Danalitic
Crafting Intelligent AI Platform

Programming Test Analysis Report

(Submitted by: Ankit Verma)

Report 1:

Report 1 asked for calculating the percentage of each defective item produced by each production unit. Here is the screenshot of the result.

Production_Unit_Id	Defect % Rock	Defect % Paper	Defect % Scissor
P000	24.995549	43.971631	17.982082
P001	18.132956	18.921521	36.908517
P002	31.867145	15.875726	26.927711
P003	7.500000	54.477612	16.161616
P004	32.792473	24.731581	22.990509
...	...	...	...
P994	51.907757	30.452466	7.322929
P995	34.306569	36.420468	31.509648
P996	34.541204	34.441489	32.080486
P998	42.704918	50.503486	37.645914
P999	8.907779	27.681999	20.475858

489 rows × 3 columns

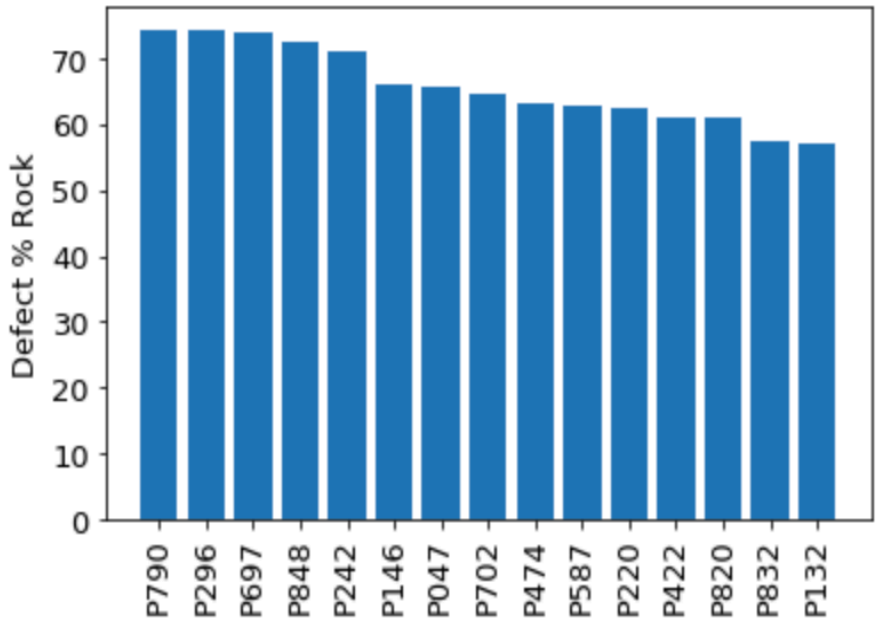
The excel file containing all the production units is attached with the email.

Insights from Report 1:

Since the reputation of the company is at stake, the management wants to identify the low-quality production units so that their manufacturing practices can be thoroughly examined.

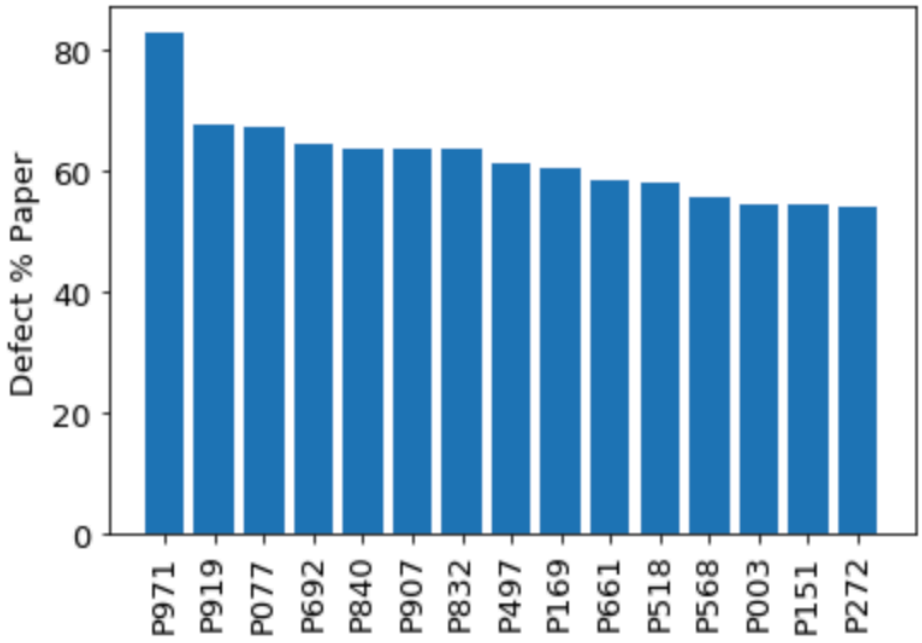
Let's examine which production units have maximum defects percentage for each manufacturing part.

Plot 1: 15 Production Units with maximum number of defects % in rock items



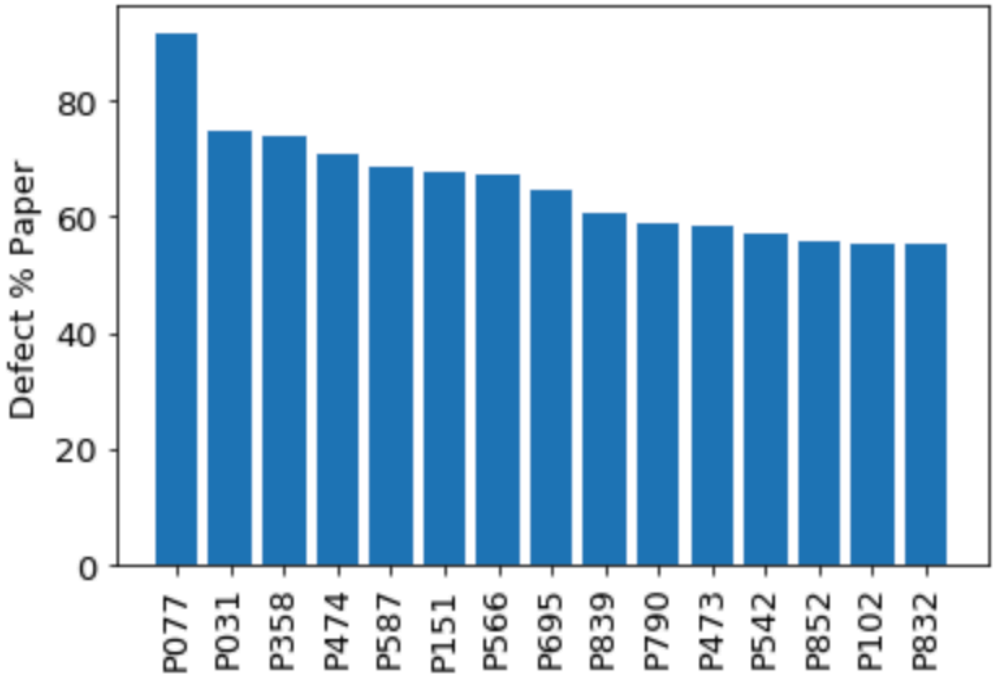
As shown in the bar chart, these 15 production units must be looked upon immediately so that the production quality of rock item can be improved.

Plot 2: 15 Production Units with maximum number of defects % in paper items



As shown in the bar chart, these 15 production units must be looked upon immediately so that the production quality of paper item can be improved.

Plot 3: 15 Production Units with maximum number of defects % in Scissor items



As shown in the bar chart, these 15 production units must be looked upon immediately so that the production quality of scissor item can be improved.

Report 2:

Report 2 asked for calculating the number of complaints by each customer group contrasted with the number of items they have bought. Here is the screenshot of the result.

Customer_Group	Number of Complaints	Rocks_Purchased	Papers_Purchased	Scissors_Purchased
a	133	2314.0	2456.0	2418.0
b	111	2047.0	1775.0	1891.0
c	134	2213.0	2360.0	2439.0
d	154	2766.0	2501.0	2484.0
e	101	1545.0	1790.0	1581.0
f	120	1885.0	2110.0	2079.0
g	137	1998.0	2199.0	2361.0
h	139	2278.0	2577.0	2149.0
i	134	2202.0	2202.0	2264.0
j	101	1868.0	1768.0	2037.0
k	161	2475.0	2558.0	2858.0
l	97	1690.0	1828.0	1622.0
m	97	1617.0	1526.0	1359.0

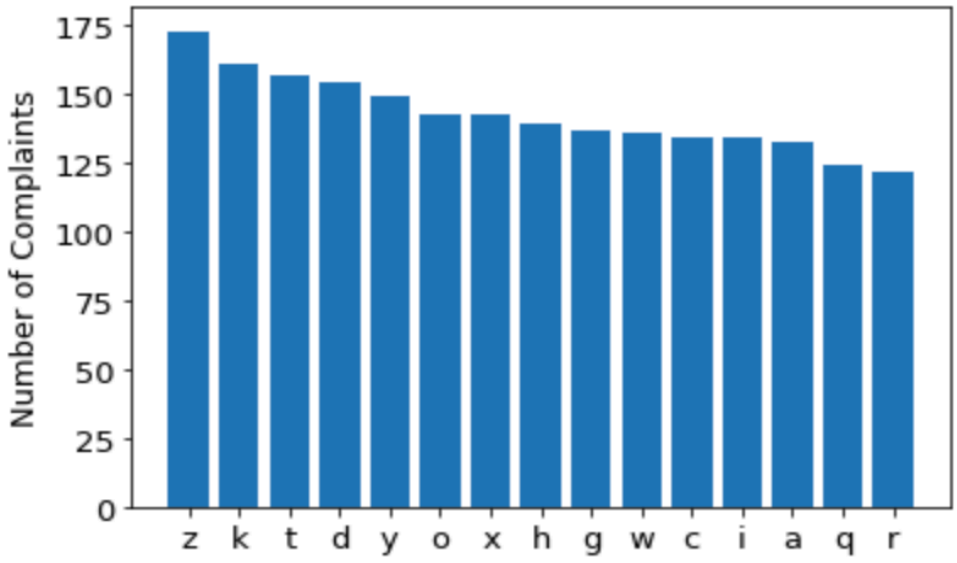
Customer_Group	Number of Complaints	Rocks_Purchased	Papers_Purchased	Scissors_Purchased
n	112	2012.0	1974.0	2019.0
o	143	2306.0	2357.0	2201.0
p	116	2328.0	1944.0	2129.0
q	124	2418.0	2333.0	1925.0
r	122	2044.0	2014.0	2388.0
s	108	1733.0	1794.0	2168.0
t	157	2683.0	2632.0	3002.0
u	99	1820.0	1551.0	1519.0
v	117	2033.0	2070.0	1943.0
w	136	2212.0	2202.0	2294.0
x	143	2155.0	2232.0	2623.0
y	149	2540.0	2767.0	2642.0
z	173	2619.0	2889.0	3053.0

The excel file is attached with the email.

Insights from Report 2:

Let's examine which customer groups have maximum number of complaints.

Plot 4: 15 Customer Groups with maximum number of complaints



The customer groups mentioned in the above bar chart must be focused upon as to why they have so many complaints.

Report 3:

Report 3 asked for calculating the percentage of total defective items that were detected by Quality Control on the factory floor. Here is the screenshot of the result.

Production_Unit_Id	% detected defects by QA
P000	30.135078
P001	25.508298
P002	24.867168
P003	27.983539
P004	27.532264
...	...
P994	29.484747
P995	34.060597
P996	33.407420
P998	44.080249
P999	19.052124

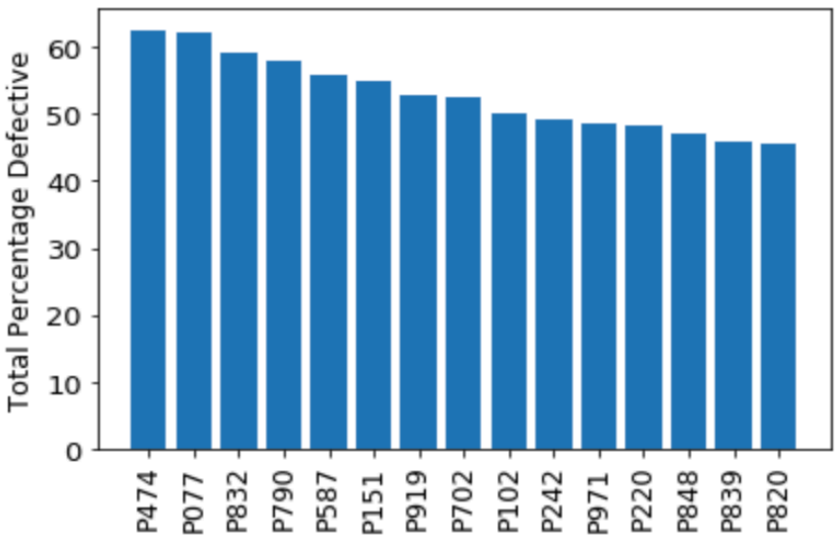
489 rows × 1 columns

The excel file containing all the production units is attached with the email.

Insights from Report 3:

Let's examine which production units have maximum number of total detected defects on the floor.

Plot 5: 15 Production Units with maximum % of Total Detected Defects



As shown in the bar chart, these 15 production units must be looked upon immediately.

Summary:

Thus, based on the analysis, the following production units and customer groups must be focused upon by the company to reduce number of complaints and assure higher quality parts.

S.No	Production Units with Maximum % of Total Detected Defects	Production Units with Maximum defect % with rock items	Production Units with Maximum defect % with paper items	Production Units with Maximum defect % with Scissor items	Customer Groups with Maximum # of Complaints
1	P474	P790	P971	P077	Z
2	P077	P296	P919	P031	K
3	P832	P697	P077	P358	T
4	P790	P848	P692	P474	D
5	P587	P242	P840	P587	Y
6	P151	P146	P907	P151	O
7	P919	P047	P832	P566	X
8	P702	P702	P497	P695	H
9	P102	P474	P169	P839	G
10	P242	P587	P661	P790	W
11	P971	P220	P518	P473	C
12	P220	P422	P568	P542	I
13	P848	P820	P003	P852	A
14	P839	P832	P151	P102	Q
15	P820	P132	P272	P832	R

(S.No 1 to 15 is in decreasing order)

White Cell Color	Only in one column
Blue Cell Color	In two columns
Yellow Cell Color	In 3 columns
Red Cell Color	In 4 columns

The production units marked in color should be focused on first.