Improvement of Attendance Management System at a Telecommunication Operation Centre In Malaysia

Nooramirah Najwa Borhanuddin, Roslina Mohammad and Zuritah A.Kadir*

*Razak Faculty of Technology and Informatics
Universiti Teknologi Malaysia
Jalan Sultan Yahya Petra, 54100, Kuala Lumpur*

zuritah@gmail.com

Abstract

This paper attempts to propose an improvement of the attendance management tool's evaluation to track employees key-performance-indicators (KPI) at a telecommunication operation centre in Malaysia. The study revealed the primary cause for verification and assessment of attendance records and measurement of staff KPI in the Telecommunication Operation Centre. The analysis was carried out to verify the attendance records versus the performance applied using DMAIC with the R Studio Programming and staff handbook performance measurement. The R Studio Programming was proposed as an automation measurement for individual workers and to improve the new staff handbook's Telecommunication Operation Centre with an improved attendance measurement KPI per the individual's performance. The findings of this research will serve as a guide for many organizations later on, in order to improve the staff's performance handbook. Furthermore, it may additionally benefit the organization as an effective administration tool for employee attendance in the future.

1. Introduction

The influence of attendance on the overall performance of workers is a necessary element of business management, as naturally it is not a question that attendance has a significance as. For this study it was a necessary trouble to help decide how a good deal is obligatory for attendance in a company. Many researchers have found high-quality research on the importance of family members between attendance and the overall performance in exclusive topics at various universities and agencies [1][2]. Attendance analysis and performance has becoming a trend in a business organization, as well as in education institutes which have become necessary for checking various activities such as student performance, their capability, interests, weaknesses which needs consideration, faculties of performances, overall performance branch, department and much more [3][4].

The telecommunication Operation Center still practices a manual way for evaluation of the attendance records. Besides, supervisors want to manually analyze a range of absences and calculate the share of the current input from the attendance listing being amassed or recorded. A total of 40 group of workers, calculated their absenteeism manually with the aid of unique units. This was time

---

consuming and the result of the calculation could possibly go wrong if the manager ignored some of the information in the attendance record.

This research attempts are to advise attendance management tools evaluation to the body of workers' performance KPI at TM Operation Center. the findings of this research will serve as a guide for different enterprise later on in order to improve staff performance handbook to researchers.

The objectives of the research are:
1. To identify the issue in verification and assessment of attendance records and measurement staff KPI in TM Operation Centre.
2. To analyse the verification attendance records with the performance of the KPI in TM Operation Centre.
3. To propose an improvement current staff handbook Telekom Operation Centre with attendance measurement KPI per individual performance.

2. Methodology

In this study, Qualitative lookup was used as a collection data method and the theories were developed based on that data. The problem statement asks, "What are the root causes and solutions to improve the verification of attendance to all employee that can used as standard tools and attendance performance in the staff handbook KPI?". Several researchers recommended that a modern-day practice of attendance verification documents that a quasi-experimental lookup sketch is most fabulous when it lacks the key ingredient, test variables, or no strong fundamental of algorithm to rely on. In this lookup, most of the facts were already available, but the opportunity lacks information and data that may also require obtaining the course of the research period. All the acquired statistics for the evaluation in the literature review, record review and commentary have been arranged in Figure 1 to ease the lookup works. The records will analyse based on the lookup goals (RO's) that have been acquired from legitimate lookup question (RQ's) from the lookup perspective.

Figure 1. DMAIC Research

DMAIC is a data-driven first-class method used to enhance processes. It is an integral section of a Six Sigma initiative but is widely wide-spread and can be applied as a standalone enchantment method or as part of another method improvement initiative such as lean [5].

2.1 Identify

This research seeks to identify the current practice of attendance verification records processes. By determining the problem of the issue and of the new approach or existing one is effective. From the current process given in Figure 2, an employee captures the daily attendance using the current system's attendance management in the Telecommunication Operation Centre. The attendance records as an auto data pushed into the server. Every month the attendance data extracts from the server and customizes the report manually. The validation approval by the manager will be presented as an attendance performance report at the top management meeting. Furthermore, the author will focus in the green area and discuss the root cause using the fishbone method.
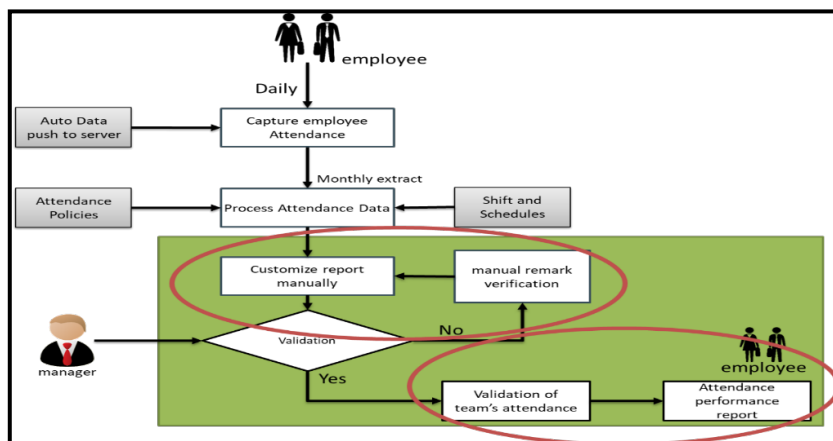

Figure 2. Current Process for Attendance verification in Telecommunication Operation Centre

2.2 Analyze

The target of population was 40 staff of the Telecommunication Operation Centre located in Kuala Lumpur, Malaysia. The qualitative research methods using the verification attendance records, will be using two years of attendance management records that were extract from the data server. Further, authors will have collected via observation on site over approximately 8 months. The data random 2 team in NOC 1 and NOC 2 will help to analyze of early arrival and late arrival "time-in". The analysis data using the R Studio programming for each individual attendance measure, in order to accumulate qualitative data statistical, the place of the employee's attendance document databases statistics mining evaluation the use of R Programming (R Studio) tools. R Studio is a statistical computing language and tool which is environmentally friendly to operate data evaluation [3].

2.3 Improvement

All collected data will be key-in using R Studio programming software. Researchers will use the attendance excel records to import the R Studio programming using the computing language in the command in the editor view. The measurement of the analysis refers to the formula in previous research works and modified using the author code editor. Furthermore, all the key-in data will be

tabulated based on the sections of the research questions. All the collected data will be prepared for qualitative data analysis.

3. Discussions

Objective 1: To identify the issue in verification and assessment of attendance records and measurement staff KPI in Telecommunication Operation Centre.

In identification of the problem, A fishbone diagram, also referred to as a motive and effect graph or Ishikawa diagram was constructed as shown in Figure 3. Ishikawa diagram was a visualization device for categorizing the potential reasons of a trouble in order to become aware of its root causes [6]. In this study, to define the issue of current verification and assessment of the attendance records and measurement of staff KPI, the fishbone tool was used. There were four main theme which called man, machine, management and material.
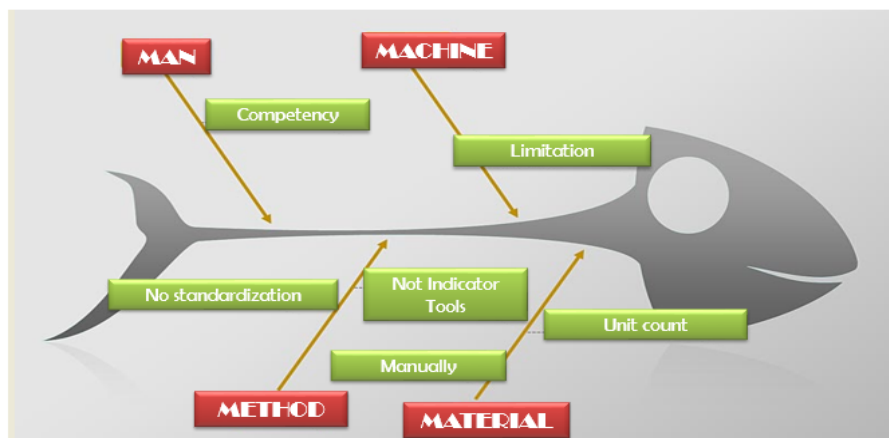

Figure 3. Fishbone Diagram

1st Bone – Man : Identifying a problem's root cause under competency "bone", it is lack of verification of attendance. It is because of the remarks of justification which were given and were not confident enough to make decisions. Furthermore, no appropriate document to justify the absences for the workers. As referred to in figure 5, the process of verification and validation will make the records a repeatable process, and reviewed by the manager.

2nd Bone – Machine : Identifying a root cause in second bones are limitation of the privilege. The limitation for attendance record view and access attendance server's records. Employees' KPI performance only can be measured by the competency of the initiative working level on a yearly basis. For the present, the measurement for the attendance absenteeism rate uses the manual calculation basis.

3rd Bone – Method : In the third bones method, the root cause of verifying attendance is not through standardization as there are no indicator tools to measure the attendance absenteeism rate. Furthermore, staff use their own method to report the result. It can impact the result if it is not clear and valid.

4th Bone – Material : The fourth bones are material root because which causes the process to analyze manually every attendance excel file and identify the

number of absenteeism for all employees. Every unit needs to be counted and the percentage calculated for all staff using the excel formula.

4. Results

Objective 2: To analyse the verification attendance records with the performance of the KPI in Telecommunication Operation Centre.

4.1 Design

The motion lookup format used is to be decided for this lookup study. This used to be deliberated to become aware of the staff's punctuality time in or late arrival time in. Eight-month intervention cycles were used to be deliberate for the identified employees. Triangulation in data series were used and applied with the aid of opting for qualitative and quantitative modes of information series and tools.

4.2 Participants

The observation checklist was designed to record the data of employees in the Telecommunication Operation Centre. The first tool devised by the researchers was to attain quantitative data from the attendance record server. The second tool was designed in order to gather qualitative data where the employees time in their attendance using attendance system management at Level 29 located office.

4.3 Data Analysis

The data list on site was analyzed to explore if there were any significant times when the employee's arrival was late for working. This experience will help researchers to understand the trends of working time. Based on the Telecommunication Policy clause 9 - working hours starts at 8:30am every Monday until Friday. From the NOC 1 graph in figure 4, a total of 18 staff arrived at 08:00am, and the total of 12 staff showed up on-time at 08:30am. Late arrivals were recorded at 09:00am with a total of 16 staff. Perhaps the most fact was that the character episodes of being late can be contagious to others and contributes to a counterproductive organizational attendance culture. Although there is a constrained lookup on early departure, it was possible to acquire undesirable penalties for oneself, co-workers, and the agency compared to sequences of being late to work [7].

In figure 4 from the NOC 2 team analysis data collection, the data showed that for on-time arrival or early arrival at 08:30am, a total of 19 staff compared with that of the NOC 1 result. Meanwhile, for late time-in at 09:00am the result was only 9 staff. Experiments were performed to understand the large records of employees. Using two year's records to analysis the absenteeism rate measurement by manual assessments is difficult to perform. For the scope of the research, a set of 40 registered employee records were selected.
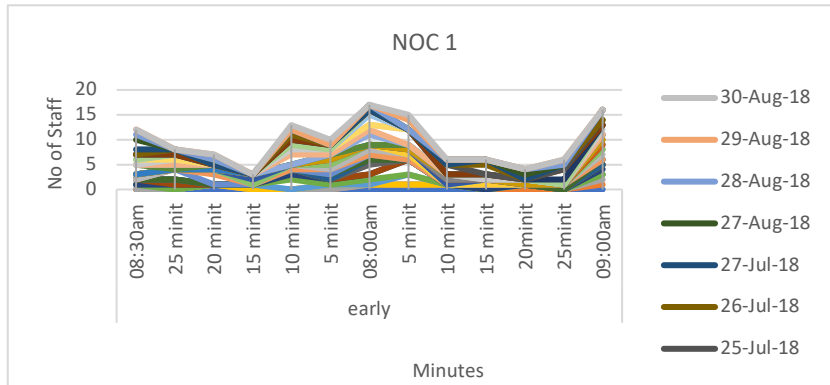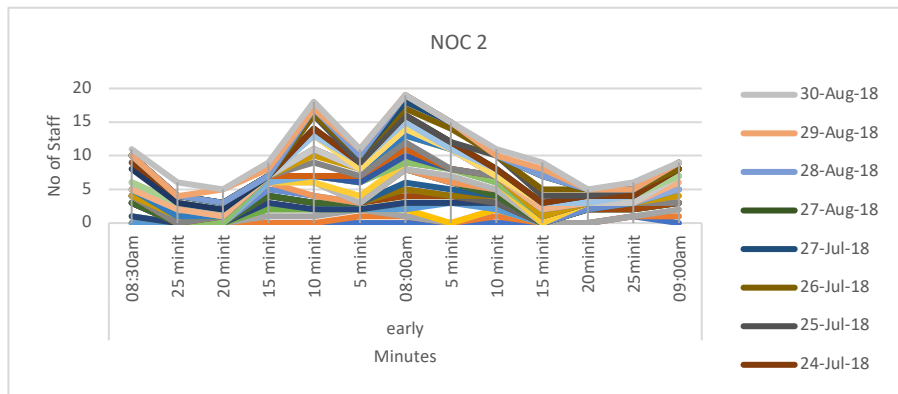
Figure 4. NOC 1 graph time arrival

Figure 5. NOC 2 graph time arrival

4.4 Data Mining

Analyzing statistics provides a unique point of view. Mining allows the user to analyze facts from many dimensions, classify it, and recapitulate the recognized relationships. It helps with finding correlations or patterns along with dozens of fields in massive relational databases [3].

4.5 Data Analysis using R Studio Programming

The result of the individual sampling from NOC 1 and NOC 2 for a total of 40 staff will refer to figures 6 and figure 7 below, which shows an increase in attendance rating which will also increase the productive performance. Meanwhile, the low absenteeism rate will have an effect on the excessive proportion of staff work effort.
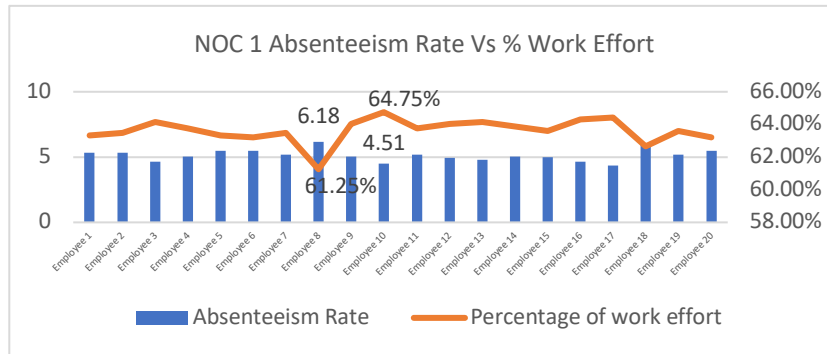
Figure 6. NOC 1 Absenteeism Rate vs % work effort graph

Figure 7 shows that the employees have a 64.75% higher work effort that was because the score of absenteeism rate was low at a rate of 4.51. Meanwhile, for employee with lower percentage of work effort, this was at 62.52% due to absenteeism rates being at 6.16. Figure 8 shows that employee 10 that 67.44% higher of the work effort that was because the score of absenteeism rate was only at 2.81. Compared to the result from employee 14d, with lower percentage work effort 62.52% have higher values on absenteeism rate result at 6.16.
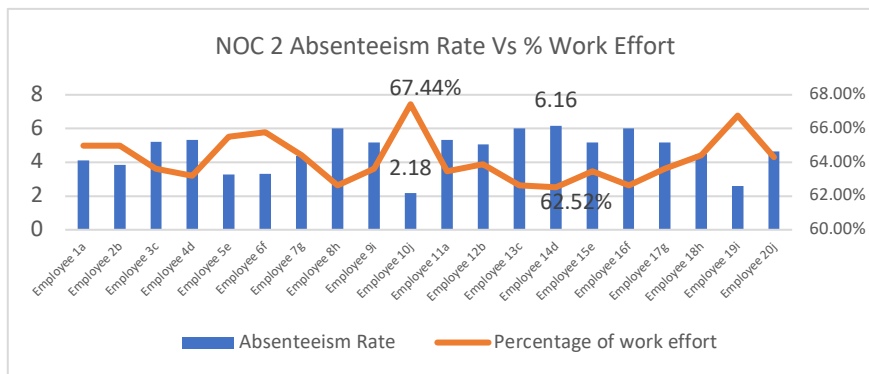
Figure 7. NOC 2 Absenteeism Rate vs % work effort graph

The research analysis using R Studio measurement tools performed individual result as shown in table 1 and table 2 below. The coding method using previous researcher findings for absence measure formula and measure of attendance working hour. Research code editor using the author's own coding performed the factor analysis with the R tool for checking the result with the best possibility.

Table 1. 20 staff NOC 1 result analysis using R Studio Programming

Employee ID	Total Working Days (within 2 years)	Total Working Hours	Absenteeism Rate	Percentage of work effort
Employee 1	463	4421.45 hours	5.33	63.34%
Employee 2	464	4432.93 hours	5.33	63.47%
Employee 3	469	4482.74 hours	4.65	64.15%
Employee 4	466	4452.46 hours	5.06	63.75%
Employee 5	463	4419.11 hours	5.47	63.33%
Employee 6	462	4409.79 hours	5.47	63.20%
Employee 7	464	4428.79 hours	5.19	63.47%
Employee 8	457	4358.4 hours	6.18	61.25%
Employee 9	468	4463.35 hours	5.06	64.02%
Employee 10	471	4495.67 hours	4.51	64.75%
Employee 11	466	4447.37 hours	5.19	63.74%
Employee 12	468	4471.63 hours	4.92	64.02%
Employee 13	469	4482.43 hours	4.78	64.15%
Employee 14	467	4459.42 hours	5.06	63.88%
Employee 15	466	4448.22 hours	5	63.61%
Employee 16	470	4492.49 hours	4.65	64.29%
Employee 17	471	4499.99 hours	4.37	64.43%
Employee 18	458	4369.2 hours	6.02	62.65%
Employee 19	465	4446.91 hours	5.2	63.61%
Employee 20	462	4409.79 hours	5.47	63.20%

Table 2. 20 staff NOC 2 result analysis using R Studio Programming

Employee ID	Total Working Days (within 2 years)	Total Working Hours	Absenteeism Rate	Percentage of work effort
Employee 1a	475	4537.12 hours	4.1	64.98%
Employee 2b	475	4535.52 hours	3.83	64.98%
Employee 3c	465	4446.91 hours	5.2	63.61%
Employee 4d	462	4413.88 hours	5.33	63.20%
Employee 5e	479	4567.19 hours	3.29	65.52%
Employee 6f	481	4574.26 hours	3.28	65.80%
Employee 7g	488	4645.27 hours	2.6	66.75%
Employee 8h	458	4369.2 hours	6.02	62.65%
Employee 9i	465	4439.43 hours	5.19	63.61%
Employee 10j	493	4693.28 hours	2.18	67.44%
Employee 11a	464	4432.93 hours	5.33	63.47%
Employee 12b	467	4459.42 hours	5.06	63.88%
Employee 13c	458	4369.2 hours	6.02	62.65%
Employee 14d	457	4358.4 hours	6.16	62.52%
Employee 15e	464	4428.79 hours	5.19	63.47%
Employee 16f	458	4369.2 hours	6.02	62.65%
Employee 17g	465	4439.43 hours	5.19	63.61%
Employee 18h	471	4495.67 hours	4.51	64.43%
Employee 19i	488	4645.27 hours	2.6	66.75%
Employee 20j	470	4492.49 hours	4.65	64.29%

As the records were collected, we processed the attendance data, analyzed it and deduced the following perception out of it: (Steps)

Step 1: To find the various attendance record file
Result: Based on the analysis, the attendance record file for two years is 731 days.

```
> All_days
[1] 731
```

Step 2: To find Individual status
Result: Based on the analysis, the individual status was 32 days earned leave, 20 days optional holiday, present was 471 days and weekly off was 2017 days.

```
> Attendance_Status

  Earned Leave      Holiday Optional Holiday        Present      weekly Off
            32               20                1           471             207
```

Step 3: To measure Absenteeism Rate
Result: Based on the analysis, the absenteeism rate was 4.3777565.

```
> absenteeism_rate
[1] 4.377565
```

Step 4: To measure Non-working hour within 2 years' record
Result: Based on the analysis, non-working hours within 2 years record was 260 hours.

```
> Non_Working_Hours
[1] 260
```

Step 5: To measure percentage of work effort – working days
Result: Based on the analysis, percentage of work effort working days was 64.43%

```
> Percentage_Working_Days
[1] 64.43228
```

Step 6: To calculate Total Working Hours
Result: Based on the analysis, total working hours was 4499.99 hours.

```
> Total_Working_Hours
[1] 4499.99
```

Step 7: To identify maximum working hour in a single day
Result: Based on the analysis, maximum working hour in a single day was 14.57 hours

```
> maximum_Working_Hours
[1] 14.57
```

Step 8: To identify minimum working hour in a single day
Result: Based on the analysis, minimum working hour in a single day was 3.77 hours.

```
> minimum_Working_Hours
[1] 3.77
```

Step 9: To find Statistic information (Mean, Median, Mode)
Results: Based on the analysis, the mean, median and mode as below,

```
> Mean
[1] 9.53
> Median
[1] 9.53
> Mode
[1] 9.47
```

Step 10: Finally, to plot the Histogram per individual result
Result: The individual result as showed in Figure 8
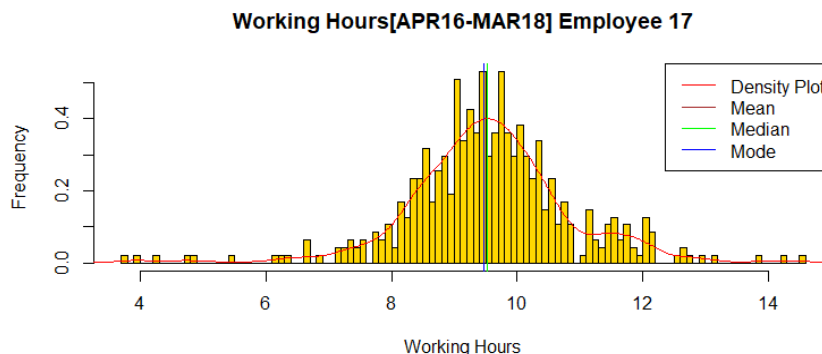
Figure 8. Histogram and Density plot of attendance data – *sampling employee17*

The process from the current verification will help managers to validate the measurement attendance using R Studio Tools. Furthermore, it will help to

improve new processes for attendance verification in the Telecommunication Operation Centre.

4.6   Improvement

Objective 3: To propose an improvement current staff handbook Telecommunication Operation Centre with attendance measurement KPI per individual performance.

The process from the current verification will help managers to validate the measurement attendance using R Studio Tools. Furthermore, it will help to improve new processes for attendance verification in the Telecommunication Operation Centre. The research has proposed an improvement staff handbook with attendance measurement KPIs for the Telecommunication Operation Centre. The new staff handbook shows the new additional sub table for NOC productivity attendance measurement for staff competency as referred to the current staff handbook in figure 9 and the new improvement proposed in figure 10 and figure 11 below.
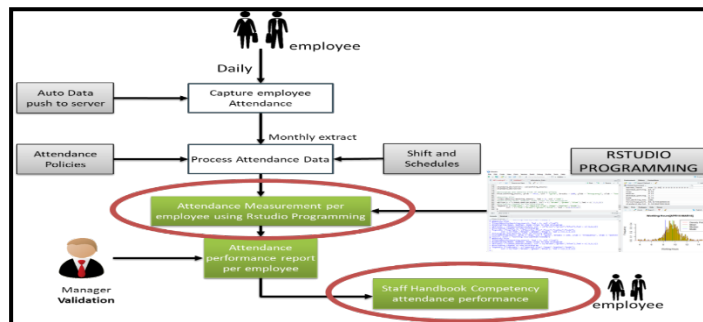
Figure 9. New process for Attendance verification in TM Operation Centre

Figure 10. Current Staff Handbook view

In new the improvement staff handbook KPI competency, the finding analysis showed that the data mining of the attendance helped cover our goal to utilize large data records in the organization. Using these records, several measurement analysis and performance can be performed for percentage of attendance work effort on an individual basis.

Figure 11. New Staff Handbook view

5. Conclusion

The study revealed the cause of the issue in verifying and assessing attendance records and measurement of staff KPI in the Telecommunication Operation Centre. The analysis of the verification attendance records versus performance was applied with DMAIC with the R Studio Programming and the staff handbook performance measurement. The R Studio Programming was proposed as an automation measurement for individual workers and to improve new staff handbook Telecommunication Operation Centers with improved attendance measurement KPI per individual performance.

Acknowledgments

6. References

[1] Kamal, M. F., Waseem, M. A., & Mujtaba, B. G. (2013). Comparative analysis of the effect of attendance on academic performance of management and finance course students. World Applied Sciences Journal, 24(12), 1651-1655.

[2] Bydawell, M. (2016). MANAGING EMPLOYEE ABSENTEEISM. Retrieved from http://hrtorque.co.za/managing-employee-absenteeism-acceptable-rate/

[3] AnanyaChandraker, D. G. V. (2014). Analytics and prediction over student's record. International Journal of Advances in Science Engineering and Technology, 2(2), 80-83.

[4] Christianson, L. K. (2018). Defining a Model to Reduce and Prevent Absenteeism in the Workplace. The College of St. Scholastica,

[5] Sutphin, P. D., Reis, S. P., McKune, A., Ravanzo, M., Kalva, S. P., & Pillai, A. K. (2015). Improving inferior vena cava filter retrieval rates with the define, measure, analyze, improve, control methodology. Journal of Vascular and Interventional Radiology, 26(4), 491-498. e491.

[6] Mehmood, N. K. D. o. K. (2014). Effects ofAbsenteeism on Students Performance. International Journal of Scientific and Research Publications, 7(9), 151-168.

[7] Nicolaides, V. C. (2016). Predicting Daily Attendance Behaviors: A Theory of Planned Behavior Approach.