

# Rounding Up Perspective and Its Correlation Towards Uncertainty of Measurement as an Effort to Complete Scales (Conventional Scale Case Study) Syar'i

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## Abstract

Islam is a religion that bring salvation for mankind, teaches integrity on the trading process, where the principle of exchange is allowed for seller and buyer. Trading process that used scales usually not appropriate for buyers who want buy groceries (e.g egg and rice) because difficult to determine an accurate count values. The best estimate measurement is a randomly observed value against  $n$  repeated observations so obtained:  $\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$  with result  $(\bar{x}) + \Delta\bar{x}$ , so that in conventional cases it is very difficult if the sellers do the weigher repeatedly. Islam forbids the seller to reduce the weigher, this statement is written in Al-Qur'an (Al-Mutaffifin: 1-3). Trading principles are based on an agreement between buyer and seller, so they are free to set the prices and profits. As a trader, certainly they don't want to suffer a financial loss, they need to apply shari'ah law when selling goods using scale. Islam provides a solution to the above problem as it is written in Al-Qur'an (Al-An'am: 152) and give full measure and weight in justice, to avoid reducing the weigher so not harming the buyer.

**Keywords:** Rounding, Uncertainty, Scale, Syari'ah law.

## Introduction

Trade is an activity of exchanging product or services based on mutual agreement between buyer and seller. Trading process between the seller and buyer is commonly occurs in traditional markets. Trading process that using scale such as weight, has been regulated in the Qur'an and hadith. Seller should know about the rules set by Islam especially in trading. Islam teaches its people to be honest and respect one another. Humans are social beings, one example of their interaction is trading to get daily needs. Trading is the agreement of both parties to exchange goods or objects that have benefits.

Market is a meeting place between sellers and buyers, in the modern era, the internet is used as a promotional media to ease buyers in ordering goods. Basic needs such as rice, flour, meat and sugar require scale as a form of trading agreement. Conventional balance that oftenly used in the market are scales and spring balance.

As we know, sellers rarely recalibrate the balances, so that inaccuracies in the results of the weigher affect the measurement. Objects that are weighed like rice, eggs, sugar are very difficult to be measured precisely, on the other hand Islam teaches to not reduce the

weigher. The purpose of this study is to know how to use balances or scales correctly to avoid any unintentional errors when determining the results of the weigher, so that traders can avoid errors and provide a sense of peace when using scales.



Figure 1. Various forms of scale.



Figure 2. weigher

**Method**

The method used in this research is literature study and count simulation. Uncertainty can be defined as a parameter that specifies the range of values which the estimated true value is measured. Calculating the range is known as the uncertainty measurement. In the measurement process, the value of  $Y$  is determined from  $n$  of other quantities ie.  $x_1, x_2, \dots, x_n$  through the following functional relations:

$$Y = f(x_1, x_2, \dots, x_n) \tag{1}$$

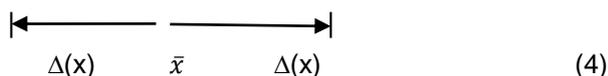
The quantity included is  $x_1, x_2, \dots, x_n$  where the measurement of  $Y$  can be viewed as a measurement quantity that depends on other quantities  $x_1, x_2, \dots, x_n$ , including corrections and correction factors for the known systematic errors, this may lead to complex functional relationships that may never be explicitly written. The input quantities  $x_1, x_2, \dots, x_n$  may have values and uncertainties that directly determined from the measurement process performed (such as from a single observation, repeated observation, the determination of corrections to instrument readings and correction of influential magnitudes) or obtained from external sources (such as quantities related to the standards calibrated measurements, certified reference materials and reference data from handbooks). In most cases, the best estimate available from expectations or expected values towards a randomly varying quantity obtained from  $n$  in repeated observations under the same measurement conditions the mean value of the observed result is:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i \tag{2}$$

Standard deviation ( $\Delta(x_i)$ ) is an estimate of the population distribution where  $n$  values are taken, that is:

$$\Delta(x) = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1}} \tag{3}$$

o that the measurement results can be presented in the form  $\bar{x} \pm \Delta(x)$  with the measuring region illustrated as follows:



Calibration is a series of activities that form the relation between the values to be showed by a measuring instrument or a measuring system with the corresponding value embodied by a known standard. Calibration is simply used as a means of scales is by weighing the weigher of the measuring instrument. In

the book of *Fathul mu'in* by Shaykh Zainuddin bin Abdul Aziz explained: literally, trading is the process of exchange one thing to another thing. Meanwhile, according to *syara'* trading is to exchange property to property. Trading is basically a permissible contract based on the propositions contained in the Qur'an, Hadith and *Ijma 'Ulama* (consensus or agreement of the Muslim scholars). According to the Qur'an (al-Baqarah: 275) allows the practice of contract sale as follows: Meaning: "and Allah has justified trading and forbid usury".

Everyone has the freedom to try to get the treasure and develop it in a syar'i way. According to Islamic trade law, trade is a beneficial endeavor to generate profits, ie the remainder after a fair compensation from factors of production. Thus, profit according to Islamic trade law is a reasonable advantage in trading. Profit is the difference between total sales and total cost. Total sales ie the price of goods sold, while the total cost is all costs incurred in either visible and hidden. Some of the rules in trading according to the Qur'an include the following:

1. Complete the measure and do not be among the adverse people. (QS; AsySyu'araa': 181)
2. Woe to those who cheat. (That is) those who, when receiving the doses of others, they are asked to be fulfilled. And if they measure or weigh for others they reduce. (QS. Al-Muthaffifin:1-3)
3. Stand up the scales fairly and do not reduce the balance. (QS ar-Rahmân:9).
4. Complete the dosage and scales fairly. We do not put a burden on someone but just according to the ability. (QS Al-An'am:152).
5. Complete the dosage when you measure, and weigh with the correct balance. It is more important (for you) and better consequence..." (QS Al-Isra': 35)

**Discussion**

One of the aims of the trade is to seek profit, so it is necessary to simulate the influence of the count on the addition of excess measurement. Simple simulation approach as follows: If the conventional scale used in consumption size (kg) with a precision of 50gr is 1000gr ± 50gr.

	Purchase price	Profit
Selling price	A	20% a

Weight (syar'i)	1000 gr sd 1050 gr
Load factor	Maximum 50/1000 a

Sale price of syar'i	A	20%a	Maximum -5%a
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The -5% value is an acceptable error within the measurement unit range, so rounding up is needed to give advantage to the seller. Example each weighing 1 kg will be over 0-50 gr (load factor). The calculation of the results of the measurement value (1000 ±50) gram can be accepted in theory the uncertainty of the measuring result where the value between (950–1050) gram can be said true, but not so in syar'i. Intermediate values (950-1000) is wrong. Load factors are categorized as ijihad attempts to refine the measure and scales fairly as in which Q.S. Al-An'âm:152, as well as to avoid deficiencies in weigh as in Q.S. Al-Muthaffifin:1-3.

### Conclusions

1. Syar'i weight on goods sold are in the range  $x + \Delta x$ .
2. Syar'i weight done to avoid mistakes as in Q.S. Muthaffifin:1-3.

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