



Item Response Analysis of the Psychometric Properties of Economics Mock Examination in Kaura Local Government Area of Kaduna State, Nigeria

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ABSTRACT

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The aim of this study was to determine the psychometric properties of Economics mock examination using Item Response Theory (IRT) analysis in Kaura Local Government Area of Kaduna State, Nigeria. The motivation for the was as a results of evidences which showed that student's achievement in economics in Kaura Local Government Area (LGA) of Kaduna State was low which could be attributed to the quality of achievement test used by teachers for assessment of students. The study was guided by five research objectives and five research questions. The study adopted descriptive Survey research design. The population for the study consisted of all Senior Secondary School Students in Kaura Local Government Area of Kaduna State, Nigeria. There are twenty (20) Senior Secondary Schools that wrote Economics Mock examination in the year 2022/2023 academic session. The sample of the study consisted of one thousand, three hundred and four (1,304) students' scripts made up of 689 Males and 615 Females students from twenty Senior Secondary schools in Kaura LGA of Kaduna State, Nigeria. Simple random sampling technique was used in selecting the sample for the study. The instrument used for the study was 2022 Economics mock examination scripts. The reliability of the instrument was re-established using the 2-PLM generalized partial credit models of IRT framework through the item information function. The items gives high amount of information in assessing the theta level of students, and high information implies high reliability. The findings showed that the difficulty, discrimination and Guessing parameter needed review. The study recommended that Kaura Area Directorate of Education should establish the psychometric properties of their test items before using the items for Mock Examination. Teachers should use IRT to improve the quality of items before using test items to determine learning outcomes.

KEYWORDS:

Analysis, psychometric, properties, item response theory.

INTRODUCTION

Classical psychometric models have been used extensively to simulate and predict the course and effect of intervention programmes both educational and social activities within a population of interest. For instance, Nduka and Igabari (2007) proposed a generating function model that could generate the moments of a measured attribute of a population group, while Mamadu et al (2020) used a numerical approach to

characterize a disease transmission process, just like Aghanenu et al (2022) who investigated the effect of control strategies in epidemic management. Ehiwarior et al (2023) coupled a psychometric lifetime probability model which established survival and hazard rate indices from certain types of data. In a similar vein, Onyemarin et al (2023) even used a time series model to explain infant mortality data in Nigeria. All these are instances of use of mathematical models in explaining population related issues. Igabari (2017) emphatically stated that population density of an environment has a way of influencing all manner of outcomes in the system. From probability theory to applied statistical psychometry, models have become invaluable in enhancing human efforts, but Osemeke et al (2024) sounded a note of caution concerning model assumptions.

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Joseph J. Mawak et al, Item Response Analysis of the Psychometric Properties of Economics Mock Examination in Kaura Local Government Area of Kaduna State, Nigeria

Economics is one of the social science subjects that studies the relationship between ends and scarce means which have alternative uses. The study of economics helps an individual to think and apply Economics principles in solving practical problems for useful living and effective management of scarce resources to satisfy unlimited wants and needs (Bulus 2018). It examines how people make choices under conditions of scarcity and analyzes the production, distribution, and consumption of goods and services (Kpolovie 2018). Economics deals with 'what is', 'what was', or what will be', and not 'what ought to be'. It is not normative, but a positive social science which describes the working of the present economic institution as they are and not how they ought to be. It offers suggestions to the solution of economic problems which confront society. Economics is the study of human endeavors with respect to production, distribution, exchange and consumption (Anyanwuchi, 2020). Economics is one of the social science subjects that heavily utilize statistical and mathematical models in real-life situations. It enables students to acquire basic knowledge for the practical solution of the economic problem of societies. It equipped students with the basic principles necessary for useful living. It also encouraged students to effectively manage their scarce resources.

The development of economics as a discipline has been guided by the need to explain economic phenomena and provide solution to economic problems so as to acquire knowledge for the practical solution to the economic problem of Nigerian societies, developing countries and the world at large, to prepare and encourage students to be cautious and effective in the management of scarce resources. Economics helps to equips students with the basic principles of economics necessary for useful living. It increases students' respects for dignity of labour and their appreciation of economic, cultural and social values of the society. Students' achievement in Economics is measured through examinations, which is designed to assess their understanding of the subject matter (Eleje, Esomonu, Agu, Okoye, Obasi and Onah (2016). Economics is one of the senior secondary school subjects that require assessment to ascertain students' basic knowledge, skills, understanding of the concepts and the nature of economics problems in any society. The Economics mock examination in Kaura Local Government Area of Kaduna State is set up to improve the performance of students in West African Examination council (WAEC) and National Examination Council (NECO). The Economics mock examination aims to measure skills needed by students to succeed in any unit of planned instructions, give good practice and speed of problem solving in economics with respect to quantitative analyses, help in giving students proper time management, monitor students learning and provide on-going feedback to both students and teachers during the teaching- learning process (Brown, 2015). The economics mock examination equally identifies the students'

learning difficulties whether persistent or recurring (Nworgu 2019). This objective can be achieved through the use of different assessment instruments such as, essay test and objectives test which are utilized by the teachers. Unfortunately, despite the objectives, students write mock examination and pass but still fail WAEC and NECO examination which calls to question the Psychometric properties of Economics mock examination that is prepared and written by the students. Findings shows that the quality of these questions have not been documented (Adebowale 2018). Hence the need to document the psychometric properties of this examination for better performance. Item Response Theory (IRT) is a branch of psychometric theory that is synonymous with latent trait theory (Adebowale & Alao, 2020). It is also referred to as the true score theory or modern mental test theory that is used in examining the psychometric characteristics of test items (Ugodulunwa 2020). Item Response theory is also known as the latent response theory. It is a family of mathematical model that attempts to explain the relationship between latent traits (unobserved characteristics) and their manifestation (the observable performances) (Wijayanti, 2020). Lawal, (2021) asserted that Item Response theory parameters such as difficulty, discrimination, dimensionality, guessing parameters, uni-dimensionality and multidimensionality are used to assess the quality of a test.

Difficulty parameter indicates the relationship between the student ability and difficulty of the item. This means that during testing, there is an encounter between each examinee and an item, where the examinee who has sufficient theta (ability) is able to answer the item correctly based on the difficulty of the item, conversely, if a student has a low ability and the item is difficult, the student may probably get the item wrongly. Ugodulunwa, (2020): Abdullahi (2020) assert that item difficulty is often expressed as a proportion or percentage of individuals who answered the item correctly and those that got the item wrongly. (Adedoyin, 2010) maintain that Item difficulty helps to estimates the equality of an item. It is used in classical test theory to determine the difficulty of the whole test and in IRT to determine the difficulty of each item (Eleje, Onah, and Abanobi, 2018). Hence the need to estimates the difficulty of the mock SSCE in Kaura Local Government Area of Kaduna State. Discrimination Indices refers to the ability of an item to discriminate between individuals who have higher levels of the construct being measured and those who have lower levels. It indicates how well an item differentiates between individuals who perform well on the overall test and those who perform poorly. Hambleton & Swaminathan,(2015) observed that the extent to which individuals who answer the item correctly have higher total scores compared to those who answer incorrectly. This therefore calls for the need to estimate the discrimination indices of the mock examination

Joseph J. Mawak et al, Item Response Analysis of the Psychometric Properties of Economics Mock Examination in Kaura Local Government Area of Kaduna State, Nigeria

so as to determine the discrimination indices of the Economics Mock test items.

Pseudo guessing refers to the random guessing of answers, even in the absence of knowledge or ability, in a multiple-choice item (Brown & Wienbroer 2018). It is particularly used when there are four or more response options and individuals have a chance of guessing the correct answer by chance. Pseudo guessing is often considered when incorporating parameter c , known as the guessing parameter (c), into the scoring of psychometric tests [Embretson, (2013)]. Embretson and Reise (2018) assert that the guessing parameter represents the probability that an individual will guess the correct answer by chance. For example, if a test has four response options and the guessing parameter is set at 0.25, individuals who choose the correct answer by random guessing would receive 0.25 points, while those who answer correctly through knowledge or ability would receive the full score for the item, (Hambleton & Swaminathan, 2015). Uni-dimensionality assesses the consistency of the test items with the intended construct. This is one of the basic and critical assumptions of item response theory. It assumes that all items on tests must measure only a single latent trait (Hambleton & Swaminathan 2021). This means that the item on a test measure one content area and ability. The dimensional analysis assesses the knowledge and skills required to answer each test item. The implication of this assumption is that all the items in a test should measure one and only one ability and should only differ in their difficulty. Item response theory is broadly categorized into two. According to Ezechukwu & Amaechi (2016); Ugodunluwa, (2020) this includes One Dimensional model and Multidimensional model. The one-dimensional model requires only one ability, while a multidimensional model requires multiple abilities. Item response theory models can also be categorized according to the number of scores responses, this include dichotomous and polychotomous models. The dichotomous items are scored correctly or incorrectly, right or wrong, 1 or 0, as in multiple choice items while in polytomous model each item response have different score values as in essay type and likert -type items, Ugodunluwa, (2020).

Multi-Dimensionality of item response theory analysis refers to the consideration of multiple latent traits or dimensions that the test item is intended to measure. It means that the test items are designed to assess not just a single construct or ability, but multiple dimensions related to economics knowledge and skills. For example, the mock examinations may include items that assess knowledge of microeconomics, macroeconomics, international economics, and econometrics. Each of these dimensions represents a distinct latent trait that the IRT analysis aims to measure Embretson, (2013). By considering the multi-dimensionality of the test, IRT analysis can provide more accurate and detailed information about individuals' abilities or traits in different areas of economics. It allows for a more

comprehensive evaluation of test performance and provides insights into strengths and weaknesses across different dimensions (Hambleton & Swaminathan, 2021).

Test information function (TIF) is a key concept in item response theory (IRT) analysis. It is a measure of the amount of information provided by a test item about a student's ability level. The TIF is a graph that shows the relationship between a student's ability level and the probability of answering an item correctly. The steeper the slope of the TIF, the more information the item provides about the student's ability level. The TIF is a tool for evaluating the quality of test items and for selecting items for a test. The TIF can be used to evaluate the psychometric properties of item response theory. The TIF can also be used to identify items that are too easy or too difficult for a particular group of students. Analyzing the TIF of economics mock examinations will help teachers to determine the amount of information provided by test and can help educators to improve the quality of the test items and ensure that the test is an accurate measure of a student's ability level (Ezechukwu, 2018; Lawal 2021. Some students are fast learners while others are not. Test information is capable of providing statistical evidence to determine whether a particular test is applicable to different subgroup of its target group Nworgu, (2019).

Available evidence shows that student's achievement in Economics in Kaura Local Government Area (LGA) of Kaduna State has not been encouraging. For example, results of WAEC analyses shows that in 2016, 40,837 and 37,837 students sat for WAEC and NECO Examinations, 76% and 65% passed. In 2018, 78% and 73% passed above credit level, in 2019 39,727 and 35,623 students sat for WAEC and NECO examination with 76% and 72% of students passed above credit level respectively. In 2020, 39,721 and 36,321 students sat for WAEC and NECO examination and 73% and 70% pass above credit level. In 2021, 37, 627 and 34,624 students sat for WAEC and NECO examination, 74% and 64% respectively passed above credit level. The failure rate is an issue of great concerned because of the relevance of the subject. Some reasons have been held accountable for students' poor performance and these reasons range from the method of teaching used by the teachers, availability of instructional materials, quality of teachers made test used in assessing the students, teachers' level of maturation to learn the subject, security of the environment among others. Effort has been put in place to help improve students' achievements and this include the training and retraining of teachers on how to teach students to answer WAEC and NECO questions, introduction of Economics mock Examination for all students in Senior Secondary School two, (SSII) so as to prepared them for final examination, organization of extra classes for the students among others still yet, the performance of student has not improved. The result of the Economics mock examinations

Joseph J. Mawak et al, Item Response Analysis of the Psychometric Properties of Economics Mock Examination in Kaura Local Government Area of Kaduna State, Nigeria

has shown that student's performance is averagely good, but when it comes to WAEC and NECO, students' performance is low. This therefore, calls for the need to investigate the Psychometric properties of the Economics mock examinations, so as to determine the quality of the test item. Hence there is need to conduct this study on item response theory analysis of the psychometric properties of Economics mock examinations in Kaura Local Government (LGA) of Kaduna State. The researcher is not aware of any current efforts aim at improving students' performance in WAEC and NECO through Item Response Theory (IRT) analysis of the psychometric properties of Economics Mock Examination in Kaura Local Government (LGA) of Kaduna State, Nigeria; hence there is need for this study to cover the gap. The present study therefore seeks to answer the broad question. What are the psychometric properties of Economics Mock Examinations in Kaura Local Government Area (LGA) of Kaduna State?

Aim and Objectives of the Study

The aim of this study is to analysis the psychometric properties of Economics mock examination using item response theory in Kaura Local Government Area of Kaduna State, Nigeria. Specifically, the objectives of the study are to:

1. estimates the item difficulty indices of the Economics mock examination in Kaura Local Government Area of Kaduna State, Nigeria.
2. establish the item discrimination indices of the Economics Mock Examination in Kaura Local Government Area of Kaduna State, Nigeria
3. estimate the guessing parameters indices of the Economics Mock Examination items, in Kaura Local Government Area of Kaduna State, Nigeria.
4. establish the test information function of the Economics mock examination in Kaura Local Government Area of Kaduna State, Nigeria.
5. examine the item information functioning of the Economics mock examination in Kaura Local Government Area of Kaduna State, Nigeria.

Research Questions

The following research questions have been raised to guide the study:

1. what are the difficulty indices parameters of the Economics Mock Examination in Kaura Local Government Area of Kaduna State, Nigeria?
2. what are the discrimination indices parameter of the Economics Mock Examination in Kaura Local Government Area of Kaduna State, Nigeria?
3. what are the guessing parameters indices of the Economics Mock Examinations Items in Kaura Local Government Area of Kaduna State, Nigeria?
4. what is the test information function of the Economics mock examinations in Kaura Local Government Area of Kaduna State, Nigeria?

5. what are the item information functions of the Economics Mock Examination in Kaura LGA of Kaduna State, Nigeria?

METHODOLOGY

The research design for this study was descriptive survey research design. According to Orluwene, (2017) descriptive survey research designed is the type of research design that aims to accurately and systematically describe the characteristic of a population situation or phenomenon. Descriptive survey research design is a systematic approach that is used to gather data from a sample of individuals (Economics scripts). It is also the collection of information from a sample of individuals through their responses to questions (Check & Schutt, 2018). Description survey research design was used, because the result obtain will be generalized on the entire population of the students. Nworgu (2015) assert that survey helps researchers to obtain large data about a phenomenon in contention for the purpose of solving the problem.

The population for the study comprised of all Senior Secondary School Students in Kaura Local Government Area of Kaduna State. Two thousand, seven hundred and eighty-six (2786) Economics students wrote Economics Mock Examination in 2022. The sample of the study consisted of one thousand, three hundred and four (1,304) Economics student's mock scripts of the year 2022. The sample consisted of 689 Male and 615 Female students selected from twenty Senior Secondary schools in Kaura LGA of Kaduna State, Nigeria.

Simple random sampling technique was used in selecting the sample of the schools that were used for the study. Simple random sampling helps to give every element equal chance of being selected. To select the schools, the names of the schools were written on twenty pieces of papers and squeezing after which ten (10) students were asked to pick one each. After which all the ten schools that were selected served as sample for the study.. The scripts of the students in all the ten schools were used as sample for the study. This according to Orluwene, (2017) gives every element equal chance of participating in the study. The instrument for data collection was 2022 Economics mock examination scripts and the items were developed by Kaduna State Ministry of Education, unit of quality assurance in Kaduna State, Nigeria. The examinations were administered at the end of SSII to all Economics students in Kaura LGA of Kaduna State. The Economics mock examination of 2022 scripts of thirty (30) multiple choice items was used for the study The Economics scripts were also included the demographic information about the participants.

The Economics mock examination consisted of thirty (30) multiple choice items and the candidates were expected to answer all the test items. The duration for the Mock Examination was forty-five Minutes (45mins), the

Joseph J. Mawak et al, Item Response Analysis of the Psychometric Properties of Economics Mock Examination in Kaura Local Government Area of Kaduna State, Nigeria

examination was conducted at the end of SSII class. All the thirty (30) multiple choice items used were selected items of West African Examination council (WAEC) and National Examination Council (NECO) that form the Economics mock examination items. Reliability of the test items was re-established using the 2-PLM generalized partial credit models of IRT frame work through the item information function. The items give high amount of information in assessing the theta level of students, and high information implies high

reliability. Research questions were answered using difficulty ‘b’ indices, discrimination indices ‘a’, guessing parameter ‘c’ indices using X-Calibre.

RESULTS

Research question one

What are the difficulty indices parameters of the Economics Mock Examination in Kaura Local Government Area of Kaduna State?

Table1: Item Parameter ‘b’ difficulty

Seq	Item id	b	Flags
1	1	1.002	
2	2	2.000	
3	3	1.870	
4	4	0.540	
5	5	0.257	
6	6	3.344	Hb
7	7	3.131	Hb
8	8	2.614	
9	9	0.936	
10	10	2.709	
11	11	-3.182	, Lb
12	12	2.767	
13	13	3.205	, Hb
14	14	2.229	
15	15	1.059	
16	16	0.454	
17	17	1.132	
18	18	0.492	
19	19	3.240	Hb
20	20	1..709	
21	21	1.137	
22	22	1.146	
23	23	2.781	
24	24	-0.155	Lb
25	25	0.336	
26	26	3.258	HB
27	27	2.529	
28	28	2.508	
29	29	3.284	LB
30	30	1.225	

The result of the analysis from table 3, revealed that 6 items shows high difficulty parameters, these are items 6,7,13 19, 26 and 29 while only two items had low difficulty parameter, these are items 11 and 24. The remaining twenty two items had moderate difficulty parameters; these are items 1, 2, 3, 4, 5, 8, 9, 10, 12, 14, 15, 16, 17, 18, 20, 21, 22, 23, 25, , 27, 28, and 30. From the results, most of the items were appropriate

and therefore should be retained while the 8 items should be expunged or modified

Research Question 2: What are the discrimination parameters of the Economics Mock Examination in Kaura Local Government Area of Kaduna State?

Table 2: Item Parameters discrimination

Seq.	Item ID	A	Flag(s)
1	1	0.922	
2	2	0.901	
3	3	2.864	La
4	4	0.876	
5	5	2.846	La
6	6	0.870	
7	7	2.830	La
8	8	0.741	
9	9	0.649	
10	10	0.791	
11	11	-2.843	, La
12	12	0.799	
13	13	0.845	
14	14	2.785	Ha
15	15	0.827	
16	16	0.797	
17	17	-0.042	La
18	18	0.829	
19	19	2.858	
20	20	0.761	La
21	21	0.843	
22	22	-1.838	, La
23	23	2.819	La
24	24	2.781	La
25	25	0.755	
26	26	0.834	
27	27	2.762	Ha
28	28	2.747	
29	29	2.830	La
30	30	0.854	

The result in Table 4 of the analysis reveals that items 3,5,7,11,14,17,20,22,23,24,27,29 need review because the items had high and low discrimination indices while the other items had moderate discrimination values which implies that the items are acceptable and very good items. These are item1, 2, 4, 6, 8, 9, 10, 12, 13, 15, 16, 18, 19, 21, 25, 26, 28,

and 30. This implies that some of the items were faulty and hence should be modified

Research Questions three

What are the guessing parameters indices of the Economics Mock Examination in Kaura Local Government Area of Kaduna State?

Table 3 Item Parameter c

Seq.	Item ID	C	Flag(s)
1	1	0.085	
2	2	0.105	
3	3	0.330	,Hc
4	4	0.348	Hc
5	5	0.244	

Joseph J. Mawak et al, Item Response Analysis of the Psychometric Properties of Economics Mock Examination in Kaura Local Government Area of Kaduna State, Nigeria

6	6	0.220	
7	7	0.421	Hc
8	8	0.249	
9	9	0.249	
10	10	0.341	Hc
11	11	0.232	
12	12	0.234	
13	13	0.334	Hc
14	14	0.238	
15	15	0.233	
16	16	0.342	Hc
17	17	0.225	
18	18	0.447	Hc
19	19	0.219	
20	20	0.550	Hc
21	21	0.225	
22	22	0.330	
23	23	0.234	
24	24	0.447	Hc
25	25	0.244	
26	26	0.330	Hc
27	27	0.249	
28	28	0.550	Hc
29	29	0.237	
30	30	0.321	Hc

The results of the analysis from Table 5, reveals that 12 items had high guessing parameters; these items are 3,4, 7,10,13,16,18,20,24,26,28, and 30 hence 12 items are prone to guessing. The other items are not prone to guessing, this means that some of the items were prone to guessing. Hence the economic mock examination questions need to be

reviewed so as to reduce the guessing parameter to the minimum

Research Question 4

What is the test information function of the Economics mock examinations in Kaura Local Government Area of Kaduna State?

Table 4. Test Information Function

Theta	Test Information Function(TIF)
-2.1	0.0667
-1.5	0.4081
-1.00	0.1544
0.00	1.7201
0.50	1.2659
1.0	1.1459
1.5	3.4238
2.0	2.3411
2.50	0.9914

Joseph J. Mawak et al, Item Response Analysis of the Psychometric Properties of Economics Mock Examination in Kaura Local Government Area of Kaduna State, Nigeria

The result of the analysis from Table 4 reveals that the test information has its highest value when the ability (theta) equal to 1.5 which is the test information value. Hence the test assesses candidates ‘ability with high precision. This means that high information implies high reliability

Research Question 5:

What are the item information functions of the Economics Mock Examination in Kaura LGA of Kaduna State?

Table 5: Item Information Function

NO	IIF	NO	IIF
1	1.0815	16	2.1358
2	1.2102	17	2.0625
3	1.1834	18	1.9933
4	1.1578	19	1.9281
5	1.1334	20	1.8662
6	1.1101	21	0.8771
7	3.0347	22	0.8684
8	2.9088	23	0.0104
9	2.7904	24	0.8531
10	2.6791	25	1.0879
11	2.5744	26	1.0667
12	0.0059	27	1.0466
13	2.3831	28	1.0274
14	0.0057	29	1.0093
15	2.2134	30	0.9921

The results of analysis from Table 7 shows that 3 items had low item information values, these are items 12, 14 and 23. All other items had moderate item information function except item 7 which has high item information value of 3.0347 .Hence 90% of the items provide good information on the level of precision candidates were assessed.

DISCUSSION OF FINDINGS

The findings from research question one showed that the difficulty parameters are mixture of low, moderate and high parameters. The breakdown of the items showed that 8 items need review while the remaining items had moderate difficulty. This this is in agreement with the assertion by Kara and Sesil (2012), and Hambleton & Swaminathan (2021) who opined that item Parameters that are two difficult or simple need to be reviewed. While those that are within the location of examinee’s ability on the ability scale with examinee having fifty per cent (50%) chance of answering the item correctly should be retain. The implication of this finding is that the mock examination items need to be further reviewed. This could be one of the reason why students used to pass the muck examination but when it comes to West African Examination Council or National Examination Council they will perform below expectation. Adebowale (2018) advised that items parameters should not be too high or too low, but should be moderate (0.62-2.00). Findings from research question two revealed that 12 items discriminated

poorly between high and low achievers while 18 items discriminated well between high and low achievers. This is in consonance with the views of Eleje, Esomonu, Agu, Okoye, Obasi and Onah (2016) Ugodulunwa (2020) who suggested that good test items should discriminate well between high and low achieves in the class. Items that discriminate poorly are considered to be faulty. The implication of this finding is that the muck economic test items need to be reviewed so that students with high ability should be seen to be doing better on such items than students with low ability.

Findings from research question three revealed that 8 items were prone to guessing while 18 items were not prone to guessing. This in accordance with views of Bulus, (2018) Abdullahi (2020). Who asserted that when test items are not properly constructed, the items will be prone to guessing especially objectives test items. The implication of this finding is that Kaura L G A in Kaduna State Ministry of Education need to review the objective test items that have been used in conducting mock examination so as to reduces the chances of students guessing because the items are either difficult or the items are ambiguous.

Findings from research question four revealed that the Economics mock examination test information has its highest value when the ability (theta) equal to 1.5 which is the test information value. Hence the test assesses candidates ‘ability with high precision. This means that high information implies high reliability. This is in agreement with the findings by

Joseph J. Mawak et al, Item Response Analysis of the Psychometric Properties of Economics Mock Examination in Kaura Local Government Area of Kaduna State, Nigeria

Ezechukwu, & Amaechi, (2016) who found that test information helps to provide teachers with information about students ability when they response to a test, it also provide teachers with broad best on the content and construct of a test. The implication of this findings is that the test is providing the ministry with information about students' performance on the test but individual test item information is not provided and this is why students perform well in economic mock examinations but perform poorly in national examination

Findings from research question five showed that 3 items had low item information values, these are items 12, 14 and 23. All other items had moderate item information function except item 7 which had high item information value of 3.0347. Hence 90% of the items provide good information on the level of precision candidates were assessed. This result agreed with Hambleton, (2018) who found that information functions provide high information about the quality of test items but does not provide individual items information such as difficulty, discrimination and guessing parameter. The implication of this findings is that more needs to be done in the area of item analysis of the economic mock examination so that students can be assessed properly before they are schedule to take national examination

CONCLUSION

Based on the findings of the study, it was concluded that the difficulty indices discrimination and guessing parameters of the economic mock examinations need to be reviewed for better results. The test assesses candidates 'ability with high precision. In addition, all the Economics mock examination items contributed high amount of information in assessing the ability scale of the students and high information implies high reliability. The study therefore concluded that the economic mock test items need to be reviewed for the purpose of improving the quality of the items

RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made:

1. Economics teachers constructing test items for mock examinations should review the test before using it in conducting Economics Mock Examination.
2. Teachers should establish the difficulty discrimination and guessing parameters of their test items before using them for assessment.
3. Examination bodies in Nigeria should adopt item response theory in analyzing multiple choice items and assay items to determine their psychometric properties

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