EFFECT OF ITEM PRE-KNOWLEDGE ON LOCAL ITEM DEPENDENCE AND DISTRACTER EFFICIENCY AMONG ECONOMICS STUDENTS IN OGUN STATE, NIGERIA

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Abstract

This study investigated the effect of item pre-knowledge on occurrence of Local Item Dependence and Distracter efficiency. The study adopted the quasi-experimental research design. The Sample consisted of 1500 Economics students selected through multi-stage sampling technique. The research instrument used was Economics Achievement Test (EAT) which contained 60 multiple-choice items with five options scored dichotomously and adapted from 2015 NECO SSCE Economics Paper III. Fifty percent of the items were pre-known (experimental items-Form A) while the other 50% were secured items (control items-Form B). Data collected was analysed using Yen Q3 statistic, frequency counts and percentages. The results showed that the 5 pairs of items comprising 6 pre-known items and 1 secured item exhibited local item dependence for Form A of the EAT while only 1 pair of item comprising 1 pre-known and 1 secured item exhibited local item dependence for Form B . However, the 6 pre-known items in the Form A did not exhibit local item dependence when they were secured in the Form B. Also, amongst the items with Non-Functional Distractors in form A, 12 (40%) were pre-known and 6(20%) were secured. With form B, only I item (42, 3.33%) was pre-known and 3 items (item 12, 16 and 26; 10%) were secured. It was recommended among others that feasible approach to eliminate the occurrence of cheating through any form especially pre-knowledge be considered as well as items with inefficient distractors be assessed and reviewed for any further usage.

Keywords: Item Pre-knowledge, Local Item Dependence, Distractor Efficiency, Secured Items

Introduction

The importance of valid assessment is as equally important as quality instruction that characterizes a good pedagogy. However, the quality of assessment is usually affected by several factors which can be either attributed to the test itself, test-takers characteristics, test administration, testing environment among others. One of such factors associated with poor test administration process is the occurrence of cheating. Cheating also known as examination malpractice is described as any action, activity or behaviour engaged in prior to, during or after an examination by candidates, teachers, invigilators or any other persons, that are capable of bringing the examination into disrepute (Afolabi, 2012).

In our school system, the occurrence of cheating before, during or after assessment have been regarded as "a little leaven that corrupts the whole lump in academic assessment" as well as undermining the very purpose of education (Orluwene & Nnaji, 2015). Even in Nigeria, the incidence of cheating caused by breach in security of examination questions have been seen as a major problem threatening public examination bodies and have impacted negatively on the integrity of public examinations over the years (Ojerinde, 2015). This is so because, cheating is an act that undermines the test administration process or breaking of rules in an examination which may also affect the quality of test items or tests score interpretations. Hence, cheating during assessments raises validity concerns.

Furthermore, in Nigeria, apart from the current and rampant exposure of examination questions on social media, the occurrence of examination malpractice can also manifest in various forms such as leaking out questions to students, sharing of test information among students, the use of crib sheets, obtaining the questions or answers to a test ahead of time, coding the answers to the questions in the handset, impersonation, swapping examination documents, spying /coping from prepared answers, use of unauthorized calculator or similar electronic devices, extension of time by supervisors and invigilators, change of scores, buying and selling of examination grades, question papers and prepared answers, trading sex for question papers, marks and grades, collusion between candidates and officials, assault and intimidation, mass cheating, submission of multiple scripts, use of coded or sign language, multiple entry for the same examination among others (Adeshina, 2005; Ekukugho, 2011; Orluwene & Nnaji, 2015).

Although, cheating usually takes several numbers of forms as stated earlier, however, when questions or answers to a test are obtained ahead of testing time or before the commencement of a test, the situation regarded or described as item pre-knowledge is said to have occurred as a result of the undue access by test-takers prior to taken the tests. Item pre-knowledge is a form of cheating which occur as a result of test security breach or issues leading to a leakage of the examination prior to the commencement of the examination which eventually will lead to a pre-knowledge of the examination questions (Zimmermann, Klusmann & Hampe, 2016; Zara & Pearson, 2006).

Moreover, to describe item pre-knowledge as a form of cheating, this study makes use of a stimulated cheating condition and not a real cheating condition. For a stimulated cheating condition due to item pre-knowledge as used in this study implies that the pre-known items will be made known to the students purposefully as part of the tests items they will come across on the tests while the items not pre-known by the examinee will be considered secured. Hence, the tests takers will be made to realize that they should ensure that they take advantage of the pre-knowledge or access to the test items before the actual test's administration.

Apart from test item leakage or breaches, specifically, item pre-knowledge can also occur due to frequent use of test item in testing (repetition), item cloning, and item rotation, item over use leading to a situation in which test-takers may enter a testing opportunity with prior knowledge of specific test content (Zara & Pearson, 2006). Item pre-knowledge is expected to affects more than

candidates' item response as it is expected that examinee with pre-knowledge might have unusual response time patterns and that examinees with pre-knowledge will response more quickly to items for which they have memorized answers than they would do to items they must solve or reason through (Wollack & Cizek, 2017).

The occurrence of item pre-knowledge may also have impact on the item quality. According to Zimmermann, Klusmann and Hampe, (2016), if an item is compromised due to pre-knowledge, changes are to be expected in the item parameter estimates which are generated by an Item Response Theory (IRT) model. This item pre-knowledge situation may also affect the validity of the tests scores, affect the item parameter estimates, lead to improperly inflated scores (Zara & Pearson, 2006). Furthermore, when cheating occurred during testing either as a result of item pre-knowledge or other cheating tendencies, test takers with low and high ability may have equal opportunity to response to both hard and easy items correctly. When this pattern occur, although with low likelihood, local dependence (LD) of item pairs may increase. Under normal circumstances, Local independence as an IRT assumption presumes that an examinee approaches each test item as a new problem without any information gained from responding to any other test item. Each item must stand alone as a specific measure of proficiency and test items should be independent of all other test items and not disclose information about any other item in the examination (Alu, 2011). However, if this assumption is violated and items are locally dependent, test information and reliability will be overestimated (Yen, 1993). Hence, Local Item dependence (LID) increases whenever items have some property in common which is independent of the ability dimension. This common property independent of ability of test takers might be similarity of content and, most importantly, the set of compromised or pre-known test items to some test takers (Zimmermann, Klusmann & Hampe, 2016).

In testing, several test formats are used in educational testing to measure a given construct or levels of cognitive domains of interest and it is believed that when a test-taker receives any test formats from the same tested content, s/he should have the same test results and performance (Haladyna & Downing, 2004). Due to certain factors which are characteristics of the test takers and are independent of the items or test item formats, such as; start-up, plodding, cheating, illness, boredom, fatigue, item omission etc. and the properties of the items which are independent of the characteristics of the person; distractor efficiency, item difficulty and discrimination indices etc. (Adebowale, 2007; Shogbesan 2017) which can have different effects on that trait measured and the test-takers' scores preventing or interfering in the proper measurement of certain construct elements, causing distortions in the scores with the possible result that they no longer reflect the construct very well (Gergely, 2007; Shogbesan, 2017).

In the use of a particular test item format, what really matters is the ability of the test type to measure aspects of learner achievement by recall or application of knowledge and by any other reliable demonstrations of change in behaviour after instruction (Amuche, Thomas & Shiaki, 2013). As such, the major concern to all testers in the use of any test format is to make sure that test takers' performance is affected most by the ability being measured and least by factors which are not part of the ability we want to measure, otherwise the meaningfulness or validity of score interpretations will be lessened. However, the multiple-choice objective type of test seems to be gaining popularity specifically in Nigeria as it is also commonly used even in several national standardized examinations due to the fact that it allows for wider curriculum coverage and give the fairest opportunity to test takers to prove their competence (Shogbesan, 2017).

Usually, a multiple-choice item format is designed for objective measurement and contains a stem and response options one of which is the correct answer (Murayama, 2009). The stem is the beginning part of the item expressed clearly and concisely that presents the item as a problem

to be solved, or a lead-in question which describes what the examinee must do, or an incomplete statement to be completed (Emaikwu, 2012; Jimoh and Adediwura, 2020) and it is meant to acquaint the examinee with the problem that is being posed (Faleye, 2012) while the options are the possible answers that the examinee can choose from, with the correct answer called the key and the incorrect answers called the distracters (Jimoh & Adediwura, 2020). However, multiple-choice tests have been seriously criticized for disregarding testees' partial knowledge and for being highly susceptible to blind guessing (Olatunji & Owolabi, 2009). Another issue with multiple-choice test formats is the fact that certain examinee may not attempt an item due to several reasons leading to item omission. Item omission refers to a situation in which an examinee does not respond to items either as a result of the fact that he or she does not know the answer or the items are considered "not reached" (De Ayala, Plake, & Impara, 2001).

Furthermore, in a multiple-choice, distractors are options that usually appears to the examinees to be correct answers but are not correct in the actual term (Jimoh & Adediwura, 2020) as they are just plausible set of alternatives meant to direct the attention of the examinee away from the key and thus serve to discriminate between those students who have command of a specific body of knowledge and those who lack it (Faleye, 2012). Also, during item analysis, the analysis of distractors are equally important as it gives an opportunity to study the responses made by test-takers on each alternative of the item (Haladyna & Downing, 1989).

In a multiple-choice item options having a key and two or more distractors, Metibemu (2016) stated that a distractor is said to be really effective or plausible when the distractors are efficiently doing what they are purposely meant to do well. Distractor efficiency refers to the extent to which the distracters draw away examinees who does not have the required knowledge for answering a question from the key or the extent to which distracters remain distractors to examinees who have the ability required to answer a particular question (Metibemu, 2016). Licona-Chávez , Boehringer and Velázquez-Liaño (2020) stated that the purpose of a distractor is to see if the learner can discriminate between correct and incorrect options. As such, an effective distractor provides great information on whether a test taker has achieved the performance objective; has misconceptions, faulty reasoning or will make errors in the "real world"; whether the particular test item needs improvement or a corresponding portion of a learning experience is ineffective. In this current study, it is imperative to investigate the extent to which item pre-knowledge contribute to dictators efficiency.

Distractor efficiency is about how the responses are distributed to the distractors and can be computed by subjecting examinees responses to choice of options on each item of the test to descriptive analysis which can be achieved through frequency counts and the percentages of examinees that choose each option under each item (Adeleke, 2009; Toksöz & Ertunç 2017). Also, Guyer and Thompson (2013) indicated that the relationship between each option and the item-total correlation (point biserial correlation) can also be used. Thereafter, the r_{pbis} of each distracter is compared with the r_{pbis} of the key. If the r_{pbis} of the key is greater than that of the distractors in each case then the distractors are considered efficient and the item is adjudged good and vice-versa. An effective distractor is the one chosen by ≥5% of the students while distracter efficiency is determined for each item on the basis of the number of nonfunctional distractor, if the option is selected by <5% of students (Kaur, Singla and Mahajan., 2016; Sajitha et al., 2015; Mehta & Mokhasi, 2014;Ware and Vik, 2009). On the basis of number of NFDs in an item, distractor efficiency (DE) ranges from 0 to 100%. If an item contains three or two or one or nil NFDs then DE would be 0, 33.3%, 66.6% and 100% respectively (Mehta & Mokhasi, 2014). However, a distractor that fails to attract any examinees is dysfunctional, does not assist in the measuring of educational outcomes, adds nothing to the item or the test (psychometrically) and has negative impact upon learners. As such, when distractors are not effective or non-

functional, they are virtually useless as there will be a greater possibility that test-takers will be able to select the correct answer by guessing as the options have been reduced (Malau-Aduli & Zimitat, 2012; Mehta & Mokhasi, 2014). Furthermore, Deepak, Al-umran, Al-Shiekh, Adkoli and Al-Rubish (2015) stated that non-functionality of distractors inversely affected the test reliability and quality of items as the items becomes easier and the discrimination indices decrease significantly.

Licona-Chávez , Boehringer and Velázquez-Liaño (2020) in a recent study assesed the quality of a 20 MCQs test in Research Methodology with three distractors and a single correct response among 89 students at the Faculty of Medicine at Xochicalco University. In their study, they observed that out of a total of 20 items having 60 distractors, 18 (30%) were nonfunctional and 42 (70%) of the distractors were considered functional. Five items had a 100% distractor efficiency (DE), 12 had 66% and 3 had 33%. Also, Mehta and Mokhasi (2014) in their study which assessed the quality of multiple choice questions (Difficulty index, Discrimination index and Distractor effectiveness), conducted in the department of Anatomy with a hundred First-year MBBS students and the MCQs test comprising of fifty questions. Each of the total of fifty items having 150 distractors were analyzed and the result showed that amongst these, 53(35.3%) were nonfunctional distractors, 38(18.6%) were functional distractors and 69(46.06%) had nil response that is, not attempted by any student or omitted. In a similar study, Gajjar, Sharma, Kumar and Rana (2014) in their result shown that, in a total of 150 distractors, 133(89.6%) were functional distractors, and 17(11.4%) were non-functional. Items with non-functional distractors were 15 (30%) out of which 13 items with distractor efficiency of 66.6% and 2 items had distractor efficiency of 33.33%. Also, in a study conducted on 514 items and 1542 distractors, 35.1% were non-functional distractors, 52.2% were functional distractors and 10.2% were not chosen or omitted by the test-takers (Tarrant, Ware & Mohammed, 2014).

Again, Toksöz and Ertunç (2017) in their study analysed the multiple-choice items aiming to test grammar, vocabulary and reading comprehension and administrated at a State University to 453 preparatory class students with the students' responses been analysed in terms of item facility, item discrimination and distractor efficiency. They found out that some distractors in the examination are significantly ineffective and they should be revised. Their recommendation is in line with that of Odukoya et al., (2017) which asserted that a distractor which distracts few or no test-takers is a poor distractor and should be reviewed. Moreover, it should be noted that, the distractor efficiency can be impacted by several factor among which are the number of options, scoring procedures. In a similar study, Jimoh and Adediwura (2020) carried out a research to ascertain the impact of number of options on distracter performance when confidence scoring was used and established the impact of numbers of options for multiple-choice test items on the reliability of the tests. The results of their study obtained from a one-way ANOVA showed that number of options had significant impact on distracters' performance when scored using confidence scoring ($F=6.679$, $p< 0.05$). Furthermore, the results of the multiple comparison (scheffe test) shows that the impact lies between three and five-option multiple-choice tests items when confidence scoring was used. Therefore, they concluded that the option length of multiple-choice objective test items has impact on its reliability and distracter efficiency. It is however not clear whether item pre-knowledge also impact positively or otherwise on distractor efficiency which then raised a concern for the current study.

Generally, given that the goal of testing is to assure the extent to which learners have achieved the instructional goals during a course then the development of valid tests would be a rigorous task to be accomplished if all the major factors affecting learner's performance are not considered. Specifically, since factors such as item pre-knowledge, local item dependence and distractor efficiency have the potential to independently impact the quality of test item and validity of scores, it is also imperative to understand specifically, the impact of item pre-knowledge on local item dependence,

omission tendencies and distractor efficiency comparatively for pre-known items when compared to secured items.

Research Questions

1. To what extent does pre-known set of Economics items exhibit local item dependence as compared to the secured items?
2. To what extent does distractors of pre-known set of Economics items efficient as compared to the secured items?

Methodology

The study adopts the quasi-experimental research design. The population for the study comprised all the 520,537 Secondary School students in Ogun State (as at 2015/2016 session). The sample consists of 1500 Economics students in both public and private secondary schools selected using multi-stage sampling procedure. From each of the three senatorial districts in the state, three Local Government Areas (LGAs) was selected using simple random sampling technique. From each of the selected LGAs, four secondary schools (2 public and 2 private) were selected using stratified random sampling technique with school type used as stratum. Furthermore, from each of the 36 secondary schools that was selected, SS3 Economics students in those schools were selected through proportional sampling technique. The research instrument used for the study was the Economics Achievement Tests (EAT) which contained 60 multiple-choice items with five options scored dichotomously and adapted from NECO SSCE 2015 Economics paper 3 and an OMR-type answer sheet. The 60 items of the EAT was administered in two forms (A and B) such that before tests administration, 50% of the items are pre-known (experimental items) while 50% are secured items (control items) and vice-versa. Data collected were be subjected to analysis using Yen Q3 statistics, frequency counts and percentages.

Results

Research Question One: Does pre-known set of Economics items exhibit local item dependence as compared to the secured items?

To determine whether pre-known set of Economics items exhibit local item dependence as compared with the secured items, the Local item independence of the items was assessed using Yen Q3 statistics. The items were calibrated using the unidimensional 3-parameter logistic model that fitted the data set. Based on the item and person parameter estimates, a residual was calculated for each person's response to each item. This residual is the difference between the predicted item response and the observed response. According to Yen (1984), Q3 value for pair of items above 0.2 indicates dependence (i:e the items in question violates the assumption of local independence). The result of the abridged Yen Q3 local item independence test of EAT items (Form A and B) are presented in Table .

Table 1: Correlation Matrix of the Residual showing items that exhibited Local dependence among the Economics Achievement Tests Items (Abridged version)

(Form A) **(Form B)**

	IT1	IT10	IT11	IT13	IT14	IT30	IT32	IT25
IT1		**0.22**						
IT10	**0.22**							
IT11								

IT13				**0.29**			
IT14			**0.29**				
IT30	**0.20**	**0.22**				**0.22**	
IT32					**0.22**		
IT38							**0.49**

NB: IT-represents Items

Table 1 shows the abridged inter-item correlational matrix of the residuals showing items that exhibited Local dependence among the EAT Items (Form A) given the benchmark of 0.20 as suggested by Chen and Thissen, (1997) as well as Kim. et. al. (2011). It should be recalled that for the form A; items 1-30 are pre-known items while items 31-60 are secured items and vice-versa for Form B. As shown in Table 1, 5 pairs of items (IT1 and IT10, IT1 and IT30, IT11 and IT30, IT13 and IT14, IT30 and IT32) with these values 0.22, 0.20, 0.22, 0.29 and 0.22 respectively violated the assumption of local item independence. While only 1 pair of item (IT25 and 38) with a value of 0.49 violated the assumption of local item independence. This implies that 92% of the EAT items in the Form A are locally independent while 98% of the EAT items in the Form B are locally independent.

From the above, it can be observed that in the Form A, 6 pre-known items and 1 secured item were among the pairs of items that exhibited local item dependence while in the Form B, only 1 pre-known item and 1 secured item exhibited local item dependence which was observed to occur not as a result of construct relatedness of the items but due to surface dependency not attributed to the item condition (i:e pre-known/secured). However, the 6 pre-known items in the Form A does not exhibit local item dependence when they are secured in the Form B. this implies that the dependency may also be as a result of the items been pre-known and classified as surface dependency. Hence, it can be concluded that the pre-known set of Economics items exhibited local item dependence as compared with the secured items.

Research Question Two: To what extent does distractors of pre-known set of Economics items efficient as compared to the secured items?

To determine whether distractors of pre-known set of Economics items are efficient as compared to the secured items, the responses of each test-takers was subjected to descriptive analysis using frequency counts and percentages. From the results obtained, following the recommendations of Kaur et. al (2016) and other researchers (Sajitha et al., 2015; Mehta & Mokhasi, 2014;Ware & Vik, 2009), an effective distractor with a response chosen by ≥5% of the students while distractor efficiency is determined for each item on the basis of the number of nonfunctional distractor, if the option is selected by <5% of students. On the basis of number of Non Functional Distractors (NFDs) in an item, Distractor Efficiency (DE) in this study ranges from 0 to 100%. If an item contains four, three, two, one or nil NFDs then DE would be 0, 25%, 50%, 75% and 100% respectively. The results are presented in table 2 below.

Table 2: Distractor efficiency of pre-known set of Economics items efficient as compared to the secured items

FORM A					
	Items with 0 NFDs DE=100%	Items with 1 NFDs DE=75%	Items with 2NFDS DE=50%	Items with 3 NFDs DE=25%	Items with 4 NFDs DE=0%
1-30*	18	10	1	-	1
31-60	24	5	-	1	-
Total	42	15	1	1	1
FORM B					
	Items with 0 NFDs DE=100%	Items with 1 NFDs DE=75%	Items with 2NFDs DE=50%	Items with 3 NFDs DE=25%	Items with 4 NFDs DE=0%
1-30	27	3	-	-	-
31-60*	29	1	-	-	-
Total	56	4	-	-	-

NB: NFDs- Non Functioning Distractors, DE-Distractor Efficiency *Pre-known set

From Table 2, it can be observed that, out of a total of 60 items having 240 distractors, for form A; 18 (30%) items were nonfunctional and 42 (70%) items of the distractors were considered functional. Forty-two items had a 100% distractor efficiency (DE), 15 items had 75% and 1 item had 50%, 25% and 0% DE respectively. This implies that for form A, 24 (10%) distractors out of 240 distractors are inefficient while 216 (90%) distractors are efficient. However, for form B; 4 (30%) were nonfunctional and 56 (70%) of the distractors were considered functional. Fifty-six items had a 100% distractor efficiency (DE) and 4 items had 75%. This implies that for form B, 4 (1.7%) distractors out of 240 distractors are inefficient while 236 (98.3%) distractors are efficient. Comparatively, amongst the items with NFDs in form A, 12(40%) were pre-known while 6(20%) were secured while for form B, only I item (item 42; 3.33%) was pre-known and 3 items (item 12, 16 and 26; 10%) were secured. It is noteworthy that all the 3 secured items (item 12,16 and 26) in form B have a 75% DE even in form A when they are pre-known attributed to option "E" of the three items for both forms. However, only item 42 have a 25% DE when secured in form A as compared to a 75% DE when pre-known in form B. Given the above result analysis, it can be concluded that distractors of pre-known set of Economics items are less efficient as compared to the secured items.

Discussion of findings

The result of the research question one shows that 5 pairs of items comprising 6 pre-known items and 1 secured item exhibited local item dependence for Form A of the EAT while only 1 pair of item comprising 1 pre-known and 1 secured item exhibited local item dependence for Form B of the EAT. However, the 6 pre-known items in the Form A does not exhibit local item dependence when they are secured in the Form B. Among several reasons that can lead to the existence of LID include; multi-stage performance tasks, context-dependent item sets, test speededness (Ferrara, Huynh, & Bagli 1997; Ferrara, Huynh, & Michaels, 1999; Yen, 1993) and external assistance or item compromise (Yen, 1993; Zimmermann, Klusmann & Hampe, 2016). It should be noted that local dependence increases whenever items have some property in common which is independent

of the ability dimension (Fennessy, 1995; Sireci, Thissen, & Wainer, 1991; Thissen, Steinberg & Mooney, 1989) such item compromise due to prior familiarity with the item context or item pre-knowledge. According to Zimmermann, Klusmann and Hampe (2016), local dependence due to item pre-knowledge is clearly surface local dependence, because the response "item correct" is mechanically the same for the whole item set pre-known or compromised. This result implies that surface dependency as a result of the items been compromised have occurred for the compromised set of Economics items as compared with the secured items. This result is in tandem with the findings of Yen (1993) and Zimmermann, Klusmann and Hampe (2016) which reveals that when an item pre-knowledge occur or there is content similarity, item chaining, test speediness, hidden dimensionality and many other sources of disturbance, local dependence of item pairs should increase. Specifically, Zimmermann, Klusmann and Hampe (2016) in their study discovered that there is an increase in local item dependence for item pre-knowledge and it turned out to be one of the most sensitive indicators of item pre-knowledge. On the contrary, the use of flagging methods (such as the use of local item dependence) to detect item response similarity caused by cases of copying, collusion or cheating occurrence caused by an item pre-knowledge or exposure are unlikely to properly detect with certainty whether higher rates of unusually high level of item response similarity are due to shared characteristics themselves (and hence are naturally occurring) or are due to a higher preponderance of copying collusion or cheating occurrence caused by an item pre-knowledge or exposure within certain shared characteristic subgroups (Allen, n.d). Hence, in dealing with response similarity as a basis for item pre-knowledge using use of local item dependence, to avoid misinterpretations, it should be noted that there can be other factors apart from item exposure or pre-knowledge that can affect response similarity of test-takers.

The result to research question two revealed that, out of a total of 60 items having 240 distractors, for form A; 18 (30%) items were nonfunctional and 42 (70%) items of the distractors were considered functional. However, for form B; 4 (30%) were nonfunctional and 56 (70%) of the distractors were considered functional. Fifty-six items had a 100% distractor efficiency (DE) and 4 items had 75%. As such, distractors of pre-known set of Economics items are less efficient as compared to the secured items. This implies that the item condition does not have an influence on the distractor efficiency to a significant extent as only items whose distractors are fundamentally efficient remains efficient even when pre-known. The results is similar with the findings of Licona-Chávez , Boehringer and Velázquez-Liaño (2020) which also found out that out of a total of 20 items having 60 distractors, 18 (30%) were nonfunctional and 42 (70%) of the distractors were considered functional. Also, Gajjar, Sharma, Kumar and Rana (2014) in their result shown that, in a total of 150 distractors, 133(89.6%) were functional distractors, and 17(11.4%) were non-functional.

Conclusion and Recommendations

It can be concluded from the study that the pre-known set of Economics items exhibited local item dependence as compared with the secured items but distractors of pre-known set of Economics items are less efficient as compared to the secured items

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

1. Examination bodies and test developers should consider feasible approach to eliminate the occurrence of cheating through any form especially pre-knowledge or leakage as its adversely impact the quality of items and score reliability, validity and usability.
2. Items with efficient distractors should be assessed and incorporated into item banks for further usage as well as to improve the test development and review.

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