STATISTICS AS A VITAL TOOL IN DECISION MAKING

November 2016

Generally Statistics /figures are used in all most every company and organization to Manage Processes, Capacity Planning, Managing constraints and Bottlenecks, getting insights, about Projects, Markets or or identifying Management problems as well as others in academics among others. However some questions have been causing in my head. “What type of Statistics is looked at while solving the above problems”. The answers I have discovered is that most of the companies and organizations look at descriptive Statistics (Measures of -central tendency, -Dispersion, and few look at distribution), and to a less extent some look at inferential statistics considering, Chi-square tests, comparing Means, correlation and linear regression, even though few of them understand why, where and when to use which tool in the analysis and which (objective) each tool intends to answer.

Regionally, I have interacted with a number of Stakeholders and have facilitated a number of training programs in Uganda, Rwanda and other countries using offline and online means, training persons working in research, Data, Management, Consulting and policy, however I have come to discover that about 98% of the staff in those departments almost no nothing about Statistics and its relevancy. The quality assurance officer or M&E or Research managers in most companies through training assessments have proved that, they only work and draw conclusions of what they do basing on basic results and mostly bad practices, many generalize results others could just use assumptions in decision making, hence failing many companies and NGOs to have sustainable projects or projects with impact “Projects end with the team implementing them”

Practical suggestion

Through Statistics and other qualitative methods, it can guide your company, or business or organization to draw reliable decisions that empower company growth and development as well as building strong bonds with customers/customer royalty.

How do we use deferent Statistical tools to solve problems and Decision Making.

These tools I’m to talk about below, can be applied in any sector and departments of the company or it can easily be used in inter regional/sector Analysis.

Scenario 1 . For companies interested exploring knowledge or insights about a given management problem, especially when a problem or reason for research is not clear and defined. We can move to extract averages, in which we can look at frequencies, Means, Sums, Medians, Mode, Skewness/distributions, variances/.Standard deviation, Min and Max values, Ranges. It means here you may have a number of questionnaires, of courses coupled with qualitative methods during g the assessments. From which you can get a number of insights about the problem, and then develop hypotheses/claims what could be affecting which, then go again to test by relating them practically then draw lessons, or decisions based on insights.
Example. Assume you have a service business that offer hotel services with a constraint of long time stay of customers at the hotel for meals (and you want to plan for seating arrangements/plans). But you want to identify the bottle neck. You can use a timer on amount of Time spent per step. (Assume we have 4 Steps

1. First person who makes order from customer.
2. Person who puts food on place from source pan
3. person who delivers food to the customer
4. time spent by the customer and time spent doing others things

If we assume these minutes per levels (1=2m, 2=5m, 3=2m 4=30m). It means level is a bottleneck and for any decision taken should not stress the employees, only you need to come up with means on how you allow persons to eat and after eating they leave, meanwhile you are likely to have an overcrowded place without allowing other new customers to come in. if the delays is because they are watching TV, or news, Place TV, in a places that permits persons with long orders e.g., if its soft drinks, or beer, or soda, etc, put it strategic and allow for second chance that when a customer changes from the hotel to a drinking place, let it be that is motivated to order for a drink not by force but let him get to realize it that is lost. But all these can be done by use the above Statistics methods

Scenario 2. For companies, individuals or organizations interested in finding out about the interrelationships between different actors or variables in the cycle or how one factor contributes to the success of the other, we can use test for relationships however, mainly this is done considering what they refer to as independent and dependent variables. We can use chi-test to extract the relationship on either is significant or not (basing on your set confidence intervals), correlations can also be used this helps to pin how these two components interact with each other’s and degree of relationship (It can either be a negative or positive interaction and the interaction can be either significant or not significant), regression, Linear, multiple, logistics, Profit among others), these can be used but bearing in mind, that it considers individual dependent variables.

Scenario 3. In cases we diverse questions on a given aspect, we can apply path models till to come up with Asmart analysis that can guide Management or a researcher in decision making. This is a very nice tool to use especially when you have many dependent variables and you want to Zip them into one, to give you one solid answer.

Example. Assume An agriculture company, May be interested in drawing a farm decision, which crop to grow in a given season/or project to come up with that will lead to higher yields, and good quality produce.

Lets assume is using the below aspects in the assessment to measure farm performances.

Variable 1. (Dependent) Farm performance defined as (Good yields, High Volumes). In scenario 2.above we would use only one (e.g good yields)
Let’s assume the factors pushing farm performance could be as below.

2. Personals (Education, Sex, Experience, Marital status)
3. Soil xtics (PH, TEXTURE, Topography)
4. Practices (Manures, Spraying)
5. Economic Factors (Farm size, Inputs,)

Check below the kind of analysis I have got and how you use it in decision making. (Where are bottlenecks)?

Looking at the figure below, we see the soil Xtics, methods, and economic factors contribute positively to the performance of the farm in terms of good quality and high yields, but we see a bottleneck of personal characteristic. Internally we see the education levels of the farmer workers if not handles well it affects negatively on the capabilities of the person you employ in your Garden, and leading to total contribution of the person to your farm performance.

However, generally we See, a value of 0.83.2 under performance, if computed by %, it tells us that The methods used, Soil characteristics, Economic factors and personal characteristics, contribute 83.2% to the performance of the farm for the a given season (in terms of producing good quality yields and in high quantities). Any improvement in them, it leads to better farm performance.

So, when it comes to decision making, for any firm manager or company will behave accordingly.
So it means, where we see negative values, the farm manager or owner, will be required to take decisions before he goes ahead to plant and prepare for the next season.

We can merge a number of components related to measure something of our interest in any sector, it may be program evaluations, baselines, Market research, Management issues, financial performance among others.

We do perform Statistical Analysis, write analytical reports, conduct researches, prepare technical write-ups, as well as providing diverse consulting services to companies and individuals. We also do provide capacity building trainings to companies and stakeholders in a number of fields one of them being Analytics and decision making.

We do develop program and project models, for both research and intervention projects contact me “William Sebunje, +256775367640 or williamsebunje@gmail.com for help if you have any of the above problems or others.

I agree you to Share with others, to enable knowledge transfer and improvements in service deliverly

If your company is facing some of these challenges, I and my Team we do provide both full time and part time services, done from our offices or clients offices depending on the needs and possibility.

Wishing you the best in All,

Yours sincerely

William Sebunje
Team leader (Statistician)
WSA Innovations, www.wsainnovations.com
+256775367640/+256700191371
williamsebunje@gmail.com wsainovation@gmail.com
Skype. William.sebunje
Kampala, Uganda –East Africa
Mosque hill drive Road, Makerere University.