Analysis of Cognitive Abilities and Work Attitudes in Non-Permanent Employees at Surabaya State University

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Abstract. This study aims to analyze cognitive abilities and work attitudes at TKTT at Unesa based on assessment test data that has been held. This research is important to be conducted to obtain an overview of cognitive abilities and work attitudes at TKTT at Unesa as a consideration to provide recommendations in optimizing employee competence and Unesa's governance as PTN BH. The method used in this study is quantitative descriptive. Data was collected through assessment tests that have been held with a research sample of 100 non-permanent employees with a minimum service period of 5 years and a maximum of 15 years. The collected data is then analyzed with descriptive statistics. The results showed that in the aspect of cognitive ability and work attitude, TKTT was included in the average category. The highest cognitive ability results were the general comprehension indicator with an average value of 2.89 (average) and the lowest on the numeracy ability indicator with an average value of 2.03 (average). The highest work attitude results were the perseverance indicator with an average value of 2.76 (average) and the lowest on the work speed indicator with an average value of 2.33 (average). This study also shows that the longer the working period and the higher the last level of education of employees does not affect the quality of cognitive abilities and work attitudes possessed. So it is necessary to make efforts such as training and others to increase knowledge and improve the quality of employees, especially on the ability to count and the speed of work of employees.

Keywords: cognitive ability, employee, PTN BH, work attitude.

1 Introduction

Along with the status of Legal Entity State Universities (PTN BH), Surabaya State University (Unesa) needs to prepare a strategic plan for development and governance. As stated by the Rector of Unesa, Unesa is currently carrying out a massive transformation after holding the status of PTNBH which was officially granted on October 22, 2022 [1]. Cooperation, understanding of vision, goals and strategies are needed to bring Unesa forward, superior and shot far ahead. The Unesa Rector mentioned the strategy that needs to be prepared, namely collaborative leadership from the top to the bottom; promoting a sense of belonging to the institution; transform the mindset, performance, way of working, organization, financial governance and human resource governance; and entrepreneurship [2].

Human Resources (HR) is one of the important factors in achieving the vision and mission. This is because it is very dependent on the ability of HR to translate strategies in operational work [3]. The efforts that Unesa has made in the field of HR governance are by appointing officials, including the ranks of directorates, deans, heads of offices, heads of centers, heads of agencies, heads of units, heads of divisions, to section heads and secretaries of Unesa institutions [1]. The collaboration of leaders, lecturers, and employees and stakeholders is the key to the success of Unesa PTN BH transformation. Guest lectures related to strengthening human resources have also been held as a form of briefing for the academic community to continue to improve independent and innovative human resources [4].

The abilities and skills possessed by human resources are one of the targets that need to be built and developed in improving the quality of employees [5]. Gozali et al. revealed that competency-based human resource development can be carried out in order to provide results in accordance with the goals and objectives with the established work standards [6]. Competence is an underlying characteristic of a person and relates to the effectiveness of an individual's performance in his work. In general, competence is defined as a combination of skills, personal attributes, and knowledge that is reflected through job behavior that can be observed, measured, and evaluated.

Cognitive ability is one of the competencies that affect HR performance. This was revealed in research conducted by [7]–[9] which shows that intellectual intelligence or cognitive abilities possessed by HR have a positive effect on HR performance. In addition to cognitive abilities, competencies that affect HR performance are work attitudes. This was revealed in research conducted by Nasution; Simanjuntak [10], [11] which shows that work landscape has a positive effect on employee performance.

The competencies possessed by HR need to be known to facilitate the identification and optimization of HR performance. To find out these competencies, several things can be done, one of which is by conducting an assessment. Assessment is the collection of information and measuring the results of employee performance which aims to see the improvement of the quality of resources managed by the institution [12]. There are various assessment tests that can be carried out to assess employee competence, ranging from personality tests, cognitive abilities, emotional intelligence, skills, integrity, work attitudes and others.

Assessment is important for institutions to plan HR mapping as needed; program coaching on HR competencies that are still low; development of better human resource potential; and financial efficiency by managing and placing human resources according to competence. For HR itself, assessment is also useful for obtaining positions according to capacity; promotion opportunities; work and placed according to ability; knowing work capacity and self-ability; Appreciate other competencies present in colleagues [13], [14]. As one of the steps to transform PTN BH, Unesa has conducted an assessment test on non-permanent employees (TKTT) together online. The assessment test carried out consists of three aspects, namely cognitive tests, work attitudes and interpersonal.

This study aims to analyze cognitive abilities and work attitudes at TKTT at Unesa based on assessment test data that has been held. This research is important to be conducted to obtain an overview of cognitive abilities and work attitudes at TKTT at Unesa as a consideration to provide recommendations in optimizing employee

competence. So, it is hoped that this research can be taken into consideration by leaders in making governance efforts to optimize employee competence.

2   Methods

The method used in this research begins with conducting a literature study to support the theoretical foundation of research. Furthermore, by collecting HR assessment data on cognitive aspects and work attitudes that have been carried out in accordance with the specified sample, namely TKTT with a minimum working period of 5 years and a maximum of 15 years. The sample in this study was taken using the disproportionate stratified random sampling method because the method is suitable for determining the number of samples if the population is stratified but poor proportional [15]. The sample size of 100 employees uses the Moe formula because the population is large [16]. After the data is collected, it is analyzed using descriptive statistical analysis techniques. Figure 1 shows the research method used.
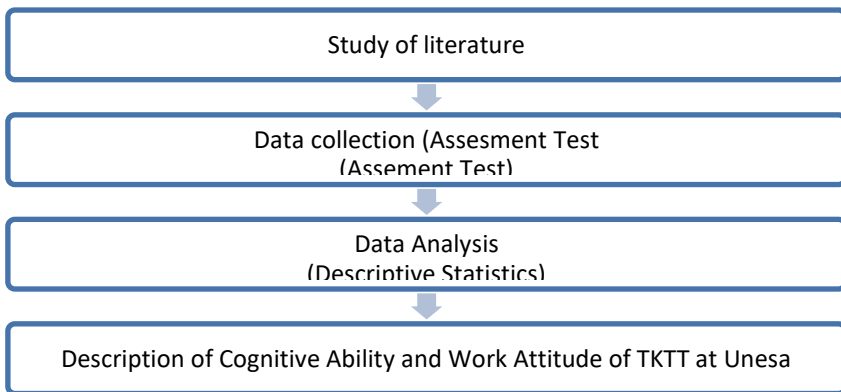

Fig. 1. Research methods

3   Results and Discussion

3.1   Sample Characteristics

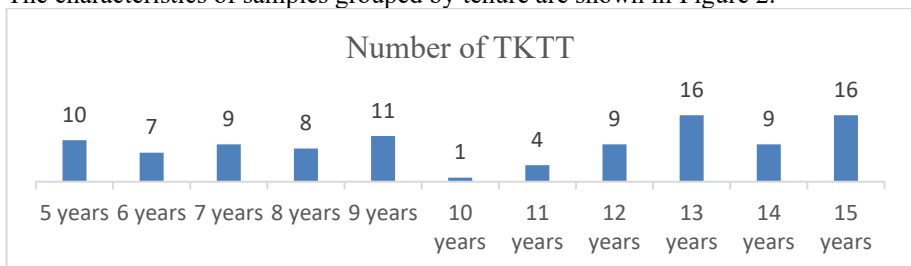The characteristics of samples grouped by tenure are shown in Figure 2.

Fig. 2. Characteristics based on working period

In Figure 2, it is known that the sample in this study with the highest number of TKTT with a working period of 13 years is 15 employees, while the number of TKTT is the least with a working period of 10 and 17 years is 1 employee. The characteristics of the sample based on the last level of education are shown in Figure 3.
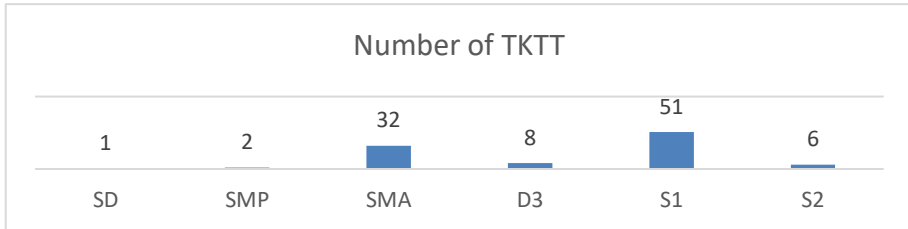

Fig. 3. Characteristics based on education

In Figure 3, it is known that the sample in this study with the highest number of TKTT with the last level of S1 education was 48 employees, while the least with the last level of elementary school education was 1 employee. The assessment data that has been obtained shows numbers 1 to 5 for each aspect of the test. The numbers are grouped in several categories shown in Table 1.

Table 1. Test result categories

Value	Category
0.0 – 1.0	Unsatisfactory
1.1 – 2.0	Poor
2.1 – 3.0	Average
3.1 – 4.0	Good
4.1 - 5.0	Excellent

3.2   Results of analysis of aspects of cognitive abilities

The average value of the test results on aspects of cognitive abilities, namely general understanding, thinking logic, communication skills, numeracy skills, analytical skills, abstraction skills is shown in Figure 4.
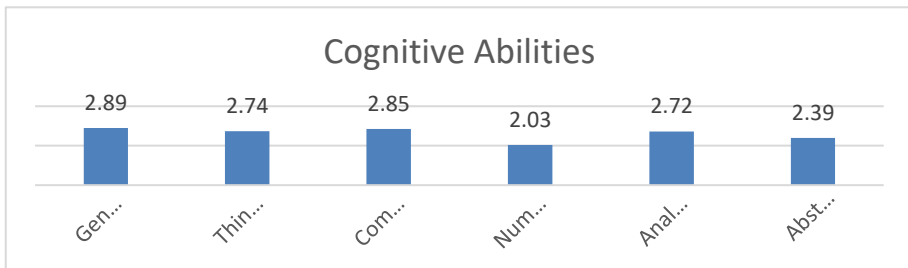

**Fig. 4.** Aspects of cognitive abilities

Figure 4 shows that all indicators in aspects of cognitive ability fall into the average category. The ability that obtained the highest average score was general comprehension of 2.89 (average). While the ability that obtained the lowest average value was the ability to count, which was 2.03 (average). So it can be known that employee numeracy skills need to be improved through training to improve the quality of human resources. Test results on aspects of cognitive ability are calculated average scores grouped based on years of service and last level of education as follows.

General Understanding
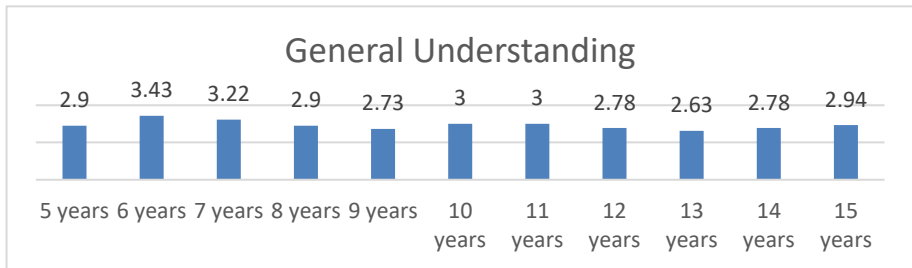
Fig. 5. General understanding based on working period

In Figure 5, it is known that TKTT who has the highest general comprehension ability is a group with a working period of 6 years, an average value of 3.43 (good). While TKTT who had the lowest general comprehension ability was the group with a working period of 13 years, the average score was 2.63 (average).
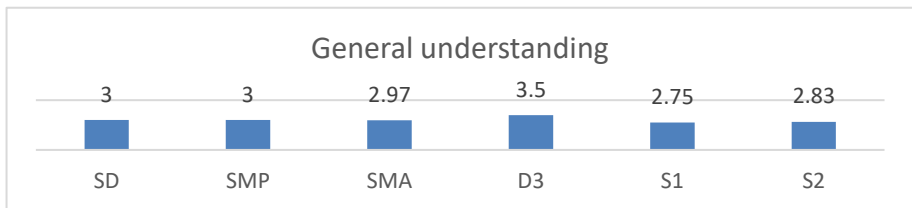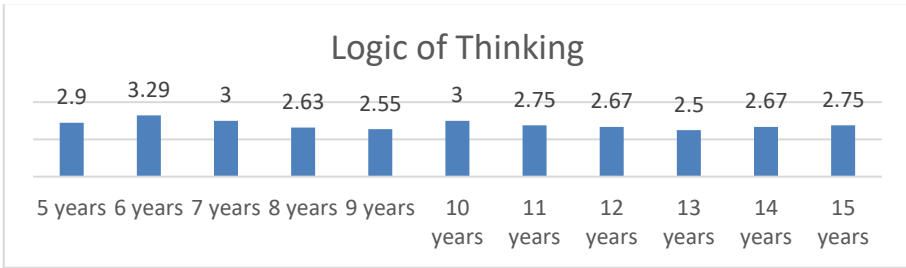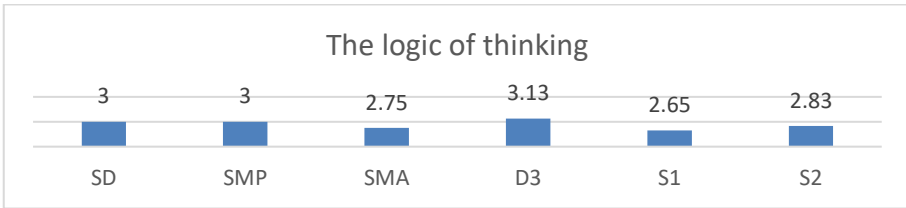

Fig. 6. General understanding based on education

In Figure 6, it is known that TKTT who has the highest general comprehension ability is the group with the last education D3, an average score of 3.5 (good). While TKTT who has the lowest general comprehension ability is the group with the last S1 education, the average score is 2.75 (average).

Logic of Thinking
In Figure 7, it is known that TKTT who has the highest logical thinking ability is a group with a working period of 6 years, an average value of 3.29 (good). While TKTT who had the lowest logical thinking ability was the group with a working period of 13 years, the average score was 2.5 (average).

Fig. 7. The logic of thinking based on working period

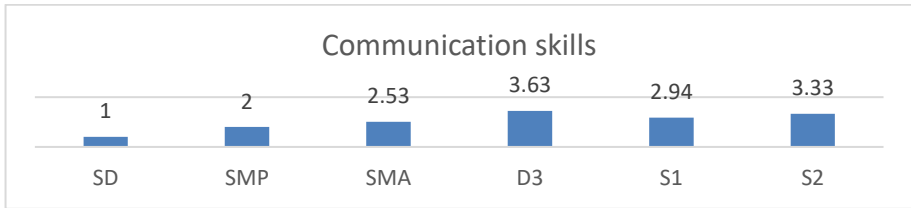**Fig. 8.** The logic of thinking based on education

In Figure 8, it is known that TKTT who has the highest logical thinking ability is the group with the last education D3, an average score of 3.13 (good). While TKTT who has the lowest logical thinking ability is the group with the last education S1, the average score is 2.65 (average).

Communication Skills
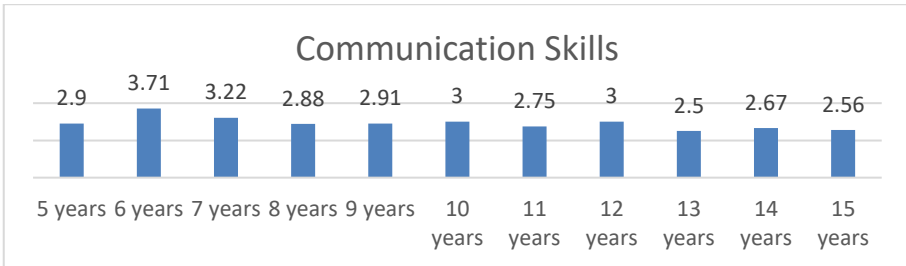
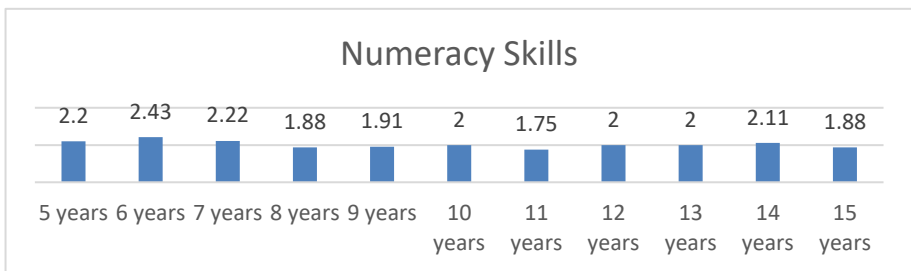**Fig. 9.** Communication skills based on working period

In Figure 9, it is known that TKTT who has the highest communication skills is a group with a working period of 6 years, an average value of 3.71 (good). While TKTT who had the lowest communication skills was the group with a working period of 13 years, the average score was 2.5 (average).

Communication skills

SD	SMP	SMA	D3	S1	S2
1	2	2.53	3.63	2.94	3.33

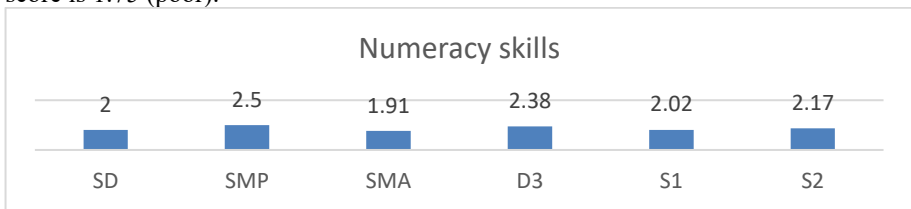**Fig. 10.** Communication skills based on education

In Figure 10, it is known that TKTT who has the highest communication skills is the group with the last education D3, an average score of 3.63 (good). While TKTT who has the lowest communication skills is the group with the last elementary education, the average score is 1 (unsatisfactory).

Numeracy skills

Numeracy Skills

5 years	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	15 years
2.2	2.43	2.22	1.88	1.91	2	1.75	2	2	2.11	1.88

Fig. 11. Numeracy skills based on working period

In Figure 11, it is known that TKTT who has the highest numeracy skills is a group with a working period of 6 years, an average value of 2.43 (average). While TKTT who has the lowest numeracy ability is the group with an 11-year service period, the average score is 1.75 (poor).

Numeracy skills

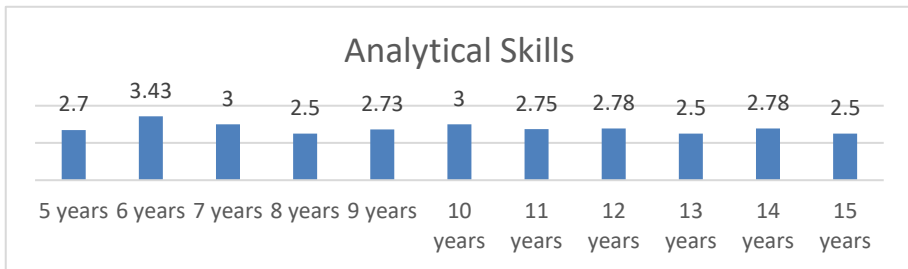| SD	SMP	SMA	D3	S1	S2
2	2.5	1.91	2.38	2.02	2.17

Fig. 12. Numeracy skills based on education

In Figure 12 it is known that TKTT who has the highest numeracy ability is the group with the last education D3, the average score is 2.38 (average). While TKTT who has the lowest numeracy ability is the group with the last high school education, the average score is 1.91 (poor).
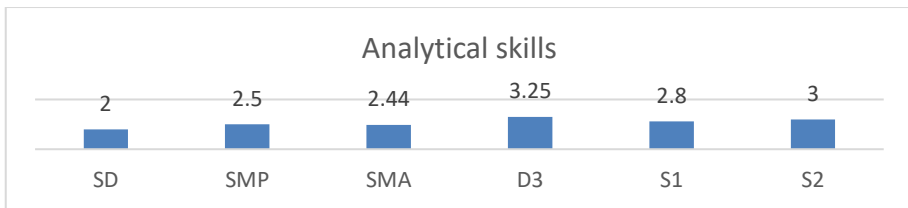
Analytical skills

In Figure 13, it is known that TKTT who has the highest analytical skills is a group with a working period of 6 years, an average value of 3.43 (good). While TKTT who

has the lowest analytical skills is the group with a working period of 8 years, 13 years and 15 years, the average value is 2.5 (average).
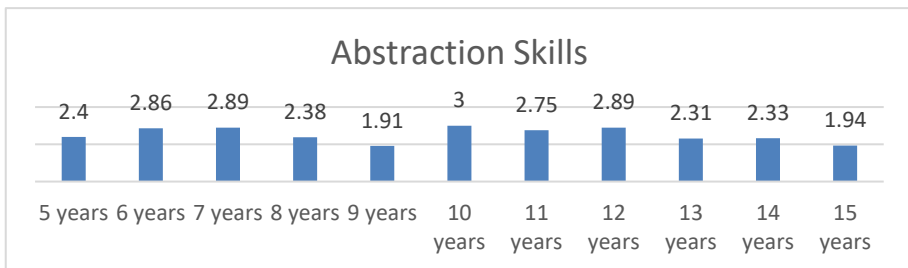
Analytical Skills

2.7	3.43	3	2.5	2.73	3	2.75	2.78	2.5	2.78	2.5
5 years	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	15 years

Fig. 13. Analytical skills based on working period

Analytical skills

2	2.5	2.44	3.25	2.8	3
SD	SMP	SMA	D3	S1	S2

Fig. 14. Analytical skills based on education

In Figure 14, it is known that TKTT who has the highest analytical skills is the group with the last education D3, an average score of 3.25 (good). While TKTT who has the lowest analytical skills is the group with the last elementary education, the average score is 2 (average).
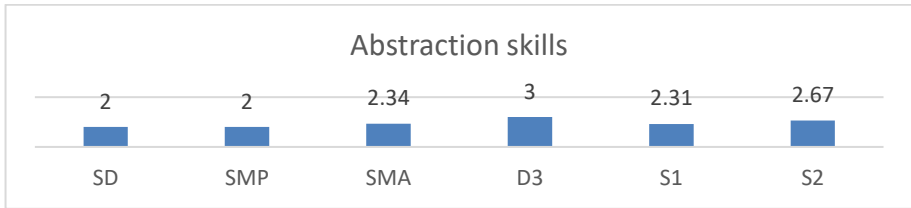
Abstraction Skills

Abstraction Skills

2.4	2.86	2.89	2.38	1.91	3	2.75	2.89	2.31	2.33	1.94
5 years	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	15 years

Fig. 15. Abstraction skills based on working period

In Figure 15, it is known that the TKTT that has the highest abstraction ability is a group with a working period of 10 years, an average value of 3 (average). While TKTT who has the lowest abstraction ability is the group with a working period of 9 years, the average score is 1.91 (poor).

Abstraction skills

SD	SMP	SMA	D3	S1	S2
2	2	2.34	3	2.31	2.67

**Fig. 16.** Abstraction skills based on education

In Figure 16 it is known that the TKTT who has the highest asbtraction ability is the group with the last education D3, average score 3 (average). While TKTT who has the lowest abstraction ability is the group with the last education of elementary and junior high school, the average score is 2 (average).

In the 6 aspects of cognitive ability consisting of general understanding, logical thinking, communication skills, numeracy skills, analytical skills, abstraction skills show that the higher the level of education and the length of service does not affect the higher the level of cognitive ability of employees.

3.3   Results of Analysis of Aspects of Work Attitude

The average value of the test results on aspects of work attitude, namely working speed, work endurance, work systematics, perseverance and desire for achievement is shown in Figure 17.

Figure 17 shows that all indicators in the aspect of work attitude fall into the average category. The work attitude that obtained the highest average score was perseverance of 2.76 (average). While the work attitude that obtained the lowest average value was the work speed of 2.33 (average). So it can be known that the speed of employee work needs to be increased through training to improve the quality of human resources. Test results on aspects of work attitude are calculated average scores which are grouped based on length of service and last level of education as follows.

Work Attitude

Working Speed	Work Endurance	Work Systematics	Perseverance	Desire for Achievement
2.33	2.56	2.56	2.76	2.68
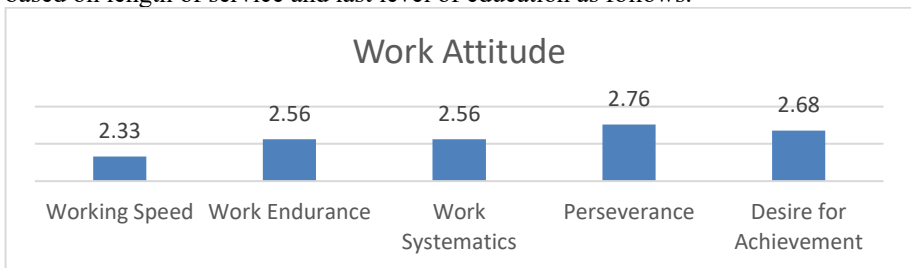
Fig. 17. Aspects of work attitude

Working Speed
In Figure 18, it is known that the TKTT that has the highest work speed is the group with a working period of 10 years, an average score of 5 (Excellent). While the TKTT that has the lowest work speed is the group with a working period of 12 years, the score is 1.78 (poor).
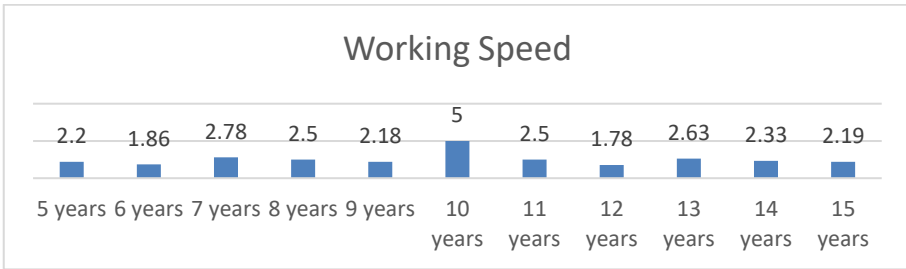
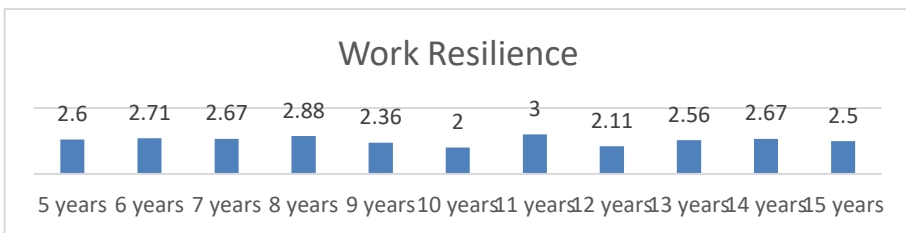**Fig. 18.** Working speed based on working period
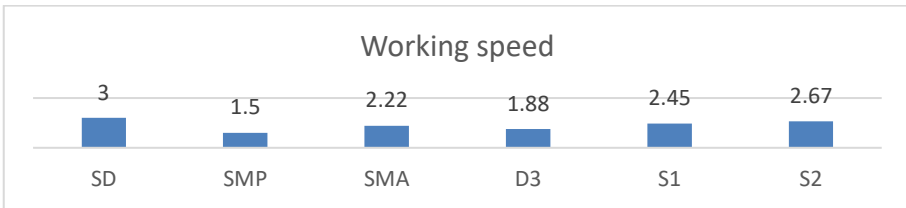
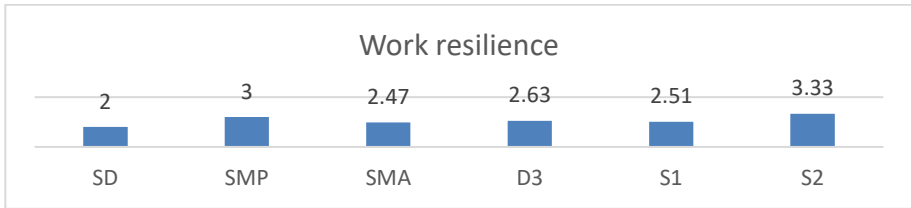**Fig. 19.** Speed of work based on education

In Figure 19 it is known that TKTT who has the highest work speed is the group with the last elementary education, an average score of 3 (average). While TKTT who has the lowest work speed is the group with the last junior high school education, the score is 1.5 (poor).

Work Resilience

In Figure 20, it is known that the TKTT that has the highest work resilience is the group with a working period of 11 years, an average value of 3 (average). While TKTT that has the lowest job resilience is the group with a working period of 10 years, the score is 2 (poor).


Fig. 20. Work endurance based on working period

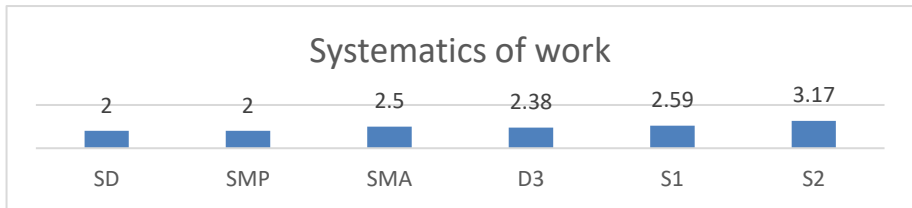**Fig. 21.** Work resilience based on education

In Figure 21, it is known that TKTT who has the highest job resilience is the group with the last S2 education, an average score of 3.3 (good). While TKTT that has the lowest job resilience is the group with the last elementary education, the average score is 2 (poor).

3.3.3 Systematics of work
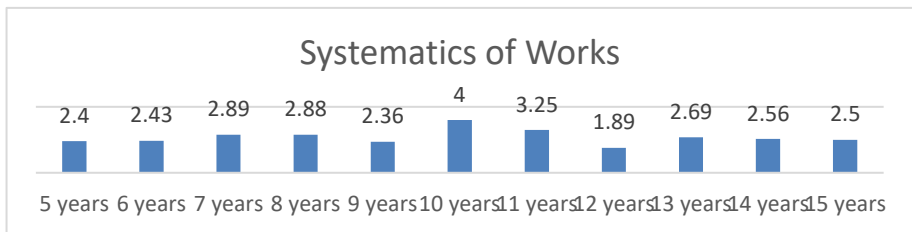
Fig. 22. Systematics of work based on working period

In Figure 22, it is known that the TKTT that has the highest work systematics is the group with a working period of 10 years, an average value of 4 (good). While TKTT which has the lowest work systematics is the group with a working period of 12 years, the average score is 1.89 (poor).


Fig. 23. Systematics of work based on education

In Figure 23, it is known that TKTT who has the highest work systematics is the group with the last education of S2, an average score of 3.17 (good). While TKTT which has the lowest work systematics is the group with the last education of elementary and junior high school, the average score is 2 (poor).
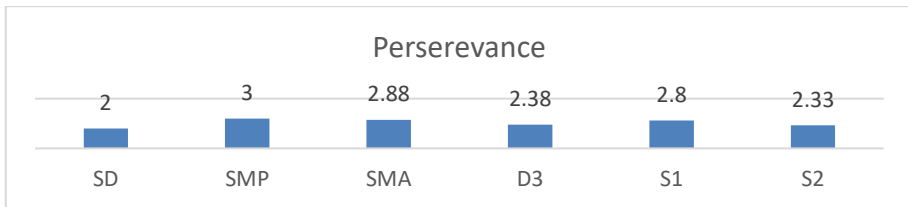
Perseverance
In Figure 24, it is known that TKTT who has the highest perseverance is a group with a working period of 10 years, an average value of 4 (good). While the TKTT that has

the lowest perseverance is the group with an 11-year service period, the average score is 2.25 (average).
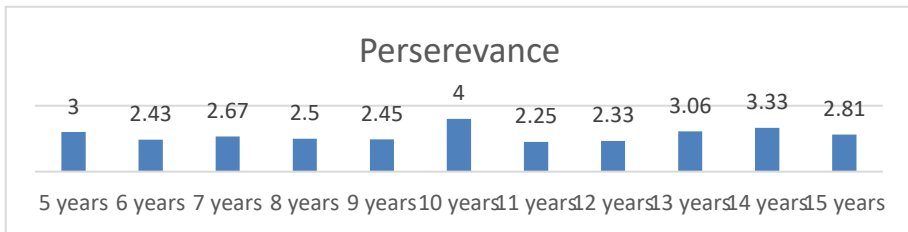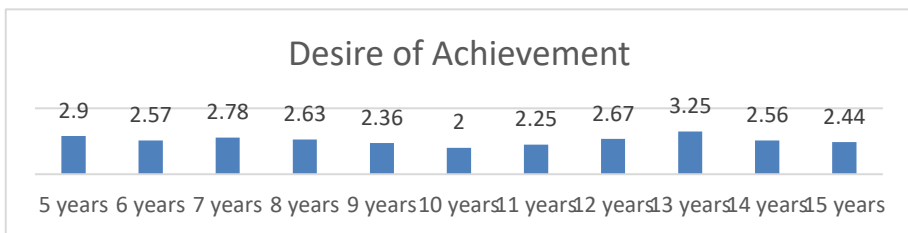

Fig. 24. Perseverance based on working period

Fig. 25. Perserevance based on education

In Figure 25, it is known that TKTT who has the highest perseverance is the group with the last junior high school education, an average score of 3 (average). While TKTT who has the lowest work diligence is the group with the last elementary education, the score is 2 (poor).
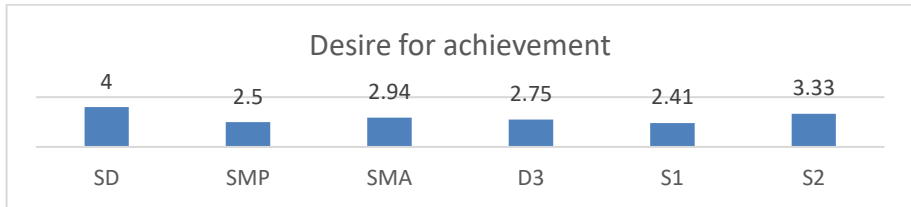
Desire for Achievement

Fig. 26. Desire for achievement based on working period

In Figure 26, it is known that TKTT who has the highest achievement desire is a group with a working period of 13 years, an average value of 3.25 (good). While TKTT who has the lowest achievement desire is the group with a 10-year service period, the average score is 2 (poor).

In Figure 27, it is known that TKTT who have the highest desire to achieve are the group with the last elementary school education, an average score of 4 (good). While TKTT who has the lowest achievement rate is the group with the last junior high school education, the average score is 2.5 (average).

Fig. 27. Desire for achievement based on education

In the aspect of work attitudes consisting of work resilience and work systematics, it shows that the higher the level of education affects the level of resilience and systematics of employee work. While in other aspects, namely work speed, perseverance and desire for achievement, it shows that the higher the level of education does not affect the level of resilience and systematics of employee work. The length of service also has no effect on the higher work attitude of employees.

4   CONCLUSION

From the research conducted, the cognitive abilities and work attitudes of TKTT at Unesa are included in the average category. The cognitive ability that obtained the highest average score was general comprehension of 2.89 (average). While the ability that obtained the lowest average value was the ability to count, which was 2.03 (average). The work attitude that obtained the highest average score was perseverance of 2.76 (average). While the work attitude that obtained the lowest average value was the work speed of 2.33 (average). The longer the working period and the higher the education of the employee does not affect the quality of cognitive abilities and work attitudes. So, it is necessary to make efforts such as training, comparative studies and others to increase knowledge and improve the quality of employees, especially in the ability to count and the speed of employee work.

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