UNDERSTANDING TABLES AND GRAPHS TO INTERPRET PROFESSIONALLY A CASE STUDY

Faiz Marikar*

General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka.

A B S T R A C T

In this study, the main aim was to elaborate the importance of drawing a proper table and a graph that reflects and characterizes the inscriptional practices demonstrated by academics; particularly their use of data tables and graphs. Many tables and graphs, even from the professionals, do not effectively convey information. This paper was developed to check the academic knowledge depicted on tables and graphs, and to reveal the known flaws in the display by analyzing the information. Basic information on the anatomy of tables and graphs is poorly understood among academia, and violation of relevant rules reveal the source of potential difficulty in using the principles of drawing tables and graphs accurately.

Keywords: Tables, Graphs, inscriptional practices, Sri Lanka.

INTRODUCTION

Many people have had the experience of opening a popular national news magazine and observing a clear table or a graph, and easily understand what it is about and what information it expects to deliver to the reader. This is the accurate reflection of a good image. However, frequently, one can point to some image and identify a problem in the image since the authors have not followed the standards. However, often, one is not sure what is wrong exactly and would be unable to tell the author how to improve his/ her work. In this paper, the researchers developed a model to teach academics how to avoid the fundamental mistakes by referring to the anatomy of a table and a graph.

The present system of drawing tables and graphs is based on Excel or other software, and if not, a professional makes many mistakes in analysis. If the computer system finds it is difficult to apply the software knowledge, it denotes some defect even in professional analytical software. Therefore, to ensure effective drawing, the professional software programs provide a set of principles that should be followed by the author (user) when preparing a table or a graph. The results will be

* Corresponding Author:
Email: faiz.marikar@fulbrightmail.org

unambiguous if one uses the computer system to express the result, but the purpose is lost if the drawing is made without proper knowledge of the system.

Tables have an internal structure in which entities must be visibly related to other entities by lines or relative positions that serve as links (Casali & Gaylin, 1988). These links can be labelled or unlabeled, directed or undirected, and need not simply pair entities; a wide variety of types of relations are possible when a table/graph is illustrated properly. Figure 1 presents the anatomy of a table.

Graphs are the most constrained form if not properly drawn, with at least two scales always being required and values being associated via a "paired with" relation that is always symmetrical. Graphs represent greater quantities of the measured substance by greater area, longer lines, or more of some other visual dimension; more along a visual continuum represents more of the symbolized entity (Simkin & Hastie, 1987). Anatomy of a graph is displayed as the Figure 2.

MATERIALS AND METHODS

Research Context and Participants: Thirty-lecturers with post-graduate qualifications, from six faculties (Law, Medical, Allied Health Sciences, Engineering, Management, and Medical faculty), and employed at a leading university in Sri Lanka, represented the study sample.

Figure 1. Anatomy of a table.
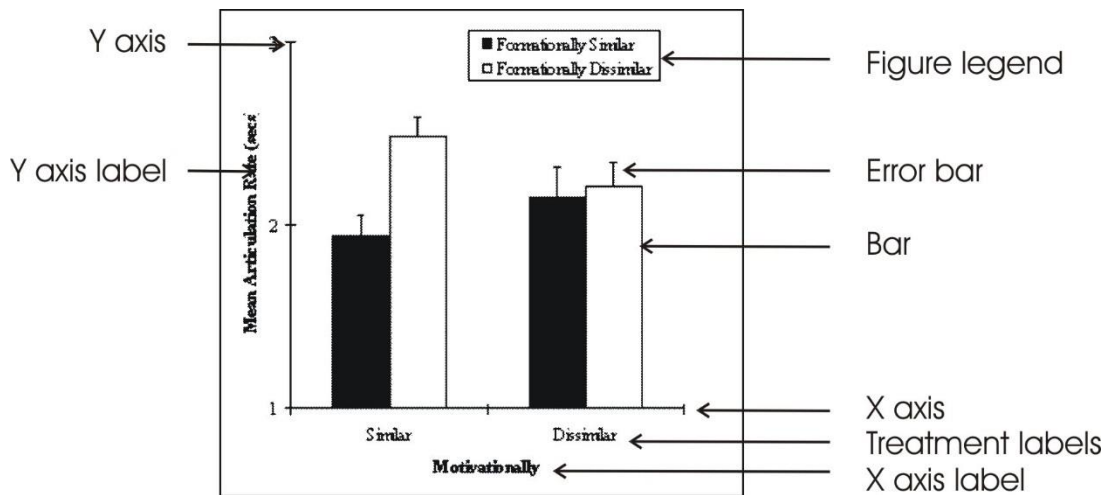
Figure 2. Anatomy of a figure.

Administration of the Problem among Students: A4-photocopy papers were provided to the participants and were asked to draw a table and a graph in a scientific manner. During the University teacher training program, each respective participant was taught about drawing a graph. Ten-minutes was the allocated time for each exercise; to draw a table and a graph. Care was taken to avoid exchanging ideas between participants.

Data Analysis: To analyze tables and graphs, the researchers compared informal reasoning displayed by individuals with respect to the anatomy and given a score. The validity of scoring was assessed independently by two observers.

RESULTS

The computer system can only be applied easily to a perfect display of a table or a graph. In this study, the problem reflected by the participants is the difficulty of drawing without a computer software. Here the descriptive procedure breaks down, and the manner in which it breaks down will be described by the anatomy of the figure or the table.

Table 1. Analysis of tables concerning anatomy of a table.

	Correct	Wrong
Table Title	59	41
Column Title	100	0
Body	82	18
Footnotes	6	94

Table 1 and 2 schematizes many properties of our visual information processing systems that affect reading tables and graphs (along with the table/graph anatomy). Four of these properties in the table concerns about how information is transferred from the perceptual input to short-term memory (and hence, into awareness). Footnotes were not mentioned by most academia, and more interestingly, the title of a graph was missing (as per Table 1, approximately 50%). In a graph, seven of these relate and assess how information is transferred from the anatomical structure. Similarly, 50% have missed the titles, and almost 65% have poorly highlighted X and Y axis labelling in the graphs. The importance of the legend was lastly considered, and 77%

missed the legend while drawing a graph. These properties affect the ability to perceive syntactic properties of displaying tables or graphs correctly.

Table 2. Analysis of graph with respect to anatomy of a graph

	Correct	Wrong
Graph Title	53	47
Y Axis	100	0
Y Axis Label	35	65
X Axis	100	0
X-Axis Label	35	65
Body	94	6
Legend	23	77

CONCLUSION

The present analysis is intended to be at the most fine-grained, 'picky' level possible. It is important to emphasize that many of the mistakes identified here would, in fact, be irrelevant, but this cannot be known without identifying the purpose of the display. That is, tables and graphs are created with a specific purpose in mind; they are intended to allow a reader to answer specific questions only. Thus, although an acceptability principle may be tested with the standard, the table or graph may not be flawed, but may still perfect to serve its purpose adequately.

REFERENCE

Casali, J. G., & Gaylin, K. B. (1988). Selected graph design variables in four interpretation tasks: a microcomputer-based pilot study. *Behaviour & Information Technology, 7*(1), 31-49.

Simkin, D., & Hastie, R. (1987). An information-processing analysis of graph perception. *Journal of the American Statistical Association, 82*(398), 454-465.