feel that distance learning mode in agricultural education has competence to develop able agricultural human recourses. (+)
2. I don't think offering higher educational degree programme in agriculture through DE is possible. (-)
3. I believe that distance mode of learning is also flexible way to offer agricultural education. (+)
4. I dislike distance learning mode in agricultural education because it is not as effective as formal way of learning. (-)
5. I like to learn agriculture through distance learning mode as it provides chance to learn at any time. (+)
6. I feel that distance learning mode provides good opportunity to learn while earn. (+)
7. I feel that distance learning mode is relevant to fulfill higher agricultural educational needs in India. (+)
8. I believe that distance learning mode has potential to introduce agricultural innovations. (+)

Value of Reliability: 0.78

48. Scale to Measure Attitude towards Agri-Business Anxiety of Youths

Authors: Patel, M. C and Chauhan, N. B (2009).

Statements

1. I feel nervousness to start business. (+)
2. I can manage fund for business. (-)
3. In my opinion, it is better to employ as serviceman rather than businessman. (+)
4. I can do hard work in business. (-)
5. I think without any experience, no one can start new business successfully. (+)
6. I feel competent to work with another business competitor. (-)
7. I am incompetent to be a businessman because I dislike interacting with other. (+)
8. I like business to fulfill family demand. (-)
9. I am incapable to follow the legal procedure of business. (+)
10. I would like to establish business if given opportunity. (-)
11. I think that I am not able to diversify the business. (+)
12. I think I am capable of managing credit needed to start business. (-)
13. I retard to employ in business because of labor problem. (+)
14. Business is the best opportunity for unemployed youths. (-)
15. I believe that businessman is not a prestigious work. (+)
16. I dislike establishing business because it restricts person living social life. (+)
17. In my opinion, one should always think of minor sector of business. (+)
18. I think business is not my cup of tea. (+)

Value of Reliability: 0.82

NOTE: High score indicates high level of Anxiety/Nervousness towards Business

49. Scale to Measure Attitude towards Agro Based Enterprise

Authors: Parmar, P. M., Patel, M. C. and Chauhan, N. B. (2012).

Statements

1. Agro-based enterprise helps in creating job opportunities. (+)
2. The creation of new agro-based enterprise is very risky. (-)
3. I like to start agro-based enterprise understanding the creation of self-employment. (+)
4. It is not advisable to spend money on agro-based enterprise. (-)
5. Agro-based Enterprise is useful in solving the unemployment problem. (+)
6. I visualize weak future of agro-based enterprise in our country. (-)
7. I prefer more to be a part of agro-based enterprise than other enterprise. (+)
8. I prefer to have service but not own agro-based enterprise. (-)
9. Agro-based enterprise is the best source of employment for irrespective level of educated rural youths. (+)
10. I don't like to advise anyone to become an entrepreneur. (-)
11. I think that agro-based enterprise can be a good source of Income for low investors. (+)
12. I feel that establishment of agro-based enterprise is unproductive. (-)
13. Agro-based enterprise is the best option to earn money for landless rural people. (+)
14. I think that it is difficult to follow legal procedure for agro-based enterprise. (-)

Value of Reliability: 0.82

50. Scale to Measure Attitude of the Students towards Agro-tourism as an Enterprise

Authors: Pattar, S. K and Chauhan, N. B (2010).

Statements

1. I feel that Agro-tourism is valuable enterprise to earn additional money from agricultural land. (+)
2. I think that mixing agriculture with tourism means inviting big loss. (-)
3. I think that Agro-tourism is effectual way to utilize agricultural resources. (+)
4. I feel that Agro-tourism makes the person bankrupt. (-)
5. I feel that Agro-tourism has potential to offer financial independence. (+)
6. I feel that Agro-tourism creates adverse impact on the rural culture. (-)
7. I think that Agro-tourism is the best way of earning money using creativity. (+)
8. I dislike Agro-tourism because it is more time consuming venture. (-)
9. I believe that Agro-tourism helps in developing rural market. (+)
10. I feel that Agro-tourism doesn't ensure remunerative income. (-)
11. I feel that Agro-tourism has scope to attract tourists as it involves nature. (+)
12. I think that Agro-tourism is not an entrepreneurial idea. (-)
13. I feel that Agro-tourism is good opportunity to encourage entrepreneurship amongst farmers. (+)
14. I think that Agro-tourism is possible only for those who have optimum resources. (-)
15. Agro-tourism provides security to farmers to survive during natural farming disaster. (+)
16. I think that Agro-tourism is not prestigious venture. (-)

Value of Reliability: 0.75

51. Scale to Measure Attitude of Women Research Scholars towards Climate Change

Authors: Netravathi, G. and Chauhan, N. B. (2014).

Statements

1. I believe that climate change is universal phenomena (+)
2. I feel that a climate change phenomenon is only misinformation. (-)
3. I believe that climate change situation has created shortage of food. (+)
4. I think no need to waste resources on climate change issues. (-)
5. I feel that a climate change phenomenon has affected human health. (+)
6. I feel climate change is the natural phenomena, so man has nothing to do with it. (-)
7. I feel study on climate change situation is the necessary for the growth of agriculture. (+)
8. I believe that occurrence of climate change has increased soil evaporation rate. (+)
9. I accept that climate change activities have increased natural calamities. (+)
10. I trust that change in rainfall pattern is mainly due to climate change. (+)
11. I think lack of sensitivity towards climate change creates vulnerability in agriculture. (+)
12. I feel that because of climate change there is need to adopt innovative methods in farming.(+)

Value of Reliability: 0.81

52. Scale to Measure Agricultural Risk Orientation

Author: Patel, M. C and Chauhan, N. B (2009).

Statements

1. I am confident on my ability to take challenges for any types of agricultural risk. (+)
2. I dislike using any agricultural risk creating methods. (-)
3. I am ready to bear risk for high profit in agriculture. (+)
4. I like to take challenge in adopting costly agricultural methods. (+)
5. I like to follow only those methods which are successfully accepted by other farmers. (-)
6. I feel people with in tented risk bearing capacity are always stepping the top. (+)
7. I feel fear that something unexpected might damage my plans of adopting new Agricultural technology. (-)
8. I can minimize the consequence of risk in agriculture by proper planning. (+)
9. I can reduce the effect of any risk in agriculture by proper execution. (+)
10. I feel that accepting realistic risk in agriculture is not always hazardous resolution. (+)

Value of Reliability: 0.73

53. Scale to Measure Agricultural Scientific Orientation

Author: Patel, M. C. (2009).

Statements

1. Scientific methods of farming always confuse me. (-)
2. Quality crop production is possible through use of science. (+)
3. Adoption of new scientific agricultural methods is problematic process. (-)
4. Profitable agricultural production is possible through intervention of science and technology. (+)
5. Scientific methods of farming are very impractical. (-)
6. I like to prefer agricultural scientific methods of crop production. (+)
7. Application of science in farming means wastage of time. (-)
8. In my opinion use of science in agriculture means fruitful result. (+)
9. I believe in traditional method of farming. (-)
10. Sustainable agriculture is possible through application of science in agriculture. (+)
11. Agricultural Scientific methods of farming damage ecology. (-)
12. Agricultural Scientific methods increase crop production. (+)
13. Agricultural Scientific methods require high infrastructural facilities. (+)
14. Application of science in farming means savings of money. (+)

Value of Reliability: 0.81

54. Scale to Measure Attitude of Extension Educationist towards Agriculture FM Radio

Authors: Shukla, A and Chauhan, N. B. (2013).

Statements

1. I think AFMR has potentiality to be credible source of information. (+)
2. Addiction to AFMR can lead to wastage of productive time. (-)
3. AFMR has the potential to reach the remote village. (+)
4. There are chances to misuse AFMR to mislead farmers by people with wicked intension. (-)
5. AFMR could be the best way to address area specific agriculture. (+)
6. Establishment of AFMR is nothing but wastage of resources. (-)
7. AFMR has potential to reach to the remote village. (+)
8. AFMR is an individually affordable source to reach even the poorest workers in farm. (+)
9. AFMR is the best mean to have interactive communication between developmental agencies and farmers. (+)
10. AFMR is innovative avenue to make the best use of local traditional artists in the process of agricultural development. (+)

Value of Reliability: 0.82

55. Scale to Measure Attitude of Tribal Peasant towards Integrated Tribal Development Project (ITDP)

Authors: Patel, M. R. and Patel, P. P. (2011).

Statements

1. ITDP is sound practical approach for the development of tribal farmer. (+)
2. ITDP leads conflict amongst the tribal farmers. (-)
3. ITDP has helped in increasing income of tribal farmers noticeably during last few years. (+)
4. I feel that ITDP is caste biased underprivileged concept. (-)
5. ITDP motives tribal farmers to come forward for participation in community affairs. (+)
6. I feel that ITDP is wastage of money. (-)
7. ITDP helps tribal farmers to develop leadership in running useful developmental activities. (+)
8. I believe that ITDP office bears are untrained to work efficiently. (-)
9. ITDP facilitates developing sensitivity of 'we feeling' among the tribal farmers. (+)
10. ITDP helps in rising knowledge of modern agricultural technology amongst the tribal farmers. (+)
11. ITDP contributes enhancing adoption of modern agricultural practices in the tribles. (+)
12. High working efficiency is great feature of ITDP. (+)
13. ITDP maintains superior linkage with other developmental agencies. (+)
14. I believe ITDP helps in providing sustainable livelihood. (+)

Value of Reliability: 0.82

56. Scale to Measure Interpersonal Conflict among Employees of Agricultural Universities

Authors: Patel, S. R., Trivedi, M. S. and Patel, J. K. (2010).

There are three parts of this scale

(A)Scale to Measure interpersonal conflict with superiors (B) Scale to Measure interpersonal conflict with colleagues and (C) Scale to Measure interpersonal conflict with subordinates

Statements

(A) Scale to Measure Interpersonal Conflict with Superiors

1. Superiors are very cooperative and supportive. (-)
2. Deadlines are given without considering individual's ability to cope up. (+)
3. I feel that my superiors behave with me democratically. (-)
4. Superiors ignore the work related feeling of interpersonal aspects of employees. (+)
5. I have to work under unclear directions or instructions. (+)
6. Superiors assign more than one simultaneous roles which are difficult to perform. (+)
7. Superiors provide heavy workload to sincere employees than others. (+)
8. Superiors are unappreciative of the work done by me. (+)

Value of Reliability: 0.88

Note: High score indicates high level of conflict with superiors.

(B) Scale to Measure Interpersonal Conflict with Colleagues

Statements

1. Colleagues provide whole hearted cooperation for various organizational tasks. (-)
2. Colleagues don't understand interpersonal feelings. (+)
3. Colleagues stealthily make out the way to excel. (-)
4. My ambitions remain unfulfilled because of blockage created by colleagues. (+)
5. We colleagues enjoy working together. (-)
6. It upsets when I come to know that my colleague does something against me in secret. (+)
7. We have a lot of differences over such matters as who should do what jobs. (+)
8. Colleagues avoid in helping me in my work to prove me bad in the eyes of management. (+)
9. Extremely over aspired colleague of my organization behaves rudely with me. (+)

Value of Reliability: 0.81

Note: High score indicates high level of conflict with colleagues

(C) Scale to Measure Interpersonal Conflict with Subordinate (Junior) Staff

Statements

1. Subordinates knowingly ignore the instructions given to follow. (+)
2. Subordinates are ever ready to do the task as I assign. (-)
3. Subordinates feel envy for my superior position. (+)
4. Subordinates are all the way helpful in attaining organizational goals. (-)
5. Subordinates are unable to keep pace with momentum as I want. (+)
6. I am fully satisfied with my subordinates. (-)
7. Differences in opinion take the form of verbal confrontation with subordinates. (+)
8. Chances are there of open disagreement with my arrogant subordinates. (+)

Value of Reliability: 0.86

Note: High score indicates high level of conflict with subordinates. To find out level of interpersonal conflict of any organization or agricultural universities, add the scores of all the three levels (A+B+C) of conflicts.

57. A Scale to Measure Attitude of Farmers towards Kisan Call Centre (KCC)

Authors: Yadav, P. C. and Patel, A. A. (2012).

Statements

1. All agricultural problems of the farmers are solved by KCC. (+)
2. KCC services are only for progressive and big farmers. (-)
3. KCC system is an innovative system to get agricultural information. (+)
4. I would not advice my friends to contact KCC for seeking guidance. (-)
5. Regularly contact with KCC leads to increase of crop yield. (+)
6. The KCC advice is suitable only for those farmers who have irrigation facilities. (-)
7. I strongly feel that the advice given by KCC apply to my farm also. (+)
8. KCC gives out dated information. (-)
9. KCC helps in building up self-reliance of farmers. (+)
10. Calling at KCC is wastage of time. (-)

Value of Reliability: 0.79

58. Scale to Measure Attitude of Farmers towards Soil Health Card (SHC)

Authors: Patel J. K and Chauhan, N. B. (2011).

Statements

1. I believe that Soil Health Card (SHC) programme is blessing for the farmers. (+)
2. I realize that SHC is useful to know the physical properties of the soil to ensure the soil productivity. (+)
3. I trust that SHC is useful to save input cost for the farmers. (+)
4. I believe that SHC is a useful scheme for farmers. (+)
5. I feel that SHC programme is not useful for illiterate farmers. (-)
6. I feel that SHC is useful scheme to understand fertility status of the soil. (+)
7. I recognize that SHC is worthy for balanced use of chemical fertilizers. (+)
8. I recognize that SHC is useful to adopt Integrated Nutrient Management practices in the crops. (+)

Value of Reliability: 0.71

59. Scale to Measure Attitude towards Working Pattern of State Agricultural University

Authors: Patel, S. R and Trivedi, M. S. (2009).

Statements

1. Present working pattern of my University is quite satisfactory. (+)
2. Present working pattern is only output oriented ignoring human element. (-)
3. A work culture prevailing in my University is good. (+)
4. The existing working pattern does not encourage expected progress. (-)
5. The present working pattern takes due care for employees career. (+)
6. I feel that the present working pattern of my University requires big reforms. (-)
7. I feel happy in the present working pattern of my University. (+)
8. Potentiality of certain employees remains underutilized in the present working pattern. (-)
9. Human resource development is powerful feature of the present working pattern. (+)
10. Administrative procedure of my University seems lengthy. (-)
11. Present working pattern allows employees using their hidden capabilities for good productivity. (+)
12. The present working pattern exploits much time of researchers in administrative matter. (-)
13. The present working pattern provides better opportunity of integration among various units. (+)
14. The present working pattern is deficient in expected interpersonal relationship within employees. (-)
15. The coordination amongst employees is experienced harmonized in present working pattern. (+)
16. Present working pattern increases work load for sincere employees. (-)
17. Present working pattern encourages employees to escape from responsibility. (-)

Value of Reliability: 0. 90

60 Scale to Measure Attitude of the Beneficiaries towards Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) Programme

Authors: Bhati, G. S and Patel, S. R. (2015).

Statements

1. MNREGA programme is effective in enhancing livelihood security in rural areas. (+)
2. There is improper coordination between MNREGA programme personnel and beneficiaries. (-)
3. MNREGA enhances the women empowerment in rural area. (+)
4. I feel that MNREGA has created problem of shortage of available agricultural labour. (-)
5. MNREGA increases purchasing power of beneficiaries. (+)
6. I think that mode of payment of wage in MNREGA is not proper. (-)
7. MNREGA is a boon for poor rural people. (+)
8. The execution of the MNREGA at grass root level is ineffective. (-)
9. There is no discrimination in paying wages to both men and women in MNREGA. (+)
10. I feel that MNREGA increases corruption in rural area. (-)
11. MNREGA is better than other employment programmes. (+)
12. MNREGA has failed in preventing migration of rural people. (-)

Value of Reliability: 0.79

61. Scale to Measure Attitude of the Farmers towards Kisan Credit Card

Authors: Patel, B. D. and Chauhan, N. B. (2015).

Statements

1. Kisan Credit Card (KCC) is a convenient mechanism to avail credit for farmers. (+)
2. I don't like availing credit through KCC due to complicated process. (-)
3. I think KCC offers an efficient utilization of credit to the farmer. (+)
4. I feel that KCC is poor source to obtain long term credit. (-)
5. KCC is a competent source for the farmers to avail credit as needed. (+)
6. KCC provides timely credit facilities to farmers throughout the year. (+)
7. I like to avail loan by KCC due to its flexibility to draw cash at any time. (+)
8. I feel that KCC is a useful facility for balanced use of finance. (+)
9. I think KCC is a farmer friendly source to avail credit. (+)
10. KCC is a backbone for farmers to take planned risk to develop farming. (+)

Value of Reliability: 0.86

62. Attitude of Farmers towards Watershed Development Programme

Authors: Patel, R. C and Patel, H. L. (2000).

Statements

1. Adoption of watershed management practices is real boon to the farmers of rain-fed area. (+)
2. Investing money for soil and water conservation in dryland is wastage. (-)
3. Watershed management project increases farmers' awareness on scientific dry farming. (+)
4. Watershed management technologies are beyond capacity of small and marginal dryland farmers. (-)
5. Watershed management practices are suitable to the farmers of all levels of economic conditions. (+)
6. Watershed development activities loss-making against cost of investment to the farmers. (-)
7. Watershed management technologies support dryland farmers to improve degraded soil. (+)
8. Watershed development programme is irrelevant to accomplish needs of majority of the farmers of dryland area. (-)
9. Watershed development programme is systematic approach to manage land using water professionally. (+)
10. Demonstrated watershed management technology does not motivate farmers' level of adoption. (-)
11. Adoption of watershed management technology supports to boost crop yield in rain-fed farming. (+)
12. Watershed development programme is more government friendly than farmers' friendly approach. (-)
13. I feel encouraging in adopting scientific watershed management technology. (+)
14. Watershed management practices are impracticable for farmers to adopt in local situations. (-)
15. Watershed development programme also helps in harmonizing other farmers' related departments of government. (+)
16. Watershed development programme personnel are unprofessional to convince farmers to gain benefits of programme. (-)

Value of Reliability: 0.83

63. Scale to Measure Attitude of Farmers towards Farmers' Interest Group (FIG)

Authors: Patel, J. B. and Chauhan, N. B. (2016).

Statements

1. I think that Farmers Interest Group (FIG) provides opportunity to solve those issues which are difficult to solve individually. (+)
2. I think that FIG creates conflict among the member farmers (-)
3. I feel that FIG helps in acquiring costly inputs which are difficult to manage independently. (+)
4. I believe that FIG means too many cooks spoil the broth. (-)
5. I think FIG is ideal platform to bridge extension personnel with farmers. (+)
6. I think that FIG creates conflict between resource poor and rich farmers. (-)
7. I like to be a member of FIG. (+)
8. I believe that FIG creates misunderstanding within the farmers. (-)
9. I believe that input buying capacity of farmers improves joining FIG. (+)
10. I believe that FIG provides forum in sharing advantageous issues (+)
11. I feel that FIG is a prospective system to empower farmers (+)
12. I feel that FIG is a potential tool for women empowerment (+)

Value of Reliability: 0.75.

64. Scale to Measure Attitude of the Agricultural Scientists towards Agricultural Publications (APs)

Authors: Makwan, A. R. and Trivedi, M. S. (2010)

Statements

1. Agril-Publications (APs) provide solutions to tackle current agricultural situations. (+)
2. APs are less effective than other media in getting farmers' feedback. (-)
3. APs help in harmonizing scientists, extension personnel and farmers. (+)
4. APs are incompetent to channelize functioning between researchers and extension agents. (-)
5. APs are potential media to connect agricultural research, education and extension management. (+)
6. APs are inefficient to address every areas of agriculture. (-)
7. APs are encouraging means to aid current extension systems. (+)
8. APs have insignificant contribution in farming process. (-)
9. APs encourage farmers effectively to purchase farm inputs. (+)
10. I consider Agril-publications as useless part in my life. (-)
11. Existing infrastructure of APs is capable to meet farmers' needs. (+)
12. I have never experienced scientists advising me to contribute through APs. (-)
13. APs contribute productively for farmers. (+)
14. Agril-publications are not my areas of interest. (-)
15. APs provide sound opportunity to farmers know information in local language. (+)
16. It is difficult to address ideas through Agril-publications. (-)
17. APs facilitate integration of information sources. (+)
18. I think agricultural publication is possible only by trained specialists. (-)
19. APs are the strength of progress of agricultural extension. (+)
20. I visualize significance of Agril-publications for my future work. (+)

Value of Reliability: 0.89

65. Scale to Measure Attitude Farmers towards Farm Literature

Authors: Soni, N. V. and Patel, N. R. (2005).

Statements

1. Farm literature creates scientific vision towards agriculture. (+)
2. Farm literature is only to pass the time for farmers. (-)
3. Farm literature helps me to be a progressive farmer. (+)
4. Farm literature does not aware farmers on safety measure during natural calamities. (-)
5. Farm literature gives the information on recommended agriculture technology. (+)
6. Farm literature is waste of one's time. (-)
7. Farm literature motivates farmer to take risk in farming. (+)
8. Farm literature fails in giving farmers' community programmes. (-)
9. Farmers' doubts are well cleared through farm literature. (+)
10. Farm literature lacks in giving marketing information. (-)
11. The information published in farm literature can increase profit of farmer. (+)
12. The recommendation published in farm literature is suitable for all farmers. (+)
13. Farm literature is real solution of farmers' field problem. (+)
14. Reading of farm literature keeps the farmers knowledge update. (+)
15. Farm literature develops scientific attitude towards farming. (+)
16. Farm literature is helpful in agricultural management. (+)
17. Farm literature helps farmer to take decision in adoption of new technology. (+)
18. Farm literature raises interest in agribusiness. (+)
19. Farm literature creates awareness among the farmer about government policy. (+)
20. Farm literature increases the inspired reading habit of the farmer. (+)

Value of Reliability: 0.89

66. Scale to Measure Attitude of Research Scientists towards Research

Authors: Patel, A. A. and Patel, H. L. (1993).

Statements

1. I have never regretted my decision to join research work. (+)
2. Research work is a waste of time. (-)
3. Research work is related to my interest. (+)
4. Research work is too hard a job to do. (-)
5. I am well adjusted with research work. (+)
6. I accepted research work job because of the non-availability of any other job. (-)
7. Research work offers social status. (+)
8. Money spent on research work is just wastage. (-)
9. Research work gives me a great deal of pleasure. (+)
10. Honesty speaking, I hate research work. (-)
11. I am proud that I am engaged in research work. (+)
12. Research work is the need of the hour.(-)
13. I would not mind to work even for seven days for research. (+)

Value of Reliability: 0.76

67. Scale to Measure Attitude of Farmers towards FLD

Authors: Patel, U. M. and Patel, B. B. (2009).

Statements

1. FLDs do not incorporate farmers' suggestions. (-)
2. FLD is practical approach for boosting the agricultural production. (+)
3. FLDs are beneficial only to the big farmers. (-)
4. FLD has shown significant impact on crop production in last two years. (+)
5. FLDs are restrictively benefited to the contact farmers only. (-)
6. FLD Scientists interacts as and when needed by the farmers. (+)
7. FLDs do not demonstrate impact on crop production of the farmers. (-)
8. FLDs motivate the farmers to adopt newly released crop production technology. (+)
9. FLD benefit is difficult to obtain from the scientists. (-)
10. FLD helps to increase knowledge of crop production technology. (+)
11. FLD creates conflicts among neighboring farmers. (-)
12. FLD helps to motivate adoption of crop production technology. (+)
13. FLD is more government programme friendly than farmers' friendly. (-)
14. FLD experts' regular visits encourage farmers to raise valuable crops. (+)
15. FLD does not reach to maximum farmers due to improper publicity. (-)
16. FLD creates favorable attitudes towards crop production technology. (+)
17. FLD Scientists do not visit the plot regularly. (-)
18. FLDs motivate farmers' participation in other extension activities. (+)
19. FLD is partial to benefit only to the demonstrated farmers. (-)
20. FLD keeps farmers in touch with latest technology. (+)
21. FLD Scientists are incapable of giving immediate solution to the farmers. (-)
22. FLD helps scientists to provide research based information. (+)

Value of Reliability: 0.88

68. Scale to Measure Attitude of Sardar Sarovar Project Affected Farmers (PAFs) towards Rehabilitated Place

Authors: Chinchmalatpure, U. and Mayani, V. V. (2001).

Statements

1. At new rehabilitated place neighbours help to PAFs. (+)
2. In the interest of other people, the PAFs like to leave the old place. (+)
3. Economically significant progress is experienced in PAFs at new place. (+)
4. Least importance is given to develop other than agriculture at new place. (-)
5. Significant impact of policy is experienced on extra employment at new place. (+)
6. Rehabilitation package is not accomplished practically at new place. (-)
7. Subsidies to purchase agro-implements are given sufficiently to PAFs. (+)
8. Rehabilitation packages provided to PAFs do not match with Govt .recommendations (-)
9. Rehabilitation packages are the best gift of the govt. to the PAFs. (+)
10. PAFs from higher casts negatively influence in gaining financial advantages. (-)
11. Medical facilities are very good at new place. (+)
12. Higher cast PAFs affect badly to gain jobs at new place. (-)
13. Educational facilities are better at new place than old place. (+)
14. Supply of agricultural inputs is inadequate at new place. (-)
15. Because of rehabilitation, the income of the PAFs has increased. (+)
16. Expected large compensation for new house is given at new place. (+)
17. There is good provision of assistance to construct house at new place. (+)
18. I take pride in telling that I am able to take benefits at rehabilitated place. (+)
19. Rehabilitated place provides opportunity to PAFs to grow crops throughout the year. (+)
20. The crop yields are better at new place than old place. (+)

Value of Reliability: 0.83

69. Scale to Measure Attitude of Beneficiaries towards National Horticulture Mission (NHM)

Authors: Gulkari Krunal, Netravathi G. and V. T. Onima (2013)

Statements

1. NHM generates new employment opportunity in rural area. (+)
2. NHM Activities are irrelevant to the needs of small and marginal farmers. (-)
3. NHM encourages the farmers to take proper care of their horticulture. (+)
4. The procedure of getting the benefits from NHM is complex. (-)
5. NHM helps the farmer to improve overall status. (+)
6. NHM creates marketing problem of fruits due to rise in fruit production. (-)
7. NHM benefits are unreached to all the farmers due to improper publicity. (+)
8. NHM benefits only to the big farmers. (-)
9. NHM increases hope for the small-scale fruit processing industries. (+)
10. NHM is more propaganda than reality. (-)
11. NHM helps farmers in adopt of high cost inputs. (+)
12. NHM is a boon for small and marginal farmers. (+)

Value of Reliability: 0.75.

70. Scale to Measure Attitude of Farmers towards Farmer Field School (FFS)

Authors: Haseena B. and Patel, J. B. (2017).

Statements

1. FFS is learner-centered approach. (+)
2. I think FFS creates conflict among participants. (–)
3. I understand that FFS is an ideal approach of practical experiential learning. (+)
4. I believe that participating in FFS is a time consuming process. (–)
5. FFS provides a platform for sharing knowledge among the farmers. (+)
6. I believe FFS is an impractical way of developing farmers. (–)
7. I feel that FFS helps improving self- confidence among farmers. (+)
8. I perceive that FFS neglects participation of resource poor farmers. (–)
9. FFS is useful tool for sustainable group formation. (+)
10. Learning in real farmer's field is more effective than classroom learning. (+)
11. I believe that FFS helps to promote sustainable agriculture.(+)

Value of Reliability: 0.79

71. Scale to Measure Attitude of Scientists towards Organizational climate

Authors: Mohmmad, Y. and Desai, C. P. (2016).

Statements

1. I think impression created by management in my university supports the research activity. (+)
2. I believe that vertical communication between senior and junior employees is discouraging. (-)
3. I consider that horizontal communication within the employees is cheering. (+)
4. I am unsatisfied with the working conditions of my university. (-)
5. I think that efficiency of employee in my organization is considerable factor in delegating the power. (+)
6. I think working climate of my university is impractical. (-)
7. I believe that level of discipline in my university is well maintained. (+)
8. I believe that climate provided to develop carrier in my university is discouraging. (-)
9. I think that critical decisions are taken in my university by participatory approach. (+)
10. I think that authority is failed in creating conducive working climate in my university. (-)
11. I think organizational environment of my university is adaptive. (+)
12. I believe that infrastructural facility made available at my university is discouraging. (-)

Value of Reliability: 0.72.

72. Scale to Measure Attitude of Tribal Farmwomen towards Different Development Programmes

Authors: Patel, M. R. and Patel, N. R. (2006).

Statements

1. Different development programmes contribute significantly to develop tribals. (+)
2. Money spent on different development programmes is just wastage. (-)
3. Objectives of different development programmes are related to my interest. (+)
4. Development programmes contribute only for big farmers. (-)
5. Works done under development programmes provide me great satisfaction. (+)
6. Different development programmes are insignificant to eliminate tribals' poverty. (-)
7. Different development programmes fulfill overall needs of tribals. (+)
8. Inputs supply process of development programmes is untimely. (-)
9. Development programmes create helpful condition for tribals to handle misconduct of money lenders. (+)
10. Regulations to obtain benefits of development programmes are complicated. (-)
11. Animal husbandry related activities of programmes contribute for additional income of tribals. (+)
12. Development programmes fail to generate employment for tribals through forestry. (-)

13. Development programmes contributes remarkably to increase area under fish culture. (+)

14. Development programmes are discouraging for tribals to take benefits of electricity for well irrigation. (-)

15. Development programmes contributes significantly in raising living standard of tribals.(+)

16. Efforts made through development programmes to develop educational level of tribals are hopeless. (-)

17. Health related programmes are inappropriate to improve wellbeing of tribals. (-)

18. Development programmes are improper to encourage family planning in tribals. (-)

Value of Reliability: 0.92.

73. Scale to Measure Attitude of woman towards Kitchen Gardening

Authors: H. Saini, Chauhan, N. B. (2016).

Statements

1. Kitchen garden provides an opportunity to make a positive environmental impact. (+)
2. I visualize limited scopes of kitchen gardening. (-)
3. Kitchen gardening provides opportunity to get fresh vegetables in all the seasons. (+)
4. I think kitchen gardening is tedious job. (-)
5. I think kitchen gardening helps in saving money. (+)
6. Kitchen gardening is hypocrisy than reality. (-)
7. Kitchen gardening is an ideal medium to give experience of nature to children. (+)
8. Kitchen gardening promotes inter-personal conflict among family members. (-)
9. Kitchen garden helps in promoting family fitness. (+)
10. Kitchen garden promotes greenery near residential areas. (+)
11. Kitchen gardening is constructive approach to convert leisure time in to productive one. (+)

Value of Reliability: 0.84

74. Scale to Measure Attitude of Famers towards APMC

Authors: Chauhan, N. B. Vinaya Kumar, H. M, Saini H. and Patel, J. B. (2016).

Statements

1. I endorse that APMC is farmers' friendly approach to sale farm products. (+)
2. Payment system of farm produces adopted under APMC is inappropriate. (-)
3. APMC is the best system to secure farmers exploited by intermediaries. (+)
4. APMC is inadequate system to help farmers to sale farm products appropriately. (-)
5. APMC serves as a system to stop harsh conditions created by traders for farmers. (+)
6. APMC is not a long-term solution to the problems of price inflation. (-)
7. APMC ensures effective mode of payment for agricultural produce sold by farmers. (+)
8. APMC does not help farmers in getting higher returns of produces when consumer prices are high. (-)
9. APMC prevents distress sale of farm produces. (+)
10. APMC does not give chance to the farmers to access larger markets to get benefits. (-)
11. APMC checks monopoly of agro-traders. (+)
12. APMC protects price-crash. (+)

Value of Reliability: 0.85

75. Scale to Measure Attitude of The Farmers towards Vermicompost

Authors: Saini, H. and Yadav, J. P. (2005).

Statements

1. Vermicompost is an important component of organic farming. (+)
2. Vermicompost is a time consuming process. (-)
3. Vermicompost is effective way to recycle agricultural waste. (+)
4. Vermicompost is possible only by skillful person. (-)
5. Vermicompost helps in precious soil improvement. (+)
6. Vermicompost is possible to accept only for rich farmers. (-)
7. Vermicompost generates additional farm income. (+)
8. Vermicompost doesn't help in adding market value of farm products. (-)
9. Vermicompost helps in the improvement of agriculture. (+)
10. Vermicompost is a costly affair. (-)
11. Vermicompost improve the drainage system of soil. (+)
12. Application vermicompost doesn't reduce the use of chemical fertilizers. (-)
13. Vermicompost decreases the beneficial soil micro-organism. (+)
14. Vermicompost does not help in improving soil health status. (-)
15. Vermicompost is a very rich source of nutrients. (+)
16. Application of vermicompost increases soil problems. (-)
17. Even a simple person can use Vermicompost. (+)
18. Use of vermicompost doesn't give quick results. (-)
19. Use of vermicompost increases the pollution. (-)
20. Chemical fertilizers are superior to vermicompost. (-)

Value of reliability: 0.84

76. Scale to Measure Management of Climate Induced Crisis of Fishery-based Farmers

Authors: Vinaya Kumar, H. M. and M. Shivamurthy

Operational definitions of the concepts related to crisis management

- **Climate change:** Climate change is operationally defined as a change in climatic parameters over time as perceived by farmers' it may be due to a natural variability or as a result of human activity.
- **Crisis:** Crisis is operationally defined as a situation of concentrated period of disturbance caused by the climatic factors affecting the farm yields and farmers income.
- **Climate-induced Crisis Management:** Climate induced Crisis Management is operationally defined as an ability of farmers to manage/overcome/resolve the Climate induced Crisis, which is assessed by the decision making ability, adaptability and economic performance of farmers.
- **Decision-making ability:** Decision making ability is operationally defined as an ability of farmers to select appropriate production alternatives and plan of action by systematic approach for achieving maximum returns in a given farming situation.
- **Adaptability:** Adaptability is operationally defined as behavioural actions (survival strategies) undertaken by the farmers to face the prevailing crisis and also anticipated future crisis. These behavioural actions are confined to crop management, horticulture, soil and water conservation, irrigation, fishery, livestock, land use, flood, labour, finance and family management.
- **Economic performance:** Economic performance is operationally defined as performance or management of the farm by taking important major and subsidiary enterprises to get maximum profit. It will be analysed on three indicators namely: Crop Yield Index, B:C ratio, Net income.

Value of Reliability: 0.91

1. Decision Making of Farmers to Overcome / Management of Climate Induced Crisis

Statements

1. Decision on selection of new crop/variety
2. Decision on selection of crops based on analysis of cost and returns
3. Decision on selection of crops based on drought tolerance
4. Decision on selection of crops based on flood incidence
5. Decision on selection of the crops based on the water availability
6. Decision on selection of crops based on market demand
7. Decision on selection of crops based on forecasting of weather uncertainties
8. Decision on development of contingency crops plan during the uncertainty
9. Decision on value addition to improve the profit

2. Adaptation Pattern of Farmers to Overcome/ Management of Climate Induced Crisis

2.1 Adaptation patterns related to agricultural crops production

Statements

1. Selection of appropriate crop/varieties
2. Adoption of inter cropping system during uncertainty
3. Use of short duration varieties
4. Alteration in sowing dates
5. Applying balanced chemical fertilizer to rainfed crops
6. Increasing area under cash crops under assured irrigation/ water supply
7. Intensified the Rabi crop cultivation during Kharif crop failure.
8. Adopting IPM methods for pest management
9. Reducing plant population during stress season

2.2 Adaptation patterns related to horticultural crops cultivation

Statements

1. Watering of horticulture crops during water scarcity
2. Planting a portion of rainfed land with horticultural crops
3. Raising of few fruit plants to earn an additional income during drought years
4. Adoption of agro-horticulture and agro-forestry
5. Value addition to horticultural crops to ensure higher income

2.3 Adaptation patterns related to soil and water conservation for field crops

Statements

1. Construction of bunds to conserve moisture
2. Stabilization of the bund by planting grasses/ tree sp.
3. Construction of water ways along the slope for safe disposal of rain water
4. Gully plugging to avoid soil loss
5. Adoption of drip or sprinkler to increase water-use efficiency
6. Leveling of the land in between the bunds
7. Construction of farm pond to store rain water
8. Ploughing and sowing across the slope
9. Adopting ridges and furrows for crop cultivation
10. Adoption of soil mulching
11. Adoption of contour farming
12. Planting cover crops
13. Adoption of crop rotation
14. Adoption of intercropping
15. Application of farm yard manure

2.4 Adaptation patterns related to irrigation/ water management

Statements

1. Adoption of drip irrigation

2. Storing of water in ponds
3. Increasing organic matter in soil to enhance water holding capacity of soil
4. Irrigation in alternative rows
5. Adopting water saving cultivation methods such as System of Rice Intensification (SRI)/ aerobic
6. Protective irrigation during critical stages

2.5 Adaptation patterns related to subsidiary farm enterprises

2.5.1 Fishery

Statements

1. Adoption of fish farming in addition to field crops
2. Adoption of fish farming to meet emergency financial need
3. Adoption of fishery to meet livelihood
4. Starting fishery to utilize time during off season

2.5.2 Adaptation pattern related to livestock management

Statements

1. Supplementary feed to livestock
2. Increasing number of small animals (sheep, goat) and decreased the number of big animals (buffalos and cows)
3. Start rearing sheep/goats to meet emergency financial need
4. Owning of multi specific holding of livestock (cows+ buffalos+ goats+ sheep)
5. Planting improved grass slips
6. Grown fodder crop in a small portion of irrigated area
7. Preservation of fodder

2.6 Adaptation patterns with respect to land use

Statements

1. Brining more dry land under cultivation to increase total yield even when rainfall is scarce
2. Intensified the agricultural activities on irrigated land
3. Use of organic sources of nutrients, avoiding use of chemical pesticides
4. Zero tillage, crop rotation to increase the yield
5. Site-specific demand-driven and balanced use of nutrients

2.7 Adaptation strategies with respect to labour use

Statements

1. Reducing the number of labourers employed on farm
2. Increase the number of family labourers to avoid waged labourers
3. Adoption of labour saving implements for cultivation
4. Diversification of labour use from crop to livestock
5. Developing wastelands through water and nutrient management for forestry, agro-forestry, grassland and crop production

2.8 Adaptation patterns related to flood management

Statements

1. Construction of Stone breakwater
2. Use of sandbags proving to avoid flood effect
3. Use of indigenous options such as walls of wood, stone or coconut leaf and afforestation to overcome flood effects

4. Use of hazard insurance
5. Practicing new agricultural practices by growing salt-resistant crops
6. Establishing improved drainage facilities
7. Use of desalination systems in the land
8. Use of Wetland restoration practices

2.9 Adaptation patterns related to family management

Statements

1. Reducing expenditure for social functions and festivals
2. Reducing spending on costly food items
3. Barrowing food grains from relatives
4. Selling jewellary during the distress year

2.10 Adaptation patterns related to sea fish farming

Statements

1. Purchasing larger, more sophisticated vessels with multi-fisheries capabilities to travel farther to catch sea fish
2. Maintaining multiple licenses or permits to allow shifting from one target species to another
3. Development of flexible fish product processing capacity for utilizing emergent resources
4. Diversifying income into non-fishing activities, which may include aquaculture and tourism
5. Risk management through insurance
6. Improving operational efficiencies, such as fuel efficiency and improved product handling, storage and preservation

2.11 Adaptation patterns related to financial management

Statements

1. Borrowing loan from commercial bank/ primary land development bank (PLDB) for land development
2. Borrowing crop loan in credit cooperative societies/ commercial bank
3. Insuring crops of rainfed and irrigated land
4. Starting to save money during normal year for using during drought year
5. Borrowing loan from SHG's

3. Economic Performance of Farmers to Overcome/ Management of Climate Induced Crisis

Components/Indicators

1. Crop yield index of the farm
2. Cropping intensity
3. Net income

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