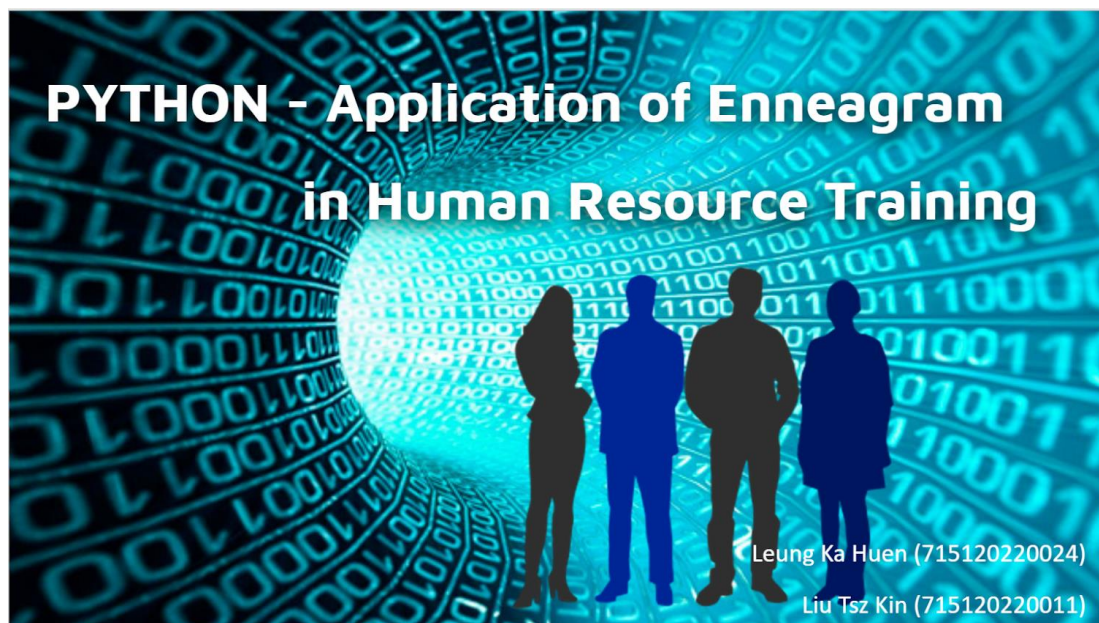# AM045 Introduction of Business Computing

2017-2018 Sem B

Group Project Report

"P.Y.T.H.O.N"

Application of Enneagram in Human Resource Training

PYTHON - Application of Enneagram in Human Resource Training

Leung Ka Huen (715120220024)

Liu Tsz Kin (715120220011)

Team member

1. Liu Tsz Kin (715120220011)

2. Leung Ka Huen (715120220024)

Content

1. Programme Objective

In 2014, 357,000 employees were interviewed to study between their self-evaluation and objective assessments, in order words to test their self-understanding. On a scale of 0 - 1 with 0 as completely inaccurate understanding and 1 as completely accurate understanding, people scored the average of 0.29. It reflects that people have very low self-understanding. On the other hand, according to a study by *Harvard Business Review*, teams in workplace with higher self-awareness would have half more chance to succeed in terms of decision quality, coordination and conflict management comparing to the low self-awareness ones (figure 1).
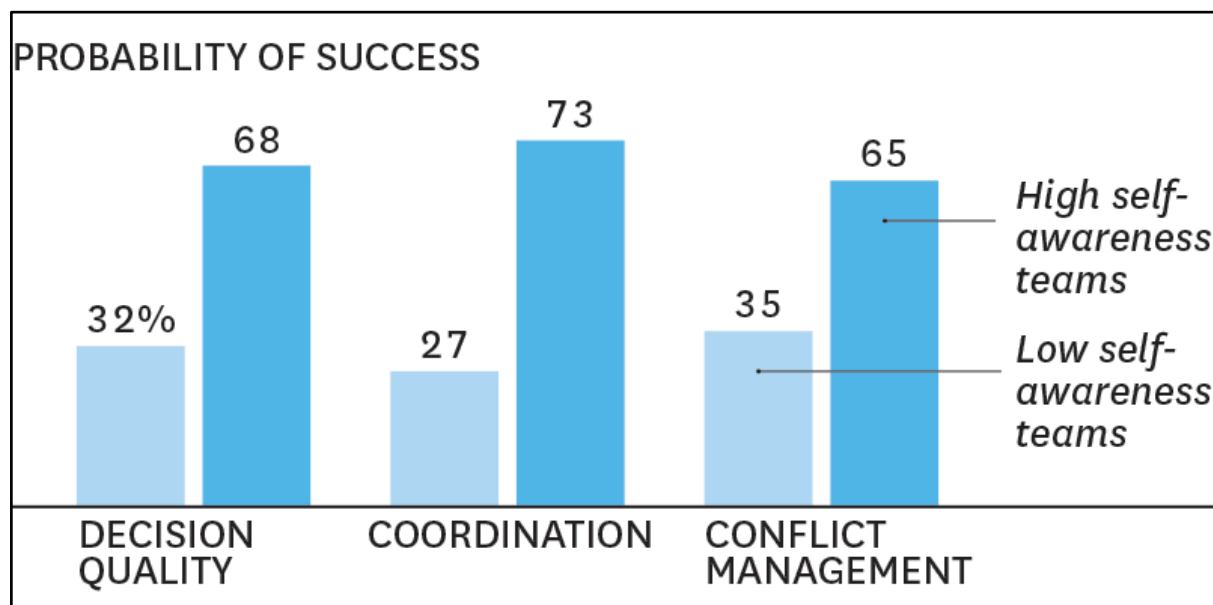

figure 1. Study on Probability of Success by Harvard Business Review

With self-understanding that important towards workplace performance while so many people , it is suggested that human resources professionals could do something to enhance people's self-awareness. Therefore, by simplifying the process of data collection and data visualization of personality test, our programme objective statement is "To better collect and analyse data of employees' personality, in order to assist human resource professional in providing related training, so as to enhance overall workplace performance."

2. Programme Content

Our programme consists of two parts: Data Collection and Data Visualization.

2.1 Part 1: Data Collection

Firstly, for data collection, employees enneagram information are collected. Enneagram has been one of the most famous and all-rounded personality test used in the psychology and personal development industry. Therefore, it would be an ideal indicator under our program

objective. We uses *"The Riso – Hudson Enneagram Type Indicator"*, also known as the *RHETI*, (2.5 Version) which is an authoritative enneagram indicator founded by Don Richard Riso and Russ Hudson. It consists of 144 forced-choice questions in helping participants to classify their personalities into one of the nine enneagram types. Each question have two statement and each statement would add one point to a specific personality type. In the end, the type with the most score would be the major personality of that participant. Our programme would show all questions and collect all answers from the participant.(see appendix 1) Then, it will automatically calculate the score of each personality type and show the overall test result (figure 2).

```
In [1]: runfile('C:/Users/Leung/Desktop/test.py', wdir='C:/Users/
Leung/Desktop')
Type 1 score:  9
Type 2 score:  12
Type 3 score:  13
Type 4 score:  20
Type 5 score:  21
Type 6 score:  10
Type 7 score:  2
Type 8 score:  7
Type 9 score:  15
Your Result:|
Your personality type is type 5.
Thank you for your participation!!
```

**Figure 2. Result Illustration of The Programme**

2.2 Part 2: Data Visualization

We conducted a Enneagram test to our 50 employees before we do the human resource training. The data is below:

| Candidate	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8	Type 9	Type
1	14	31	3	30	2	0	23	19	22	2
2	30	8	23	21	26	14	8	9	5	1
3	30	31	7	11	6	5	34	8	12	7
4	22	11	0	25	3	29	28	3	23	6
5	8	20	13	25	6	14	11	21	26	9
6	22	5	24	34	3	13	0	26	17	4
7	12	20	7	2	21	34	12	13	23	6
8	13	18	22	24	4	27	20	7	9	6
9	6	19	18	26	7	2	10	25	31	9
10	14	5	21	9	29	9	12	16	29	9
11	29	21	5	23	18	7	13	6	22	1
12	13	26	11	15	4	34	17	15	9	6
13	21	13	20	12	21	22	0	23	12	8
14	17	30	20	4	15	10	5	25	18	2
15	0	13	10	20	24	25	8	17	27	9
16	18	21	11	3	23	27	22	8	11	6
17	31	8	1	32	7	24	26	4	11	4
18	15	14	14	5	17	20	13	28	18	8
19	21	0	5	22	21	26	7	25	17	6
20	16	15	18	14	12	10	19	23	17	8
21	2	13	5	12	22	23	22	32	13	8
22	7	30	12	32	8	6	32	13	4	4,7
23	13	8	20	29	17	28	12	14	3	4
24	9	26	6	21	24	15	19	24	0	2
25	28	18	15	22	4	27	24	0	8	1
26	4	22	19	2	15	18	31	19	14	7
27	9	26	7	29	22	28	0	0	23	4
28	7	32	5	16	5	32	27	6	14	6
29	7	15	13	24	20	8	26	13	18	7

2.2.1Histogram

We are going to use pandas to draw the histogram. First of all, we import the excel file "employeedata.xlsx" into jupyter notebook. The excel file shows the type of each workers. Then, to generate the histogram, we import 'matplotlib.pyplot' and 'seaborn' which are tools to convert the data into graphs and make the graph looks nicer.(Visualization) We set 'Type ' as data value, 'hist' as graph type, bins equal to 9.(see appendix 2) After we run the code, the histogram is shown as follow:
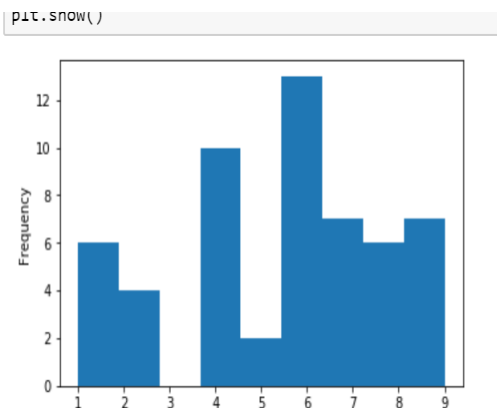
Histogram is used to show the distribution of their types. We can see that there are more employees belong to type 6 and no one is belonged to type 3. It means that most workers' personalities are type 6.

2.2.2 Swarmplot

For the swarmplot, we use the same method to do so. We import the data into jupyter notebook to display the result on it. The data show all the scores in each type and group them into one sheet. We also use 'matplotlib.pyplot' and 'seaborn' to plot the graph. We set 'whitegrid' as the graph style, 'Type' as x-axis value, 'Score' as y-axis value.(see appendix 3) After we run the code, the swarmplot is shown as follow:
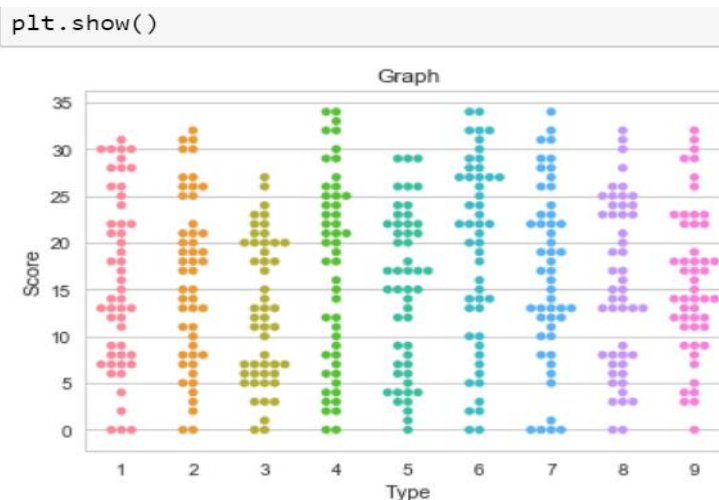
Swarmplot is used to show the concentration of the scores that workers get in each types. We can see there are three points plotted on '0' line above type 1. It means that there are

three employees get zero mark in type 1. Moreover, we can see that many employees get higher marks (above 25) in type 6, but almost half of employees get below 10 marks in type 3. It means that employees' personalities are tended to be type 6 overall, but most of them lack type 3's personalities.

3. Application to Human Resource Training

After we plotted the histogram and the swarmplot, we can use them to provide suggestions for the human resource training.

Form the histogram, we can see that more workers are belong to type 6. This means we need to focus on improving type 6's weakness. Although type 6 people are reliable and responsible, they are easy to feel anxious and self-doubt. Therefore, HR department should help them to strengthen their self-confidence and find a way to reduce their anxiety. For example, we can hold a talk for employees and invite a famous psychologist to teach them how to maintain positive-mind and relax themselves in daily life.

Form the swarmplot, we can see that many employees get lower scores in type 3, almost half of them were below 10. Type 3 people are ambitious and competent which is helpful for employees to strengthen their aggressiveness, competitiveness and work performance. Therefore, the human resource training ought to focus on optimizing employees' performance in type 3. For example, HR department can hold an adventure-based counselling to encourage staffs to take risk and set goals. So that employees can become more positive.

Enneagram test is just a reference for HR department to set the training content. Seniors still need to consider the real situation before they implement the training programme like employees' working performance, personalities or current mental status.

4. Limitation

The first problem is that the Enneagram test has fixed the value of each questions and the type that employee belong to. Therefore, it is hard for us to show the relationship between employees' type and their status such as age, sex or married status.

The second problem is that some employees may get same score in two types. So we need to consider this situation before we design the training. It takes time to figure out which type the employee is more like.

The third problem is that our group only involved two members, we do not have sufficient manpower to do deeper analysis.

The fourth problem is that using python to draw the swarmplot is really hard, because we never use it before. It takes time for us to learn how to use it and how to input the code.

We tried many and many time and failed again and again. Fortunately, we understood how to use python to draw swarmplot finally.

5. Conclusion

To conclude, although the data is just our assumption and the code is quite complex toward us, Python is really useful to analyse data. It is very convenience for us to import data and then do further studies on it. We sincerely hope that we can have more time to study python and apply it in our future career. At last, we thank for our teacher Bao Yang's guidance and suggestions to our project.

Reference

Books

1. Don Richard Riso; Russ Hudson.(2000). *Understanding The Enneagram: The practical Guide To Personality Types (Revised Edition)*. The United State of America. Bardon-Chinese Media Agency.

Online resources

1. Erich C. Dierdorff； Robert S. Rubin. Harvard Business Review. (12 Mar 2015). *Research: We're Not Very Self-Aware, Especially at Work*. Retreived from https://hbr.org/2015/03/research-were-not-very-self-aware-especially-at-work

2. The Enneagram Institute(2017) Type 3 - The Enneagram Institute https://www.enneagraminstitute.com

Appendix

1. Code Illustration (See RHETI test code.py for details)

```
1 while True:
2     print("The Riso-Hudson Enneagram Type Indicator (RHETI version 2.5) is one of the most popular Enneagram-b
3     agreement = input("Do you understand all terms before you start? Yes or No")
4     if (agreement == "Yes") or (agreement == "yes"):
5         break
6     elif (agreement == "No") or (agreement == "no"):
7         print("Thank you for your interest.")
8         continue
9     else:
10        print("Please enter Yes or No.")
11        continue
12
13 type_1 = 0
14 type_2 = 0
15 type_3 = 0
16 type_4 = 0
17 type_5 = 0
18 type_6 = 0
19 type_7 = 0
20 type_8 = 0
21 type_9 = 0
22
23 #Q1
24 while True:
25     Q1 = input("Q1 A. I have been romantic and imaginative. / B. I have been pragmatic and down to earth.")
26     if (Q1 == "A") or (Q1 == "a"):
27         type_4 = type_4 + 1
28         break
29     elif (Q1 == "B") or (Q1 == "b"):
30         type_6 = type_6 + 1
31         break
32     else:
33         print("Please enter either A or B")
34         continue
35
36 #Q2
37 while True:
38     Q2 = input("Q2 A. I have tended to take on confrontations. / B. I have tended to avoid confrontations. ")
39     if (Q2 == "A") or (Q2 == "a"):
40         type_8 = type_8 + 1
41         break
42     elif (Q2 == "B") or (Q2 == "b"):
```

```
46 while True:
47     Q19 = input("Q19. A. Generally, I've been methodical and cautious. / B. Generally, I've been adventurous and take
48     if (Q19 == "A") or (Q19 == "a"):
49         type_6 = type_6 + 1
50         break
51     elif (Q19 == "B") or (Q19 == "b"):
52         type_7 = type_7 + 1
53         break
54     else:
55         print("Please enter either A or B")
56         continue
57 #Q20
58 while True:
59     Q20 = input("Q20. A. I have tended to be a supportive, giving person who seeks intimacy with others. / B. I have
60     if (Q20 == "A") or (Q20 == "a"):
61         type_2 = type_2 + 1
62         break
63     elif (Q20 == "B") or (Q20 == "b"):
64         type_1 = type_1 + 1
65         break
66     else:
67         print("Please enter either A or B")
68         continue
69 #Q21
70 while True:
71     Q21 = input("Q21. A. I've often felt the need to be a pillar of strength. / B. I have often felt the need to per
72     if (Q21 == "A") or (Q21 == "a"):
73         type_8 = type_8 + 1
74         break
75     elif (Q21 == "B") or (Q21 == "b"):
76         type_3 = type_3 + 1
77         break
78     else:
79         print("Please enter either A or B")
80         continue
81 #Q22
82 while True:
83     Q22 = input("Q22 ")
84     if (Q22 == "A") or (Q22 == "a"):
85         type_5 = type_5 + 1
86         break
87     elif (Q22 == "B") or (Q22 == "b"):
```

2. Import data(Histogram)

	emplyees	type
0	1	2
1	2	1
2	3	7
3	4	6
4	5	9
5	6	4
6	7	6
7	8	6
8	9	9
9	10	9
10	11	1
11	12	6
12	13	8
13	14	2
14	15	9
15	16	6
16	17	4
17	18	8
18	19	6

```python
In [6]: import pandas as pd
excel_file="employeedata.xlsx"
data=pd.read_excel(excel_file)
data.head(55)
```

```python
import matplotlib.pyplot as plt
import seaborn as sns
data['type'].plot(kind="hist",bins=9)
plt.show()
```

3. Import data(Swarmplot)

Out[135]:

	Type	Score
0	1	14
1	1	30
2	1	30
3	1	22
4	1	8
5	1	22
6	1	12
7	1	13
8	1	6
9	1	14
10	1	29
11	1	13
12	1	21
13	1	17
14	1	0
15	1	18
16	1	31

```python
In [135]: import pandas as pd
excel_file="result.xlsx"
data=pd.read_excel(excel_file)
data.head(1000)
```

```python
import matplotlib.pyplot as plt
%matplotlib inline
import seaborn as sns
sns.set(style ="whitegrid")
ax=sns.swarmplot(x='Type', y='Score', data=data)

plt.title('Graph')

plt.show()
```