

# Optimization Design of Admission Process Based on the IE Technology

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**Abstract.** New registration is an important link of freshmen enter universities will experience. In this paper, Panzhuhua University, as an example, the integrated use of process analysis and layout and the path analysis method of freshmen register unreasonable process in the presence of the analysis and improvement, and evaluate the effectiveness of improving results.

## Introduction

Registration is a new report into the university's first freshman to go through things. Every newborn wants to quickly and easily apply for admission registration formalities, also the school wants to provide the staff of the school a convenient service to report, and save time and money and personnel consumption. To this end, in this paper , Panzhuhua University 2013 Freshmen Registration process, for example, the use of program analysis and process layout and the path analysis its unreasonable analysis methods to analyze and improve the effectiveness and improving the assessment of the results.

## Status Survey

The current new students register process is shown in Table 1.

Table 1 New students registration process

| Number | Items   |
|--------|---|
| 1      | The new arrival south gate of Panzhuhua University, by the staff to lead  |
| 2      | Go to test center opposite orientation, to lay down their luggage, take out the admission notice  |
| 3      | Staff access to new information, new sub bedroom, fill in the "registration form" process, at the same time the new library entrance to buy phone cards   |
| 4      | The new buying the card back to the new year, fill in the personal information as well as the new phone number  |
| 5      | Under the leadership of the staff to the new office building of payment   |
| 6      | Payment is completed, get a receipt and report on the flow chart below to collect stool Hall  |
| 7      | Took the stool, back to the new year, the stool and luggage together  |
| 8      | Lead the freshmen to analysis and test center on the first floor fee (blanket, a water bottle, a receipt)   |
| 9      | After paying the entrance of the measured line up to report for registration and obtain the student handbook, the student is in the process table stamped |
| 10     | Back to the point of application, receive a card, take all the luggage, stools, all kinds of receipts, invoices and flow chart                            |
| 11     | To the gym, with receipt receive the blanket and bottle   |
| 12     | Lead the freshmen to the bedroom, registered in the bedroom door, life teacher sign, keys   |
| 13     | Live in bedroom   |

According to the new students register process, the process to reach the South Gate of Panzhuhua University is taken as starting point and the completion of student dormitory occupancy Registration is taken as completed point for research. The entire process is shown in Fig. 1, the site layout and moving the route is shown in Fig. 2.

| Job title: freshman registration process<br>Start: arrive the gate of campus<br>End: in the bedroom<br>Methods: the current<br>Researchers: IE study group<br>Date: 2013.9<br>Reviewer: IE study group | Statistics  |          |                |              |
|--|-------------|----------|----------------|--------------|
|  | Project     | Times    | Time [s]       | Distance [m] |
|  | Processing  | 11       | 745            |              |
|  | Checking    | —        | —              |              |
|  | Moving      | 11       | 1353           | 1105         |
|  | Waiting     | 6        | 1170           |              |
|  | Storing     | 1        | —              |              |
| Job description  | Distance[m] | Time [s] | Process symbol |              |
|  |             |          | ○              | □            |
| 1. Go to the point of meeting freshman   | 75          | 86       |                | ●            |
| 2. Coordination staff confirmed information and fill in the "registration form"  | 0           | 100      | ●              | →            |
| 3. Go to the library   | 87.5        | 103      |                | ●            |
| 4. Waiting   | 0           | 120      |                | ●            |
| 5. Buy the phone card  | 0           | 60       | ●              | →            |
| 6. Returns to the new point  | 87.5        | 103      |                | ●            |
| 7. Fill in personal information and new phone number, take "the sign up process table"   | 0           | 35       | ●              | →            |
| 8. To the Finance Office   | 97.5        | 119      |                | ●            |
| 9. Waiting   | 0           | 300      |                | ●            |
| 10. Pay  | 0           | 180      | ●              | →            |
| 11. Go to the synagogue  | 53          | 56       |                | ●            |
| 12. Waiting  | 0           | 180      |                | ●            |
| 13. Bring the stool  | 0           | 60       | ●              | →            |
| 14. Returns to the new point   | 109         | 126      |                | ●            |
| 15. Put the stool  | 0           | 5        | ●              | →            |
| 16. To analysis and test center on the first floor   | 30          | 95       |                | ●            |
| 17. Waiting  | 0           | 180      |                | ●            |
| 18. Pay for Bedding fee  | 0           | 120      | ●              | →            |
| 19. To analysis and test center gate   | 20          | 30       |                | ●            |
| 20. Waiting  | 0           | 300      |                | ●            |
| 21. Take a student handbook  | 0           | 45       | ●              | →            |
| 22. Returns to the new point   | 40          | 35       |                | ●            |
| 23. Take a card the luggage  | 0           | 85       | ●              | →            |
| 24. Go to the gym  | 450.5       | 420      |                | ●            |
| 25. Waiting  | 0           | 90       |                | ●            |
| 26. For bedding  | 0           | 30       | ●              | →            |
| 27. Go to the bedroom apartment  | 55          | 180      |                | ●            |
| 28. The bedroom registration, collect the keys   | 0           | 25       | ●              | →            |
| 29. In the bedroom   | 0           |          |                | →            |

Fig. 1 Freshman registration process flow chart

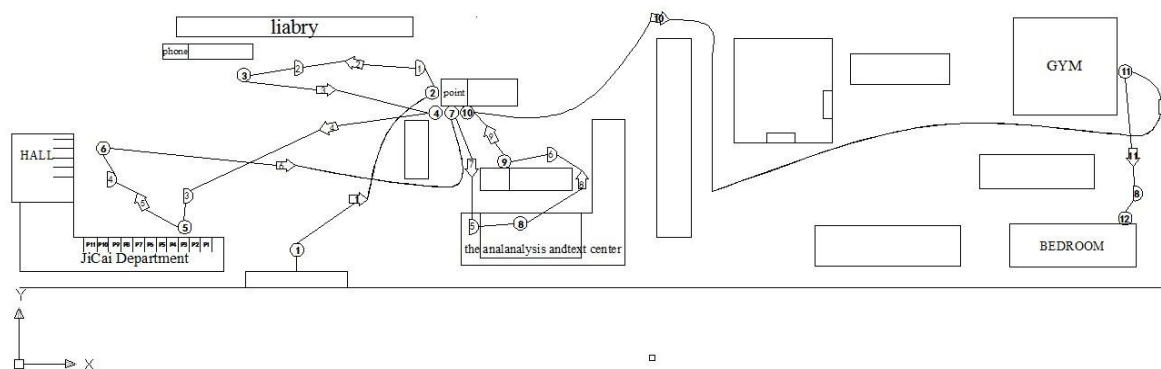


Fig. 2 Register circuit diagram

### Analysis and improvement

Based on the analysis of Fig. 2 and Fig. 3, found that the current process and layout problems:

(1) The times of moving and waiting are too much. In the registration process, the new must move 11 times and wait 6 times. Mobile will not bring any added value, only consumes time, manpower, material and financial resources, but the goods from one place to another, moving, moving is essential, therefore, in carries on the analysis to the mobile issues, focus on the analysis of the facility layout is reasonable; wait without increasing any additional value, can only increase the cost, prolong working time, to wait for problem analysis, focusing on understanding the cause for reason, try to eliminate wait for a phenomenon;

(2) The time of waiting and moving is too long. From Fig. 3 ,we can see, the new completed registration, mobile time is about 1353 seconds, the whole operation cycle 41.4%; waiting time is 1170 seconds, the whole operation cycle 35.8%; combined accounted for a total of the whole operation time 77.2%;

(3) the mobile route is long. In the registration process, the moving distance is 1251 meters long, and there are cross, back and forth and convection.

In the light of the existing problems, the application of "5W1H" and "ECRS" is to improve the issues, the analysis process is shown in table 2.

Table 2 Improve the analysis table

| Ask   | Answer  |
|---|---|
| The bedroom is divided up ahead?  | Not, according to the new report, a stay in a.  |
| Can the new be divided into the bedroom in advance?                                   | Yse   |
| Can the paper files into electronic edition?  | Yse, the electronic version also can save more time.  |
| The finance section and measurement of a building with a two toll charges in finance? | Can, financial department may indicate bedding fee for the collection, and bedding to buy the "voluntary" principle   |
| The new stool must be in the hall below the collar?                                   | Not necessarily, the current is arranged such that  |
| Is there no better place to receive the stool?  | There can be combined together, a stool to receive and bedding  |
| Is there no better place for bedding?   | Yes, it can be placed in the sports department, sports department is located in the new year the only way which must be passed from the point to the bedroom, can avoid to go back and forth stadium round trip.                  |
| "Student Handbook" must be specified in the school place to bring?                    | Not necessarily, student handbook issued the purpose is to let students can understand the school rules and regulations in the matriculation stage, the student handbook issued arrangement in the new point by two college issue |

To improve the solution as follows:

- (1) We can divide dormitory in advance, and use the electronic information table, to improve the recognition and fill in the new information and the efficiency of the bedroom;
- (2) Merge program for pay, in accounting and measurement of a floor bedding cost and fee in finance department in; eliminating waiting and payment in two, improve service levels;
- (3) A change in stool by the hall sports department;
- (4) For the gymnasium bedding in the sports department, a merger with stool;
- (5) The student handbook for the school uniform to receive at the point of orientation to the two level of institute.

The flow chart and circuit diagram of improved as shown in Fig. 3 and Fig. 4.

| Job title: freshman registration process<br>Start: arrive the gate of campus<br>End: in the bedroom<br>Methods: after improvement<br>Researchers: IE study group<br>Date: 2013.9<br>Reviewer: IE study group | Statistics  |          |                |              |   |   |   |
|--|-------------|----------|----------------|--------------|---|---|---|
|  | Project     | Times    | Time [s]       | Distance [m] |   |   |   |
|  | Processing  | 6        | 615            |              |   |   |   |
|  | Checking    | —        | —              |              |   |   |   |
|  | Moving      | 6        | 661            | 802          |   |   |   |
|  | Waiting     | 4        | 720            |              |   |   |   |
|  | Storing     | 1        | —              |              |   |   |   |
| Job description  | Distance[m] | Time [s] | Process symbol |              |   |   |   |
|  |             |          | ○              | □            | ⇒ | D | ▽ |
| 1. Go to the point of meeting freshman   | 75          | 86       |                |              | ● |   |   |
| 2. Coordination staff confirmed information and fill in the "registration form"  | 0           | 40       | ●              |              |   |   |   |
| 3. Articles "registration process table" to the Finance Office   | 98          | 119      |                |              | ● |   |   |
| 4. Waiting   | 0           | 300      |                |              |   |   | ● |
| 5. Payment (including bedding fee) and stamp   | 0           | 210      | ●              |              |   |   |   |
| 6. Go to the library   | 99          | 106      |                |              | ● |   |   |
| 7. Waiting   | 0           | 60       |                |              |   |   | ● |
| 8. Buy a phone card  | 0           | 180      | ●              |              |   |   |   |
| 9. Returns to the new point  | 87.5        | 103      |                |              | ● |   |   |
| 10. Fill in personal information, took the card and "Student Handbook", take the luggage   | 0           | 120      | ●              |              |   |   |   |
| 11. Go to the sports department  | 278         | 157      |                |              | ● |   |   |
| 12. Waiting  | 0           | 180      |                |              |   |   | ● |
| 13. For bedding and stool  | 0           | 40       | ●              |              |   |   |   |
| 14. Go to the bedroom apartment  | 164.5       | 90       |                |              | ● |   |   |
| 15. Waiting  | 0           | 180      |                |              |   |   | ● |
| 16. The bedroom registration, collect the keys   | 0           | 25       | ●              |              |   |   |   |
| 17. In the bedroom   | 0           | 180      |                |              |   |   | → |

Fig. 3 Improved freshman registration process flow chart

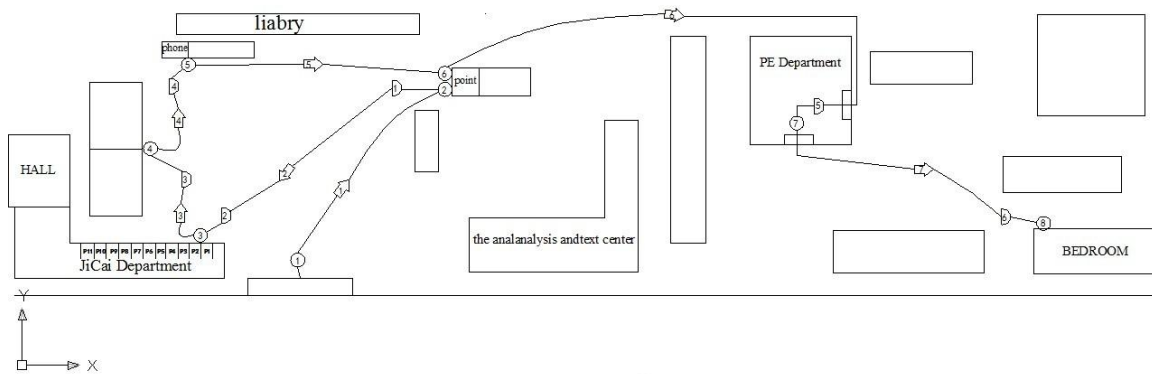


Fig. 4 Improved register circuit diagram

### Effect evaluation of improvement

Measures to improve the above, improved results are as follows:

(1) Reduced the newborn registration time. New registration time by improving the prior 3268 seconds to improve after 1996 seconds, by 1272 seconds, the service efficiency is increased by 38.9%;

(2) To streamline the new registration procedure. New registration process by improving the prior 29 shortened to improve after 17, greatly improving the service efficiency, save manpower, material and financial resources;

(3) Reduced the mobile number, shorten the moving distance. The new report mobile number by improve before the 11 time shortened to improve after the 6 time, distance traveled by improve before the 1251 meters to 723 meters can improve, shortened by 42.2%;

(4) To shorten the waiting time. The new report waiting time consumption by improving the prior 1170 seconds to improve after 720 seconds can register, 38.5%;

(5) The new registration process is more scientific, reasonable, enhance the registration process of continuity and compactness, service efficiency.

### Conclusion

IE technology is applied widely, this paper is the process analysis and layout and route analysis methods, to optimize the design of freshmen registration process. To improve the registration process, not only shorten the admission time, also shortened the entrance for the moving distance, improve service efficiency, reduce the cost of service. This paper also further analyzed through job analysis and action, to shorten the freshmen registration period, enhance the freshmen registration service efficiency, this is also the topic deeply discussed.

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