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Strategy on boarding school development: between trend and performance analysis

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Abstract Many cases show that the preexisting human resource condition of teachers may potentially cause problems for an educational institution. Two possibilities arise: (1) if the number of teachers is lower than the ideal number and (2) if the number of teachers is more than the ideal number. Therefore, every institution must plan the human resources of teachers through a scientific approach, both qualitative and quantitative. This study aims to plan a strategy for boarding school development based on the human resources of schools and the level of performance at the International Standard Madrasah, Amanatul Ummah, Pacet, Mojokerto, East Java. The human resource planning of teachers used in this study is a trend analysis to predict the number of new students, which then becomes the basis for determining the number of study groups. The number of study groups will then determine the required number of teachers, especially for those teaching the nationally tested subjects. The performance analysis used in this research is named PIAS Analysis, an upgrade of IPA analysis with an additional axis in the same parameters. The results of the study indicate that the composition of teachers is essential based on the primary and current needs of trend analysis. PIAS analysis shows that some attributes need to be improved for better services and better performance in sustainable school development.

Keywords: Islamic boarding school, PIAS analysis, teachers, trend analysis

1. Introduction

There is an old saying, "Reaching a goal depends on 5 M, namely, Money, Man, Machine, Material, and Management". This can be translated as follows: all activities require "money" to finance various needs to realize the goal. Additionally, to ensure that all organizational activities run correctly, an effective "management" system is needed. Interestingly, many parties agree that "man" is the most critical factor among the 5 M. What this means is that humans are qualified as advanced factors in various activities to achieve organizational goals. Logically, this means that a qualified man will be able to access the “money” from the party with the money. A qualified man can create the required machines in various activities to produce targeted products or services. Likewise, qualified men will ensure that there will be no difficulty in obtaining materials as factors of production to create products and services. Finally, qualified men will design, implement, and develop the required “management” for the overall activity of the organization to ensure that it runs effectively and efficiently. For example, Microsoft, a company engaged in information technology, has become a world business giant, not only because of the company's competitive advantages but also the result of human thought in creating various application programs. Likewise, other multinational corporations (MNCs), such as Google, YouTube, and Alibaba, have become giants because of the superior human beings inside the company.

These facts stress that the critical factor in developing a nation is increasing the quality of good education to produce superior human resources. How can good education be achieved to produce qualified students? In general, the quality of education is determined by the curriculum, syllabus, learning facilities, learning methods, teaching staff, education staff, performance evaluation and achievement standards, and leadership. Meanwhile, the Organization for Economic Cooperation and Development (2005:26) stated that “teacher is the single most important school variable influencing student achievement.” Based on this statement, every teaching institution must have enough qualified teachers in their field, in addition to other variables to produce superior graduates.

Therefore, all levels of education, starting from preschool to tertiary education, should not be hasty in recruiting teachers but must have thought-out plans to ensure that the implementation of education runs as expected. Although human resource planning can be done with a variety of scientific approaches based on various theories, in general, educational institutions in Indonesia do not plan to recruit educators with a scientific approach due to the institution’s variety of

backgrounds or causes. Therefore, this study provides an alternative approach to teacher planning based on a scientific approach at the theoretical and practical levels.

Service quality is an important factor that affects student performance in a boarding school. This research shows that a management aspect and building facilities aspect are necessary to enhance the service quality of a boarding school. The results are useful for identifying the real condition of a building facility and helping a boarding school to develop better service quality.

Human resources are a significant variable in the success of a country's development. As stated by Belcourt et al (2013), "there is a growing recognition that the strategic management of people within organizations affects important organizational outcomes."

Thus, managing human resources (HR), among others, starting from the planning, implementation, monitoring, and evaluation of HR must be carried out optimally to realize organizational goals. Therefore, the formulation of the problem in this study is, “How is the planning of educators based on a scientific approach built on various theories?”

Related to the sustainability of Islamic boarding schools, variables of performance evaluated use an upgrade of importance performance analysis named PIAS analysis. With these tools, we found that some attributes of school services are very important to improve for better service.

By referring to the problem formulation, this study aims to analyse the planning of educators with a scientific approach as an alternative for educational institutions to meet their needs. PIAS analysis was used to evaluate the quality of service based on the performance, importance, advisory and standard of each attribute in a boarding school. Based on PIAS analysis, many important attributes were found to improve the sustainability of boarding school development.

2. Literature review

2.1. Human Resource Planning

The science of management has known a saying of "Failing to plan is planning to fail", meaning that (1) failure to make plans is nothing but planning to fail, (2) a plan must be arranged as well as possible to avoid failure, (3) everything must be well planned beforehand, and (4) without a plan, there is a high probability of failure. Therefore, to guarantee the expected resource requirements, the organization must conduct optimal human resource planning. According to Monica et al. (2013), "every human resource policy and practice must directly support the organization’s strategy and objectives".

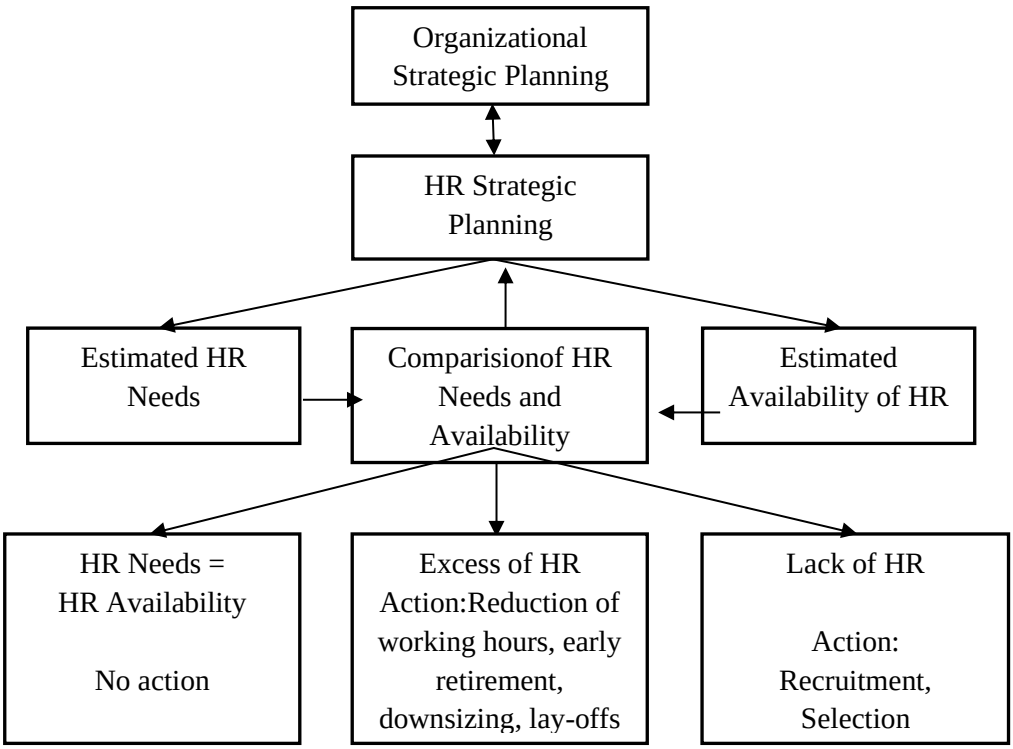

Figure 1 General process of HR planning.

Adjusting strategic human resource policies with the organization's strategic policies can be conducted in the following ways. Among others: (1) formulating organizational strategies, then designing human resource strategies, (2) or vice versa, starting with making an inventory of the existing human resource competencies, then formulating a corporate strategy based

on these competencies, and (3) doing a combination of both in a reciprocal relationship. More details can be seen in the figure above.Figure 1 can be explained as follows:

a. The first step is to formulate the organization's strategic plan. Preparation of the organization's strategic plan must pay attention to the quality, competence, and availability of HR.
b. Next, formulate an HR strategic plan that is linked to the organization's strategic plan. That is, the HR strategic plan is one step to reach the objectives of the organization's strategic plan.
c. To ensure a good implementation of activities to achieve organizational goals, the forecasted HR needs and availability should be determined, which are then compared to produce three possibilities:
    (1) Number of HR needs = the number of available HR. The organization does not take any action on the strength and formation of the HR.
    (2) Excess of human resources. To obtain efficiency and savings, the organization may implement various policies, including reducing working hours, implementing early retirement programs, implementing downsizing policies, and implementing layoffs.
    (3) Lack of human resources. The organizations must recruit HR, outsource, or select new employees.

2.2. Human Resource Planning Process

In general, the process of human resource planning is presented in Figure 1. However, human resource planning includes the following stages (Belcourt et al 2013).

a. Job Analysis
b. The Human Resources Forecasting Process
c. Determining HR Demand
d. Ascertaining HR Supply

2.3. Benefits of Human Resource Planning

As previously stated, strategic human resource management has a significant impact on the organization's achievements, such as the ability to survive, profits, the level of satisfaction of stakeholders, and employee performance. Therefore, proper human resource planning will benefit the organization both financially and in other forms.

One should also remember the saying, "only companies that have employees with the right people, assigned to the right place and at the right time with the right procedures will reach their goals." This is supported by a study conducted by Young (2009) on small and medium enterprises in Hong Kong, who determined that human resource management has a significant positive correlation with the success of the company.

2.4. Teacher

According to the Standard Encyclopedic Dictionary (1975), a teacher is "whose occupation is to teach others." Based on the Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers Article 1 Paragraph (1), educators or teachers are professional educators with the main task of educating, teaching, guiding, directing, training, assessing, and evaluating students in the education of children aged from formal education, primary education and secondary education. In this case, the professional principle of the teacher is those who:

a. have talent, interest, soul calling, and idealism;
b. have a commitment to improve the quality of education, faith, piety, and noble character;
c. have academic qualifications and educational background in accordance with the field of duty;
d. have the competencies needed in accordance with the field of duty;
e. have responsibility for conducting professional duties;
f. obtain income determined according to work performance;
g. have the opportunity to develop professionalism on an ongoing basis with lifelong learning;
h. have guaranteed legal protection in conducting professional duties; and
i. have professional organizations that have the authority to regulate matters relating to teacher professionalism.

In Article 8 of the aforementioned law, teachers must have academic qualifications, competencies, educator certificates, be physically and mentally healthy, and have the ability to realize national education goals. Academic qualifications are obtained through higher education undergraduate programs or four-year diploma programs. Meanwhile, competence includes pedagogical competencies, personality competencies, social competencies, and professional competencies obtained through professional education, whereas an educator certificate is given to teachers who have met the requirements.

2.5. The Role of Teachers in Student Quality

Gregory J. Palardy and Russell W. Rumberger (2008) stated that "a multilevel theoretical framework that recognizes the variation in student achievement gains due to three distinct and nested levels: the school, classroom, and student level. This framework also divides the schooling process into three sequential stages, including inputs, processes, and outputs". This statement concludes that the implementation of education includes 3 (three) levels, namely, at the school level, classroom level, and student level, each of which has stages starting from input, processes, and output.For example, at the classroom level, it includes (1) input stages consisting of teacher background and classroom features, (2) process stage consisting of teacher attitude and teaching practices, and (3) the output stage consisting of classroom outputs.

Thus, it is clear that teachers have a central role in producing quality outputs. This conclusion is in line with the Organization for Economic Co-operation and Development (OECD), as previously stated in the introduction, that teachers are the essential variable in determining the success of students. This is reinforced by the results of Mojavezi and Tamiz (2012), who stated that "self-efficacy has a positive influence on the students' motivation and achievement." Unanma et al (2013) also concluded that "there is a positive relationship between the teacher's academic qualification and student's academic achievement." This is also supported byKrasnoff (2014), who researched a high school in North Carolineand concluded that student achievement is significantly high if students are taught by teachers who are certified as instructors, recruited with a good system, have high certification values, graduated from reputable universities, have more than two teaching experiences, or have been certified by the National Certification Body.

2.6. Teacher Planning

Human resource planning has a variety of problems. As an illustration, the planning of hiring hard labor is certainly not the same as hiring experts with certain skills, competencies, or expertise, as well as work experience. As with the hiring needs of skilled workers, planning the hiring of teachers is a process for determining the number of required teachers so that teachers can be fulfilled and balanced between teacher demand and supply (Fauzan et al 2017). This means that if there is a shortage of teachers from the ideal needs, it will result in a doubling of teaching assignments or the provision of teaching assignments to those who do not have the competence of teachers, hindering the proper implementation of education.

Conversely, if there is an excess of teaching staff, then this creates inefficiencies that will burden the education institution's expenditure budget. Therefore, planning the hiring of teachers is part of the overall national education system planning, considering that they play a crucial role (Sunandar 2006). This is supported by Nurcholis et al (2016), who concluded that teachers are the most crucial determinant factor of the successful implementation of the curriculum.

2.7. PIAS Analysis

The importance and performance analysis (IPA) proposed by Matrilla and James in 1977 was a useful tool to provide a management perspective to identify strengths and weaknesses of the object for improving performance. Importance-performance analysis has been used as a tool to evaluate strategies and service quality in educational organizations, in the service quality of schools, and in many governmentprojects (Fadly et al 2019).

Since Matrilla and James researched, the importance performance analysis framework has become very popular among researchers in service quality research (Ennew et al 1993), and this method is a simple tool for evaluating the service quality of many attributes (Silva et al 2011). IPA examines not only the performance of the attribute but also the importance of that item as a determining in satisfaction factor to the respondent (Silva et al 2010). The IPAmethod has proven to be a generally applicable tool that simply interprets results in very wide uses among researchers in various fields and subjects. IPA is a way to promote the development of an effective strategy because this method facilitates the interpretation of attributesand increases the usefulness in making strategicdecisions (Abalo et al 2007; Fadly et al 2019).

Some problems were found in the IPA method, which only focused on the suggestion from the respondents. This condition means that the attribute of performance and importance is only based on their perspective. In this research, we added more parameters: advice from experts and standards. We named this method PIAS Analysis. After the performance and importance attributes, this research adds Advisory and Standard to evaluate the same attribute in performance and importance.Different from IPA, in which the results will create a cartesius strategy in some quadrants, the results in PIAS analysis give a color of performance level to improve. The color found from the value of the gap between the performance, advisory and standard of the attributes compared with the importance value.

3. Materials and Methods

3.1. Locus and Research Object

The object of this research is the International Standard Islamic Senior High School (MBI) Amanatul Ummah, which is an Islamic religious school under the Amanatul Ummah Superior Education Foundation located in Kembangbelor village, Pacet, Mojokerto Regency, East Java Province. This school organizes general education and Islamic religious education under the auspices of the Ministry of Religion of the Republic of Indonesia, which was established in 2006.

3.2. Samples and Data Collection Techniques

This study uses new student admissions data not in the form of samples but in the form of the entire population from the 2006/2007 academic year to 2018/2019, as presented in Table 1. This data collection technique is through the recording from the archive in the form of administration documents for the admission of new students at the MBI Amanatul Ummah Administrative Office.

Table 1 Number of New MBI Students in Amanatul Ummah.

No	Academic Year	Number of Accepted New students	
		Male	Female
1	2006/2007	48	52
2	2007/2008	100	115
3	2008/2009	120	122
4	2009/2010	140	141
5	2010/2011	165	161
6	2011/2012	180	180
7	2012/2013	200	202
8	2013/2014	222	223
9	2014/2015	243	245
10	2015/2016	261	265
11	2016/2017	282	284
12	2017/2018	301	305
13	2018/2019	348	352

3.3. Teacher Planning Approach

In this study, a trend analysis approach is used, which broadly includes the following three stages. Step (1) Determining the straight-line equation of the new student acceptance trend. Of the many approaches to human resource planning—in this case, the teacher—this study uses a trend analysis approach. Trend analysis is defined as a quantitative approach that tries to predict the human resources (teachers) needed by extrapolating the historical changes of one or more indicators or parameters of an educational institution (Belcourt et al 2013). The indicator or parameter in this study is the number of new student admissions since the 2006 to 2018 school year.

Statistically, trend analysis describes the movement of changes according to a linear trend so that the line equation is Y = a + bt, where Y = the projected value of the number of new students, a = intercept, b = slope, and t = time value in this school year. The formula to calculate the value of a (intercept) and b = trend line slope is:

$$a = \frac{\sum Y}{n} - b\frac{\sum t}{n} \quad \text{..... (1)}$$

$$b = \frac{n(\sum tY) - (\sum t)(\sum Y)}{n(\sum t^2) - (\sum t)^2} \quad \text{..... (2)}$$

The next stage of research is step (2), calculating the predicted number of new students. By using the straight-line equation trend, the estimated number of new students in the next school year, 2018/2019, etc., can be calculated. Finally, step (3) calculates the expected needs of the teacher. After obtaining an estimated number of new students in the 2018/2019 academic year, the number of study groups (*rombel*) is calculated starting from class X to class XII. Based on the number of classes, then the teacher needs are calculated, especially for the subjects that are tested nationally in the Computer-Based National Examination (UNBK).

4. Results

The findings of step (1), determining a straight-line equation from the acceptance trend of new students, can be referred to the data in table 1 above and then separate the male and female students. Figure 2 below shows the number of new students as the dependent variable (Y), while the years are the independent variable (t). By using a statistical program, a regression coefficient can be obtained between the independent variable (t) and the dependent variable (Y), as shown in Figure 2 below.

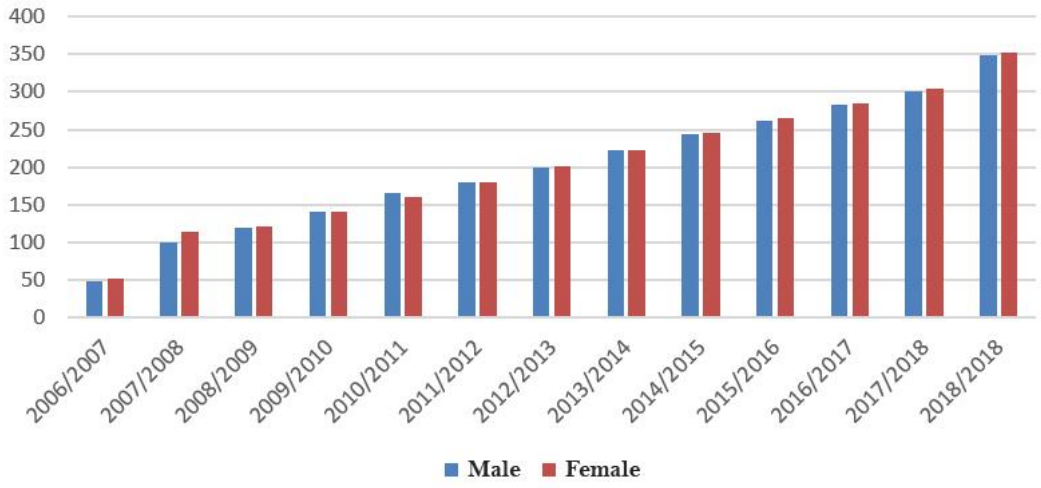

Figure 2 Trend of the number of students from 2006 to 2018.

Based on the data in Table 1, Figures 2 and 3, the linear trend equation is written as follows:

New male student admissions: $Y = 22.055x + 46.39$ (1)
New female student admission: $Y = 21.874x + 50.50$ (2)

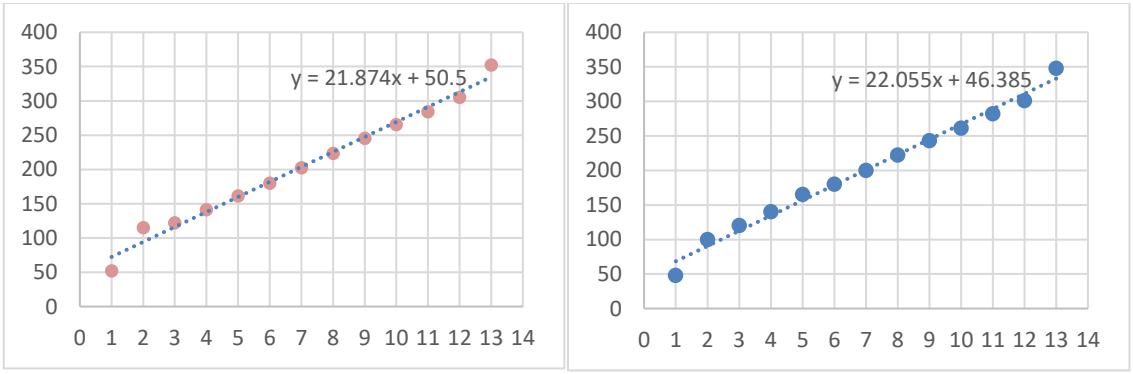

Figure 3 Trend of the number of male and female students in linear equations.

By referring to the results above, the next step is step (2), calculating the predicted number of new students. By using equations (1) and (2) above, the number of students from 2019 to 2024 can be predicted as follows.

Table 2 Prediction of the number of new students 2019-2024.

2019/2020		2020/2021		2021/2022		2022/2023		2023/2024		2024/2025	
14		15		16		17		18		19	
Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
355	357	377	379	399	400	421	422	443	444	465	466

The data on new student admissions from 2006 to 2018 (Table 1) and the predicted new students in Table 2 show that there was a significant surge from 2017/2018, when there were only 20 male students and 20 female students; however, in 2017/2018, there was an increase of approximately 50 female students and 50 male students.

The inconsistency of this pattern should have an impact on the estimation of a new student, so that linear equations 1 and 2 can change with unpredictable constants. The trend is approximately 20-40 students, but if there is a significant surge,as in 2017/2018, the trend of the constant will be approximately 40-100.

Step 3 is calculating the teacher's estimated needs. Based on the results of the predicted number of new student admissions for the 2019 school year, we can calculate the number of study groups (*rombel*) until 2024. Furthermore, the number of these classes is used to calculate the estimated number of teachers teaching the nationally tested subjects, as presented in Table 3 below.

Table 3 Estimated Number of Teachers of Nationally Tested Subjects in the Academic Year of 2019 to 2024.

Year	Student	Class Room	Subject						Teacher
			Math	Indonesia	English	Biology	Physic	Chemistry	
2019/2020	756	30	15	6	6	10	10	10	57
2020/2021	800	32	16	6	6	11	11	11	61
2021/2022	844	34	17	7	7	11	11	11	64
2022/2023	888	36	18	7	7	12	12	12	67
2023/2024	932	37	19	7	7	12	12	12	71
2024/2025	975	39	20	8	8	13	13	13	74

The performance-importance-advisory-standard (PIAS) analysis method is an advancement of importance-performance analysis (IPA). In IPA, the quadrant is formed only based on the opinions of the respondents by ignoring other criteria such as service standards, opinions of experts, and other criteria that may be owned by the variables in the research.

In this research, an analysis of several school services variables was carried out in a boarding school. Preliminary analysis in the study used importance-performance analysis (IPA), which was then modified by adding policy products in the form of support from the school as a parameter called'standard' and advisory assessment from school management experts.

Table 4 below is a recapitulation of questionnaire data for 250 respondents. Respondents were selected from the student and parent groups with a range between 15-17 years for students and 35-55 years for parents. X is the 'performance' variable,Y is 'importance,' Z is the standard parameter that is 'support from the school', and α is an 'advisory' variable that is the opinion of the experts. There was no total questionnaire calculation result for Z because the Z variable is support from the school, which means that the existing data are related to boarding schools in this research.

The value of α is the opinion of the experts. The results of the value of□ are the result of the average opinion of all experts on the variables asked in the questionnaire. There are 15 experts consisting of lecturers in the Department of Islamic Education and Management of Islamic Education, Faculty of Tarbiyah, as well as lecturers in the Department of Islamic Law, Faculty of Shariah, Institute KH Abdul Chalim, Indonesia. Figure 4 below is the result of calculations that refer to Table 4 above. This figure shows that each variable will form an intersection point in the Cartesian diagram that can determine the quadrant position point for each variable in the IPA.

The following explanations describe each IPA quadrant following the results in Table 4 above:

1) The "Keep up the good work" quadrant (I). According to respondents, the attributes included in this quadrant are 'health facility', 'security system', 'curriculum of education', 'curriculum of madrasah', 'education system', and 'school environment'.
2) The "Concentrate here" quadrant (II). The attributes that enter into this quadrant are 'houstel', 'class room', and 'canteen'. Thus, it is necessary to increase and create better development planning for these attributes.
3) "Low priority" quadrant (III). Regional development attributes such as 'tution fee' and extra activity' are not a priority for respondents (?
4) The "Possible overkill" quadrant (IV). In this quadrant, there is one attribute of development, namely, 'taoilet'. This shows that this attribute is not too significant for respondents.

The importance-performance analysis above shows how respondents who are students in this boarding school consider that the problem of classroom facilities, housing, and canteen is not an important variable. This can be seen clearly in Figure 4 above, where the attributes mentioned above enter into quadrant II, namely, the low priority category. Respondents categorized this as these attributes do not have a significant level of importance for them.

Figure 5 shows the results of the assessment of importance, service level, madrasah support, and the opinions of experts. The figure below clearly shows the gap between service levels when compared with interests, support from the school and the opinions of experts.

By using performance-importance-advisory-standard (PIAS) analysis, the gap and void of importance in the school management variable can be better eliminated. The advice of the experts in school management is invaluable in formulating development strategies in sustainable boarding schools. The gap between support from school and poor service levels can also be shown in the PIAS analysis chart. Thus, structuring and prevention efforts can be made by considering the aspects of development lacking in school attention and following the directions of expertise.

Table 4 Recapitation of questionnaire results.

X	Importance Attributes	1	2	3	4	5	∑ y	Value Y
A	Curriculum of Education	11	4	25	88	122	1056	4.40
B	Curriculum of Madrasah	35	4	35	55	121	973	4.05
C	Education System	4	0	40	69	137	1085	4.52
D	Tution Fee	55	45	40	45	65	770	3.21
E	Environment	31	17	50	55	97	920	3.83
F	Extra Activity	47	65	65	31	42	706	2.94
G	Houstel	15	40	17	80	98	956	3.98
H	Class Room	23	25	55	60	87	913	3.80
I	Medical & Health Facilities	16	12	20	97	105	1013	4.22
J	Canteen	11	22	34	99	84	973	4.05
K	Toilet	98	8	9	65	70	751	3.13
L	Security System	2	6	40	67	135	1077	4.49

X	Importance Attributes	1	2	3	4	5	∑ y	Value Y
A	Curriculum of Education	-	-	-	-	-	-	4.50
B	Curriculum of Madrasah	-	-	-	-	-	-	5.00
C	Education System	-	-	-	-	-	-	4.50
D	Tution Fee	-	-	-	-	-	-	5.00
E	Environment	-	-	-	-	-	-	3.50
F	Extra Activity	-	-	-	-	-	-	3.50
G	Houstel	-	-	-	-	-	-	4.00
H	Class Room	-	-	-	-	-	-	4.00
I	Medical & Health Facilities	-	-	-	-	-	-	4.00
J	Canteen	-	-	-	-	-	-	3.00
K	Toilet	-	-	-	-	-	-	3.00
L	Security System	-	-	-	-	-	-	4.00

X	Importance Attributes	1	2	3	4	5	∑ y	Value Y
A	Curriculum of Education	8	56	30	45	111	954	3.94
B	Curriculum of Madrasah	15	45	52	78	60	873	3.64
C	Education System	36	25	45	45	99	896	3.73
D	Tution Fee	62	54	33	57	44	717	2.99
E	Environment	4	30	50	65	101	979	4.08
F	Extra Activity	60	80	33	44	33	660	2.75
G	Houstel	56	42	45	50	57	760	3.17
H	Class Room	56	42	55	52	45	738	3.08
I	Medical & Health Facilities	1	5	8	82	154	1133	4.72
J	Canteen	53	35	42	67	53	782	3.26
K	Toilet	36	25	26	75	88	904	3.77
L	Security System	13	12	35	69	121	1023	4.26

X	Importance Attributes	1	2	3	4	5	∑ y	Value Y
A	Curriculum of Education	1	0	2	5	7	62	4.13
B	Curriculum of Madrasah	1	1	3	5	5	57	3.80
C	Education System	0	0	0	6	9	69	4.60
D	Tution Fee	0	0	1	4	10	69	4.60
E	Environment	0	2	2	5	5	58	3.87
F	Extra Activity	0	0	1	3	11	70	4.67
G	Houstel	0	1	2	4	8	64	4.27
H	Class Room	0	0	0	2	13	73	4.87
I	Medical & Health Facilities	0	0	1	2	12	71	4.73
J	Canteen	2	2	2	3	6	54	3.60
K	Toilet	0	4	3	4	5	56	3.73
L	Security System	0	1	2	3	9	65	4.33

No	Attributes	X	Y	Z	α
1	Curriculum of Education	3.94	4.40	4.50	4.13
2	Curriculum of Madrasah	3.64	4.05	5.00	3.80
3	Education System	3.73	4.52	4.50	4.60
4	Tution Fee	2.99	3.21	5.00	4.60
5	Environment	4.08	3.83	3.50	3.87
6	Extra Activity	2.75	2.94	3.50	4.67
7	Houstel	3.17	3.98	4.00	4.27
8	Class Room	3.08	3.80	4.00	4.87
9	Medical & Health Facilities	4.72	4.22	4.00	4.73
10	Canteen	3.26	4.05	3.00	3.60
11	Toilet	3.77	3.13	3.00	3.73
12	Security System	4.26	4.49	4.00	4.33

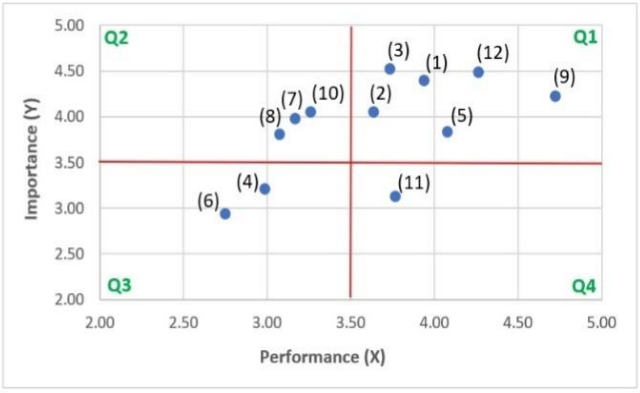

Figure 4 Quadrant of attributes in Importance-Performance Analysis.

Table 5 below is the result of calculations between table 4, namely, the variable level of importance, government support and expert opinions, compared with the results of the questionnaire from respondents for the level of service satisfaction. The colors in the GAP performance variables table are divided into five service levels, namely, very poor, poor, average, good and best performance. The five levels in GAP variables are derived from the difference between the highest (0.78) and the lowest (-1.42) then divided by 5, resulting in a 0.44-point difference between performance. The colors of the gaps obtained from the results of the gap between the average variable and the service level variable then produce colors that also show the priority of action in development (see table 3).

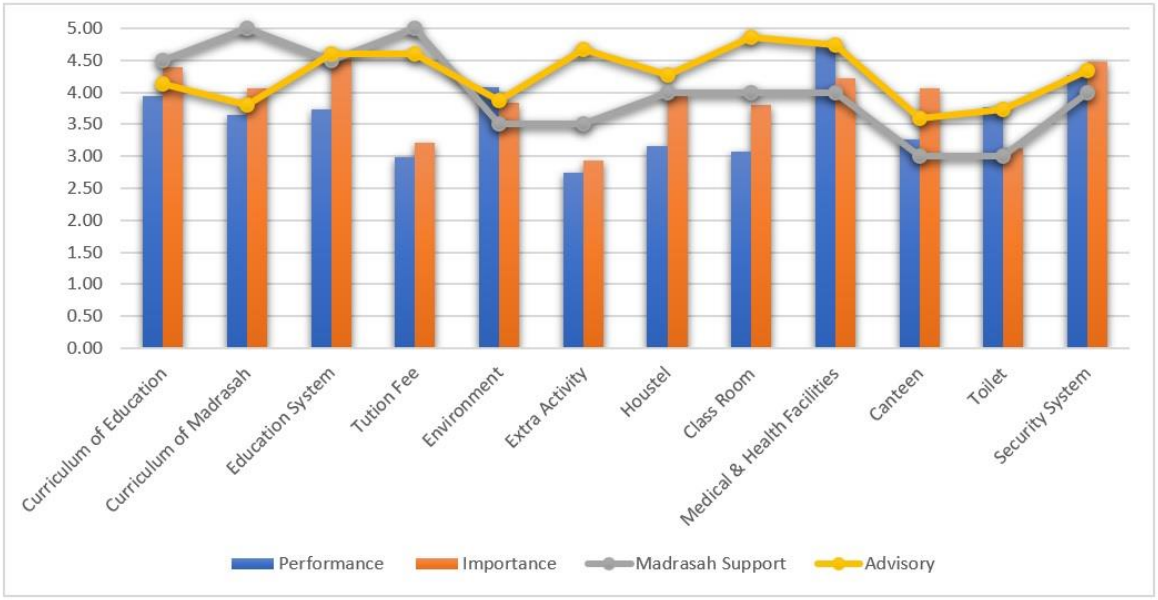

Figure 5 Chart of PIAS Analysis.

Table 5 GAP between variables and performance (priority actions).

X	A	B	C	D	E	F	G	H	I	J	K	L	X	
A	(0.410	(0.30)	(0.56)	(0.56)	(0.32)	(0.58)	(0.70)	(0.67)	(0.61)	(0.23)	(0.27)	(0.47)	A	Curriculum of Education
B	(0.76)	(0.65)	(0.91)	(0.91)	(0.67)	(0.94)	(1.03)	(0.96)	(0.96)	(0.58)	(0.63)	(0.82)	B	Curriculum of Madrasah
C	(0.27)	(0.54)	(0.81)	(0.81)	(0.56)	(0.83)	(0.94)	(0.92)	(0.92)	(0.47)	(0.52)	(0.72)	C	Education System
D	(1.13)	(1.02)	(1.28)	(1.28)	(0.04)	(1.30)	(1.42)	(1.39)	(1.33)	(0.95)	(0.99)	(1.19)	D	Tution Fee
E	0.26	0.37	0.10	0.10	0.35	0.08	(0.03)	(0.01)	0.06	0.43	0.39	0.19	E	Environment
F	(0.78)	(0.66)	(0.93)	(0.93)	(0.69)	(0.95)	(1.06)	(1.04)	(0.98)	(0.60)	(0.64)	(0.84)	F	Extra Activity
G	(0.87)	(0.76)	(1.03)	(1.03)	(0.78)	(1.05)	(1.16)	(1.14)	(1.07)	(0.69)	(0.74)	(0.94)	G	Houstel
H	(0.90)	(0.79)	(1.06)	(1.06)	(0.82)	(1.08)	(1.19)	(1.17)	(1.10)	(0.73)	(0.77)	(0.97)	H	Class Room
I	0.60	0.71	0.45	0.45	0.69	0.43	0.31	0.34	0.40	0.78	0.74	0.54	I	Medical & Health Facilities
J	(0.47)	(0.36)	(0.63)	(0.63)	(0.38)	(0.65)	(0.76)	(0.74)	(0.67)	(0.29)	(0.34)	(0.54)	J	Canteen
K	0.35	0.46	0.19	0.19	0.43	0.17	0.06	0.08	0.15	0.52	0.48	0.28	K	Toilet
L	0.06	0.17	(0.10)	(0.10)	0.14	(0.12	(0.23)	(0.21)	(0.14)	0.23	0.19	(0.01)	L	Security System

Very Poor Poor Average Good Best Performance

After being input into the priority scale table, it can be seen that very poor services are dominated by transaction fees, extra activity, housing, and class rooms, whereas the curriculum and education system are categorized as badperormant. Services that are categorized as ‘best performance’ by the respondents are medical and health facilities, while environments in boarding schools are categorized as 'good' for respondents. In contrast to importance-performance analysis (IPA), which can produce cut-off values that are then used in the Cartesian diagram in the IPA quadrant, PIAS analysis is more likely to assess the level of importance, which is then compared with the opinions of experts and standards (support from the boarding school). The results are then compared with the level of service of each development variable.

5. Discussion

By knowing the prediction of the number of additional needs of teachers of nationally tested subjects, the school can recruit qualified new teachers early. With rigorous selection stages, the school will obtain new teachers with competencies above the general standard, thus producing competitive quality graduates to continue further studies (Krasnoff 2014).

Human resource planning (teacher) with trend analysis is an alternative quantitative approach that is relatively simple. This is one of the limitations of this research. Another alternative is regression analysis, which considers various fundamental factors that influence the number of new students who are then used as a basis for determining the number of required teachers. These factors include the number of secondary school/madrasah graduates in the region, community income, inflation rate, number of newly opened senior high schools/madrasahs in the region, amount of school fees, school ranking, number of transfer students, number of students who transfer out, government policies regarding the zonation of new student admissions, school policy concerned about the quota of new students, and various other factors. In addition to the limitations mentioned above, this study only focuses on the planning of teacher needs for nationally tested subjects, whereas it could also be done on all teachers, regardless of subjects. Considering that the International Standard Madrasah (MBI) of Amanatul Ummah is one of the educational institutions under the auspices of the Amanatul Ummah Islamic Boarding School, it will be complete if the planning of human resources includes the teaching staff of Islamic studies (Tabrani 2014; Aryati and Suradi 2022).

In addition to the limitations in point (b), this study also uses the assumption that MBI Amanatul Ummah is not limited by teaching and learning facilities, such as the availability of classrooms, laboratories, libraries, the presence and capacity of dormitories and places of worship. Thus, the opportunity to add 450 new male students and 450 new female students is still wide open. Additionally, the MBI Amanatul Ummah does not have a quota policy of adding new students lower than the number of new students based on the results of calculations in this study.

This study uses a modified importance-performance analysis (IPA). The modified form of the IPA is performance-importance-standard-advisory (PIAS) analysis, which adds two parameter values, namely, support from the school as the standard and the opinions of experts in the related fields (Mukhlis and Makhya 2021; Nasution 2018). In PIAS Analysis, an analysis of several development variables in boarding schools was carried out, such as the curriculum, school environment, class room, housing, and other facilities.

Referring to the results of the IPA, respondents felt quite comfortable with the low level of classroom, housing, and canteen in boarding school. It is shown that the variable quadrant is in quadrant II with low priority actions. The amount of madrasah support and advice from experts in the field of boarding school development and school management planning shows the gap between each variable, enabling serious action to be taken so that sustainable development can be carried out more effectively and on target.

5. Final considerations

Through well-thought-out teacher planning, a balance between the demand and supply of teachers can be created, preventing teacher shortages to the institution, which may have a negative impact on the learning process, or excess teachers, which may increase the budget and make operations inefficient. Therefore, to avoid these problems, each educational institution should meet the needs of teachers through planning with existing scientific approaches, both quantitative and qualitative, not based on the intuition that is full of uncertainty.

Analysis using PIAS Analysis can be further developed, namely, by entering the value of each variable into four dimensions of assessment. If the IPA with the X-axis and Y-axis produces a quadrant location point as a strategic reference, then with four dimensions of assessment, a more rational boarding school development planning and strategy or priority can be made, as it is based on four different dimensions of the parameters. In this research, development variables are included in the average rating for the level of importance, standards (school support), and opinions of experts in the field of boarding school development planning. The results of the three parameters are then made into a gap table that forms priority colors called 'priority actions' in the form of a priority scale color table. The PIAS analysis method can be used as a reference for development planning or even to assess service facilities and other services with different attribute parameters and variables.

Ethical Considerations

The respondents have given their consent for the study.

Conflict of Interest

There is no conflict of interest declared by the authors.

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