DATA ANALYSIS :
THE NEW WAY OF AUDITING

Darshan Shah

Email :darshanshah2299@gmail.com

As the world is shifting towards AI and Machine Learning in every sector of the Economy, as auditors we are upgrading from the conventional ways of auditing to using more system driven tools for auditing of various entities. Talking about tools and techniques, the most useful tool used in everyday life in our profession is MS Excel. Even though MS Excel is a powerful tool, it suffers from certain inherent limitations just like our profession of auditing. Thinking about voluminous data, the tool might not be efficient and effective for collecting evidence. Also forming an independent opinion on such data might be erroneous. In such circumstances, there are other useful tools such as POWER BI [an Application by Microsoft], ACL, IDEA etc. which are useful, effective yet data friendly software tools. Also, in Excel the advance version called as VBA, Power Query in which a few efforts of coding and learning can not only upgrade our skills but also enhance and make the best use of time while working on Data Analysis.

Now, let's have a glance on the most useful tool i.e. MS Excel which can help us in unearthing some extraordinary findings which shall make our raw data more insightful.

Case 1: Purchase Dump [Illustrative]

SKU & (State)	Party Name	Revised Product Name	Rate per Product	QTY per Box	No of Box	Amount
BZ-SKU-0030959-Delhi	RFB LATEX LTD - Purchase A/c	Nitrile Examination Gloves	₹ 6.50	100	10	₹ 6,500.00
BZ-SKU-0030959-Delhi	RFB LATEX LTD - Purchase A/c	Nitrile Examination Gloves (280mm)	₹ 6.49	100	10	₹ 6,490.00
BZ-SKU-0030959-Haryana	FOUNDATION FOR ECOLOGICAL SECURITY - Sales A/c	Shieldwise Basic Kit	₹ 857.00	100	10	₹ 8,57,000.00
BZ-SKU-0030959-Haryana	FOUNDATION FOR ECOLOGICAL SECURITY - Sales A/c	Shieldwise Basic Kit	₹ 857.00	100	10	₹ 8,57,000.00
BZ-SKU-0030959-Haryana	Smartpaddle Technology Private Limited	PPE Kits	₹ 1,094.64	100	10	₹ 10,94,640.00
BZ-SKU-0030959-Haryana	Smartpaddle Technology Private Limited	PPE Kits	₹ 1,094.64	100	10	₹ 10,94,640.00
BZ-SKU-0030959-Haryana	United Way of Mumbai- Sales A/c	PPE Kits	₹ 757.00	100	10	₹ 7,57,000.00
BZ-SKU-0030959-Haryana	ICICI Foundation for Inclusive Growth - Sales A/c	Shieldwise Intermediate PPE Kit	₹ 1,095.00	100	10	₹ 10,95,000.00
BZ-SKU-0030959-Haryana	FOUNDATION FOR ECOLOGICAL SECURITY - Sales A/c	PPE Kits	₹ 4,000.00	100	10	₹ 40,00,000.00
BZ-SKU-0030959-Karnataka	URBANCLAP TECHNOLOGIES INDIA PRIVATE LIMITED - Sales A/c	Nitrile Examination Gloves (280mm)	₹ -	100	10	₹ -
BZ-SKU-0030959-Karnataka	63 Ideas Infolabs Pvt Ltd - Sales A/c	Nitrile Examination Gloves (280mm)	₹ -	100	10	₹ -
BZ-SKU-0030959-Karnataka	URBANCLAP TECHNOLOGIES INDIA PRIVATE LIMITED - Sales A/c	Nitrile Examination Gloves (280mm)	₹ -	100	10	₹ -
BZ-SKU-0030959-Maharashtra	COLLATERAL MEDICAL PRIVATE LIMITED - Purchase A/c	Nitrile Examination Gloves	₹ 4.10	100	10	₹ 4,100.00
BZ-SKU-0030959-Maharashtra	JAYANA INDUSTRIES - Purchase A/c	Nitrile Examination Gloves (280mm)	₹ 4.75	100	10	₹ 4,750.00
BZ-SKU-0030959-Maharashtra	C ABHAYKUMAR & CO - Purchase A/c	Nitrile Examination Gloves (280mm)	₹ 5.12	100	10	₹ 5,120.00
BZ-SKU-0030959-Maharashtra	C ABHAYKUMAR & CO - Purchase A/c	Nitrile Examination Gloves (280mm)	₹ 5.12	100	10	₹ 5,120.00
BZ-SKU-0030959-Maharashtra	HOUSING DEVLOPMENT FINANCE CORP LTD - Sales A/c	PPE Kits	₹ 926.25	100	10	₹ 9,26,250.00
BZ-SKU-0030959-Maharashtra	IMC CHAMBER OF COMMERCE AND INDUSTRY - Sales A/c	Shieldwise Advanced PPE Kit	₹ 1,295.00	100	10	₹ 12,95,000.00
BZ-SKU-0030959-Maharashtra	IMC CHAMBER OF COMMERCE AND INDUSTRY - Sales A/c	Shieldwise Advanced PPE Kit	₹ 1,295.00	100	10	₹ 12,95,000.00
BZ-SKU-0030959-Maharashtra	SHREEKANT YADAV JAVALGEKAR - Sales A/c	Shieldwise Advanced PPE Kit	₹ 975.00	100	10	₹ 9,75,000.00

Illustration 1.1

Say we are provided with the Data Dump of purchases for a year where a system is placed in the organization and we have to provide an independent report on Internal Control. Following are the glimpse in company's system manual.

- The system in place has all configurations starting with creation of creditor master till booking any purchase transactions for particular products.

- The creditor master must be created after approvals which are based on quotations. Subsequently, the determined rate of purchases is configured in the software.

While performing the system audit procedures for understanding the entity and its relevant Internal Controls, we were provided with software usage guidelines whose preparation and presentation was the management's responsibility. These guidelines stated that the cost per product can be amended based on fluctuations in trends either internal or external.

If we need to obtain evidence using this electronic data, the first audit technique that comes to our minds is **Audit Sampling** but it faces **Limitation** as to whether selected sample data contains the material misstatements or instances where fluctuations in trends from the given set of data. Since sampling represents a part of the population, we are unable to verify the authenticity and correctness with regards to the objective of Internal Control being operational throughout the year.

Thus, to tackle such Inherent Limitation, let's run through the solution using the **Swiss Knife** of **MS Excel i.e. Pivot Table.** Here, we are concerned about a question, whether any risk exists in cost per unit? Since, there is a variation in the observation in the population, so, **STANDARD DEVIATION REPRESENTS THE RISK WITHIN COMPONENTS OF POPULATION.**

Product	Values			Need to work out from pivot table		
	StdDevp of Rate per Product	Average of Rate per Product	Sum of Amount	Co-efficient of Correlation	% of Purchase to Total Purchase	
Nitrile Examination Gloves	64.07	14.62	17,39,692.00	438.27	2.06%	
Nitrile Examination Gloves (280mm)	11.45	6.08	2,99,88,806.00	188.37	35.53%	
PPE Kits	927.44	1,105.17	2,87,34,530.00	83.92	34.04%	
Shieldwise Advanced PPE Kit	198.55	1,211.00	60,55,000.00	16.40	7.17%	
Shieldwise Basic Kit	64.39	906.88	1,45,10,000.00	7.10	17.19%	
Shieldwise Intermediate PPE Kit	165.83	845.00	33,80,000.00	19.62	4.00%	
Grand Total	123.47	16.54	8,44,08,028.00			

Value Field Settings

Source Name: Rate per Product

Custom Name: StdDevp of Rate per Product

Summarize Values By | Show Values As

Summarize value field by

Choose the type of calculation that you want to use to summarize data from the selected field

- Max
- Min
- Product
- Count Numbers
- StdDev
- StdDevp

Number Format | OK | Cancel

OBSERVATION

1. As apparent to above table PPE Kits has highest Standard Deviation compared to other products whereas its co-efficient of variation is just 83.92% also with reference to total purchases it amounts to 34.04%

2. Since Nitrile Examination Gloves (280 mm) has lowest Standard Deviation but in relative terms [co-efficient of variation] its 188.37% and also denotes 35.53% to total purchases which may be red flag.

3. Nitrile Examination Gloves has mere 2.06% of weightage with reference to total purchases but its co-efficient of variation is highest thus it may be consider for detail examination depending on Auditors Judgement

Illustration 1.2

First, create a Pivot Table format with **"Classic View"** then, take **"Products"** as base and **"Rate per product"** in the values column. As depicted in **Illustration 1.2** above, change value field to **"StdDevp of Rate per product"**. Since Standard Deviation is an absolute measure take the **"Average of Rate per product"** and **"Sum of Amount"** (**Total purchase of product**). Now, you have a data set ready for finding the observations. Find Co-efficient of Correlation **(Std Devp / Avg)** depending on which your decision shall be based. On comparison with Std Devp and Co-efficient of Correlation, you might find Red flag items which either contain misstatements whether intentional or unintentional. In order to determine the materiality of such Red flag items, compare the percentage of purchase of product to total purchase within such items to review the degree of materiality w.r.t such population.

Thus, according to the above observations, we may draw conclusions (Refer observation in Illustration 1.2) as to whether there is appropriate selection of sample upon which conclusion is based **and** whether these samples shall fulfill the objective of Internal Control relevant to the audit.

Obtaining sufficient appropriate evidence to achieve engagement objectives depends on the nature, extent, and timing of the procedures performed. While economic and time constraints have historically precluded internal auditors from testing 100 percent of a given population, advances in data analysis have made it more possible than ever before as many constraints such as disk storage, processing power, ease of using software, and auditor ability to interpret results from large volumes of data have been minimized.

Audit sampling is, by definition, the application of an audit procedure to less than 100 percent of the items in a population of audit interest for the purpose of drawing an inference about the entire population. It is used most commonly by internal auditors to test the operating effectiveness of controls. Increasingly, however, internal auditors can apply analysis to large populations of data to identify anomalies that could indicate a need for remediation.

Ten important things to remember about data analytics and audit sampling are listed in

1. Develop a strategic view of data analytics in the internal audit plan to determine which audits will employ data analytics.

2. Provide for adequate staffing and support of data analytics within the internal audit group.

3. Evaluate use of data analytics at the beginning of each audit and determine how data analytics can contribute to the effective and efficient completion of internal audits.

4. Modify the internal audit process to take full advantage of data analytics.

5. Leverage key technologies within the organization and supplement with additional internal audit data analytics tools.

6. Take advantage of data visualization tools to enhance audit results and presentations to management.

7. Both statistical sampling and non-statistical sampling require the use of professional judgment in designing the sampling plan, executing the plan, and evaluating sampling results.

8. An important advantage of statistical sampling over non-statistical sampling is that statistical sampling allows the internal auditor to quantify, measure, and control sampling risk.

9. Attribute sampling is a statistical sampling approach that enables the user to reach a conclusion about a population in terms of a rate of occurrence.

10. Evaluating the results of an attribute sampling application involves formulating a statistical conclusion, making an audit decision based on the quantitative sample results, and considering qualitative aspects of the sample results.

Thus, with a little creativity in matching data science tools to the problem & opportunity of control attribute sampling we can say:

1. Dramatically improve quantification & the quality of audit decision-making.

2. Automate auditor judgement to scale across entire populations.

3. Better understand, adjust and explain our own opinions.

4. They help to ensure that internal controls are operating effectively, risks are being identified and mitigated, and compliance with regulatory requirements is being maintained.

5. It provides an assessment of the institution's IT systems and identifies any vulnerabilities, system weaknesses, or compliance issues that may exist.