Please see the attached PDF with a Topic Submission for Case Study on Increasing the consistency of examinations within an art unit.

Thank you,
James Henry

Topic Submission for Case Study

by James Henry[1]

Title: ''Increasing the consistency of examinations within an art unit"

Proposal for study: ''Identify examiners whose allowance rates differ significantly from the overall allowance rate of their art unit and study their work to identify opportunities to increase the consistency of examinations within the art unit."

Explanation: As a patent practitioner I have observed that some examiners have allowance rates that are significantly different from the overall allowance rates of their art units. Since applications are assigned to examiners at random, every examiner should have a representative sample of the applications assigned to their art unit. A certain amount of difference between an examiner's allowance rate and the overall allowance rates of their art unit can be explained by the variability of statistical sampling. However, large differences that are statistically improbable suggest differences in examination standards that should be remediated.

Patent applications filed with the USPTO are examined and disposed of by allowance or abandonment. There is a legal presumption that an application is allowed if and only if it claims a patentable invention. An examiner with an allowance rate greater than that of their art unit may be allowing applications that do not claim a patentable invention, thus burdening the public with invalid patents. An examiner with an allowance rate lower than that of their art unit may be failing to allow applications that do claim a patentable invention, thus denying inventors patents to which they are entitled. Either type of error affects the USPTO's ability to effectively issue high-quality patents.

It is proposed that the work of a sampling of examiners with allowance rates that differ from the overall allowance rate of their art unit by more than a statistically explicable amount be studied to determine if there are opportunities to improve the consistency of examinations by additional training, supervisory oversight, or other quality control methods.

Examination of a patent can be viewed as a statistical sampling of a population with a dichotomous outcome of allowed or not allowed. The central limit theorem states that if n samples are taken of a binomial populations having p probability of "success" on any given trial, then the distribution of the sample means will be approximately normally distributed if the minimum of np and n(1-p) is at least 5. The central limit theorem allows confidence intervals for allowance rates to be approximated if at least 5 patents have been allowed and at least 5 have not.

For example, if an art unit[2] allowed 3,000 applications from a total of 3,700 dispositions over a three year period, the allowance rate would be 81.1% and confidence interval for the allowance rate can be found using the following formula:

$$\hat{p} \pm Z\sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$$

Z = 2.58 for a 99% confidence interval. Thus, we can state with 99% confidence that our hypothetical art unit is examining an art area where the proportion of allowable applications is between 79.4% and 82.7%.

We can similarly evaluate the allowances of individual examiners in the art unit:

Examiner	Dispositions	Allowances	Rate	99% Confidence Interval Low	High
A	157	95	60.5%	50.5%	**70.5%**
B	100	65	65.0%	52.8%	**77.2%**
C	215	140	65.1%	56.8%	**73.4%**
D	35	25	71.4%	51.9%	91.0%
E	160	120	75.0%	66.2%	83.8%
F	185	140	75.7%	67.6%	83.8%
G	150	120	80.0%	71.6%	88.4%
H	235	200	85.1%	79.2%	91.1%
I	205	175	85.4%	79.0%	91.7%
J	260	225	86.5%	81.1%	92.0%
K	270	235	87.0%	81.8%	92.3%
L	240	210	87.5%	82.0%	93.0%
M	245	215	87.8%	82.4%	93.1%
N	100	90	90.0%	82.3%	97.7%
O	225	210	93.3%	**89.1%**	97.6%
P	230	215	93.5%	**89.3%**	97.6%
Art Unit	**3700**	**3000**	**81.1%**	**79.4%**	**82.7%**

It can be seen that examiners A through G have allowance rates below the unit and examiners H through P have rates above the unit. Comparing the high end of the examiner's confidence interval to the low end of the unit's confidence interval it can be seen that it is statistically unlikely that the low allowance rates of examiners A through C can be explained entirely by differences in the applications assigned. Likewise, the high allowance rates of examiners O and P are statistically unlikely. It is worth noting that Examiner D appears to allowing fewer applications than would be expected, but that cannot be said with 99% confidence because of the lower number of cases that have been examined. Thus, it is more senior examiners who have larger numbers of dispositions whose work will most likely be identified for evaluation.

It is proposed that the work of examiners A, B, C, O, and P be studied to determine if their work could be improved to increase the consistency of examinations within the art unit.