

# The Analysis on Instrument Items and Condition of Lecturer's Ethical Behavior Using Rasch Model

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**Abstract**—Information on valid and reliable lecturer ethical behavior is needed. The university inhabited by employees with high ethical behavior have proven to be more advanced. The purpose of this research is to analyze the instrument items of lecturers' ethical behavior and its conditions. The research was conducted in private universities in Bogor, Indonesia. Data were collected using a questionnaire containing 5 sub-constructs of lecturers' ethical behavior. Rasch modeling was applied for the data analysis in this research. Through the use of item measure analysis it has been found that there are 30 items of 33 items that can be used to measure the ethical behavior of lecturers which are divided into 5 sub-constructs, that are (1) the prioritizing benefits for universities (5 items); (2) the respect for human rights (3 items); (3) the excellent service to the academic community (7 items); (4) promoting integrity (5 items); and (5) strengthen professionalism (10 items). There were also several differences in approval in terms of gender, education and academic positions of lecturers on instrument items. Those findings are expected to be a matter of discussion in developing the lecturer of ethical behavior in Indonesia

**Keywords**—ethical behavior; rasch model; lecturer ethical behavior

## I. INTRODUCTION

Ethical behavior in an organization is needed [1], including educational institutions such as universities. Ethical behavior at a university influences the quality of graduates [2]. If the lecturers do plagiarism, the trust in the university will be lost [2]. In the university there is unethical behavior, such as: plagiarism carried out by lecturers and students, cheating, sexual harassment, abuse of power, sexual gratification and bribery or acceptance of other gifts.[3] Based on the above explanation, a university really needs information about the ethical behavior of lecturers.

Research on ethical behavior is widely carried out, among others: on business ethics [4], accounting [5], and stock market [6]. Special research on ethical behavior of lecturers at private universities in Indonesia is still lacking. Therefore, an instrument is needed to be able to measure the ethical behavior of lecturers.

This research uses Rasch Modeling to analyze the ethical behavior instruments of lecturers that have never been done before. This research takes indicators of ethical behavior based

on the theories contained in developing literature. Based on that, the researcher made an instrument for the ethical behaviour of lecturers that was different from the instruments made by previous researchers.

The purpose of this research is to answer the following questions: (1) Is Rasch Model effectively to make instrument for measuring the ethical behavior of lecturers? (2) What is the difference between items from the point of view of gender, education level and academic position of lecturer?

### A. Ethical Behavior

Ethical behavior is a degree to which a behavior, decision, or performance outcomes are communicated with ethical standards and espoused values [7]. Ethical behavior refers to one's actions that are consistent with the values espoused by oneself, the organization and society [8], accordance with moral norms that are applied in the community or vice versa [9], suitability of one's behavior with norms [10], consistent with ethical principles [11], in line with the values that exist in society [12], related to ethical actions that a person does [13]. Lecturer ethical behavior is where the action of a lecturer in carrying out his duties and functions is consistent with the values and moral principles [14].

Ethical behavior refers to 3 guidelines: (1) greatest good for largest number of people ; (2) respect human right, and (3) treat employees and customers equitably and fairly [11]. McShane (2010) identifies 3 guidelines for assessing ethical behavior: (1) utilitarianism, (2) individual right, (3) distributive justice [15]. Spector (2007) states 6 ethical principles: (1) competence, (2) integrity, (3) professional and scientific responsibility, (4) respect for people right and dignity, (5) concern for other welfare, and (6) social responsibility [16]. Someone is said to behave ethically if he is able to practice the values of excellence, caring, justice, and faith [17].

### B. Rasch Model

The Rasch model analysis is a statistical approach to measuring performance, attitudes, and human perception. Named after the name of its inventor, Georg Rasch, a Danish nationality, he published his theory in 1960 and died in 1980 [18]. The Rasch model is applied to human Sciences [19],

using the Rasch model is recommended more broadly to improve the quality of measurements both qualitative and quantitative measurements [20].

Rasch analysis, based on item response theory, provides a better alternative for examining the quality of assessment of psychometric scales and informing scaling up [21]. Rasch can be used in various studies. The use of Rasch analysis in education, for example, is to create instruments to measure conduciveness for teaching and learning activities and measuring professional development [22]. The advantage of Rasch Model is that it can explain items and person, [23]. The unit of measurement of scale for ability and item difficulty is generally known as "logit", the contraction of "unit odds log". The Rasch model helps to overcome item measurements in the right way [24].

II. METHOD

The research was conducted in three private universities in Bogor, Indonesia. Rasch modeling is used to analyze questionnaire data. The respondents of this research were 135 lecturers, consisting of 57 men and 78 women, who had National Lecturer Identification Number (NIDN). Lecturers who have master's degree 119, and doctoral degree 16. Lecturers with academic position: 41 instructor, 58 assistant professors, and 36 associate professors.

Measurements are based on lecturers' perceptions of their ethical behavior in carrying out their duties as lecturers. The demographic aspects of the lecturers are gender, education and academic position of lecturers. The type of scale used is the Likert rating scale with five ranking choices [25]. The greater the score of the respondent's answer is that it is more agreed to the item and vice versa.

Measurement of the ethical behavior of lecturers using 5 sub-constructs: (1) Prioritizing benefits for the academic community, (2) Respecting human rights, (3) Performing excellent service, (4) Promoting integrity, and (5) Strengthen professionalism.

The raw data from the questionnaire in the form of an ordinal scale is then converted to an interval scale using Rasch modeling with Winsteps software version 3.73. Rasch modeling addresses data integrity problems by accommodating logit transformations, by applying logarithms at odd ratios of raw data obtained from respondents [26].

Analysis of the instrument validity testing uses Rasch modeling with these criteria: (1) Outfit Mean Square (MNSQ) accepted:  $0.5 < MNSQ < 1.5$ , (2) Outfit-Z Standard (ZSTD) accepted:  $-2.0 < ZSTD < + 2.0$ , and (3) Acceptable PT Mean Correlation accepted:  $0.4 < Pt \text{ Mean Corr} < 0.85$ . If the instrument items meet one of these criteria, the lecturer ethical behavior instrument is suitable for use [27].

The tools of analysis to assess differences in measurement of instrument items using Rasch modeling are by looking at the person Differential Item Functional (DIF) plot [27]. The criteria for differences are seen from the zero line, where if the person above the zero line shows the more agree and vice versa [28].

III. RESULTS AND DISCUSSION

The first sub-construct of lecturer ethical behavior: prioritizing the benefits for the academic community with items: (u1) *I place to improve the quality of education in the academic community above all*; (u2) *I struggle to maintain academic freedom with all the risks*; (u3) *I use the latest references in my lecture activities*; (u5) *I voice the interests of the academic community wherever I am*; (u6) *I dedicate a large part of my life to the advancement of the academic community*. Item (u4) *I submit a suggestion to improve services on various occasions at the university* does not meet the criteria as a validity item, so item u4 cannot be used for research.

Based on figure 1, the easiest item to be approved is u6, the hardest item to be approved u5. The data show that lecturers are "afraid to voice their interest".

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MODEL MEASURE	S.E.	INFINIT MNSQ	ZSTD	OUTFIT MNSQ	ZSTD	PT-MEASURE CORR.	EXP.	EXACT MATCH OBS%	EXP%	Item
4	184	135	3.45	.14	2.32	5.4	9.90	9.9	.12	.63	58.6	71.9	u4
6	527	135	-.18	.11	.93	-.5	.94	-.4	.69	.59	60.2	50.8	u6
2	564	135	-.65	.12	.69	-2.2	.71	-2.1	.62	.55	63.9	57.4	u2
3	578	135	-.86	.13	.64	-2.5	.71	-2.0	.63	.53	72.2	58.9	u3
1	579	135	-.88	.13	.63	-2.6	.73	-1.8	.65	.53	68.4	58.9	u1
5	579	135	-.88	.13	.65	-2.4	.57	-3.2	.69	.53	72.2	58.9	u5
MEAN	501.8	135.0	.00	.12	.98	-.8	2.26	.0			65.9	59.5	
S.D.	143.3	.0	1.56	.01	.61	2.9	3.42	4.5			5.4	6.3	

Fig. 1. Items measure of prioritizing benefits for academic community.

Figure 2 shows that there is no difference in agreement on instrument items for male lecturers (line-1) and female lecturers (line-2).

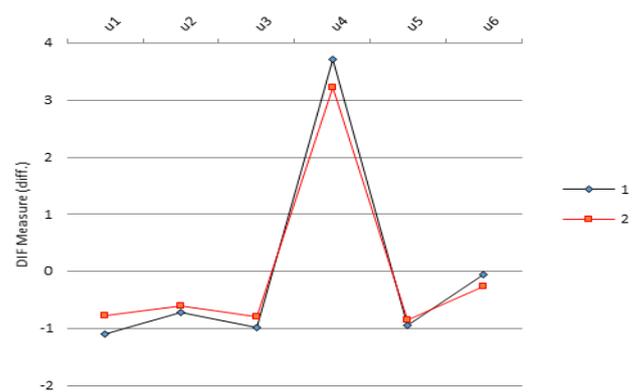


Fig. 2. Person DIF plot, prioritizing benefits with gender.

Figure 3 shows that there is a difference between Masters (line-2) and Ph.D. (line-3) at u6, where Ph.D., is more difficult to give approval on item u6. The data show that lecturers with PhD degree are "less dedicated" to the university.

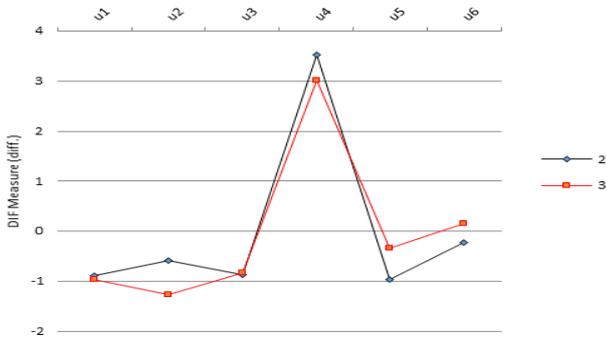


Fig. 3. Person DIF plot, prioritizing benefits with education.

Figure 4 shows that there are no differences between: instructor (line-1), assistant professor (line-2) and associate professor (line-3) for instrument items.

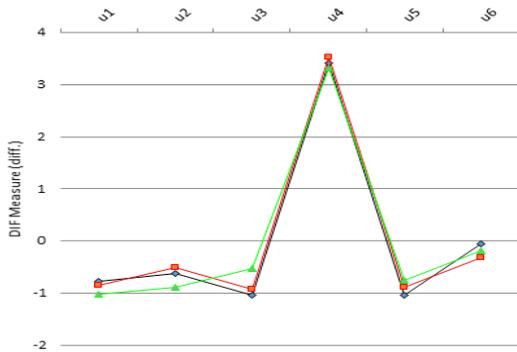


Fig. 4. Person DIF plot, prioritizing benefits with academic position.

Second sub-construct of ethical behavior: respecting human rights in the academic community with items: (h2) I encourage the academic community to be active in professional organizations; (h3) I hold high the privacy of the academic community; (h5) I fight for the economic rights of the academic community to be fulfilled by the university. The item h1 (I say happy "religious holidays" to members of the academic community whose religion is different from mine) and items h4 (I fight for the right to express opinions in the academic community) does not meet the criteria as a validity item, so item h1 and h4 cannot be used for research.

Based on figure 5, the most easily approved item is h2, and the most difficult item to be approved is h3. The data show that lecturers at private universities are "less able to maintain" the privacy of their peers.

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT  MISQ ZSTD	OUTFIT  MISQ ZSTD	PT-MEASURE  CORR.	EXACT MATCH  EXP.	EXP%	Item			
1	529	135	.46	.17	1.50	3.2	1.59	3.7	.76	.81	58.1	65.1	h1
4	535	135	.29	.17	1.42	2.7	1.47	3.1	.72	.80	65.8	65.9	h4
2	552	135	-.22	.18	.62	-3.1	.63	-3.0	.85	.79	78.6	67.0	h2
5	553	135	-.25	.18	.70	-2.3	.69	-2.5	.85	.78	76.9	66.9	h5
3	554	135	-.28	.18	.61	-3.2	.63	-3.0	.84	.78	81.2	66.8	h3
MEAN	544.6	135.0	.00	.17	.97	-.5	1.00	-.3			72.1	66.3	
S.D.	10.5	.0	.31	.00	.40	2.9	.43	3.1			8.8	.7	

Fig. 5. Items measure of respecting human rights.

Figure 6 shows that there is no difference between male lecturers (line-2) and women (line-2) against instrument items.

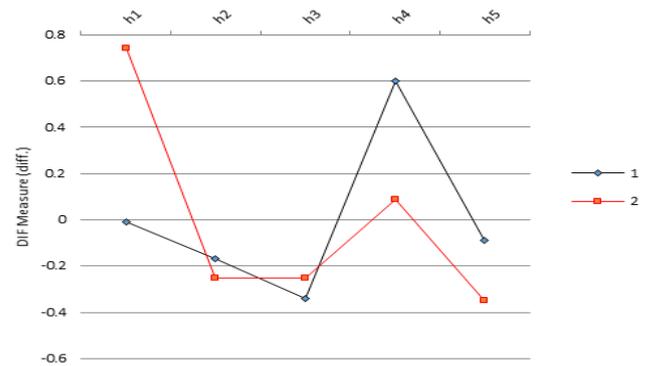


Fig. 6. Person DIF plot, respecting human rights with gender.

Figure 7 shows that there is a difference between the Master (line-2) and the Ph.D. (line-3) on item h2, where the Ph.D. lecturers are easier to approve than the Master's lecturer in item h2. The data show that lecturers with master education are "less interested" with networking.

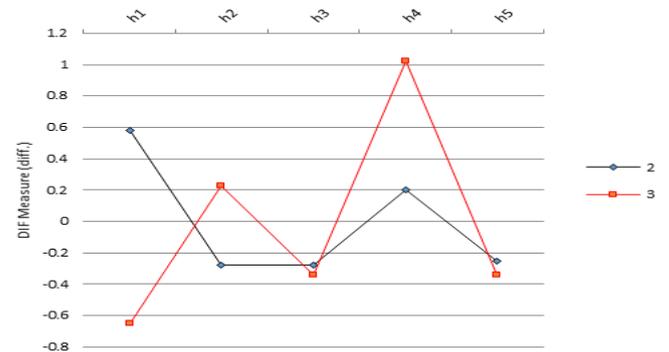


Fig. 7. Person DIF plot, respecting human rights with education level.

Figure 8 shows that there is no difference between the instructor (line-1), assistant professor (line-2) and associate professor (line-3) for instrument items.

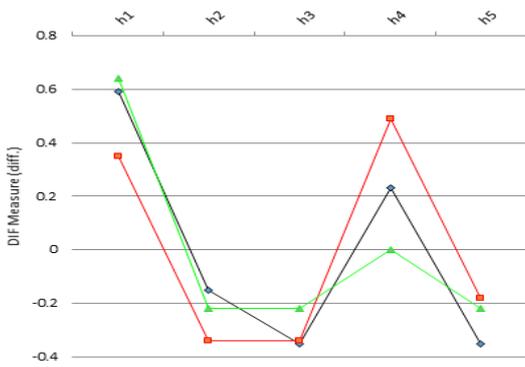


Fig. 8. Person DIF plot, respecting human rights items with academic position.

The third sub-construct of lecturer ethical behavior: performing excellent service to the academic community with all items meet the validity of criteria so that they can be used for research: (s1) *I carry out the process of academic guidance to students above the minimum service standards imposed at the university;* (s2) *I ask for advice from other lecturers to improve the learning process that I do;* (s3) *I sincerely help writing scientific papers to students even though the student is not my responsibility;* (s4) *I helped to find sources of scholarship for lecturers and students even though that was not my job;* (s5) *I allocate special time for students who request additional academic consultations;* (s6) *I use actual issues in my lectures;* (s7) *I objectively convey information to the public about the academic quality at the university where I work.*

Based on figure 9, the most easily approved item is s7, and the most difficult item approved is s2. The data show that lecturers at private universities "are lack of sharing knowledge and experiences".

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MODEL MEASURE	MODEL S.E.	INFIIT  MISQ ZSTD	OUTFIT  MISQ ZSTD	PT-MEASURE  CORR.	EXP.	EXACT MATCH  OBS% EXP%	Item
7	500	135	1.29	.16	1.14	1.1 1.18	1.3	.71	.77  64.2 63.9	s7
6	510	135	1.02	.16	1.02	.2 1.03	.2	.76	.76  66.7 64.6	s6
4	543	135	.09	.17	.84	-1.2 .82	-1.4	.75	.73  70.7 65.8	s4
3	547	135	-.02	.17	.92	-.6 .90	-.7	.75	.72  66.7 65.7	s3
5	560	135	-.40	.17	.83	-1.4 .89	-.8	.73	.71  70.7 65.9	s5
1	564	135	-.52	.17	1.21	1.6 1.14	1.0	.71	.70  58.5 66.1	s1
2	594	135	-1.46	.18	1.03	.3 1.11	.7	.63	.64  71.5 67.1	s2
MEAN			545.4	135.0	.00	.17 1.00	.0 1.01	.1	67.0 65.6	
S.D.			29.9	.0	.87	.01 .14	1.1 .13	1.0	4.3 1.0	

Fig. 9. Item measure of performing excellent service.

Figure 10 shows that there is no difference between male lecturers (line-1) and female lecturers (line-2) in the instrument items.

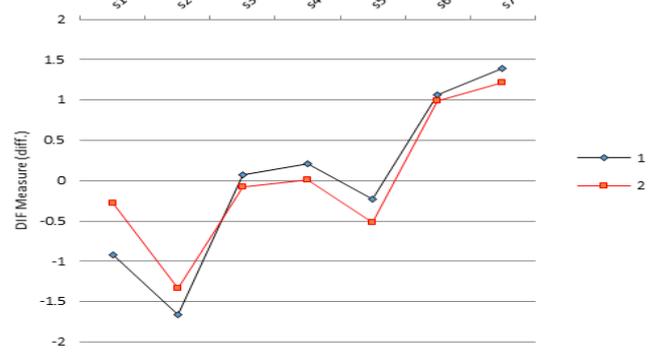


Fig. 10. Person DIF plot, performing excellent service with gender.

Figure 11 shows that there is a difference between Master (line-2) and Ph.D., (line-3) toward item s5, where Ph.D., are easier to approve than Master. The data show that lecturers with Ph.D., "are lack of enthusiasm" in guiding students.

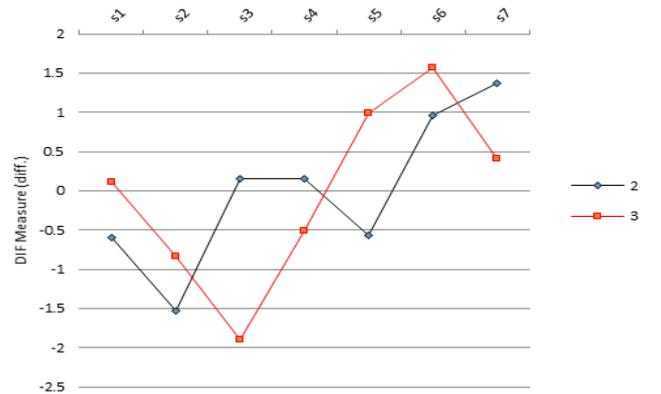


Fig. 11. Person DIF plot, performing excellent service with education level.

Figure 12 shows that there are differences between instructor (line-1) and associate professor (line-3) on items s3 and s4. The associate professors are more difficult to agree if compared to instructors on items s3 and s4. The data show that associate professors are "less helpful" with their colleagues and students.

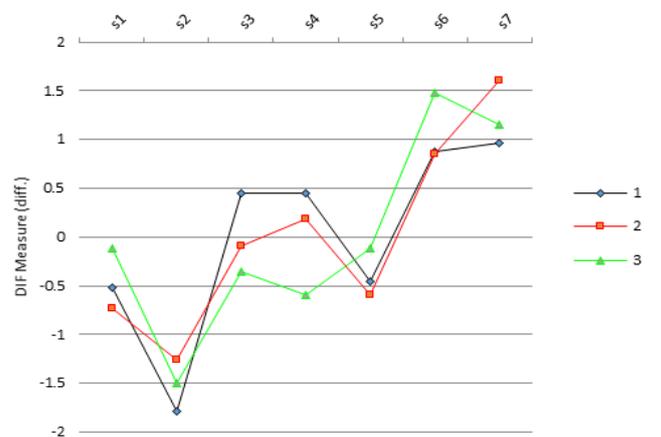


Fig. 12. Person DIF plot, performing excellent service with academic position.

The fourth sub-construct of lecturer ethical behavior: promoting integrity with all items on promoting integrity meet the criteria of validity so that they can be used for research: (se1) *I report violations of rules that occur at the university to my supervisor in both oral and written*; (se2) *I refuse to give grades to students who are proven to have committed plagiarism*; (se3) *I am loyal to what has been decided in the meeting of the academic community*; (se4) *I explain something accompanied by supporting facts*; and (se5) *I reject whatever is given by students that can affect my decision*.

Based on figure 13, the easiest item to be approved is se1 and the most difficult item to be approved is se5. This data shows that lecturers at private universities face "temptation", especially from students who want to give something to their lecturers.

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MODEL MEASURE	MODEL S.E.	INFIT  MNSQ  ZSTD	OUTFIT  MNSQ  ZSTD	PT-MEASURE  CORR.	EXP.	EXACT MATCH  OBS%  EXP%	Item
1	499	135	.72	.18	.61   -3.0   .58	-3.3	.86	.79	78.2   71.0	se1
3	499	135	.72	.18	.61   -3.0   .58	-3.3	.86	.79	78.2   71.0	se3
2	500	135	.69	.18	1.10   .7   1.11	.8	.78	.79	70.2   70.9	se2
4	530	135	-.36	.19	1.22   1.6   1.27	1.7	.69	.77	62.9   71.1	se4
5	568	135	-1.77	.19	1.40   3.0   1.46	2.8	.65	.72	73.4   71.2	se5
MEAN	519.2	135.0	.00	.19	.99	-.2   1.00	-.3		72.6   71.0	
S.D.	27.1	.0	.98	.01	.32	2.4   .36	2.6		5.7   .1	

Fig. 13. Items measure of promoting integrity.

Figure 14 shows that there is no difference between male lecturers (line-1) and female lecturers (line-2) on instrument items.

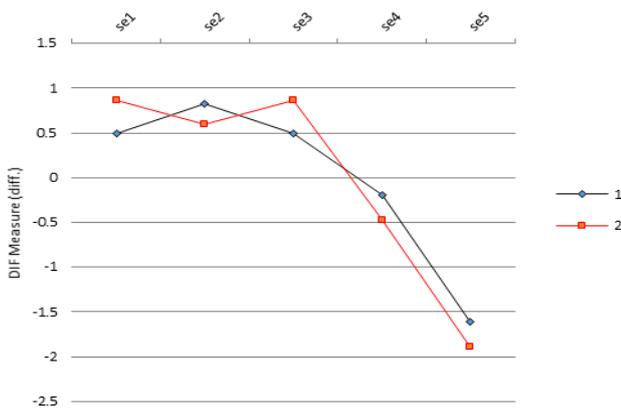


Fig. 14. Person DIF plot, promoting integrity with gender.

Figure 15 shows that there are differences between Masters (line-2) and Ph.D. (line-3) on se2 and se4 items, where lecturers with Ph.D. degrees are more difficult to agree than Masters in items se2, but different in se4 items where Masters are more difficult to agree than Ph.D. This fact shows that the Ph.D. lecturers are more concerned with the quality of lectures and the Master lecturers have difficulty in delivering content in lecturing compared than Ph.D.

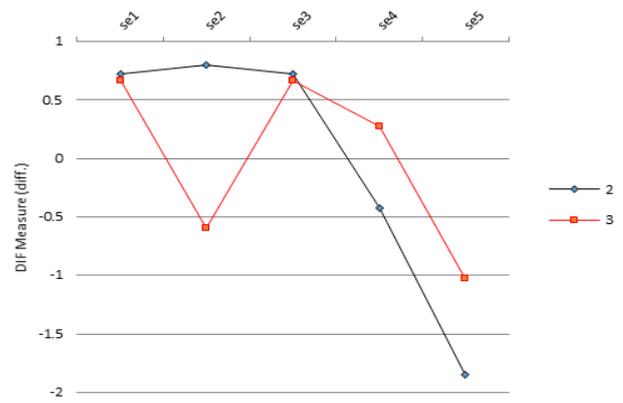


Fig. 15. Person DIF plot, promoting integrity with education level.

Figure 16 shows that there is a difference between the instructor (line-1) and associate professor (line-3) toward item se4, where the associate professor is more difficult to agree on se4 item. The data show that associate professors are "less prepared" in teaching students.

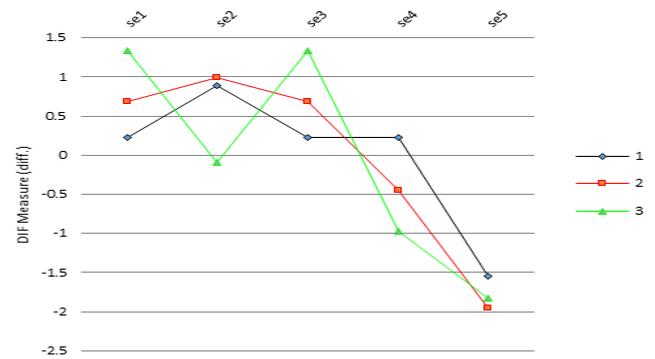


Fig. 16. Person DIF plot, promoting integrity with academic position.

The fifth sub-construct of lecturer ethical behavior: strengthen professionalism with all instrument items have met the validity criteria so that they can be used for research: (p1) *I am improving my academic competence so that I can contribute maximally in the academic field*; (p2) *I improve my ability to communicate so that I can communicate effectively with the academic community*; (p3) *Before implementing the lecture, I made a plan for the implementation of the lecture according to the syllabus*; (p4) *I evaluate what I have done to improve my performance at this university*; (p5) *I carry out teaching, research and community service according to the rules imposed at the university*; (p6) *I collaborate with people who have similar scientific professions with my knowledge*; (p7) *I am responsible for the scientific truth that I teach to the academic community*; (p8) *I am able to carry out my work and functions as a lecturer to the fullest without being disturbed by my personal problems*; (p9) *I am trying to increase my knowledge so that I can support my profession as a lecturer*; and (p10) *In order to perform well as a lecturer, I actively participate in professional organizations*.

Based on figure 17, the most easily approved item is p1, and the most difficult item to be approved is p10. The data show that lecturers at private universities "are lack of participation" in professional activities.

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MODEL MEASURE	INFIT		OUTFIT		PT-MEASURE		EXACT MATCH		Item	
				S.E.	MISQ	ZSTD	MISQ	ZSTD	CORR.	EXP.	OBS%		EXP%
1	536	135	.93	.17	1.14	1.0	1.15	1.1	.69	.72	67.7	66.6	p1
4	542	135	.75	.18	.95	-.3	.94	-.4	.74	.71	66.1	67.2	p4
8	560	135	.17	.18	1.24	1.7	1.28	1.9	.63	.70	61.3	70.1	p8
5	562	135	.10	.18	.96	-.3	.93	-.5	.66	.69	71.8	70.3	p5
9	564	135	.04	.19	1.14	1.0	1.19	1.3	.63	.69	64.5	70.6	p9
2	565	135	.00	.19	.77	-1.7	.75	-1.9	.77	.69	82.3	70.8	p2
6	565	135	.00	.19	1.00	.1	1.00	.1	.71	.69	71.8	70.8	p6
7	568	135	-.10	.19	1.00	.1	.91	-.6	.72	.69	77.4	71.3	p7
3	575	135	-.35	.19	.70	-2.4	.74	-1.9	.74	.68	80.6	72.1	p3
10	606	135	-1.54	.20	.95	-.3	1.27	1.4	.61	.62	79.8	73.7	p10
MEAN	564.3	135.0	.00	.19	.99	-.1	1.02	.0			72.3	70.4	
S.D.	17.9	.0	.63	.01	.16	1.2	.19	1.3			7.0	2.0	

Fig. 17. Item measure of fifth construct.

Figure 18 shows that there are differences between male lecturers (line 1) and female lecturers (line2) on items p2 and p6, where female lecturers are more easily agree on items p2 and p6. The data show that male lecturers are more difficult to communicate and cooperate than female lecturers.

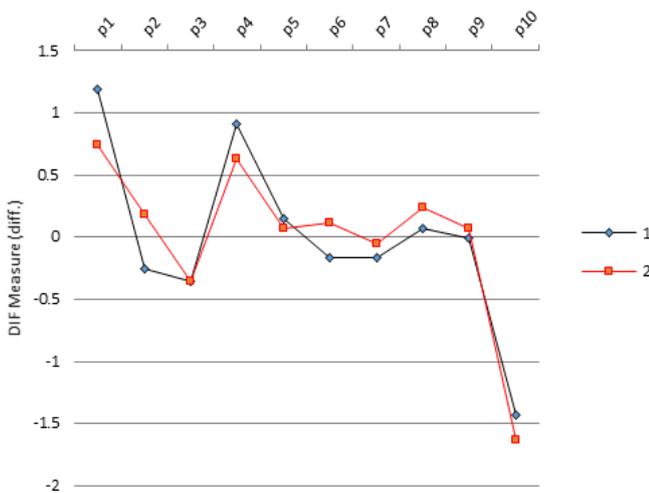


Fig. 18. Person DIF plot, strengthen professionalism with gender.

Figure 19 shows that there is a difference between Masters (line-2) and Ph.D., (line-3) toward items p2 and p7, where the Master is easier to approve than the Ph.D., on items p4, but vice versa item on p7. The data show that lecturers with Ph.D. degree are "more selfish", and "more confident".

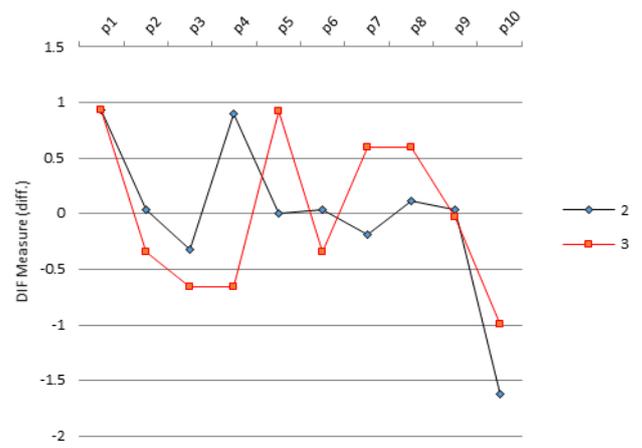


Fig. 19. Person DIF plot, strengthen professionalism with education level.

Figure 20 shows that there are differences between the instructor (line-1), assistant professor (line-2) and associate professor (line-3) toward items p2, p5, p6, p7, p8, and p9.

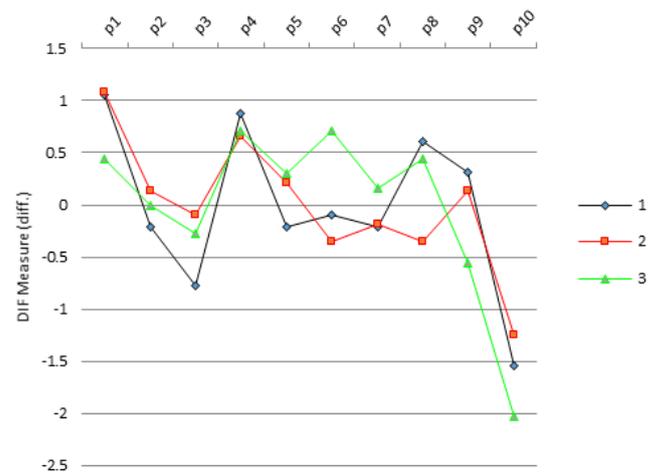


Fig. 20. Person DIF plot, strengthen professionalism with academic position.

#### IV. CONCLUSION

Through the use of item measure by Rasch Modeling it has been found that there are 30 items statement that can be that can be used to measure the ethical behavior of lecturers while 3 items of cannot be used for measurement. These 30 items are divided into 5 sub-constructs of lecturer ethical behavior: the prioritizing benefits for universities (5 items), the respect for human rights (3 items), the performance of excellent service to the academic community (7 items), promoting integrity (5 items), and strengthening professionalism (10 items).

This study has found some differences in approval in terms of gender, education level and academic position on lecturers' ethical behavior instrument items, among others. The research findings reveal that male lecturers are more difficult to give consent about "communication and collaboration" than female lecturers, PhD is more difficult to give approval about "dedication" compared to Masters lecturers, and associate

professors are more difficult to agree on "willingness to help students" than instructors. Those findings are expected to open a further discussion in developing the lecturer of ethical behavior in Indonesia.

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