



**HAL**  
open science

# Measurement and Scaling Techniques in Research Methodology; Survey / Questionnaire Development

Hamed Taherdoost

► **To cite this version:**

Hamed Taherdoost. Measurement and Scaling Techniques in Research Methodology; Survey / Questionnaire Development. International Journal of Academic Research in Management (IJARM), 2016, 6. hal-02546801

**HAL Id: hal-02546801**

**<https://hal.science/hal-02546801>**

Submitted on 23 Apr 2020

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



---

---

## Measurement and Scaling Techniques in Research Methodology; Survey / Questionnaire Development

---

---

---

### Authors

#### Hamed Taherdoost

Research and Development Department, Hamta Business Solution Sdn Bhd  
Research and Development Department, Ahoora Ltd | Management  
Consultation Group

[hamed.taherdoost@gmail.com](mailto:hamed.taherdoost@gmail.com)  
Kuala Lumpur, Malaysia

---

### Abstract

One of the important research tool is questionnaire. In order to develop a survey/questionnaire, first the researcher should decide how the data is measured to collect. Scaling is the branch of measurement that involves the construction of an instrument. There are a number of factors that should be considered to choose an appropriate scaling method in a questionnaire and which ones to use while analyzing data. This paper is summarizing the different types of scaling methods to provide a guideline for selection of scaling method for survey/questionnaire.

---

### Key Words

Scaling Method, Research Methodology, Survey and Questionnaire

---

## I. SCALING METHODS

Once the variables of interest have been identified and defined conceptually, a specific type of scale must be selected. Scaling methods are divided into two main categories, open questions and closed question. Scaling is the process of generating the continuum, a continuous sequence of values, upon which the measured objects are placed.

An open question is one in which the respondent does not have to indicate a specific response. Open questions have a tendency to generate lengthy answers. Often, respondents see open questions as an opportunity to respond to a question in detail. The advantage of open questions is that they allow the respondent to provide an answer that is not restricted to a select view. In addition, open questions can provide some very interesting qualitative findings that may lead to new insights, or possibly help to develop future research ideas (Wilson, 2010). There are two disadvantages associated with open questions. First, too many open questions can make the analysis and interpretation of the findings extremely time-consuming. Second, it can make a comparative analysis of qualitative answers difficult.

A closed question is one in which a respondent has to choose from a limited number of potential answers. Usually this is a straightforward yes or no. Other closed questions may require the respondent to choose from multiple response options such as multiple choice questions, Likert scale and Semantic differential scale. From another angle, scale methods could be classified as a rating scales and attitude scales. Table 1 shows some of the commonly scaling methods with a brief description.

TABLE 1: SOME COMMONLY USED SCALING METHODS, ADAPTED FROM DAVIS (2005)

Scaling Techniques
Rating Scales
Graphic Rating Scales
Itemized Rating Scales
Comparative Rating Scales
Attitude Scales
Likert Scale
Semantic Differential

### **1.1. Rating Scales**

Raters evaluate a person, object, or other phenomenon at a point along a continuum or in a category. A numerical value is then assigned to this point or category.

#### **1.1.1. Graphic Rating Scales**

Raters mark, or indicate in another fashion, how they feel on a graphic scale of some sort. A common graphic scale is the thermometer chart.

On the scale of 0 to 100, please indicate how you would grade your knowledge about e-services.

100 very best      50 indifferent      0 very worst  
Record grade    -----

### **1.1.2. Itemized Rating Scales**

Raters select one of the limited numbers of categories that are ordered in some fashion. The number of categories is usually between 2 and 11. The itemized scale at the right is a 3-point scale.

How interested would you be to use e-service?

Very interested

Somewhat interested

Not interested

### **1.1.3. Comparative Rating Scales**

Raters judge a person, object, or other phenomenon against some standard or some other person, object, or other phenomenon. The scale can take a variety of forms. One comparative rating scale is the rank-order scale.

Please rank the following e-service applications in terms of your usage. Assign 1 to the most usage application, 2 to the next, etc.

\_\_\_ Ticketing

\_\_\_ Banking

\_\_\_ Shopping

## **1.2. Attitude Scales**

Any one of the variety of scales that measure an individual's predisposition toward any person, object, or other phenomenon. These scales differ from rating scales in that they are generally more complex, multi-item scales.

### **1.2.1. Likert Scale**

Respondent indicates degree of agreement and disagreement with a variety of statements about some attitude, object, person, or event. Usually the scales contain 5 or 7 points. The scales are summed across statements to get the attitude score.

Using e-service is a wise idea.

Strongly disagree

Disagree

Neither agree nor disagree

Agree

Strongly agree

### **1.2.2. Semantic Differential**

A semantic differential scale intends to see how strongly the respondent holds an attitude. These scales include a progression from one extreme to another. Respondent rates an attitude object on a



Particularly, he is a Certified Ethical Hacker (CEH), Associate in Project Management (CAPM), Information Systems Auditor (CISA), Information Security Manager (CISM), PMI Risk Management Professional, Project Management Professional (PMP), Computer Hacking Forensic Investigator (CHFI) and Certified Information Systems (CIS).

His research interest areas are Management of Information System, Technology Acceptance Models and Frameworks, Information Security, Information Technology Management, Cryptography, Smart Card Technology, Computer Ethics, Web Service Quality, Web Service Security, Performance Evaluation, Internet Marketing, Project Management and Leadership.