

Feedback Service Management of Student Midterm Assessment Based on Six Sigma Theory

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Abstract

The effect of improving the efficiency of information feedback service after applying six sigma theory in the management of students' midterm assessment results feedback service was discussed in this paper. The midterm assessment of students in the first semester of 2020-2021 academic year was selected as the control group, and the midterm assessment of students in the second semester of 2020-2021 academic year was selected as the experimental group. The service call time was used to measure the service efficiency of information feedback. Through the improvement mode of six sigma DMAIC, the reasons influencing the service efficiency of information feedback are investigated and analyzed to find out the main reasons and make improvement analysis. The service time of two groups before and after the implementation of six sigma management is compared. After applying six sigma management, the service efficiency of information feedback was significantly higher than that of control group, and the difference was statistically significant ($P < 0.05$). And the application of six sigma management in the feedback service of students' midterm assessment has obviously improved the service response ability of the assessment results.

Keywords

Six sigma; The midterm assessment; Service management.

1. Introduction

Six sigma management is a kind of new quality management method [1]. It is a management method that takes customers as the center and eliminates defects and problems in the process through process improvement or process design, so as to improve quality, improve service, reduce cost, shorten cycle and improve efficiency. Six sigma improvement steps include five stages [2], that is, Define, Measure, Analyze, Improve and Control, referred to as DMAIC model. The Six sigma method was first proposed and implemented by Motorola in 1987. In 1995, General Electric began to implement the six sigma strategy and carried it forward. Later, Sony, Nokia, Samsung, Haier and other enterprises began to implement the six sigma management, and it gradually prevailed. With the promotion and continuous application of six sigma management method, it has not only achieved success in manufacturing industry, service industry and other fields, but also has been widely used in government service quality, higher education and other fields [3-8]. In this paper, six sigma management is applied to the feedback service management of students' mid-term assessment results, and the effects are satisfactory.

2. Research Process and Method

2.1. The Research Process

In order to understand teachers' classroom teaching and improve teaching quality, the quality assurance center of the school will organize all students to conduct mid-term assessment every semester (for the evaluation of the courses in the first half semester), and feedback the assessment results to the teachers. Teachers log in the system to inquire according to the

instructions. If there is any problem during the process, they can call the teachers of the quality assurance center for consultation. The mid-term assessment of students in the first semester of the 2020-2021 academic year was selected as the control group, and the daily service call time of the quality assurance center were collected. In addition, the mid-term assessment of students in the second semester of the 2020-2021 academic year was selected as the experimental group, and the six sigma management was implemented. Data were collected by the same method, and the two groups of data were compared.

2.2. The Research Methods

2.2.1 Define

Set up a project team, determine the responsibilities of the team members, and establish the goal: to improve the efficiency of the feedback service for students' midterm assessment results.

2.2.2 Measure

In the first semester of 2020-2021 academic year, more than 170,000 items of data were collected for the mid-term assessment of students. The valid period for teachers to inquire students' course evaluation was 6 days. The daily service call length records of the feedback of the mid-term assessment results of students in the first semester of 2020-2021 academic year were consulted to calculate the current feedback service quality level. The average daily service call time is 177.2 minutes.

2.2.3 Analyze

The group members worked together to analyze and discuss the reasons for the long average daily service call duration in the measurement stage. The results found that the teachers' login accounts were confused, with some working numbers, some teaching administration system numbers, some names spelled in full, etc.; Teachers often forget their login passwords; there are too many words to view the feedback guidance of students' mid-term assessment, which is not intuitive enough; unable to log in outside the school; after the teacher successfully logged in, a few teachers who had started the course could not check their students' evaluation about their courses because of the same name with other teachers.

2.2.4 Improve

Make improvement plan and implement corrective action according to the problems found in the analysis stage. (1) The confusion of teachers' login accounts should be solved by adopting a gradual and unified approach. That is, for teachers who have problems with their login account or do not remember their login account, they will no longer just help them to check their login account, but as long as they find that the current login account of the teacher is not their job number, they will help them to change their job number to login after consulting the teachers. This can be convenient for teachers to log in again in the future to avoid confusion. (2) For the problem that teachers forget their login passwords, a unified password initialization setting should be adopted before sending feedback notification, and teachers should be informed at the same time to make it more convenient for teachers to log in. (3) For the problem that there are too many words in the feedback guide of students' mid-term assessment and it is not intuitive enough, the screenshot guide of each step is added, and the key part is marked with red color, so that teachers can feel themselves on the scene, and the operation is compared step by step, which greatly solve the trouble of teachers, especially senior teachers, when inquiring the feedback of assessment.(4) For problems that cannot be logged in and inquired off-campus, after consultation with the educational technology and information center of the school, VPN login can be opened to facilitate teachers to log in and inquired off-campus.(5) As for the problem that a few teachers who have started the course cannot be evaluated by students because they have the same name as other teachers, each teacher can query the students' course evaluation by marking different departments or adding numbers after their names to distinguish them through the management of the basic information of teachers.

Over 140,000 items of data were collected for the mid-term assessment of students in the second semester of the 2020-2021 academic year. The valid period for teachers to query students' course evaluation was 6 days. The daily service call time for the feedback of the mid-term assessment results of students in the first semester of the 2020-2021 academic year was recorded. The service quality level of this feedback was calculated, and the average daily service call time was 90.7min.

2.2.5 Control

On the basis of the implementation of improvement measures, control measures should be formulated to strengthen the service management of each link. For links with no obvious improvement effect, group discussion and analysis are required to reformulate intervention measures to ensure the stability of improvement effect.

2.3. Statistical Treatment

Minitab statistical software was used for data processing and statistical analysis. Measurement data with normal distribution and homogeneity of variance were represented as $\bar{x} \pm s$, and t test was used for comparison between groups. $P < 0.05$ was considered statistically significant.

3. The Results

After applying six sigma management, the average service call time per day in experimental group was significantly reduced compared with control group, with statistical significance ($P < 0.05$). See Table 1 for details.

Table 1. Comparison of relevant data before and after implementation of six sigma management ($\bar{x} \pm s$, min)

groups	average effective service call time per day
the control group	177.2±31.6
the experimental group	90.7±21.8
t	5.51
P	< 0.05

4. Discussion and Conclusions

In this study, the six sigma theory was applied to the feedback service management of students' mid-term assessment results. Firstly, the duration of students' mid-term assessment in the first semester of the 2020-2021 academic year was analyzed and the service duration was found to be (177.2±31.6) minutes. Through continuous analysis of the investigation results, the reasons were found. For these reasons, the priority improvement projects were listed and a series of improvement measures were formulated, respectively from unifying teachers' login account, initializing the teacher login password before opening the system, optimizing the guidelines for evaluation feedback, contacting related department to open the VPN, the namesake teachers in the aspects of differences in the system identification. In the control phase, the six sigma management team supervises, controls and formulates control measures. As can be seen from Table 1, after the implementation of six sigma management, the service call time of the experimental group was (90.7±21.8) minutes, significantly lower than that of the control group, with a statistically significant difference ($P < 0.05$), and the efficiency was improved by 48.8%.

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