

# ***Enterprise Based Training (EBT) and Enterprise Growth, Productivity and Innovativeness among manufacturing firms in Nairobi***

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*This paper highlights some of the findings of a study carried out by the author on the relationship between enterprise based training and enterprise growth, productivity and enterprise innovativeness among manufacturing firms in Nairobi. The study investigated as to whether the Directorate of Industrial Training (DIT) supported industrial training has contributed to improved enterprise performance among participating enterprises relative to the non-participating enterprises. It also investigated the constraints encountered by industrial training delivery and has proposed appropriate interventions so as to enhance industrial training delivery in line with the legal mandate and the demands of the national aspirations of industrialization. The study focused on 168 manufacturing enterprises in the Nairobi area which accommodates 74 percent of the manufacturing activity on the Kenya Association of Manufacturers (KAM) countrywide list. 80 manufacturing enterprises were randomly selected from the DIT list of enterprises that trained in the years 2002 to 2004 year period, while 88 non-training enterprises were randomly selected from among enterprises in Nairobi and on the KAM list but did not train with the support of DIT during the same period. The survey utilized three surveys and used three questionnaires. The investigation established that there were high levels of EBT among both training and non-training enterprises although the incidence of EBT was higher among the training enterprises. The study also established that considerable correlation between EBT and enterprise growth, enterprise productivity and enterprise innovativeness and hence recommended that Industrial training be used to fight poverty and under-development in addition to being used as an instrument for industrialization.*

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## ***Background***

Although, (Ebt) is not a new phenomenon (Grierson 2002) and enterprises have always trained since time immemorial in, recent times Ebt has assumed new importance as enterprises seek to create a competitive advantage especially in light of the twin forces of globalization and liberalization.

The link between Ebt and Enterprise performance of enterprises is generally assumed and many countries in the developing world starting with the Latin American countries followed by the Asian countries and in the recent past by African countries have formed Training Authorities (Ziderman 2001). These training authorities are utilized for co-coordinating, financing and delivery of Ebt in enterprises in order to enhance their enterprise

performance which would hopefully in turn result in a country's competitive advantage on the international stage.

In Kenya the government established the Directorate of Industrial Training (DIT) in 1973 so as to manage the Industrial Training Levy Fund (ITLF) brought about by the enactment of the Industrial Training Act (cap. 237) (ITA) whose objectives are among other things to secure the greatest possible improvement in the efficiency of training of personnel engaged in industry and to ensure an adequate supply of properly trained manpower at all levels of industry.

The DIT was started in 1973 through the amendment of the ITA. This amendment brought into being not only the DIT but also ITLF and the National Industrial Training

Council (NITC) which is a tripartite body. The council is appointed by the responsible minister from among the three stakeholder groups of workers, employers and other interests that include government (Republic of Kenya, 1983) to oversee the activities of DIT.

The introduction of the ITLF in Kenya was prompted firstly by the perceived skills shortage in the country and which shortage was brought about by the exodus of skilled white people as well as persons of Asian origin as Africans took hold of the reins of state power at independence in 1963 and secondly by the need to share the cost of the training burden between the public and the private sectors and indeed among all employers equitably (DIT 2000)

The current ITLF is segmented into 11 sectors (DIT 2004) namely, Banks and Other Financial Institutions; Building Construction & Civil Engineering and Allied Industries; Chemical Manufacturing, General Processing and Allied Industries; Commercial/Distributive and Allied Industries; Food Processing and Allied Industries; General Engineering and Allied Industries; Motor Engineering, Transport and Allied Industries; Plantation, Agricultural and Allied Industries; Printing/Publishing, Paper Manufacturing and Allied Industries; Sawmilling/Timber, Furniture and Allied Industries and finally Textile and Allied Industries. Perhaps there is a case for the establishment of an Informal Sector and Allied Industries committee to run along the same lines as the other sector committees.

Since inception, the DIT and the ITLF have served the country well and a lot of expertise has been built on both the managerial and organizational aspects but increasingly questions are being raised as to whether DIT could have done better or whether it can do better in the future in order to meet the developmental and aspiration goals of the nation (DIT 2004). This study should be seen in that light. It is part of a constant self re-examination as opposed to being complacent.

The sector structure of the current levy system is sometimes considered rather restrictive since it is thought of as rather

inflexible as far as addressing the areas of perceived greatest training need is concerned. Other persons do argue that the sector system is meritorious as it is able to identify where the training needs are and at the same time avoid cross-subsidization across sectors.

The pursuit of the non-cross subsidization goal has seen the ITLF avoid reaching the informal sector popularly called the Jua Kali sector in Kenya. Although it is not obvious it can be argued that the informal sector of today is likely to be the formal sector of tomorrow especially assuming that the industrial development of Kenya is likely to follow the East Asian model (Harrold and Bhattasali. 1996). The reach of the current ITLF has been the other concern. The 10,000 current (2004) industrial levy contributors are considered less than 10 percent of the total possible membership.

### ***Statement of the problem***

The following general knowledge gaps cited by the shown authors with regard to Ebt were established through literature review and by the researcher: i) Evaluative evidence on levy schemes is limited and despite the relative prevalence of these schemes, rigorous evaluations of the effectiveness of levy-grant programs are extremely uncommon (Dar, Canagarajah, and Murphy 2001). ii) Ebt figures prominently in corporate strategies for productivity growth and international competitiveness importance. Despite its importance for private sector firms and for policy makers there hitherto, has been little effort made to collect information on and study the role of firm led training in developing countries (Tan, and Batra 1995).iii) Little research seems available on the issue of success of levy-grant schemes and there is lack of studies that comprehensively and in detail show the training provided by a sample of firms before the introduction of the scheme and afterwards and in other words what is needed is an in-depth micro approach rather than the aggregate approach in the literature to-date (Dougherty, and Tan 1991).

The following specific knowledge gaps cited by the shown authors with regard

to Ebt and in relation to Africa were established through literature review and by the researcher: iv). Despite all this, very little is known about the actual characteristics of Ebt of the modern sector in Africa (Grierson 2002). v) Over the last 30 years, since it was introduced in Kenya, the levy-grant principle does not appear to have acted as a spur to more training and elsewhere in Africa (South Africa and Tanzania) new attempts at the levy-grant principle are being tried and it appears that insufficient attention is being paid to the experience of those countries like Kenya and Zimbabwe where the legacy of levy-grant has been little researched in the last decade (King 2002).vi) The findings from the case studies of Ebt in Kenya and Zambia provide a useful insight into Ebt practices in Sub-Sahara Africa, however they are anecdotal in character and provide evidence of the need for a more detailed examination of Ebt practices in Sub-Saharan Africa.

Taking the above knowledge gaps into account and especially as they relate to Kenya, and also taking into account the following: i) That there were only about 10,000 registered levy contributors in 2004 (DIT 2004) which represented only about 10% of the potential levy contributors (Republic of Kenya 2003) the industrial training reach appeared low; ii) That the ITLF was catering only for the supervisory and managerial cadres and did not cater for operatives or clerks, despite specific provisions in the law mandating the DIT to provide properly trained manpower at all levels in industry there was an apparent problem of non-reach ; and iii), That the ITLF was not reaching the informal sector despite specific provisions in the law mandating the DIT to secure the greatest possible improvement in the efficiency of the training of all persons engaged in industry, there was a further apparent problem of non-reach. In summary there was an apparent problem of underperformance by the DIT aggravated by the fact that although the Kenya levy-grant system had been in place for over 30 years, no serious research had been done on its operations and performance.

## ***Research questions***

Taking into account the knowledge gaps mentioned above and also the statement of the problem, the following research questions were formulated to guide the study:

1. What is the incidence of the various categories of Ebt in Nairobi?
2. To what extent has industrial training resulted in improved enterprise performance among participating enterprises in Nairobi in terms of growth, innovativeness and productivity?
3. What are the perceived constraints that the DIT has encountered in the delivery of industrial training amongst its present and potential customers?
4. What are the perceived interventions to improve the delivery of the industrial training offered by the DIT to its present as well as its potential customers?

## ***Research objectives***

### ***General objectives***

1. To determine as to whether industrial training has resulted in improved enterprise performance among participating enterprises.
2. To determine the constraints hindering the delivery of industrial training and to propose appropriate interventions to remedy the situation.

### ***Specific objectives***

1. To determine the incidence of the various categories of Ebt in Nairobi.
2. To determine to what extent industrial training has resulted in improved enterprise performance among participating enterprises as reflected in
  - a) growth, b) innovativeness, and c) productivity. ...
3. To determine the constraints hindering the delivery of industrial training programmes among the DIT's present as well potential customers.

- 4 To determine the appropriate interventions necessary to assist the DIT effectively cope with the demands of its legal mandate.

### ***Research hypothesis***

#### ***The Null hypothesis***

To answer some of the research questions, five Null (HO) hypotheses were formulated as a consequence of the statement of the problem.

H00: There is no relationship between Enterprise based training and Enterprise performance.

H01: There is no significant difference between the Growth index (G) of the enterprises that trained with the help of the ITLF (Training enterprises) and that of the enterprises that did not train with the help of the ITLF (Non-training enterprises).

H02: There was no significant difference between the Innovativeness index (I) of the enterprises that trained with the help of the ITLF (Training enterprises) and that of the enterprises that did not train with the help of the ITLF (Non-training enterprises)

H03: There is no significant difference between the Productivity index (P) of the enterprises that trained with the help of the ITLF (Training enterprises) and that of the enterprises that did not train with the help of the ITLF.

H04: There is no significant difference between the Enterprise Performance index (E) of the enterprises that trained with the help of the ITLF (Training enterprises) and that of the enterprises that did not train with the help of the ITLF.

### ***Justification for the study***

One thing is for sure, all over the world, we see an increasing emphasis on the entrepreneurial economy (Lundstrom, and Stevenson, 2000). Virtually all the developed economies within the last ten years or so have taken some measures to encourage the development of an entrepreneurial society.

A major objective of entrepreneurship policy in most of the economies of the world

is the increasing of entrepreneurial activity (with the resultant increase in the number of enterprise) with the aim of fostering competitive advantages of enterprises in a given country relative to competing enterprises in other countries. In this way every country in the world hopes to create a sustained and competitive business advantage. One can argue that indeed the need for fostering entrepreneurial activity is probably greatest in the developing countries since it they who desire most to breach the gap of development between themselves and the developed countries.

Indeed the relative neglect of the informal sector in the training provisions is out of kilter with the realities of labor markets in the Sub-Saharan Africa (SSA) (Ziderman 2001). In Africa the employment share of the informal sector is dominant except for a few exceptions.

In Kenya there were a total of 2,361,250 persons employed in the informal sector which provided 18 percent of the GDP (Republic of Kenya 1999). Yet the most organized, experienced and qualified institution in the country on Ebt (DIT) was not catering for the informal sector at all.

This study, probably the first of its kind in our region and by a local practitioner linking the ITLF supported Ebt and the enterprise performance of some manufacturing participating firms empirically indicates the assumed benefits of enterprise based training and hence provide the basis for future policy in this area in Kenya in view of the vision 2030 and country's commitment to alleviate poverty.

### ***Significance of the study***

This study was designed with the twin pillars of knowledge building and practical utility in mind. In the first instance the findings of this study have contributed in its humble way to the knowledge of Ebt practices and their incidence in our region as compared to some other regions of the world. It has also formulated indices for Ebt, Growth, Innovativeness, Productivity and Enterprise

performance which appear reasonable especially as demonstrated by results of co relational analysis. These indices may be the subject of further research for refinement. This study has also confirmed in its own way the validity of the policy and programme intervention in our region but it has also demonstrated that the benefits accruing hitherto are less than satisfactory. In the second instance this study has shown the constraints hindering Industrial training in Kenya and made recommendations on the way they can be overcome. The study will hence be useful to the researcher, the policy maker as well as the Ebt practitioner both in Kenya and in this region.

### ***Scope and limitations***

#### ***Scope***

The study involved 168 formal sector manufacturing firms in Nairobi that were included in the Kenya Association of Manufacturers (KAM) list of countrywide membership. It also involved 37 purposively selected informal sector operators in Nairobi and 30 key informants consisting of DIT management, employers', employees' and other interests' representatives. The Nairobi area was chosen since it accounts for 74 per cent of the firms on the KAM's countrywide list.

#### ***Limitations***

The study was limited to 168 manufacturing firms appearing in the KAM list, and only 37 purposively selected informal manufacturing enterprises. The firms were situated in the Nairobi area and limited in number because of budgetary considerations. The 37 informal manufacturing enterprises were however considered adequate for assessing the opinion of the informal sector with regard to the DIT's involvement in informal sector industrial training provision. The study did not involve financial data because it would have been largely unobtainable as

demonstrated responses with regard to Turnover.

### ***Assumptions***

The study was largely based on the assumption that the grouping of the enterprises into training and non-training enterprises using the DIT training data would eventually be reflected and be validated on the ground by the higher training activity of the training group when compared to the non-training group.

### ***Methodology***

#### ***Sampling strategy***

This was essentially a comparative study comparing the training and the non-training enterprises. To get the sampling frames for the training and the non-training enterprises, a computer print out of the enterprises that trained with the help of the ITLF during the years 2002, 2003 and 2004 was obtained from the DIT. A list of the members of the KAM for the year 2005 was bought from the KAM secretariat. This had 466 members countrywide of whom 345 were located in Nairobi.

After excluding the enterprises outside of Nairobi and on the KAM list, the KAM and the DIT lists were compared. A total of 80 enterprises were found to be on both lists. These were the manufacturing enterprises in Nairobi that trained with the support of the ITLF during the years 2002, 2003 and 2004 and constituted the sampling frame for the Training enterprises while a total of 265 manufacturing enterprises in Nairobi and on the KAM list but did not train with the support of the ITLF during the same period. These were categorized as the non-training enterprises and constituted the sampling frame for the Non-training enterprises. This categorization was based on the premises that practical knowledge transfer decays with non use (Baldwin, and Ford 1998; Georgeson 1982; Ford, Quinoes, Sego, and Sorra 1992; Noe 2002).

It had been envisaged that systematic random sampling would be adopted to

determine 40 sample training manufacturing enterprises from the 80 training enterprises (every second enterprise on the training enterprises sampling frame) and also the 40 sample non-training enterprises from the 265 non-training enterprises (every sixth enterprise on the non-training enterprises sampling frame) in Nairobi.

This was indeed done. However, when only 14 responses had been received after distributing about 60 category 1 questionnaires, it was decided to roughly double the sample size with the hope of maintaining the study's design level of confidence at 95 percent and 5 per cent level of significance. This design level of confidence anticipated a minimum of 60 responses. This level of confidence was finally achieved since the study attained 69 responses.

Systematic random sampling is fairly flexible and instead of sampling 40 out of 80 (every second enterprise on the training sampling frame) training enterprises the whole sample of 80 training enterprises was adopted and targeted for questionnaires. The 80 training enterprises had been identified as having trained with DIT under the ITLF during the years 2002, 2003 and 2004. This left a balance of 265 non-training enterprises and from these it was decided to select a number almost equal to the targeted 80 sample training enterprises for questionnaire targeting. By identifying 1 out of every 3 firms for targeting (every third enterprise on the non-training enterprise sampling frame), the number of non-training sample was determined to be 88. These are the enterprises that had not trained with DIT under the ITLF during the years 2002, 2003 and 2004.

## ***Summary of the Results***

### ***Introduction***

These results were presented according to the following themes: a) comparative statistics for training and non-training manufacturing enterprises in Nairobi, b) results from the informal sector, c) the incidence of Ebt among manufacturing

enterprises in Nairobi, d) the variance of the Innovativeness, the Growth, the Productivity and the Enterprise performances indices among training and non-training manufacturing enterprises in Nairobi, e) the co relational analysis of the Innovativeness, the Growth, the Productivity, the Enterprise Performance and the Ebt indices among training and non-training manufacturing enterprises in Nairobi, f) the regression of the Innovativeness, the Growth, the Productivity and the Enterprise Performance indices on the Ebt indices among small, medium and large size categories of the training and non-training enterprises in Nairobi, g) general views on training from the formal manufacturing enterprises and key informants, h) the perceived constraints hindering industrial training delivery and i) the interventions perceived as appropriate to remedy the situation.

## ***The comparative descriptive statistics for training and non-training manufacturing enterprises in Nairobi***

### ***Introduction***

The investigation contained in this section, was geared towards painting the character in descriptive statistics of the formal training enterprises as well as the character of the formal non-training enterprises in as far Ebt was concerned.

It demonstrated the similarities as well as the differences among these two. In addition, it demonstrated that the basic assumptions made about the two groups of enterprises in the design of this study were valid.

1. It established that training enterprises outperformed the non-training enterprises at every size level for the 19 selected statistics. Examining the individual categories (Table 4.7), it was established that the large training category outperformed the corresponding non-training category by 42 to 37 per cent whereas the medium training category outperformed the corresponding non-training medium category by 63 to 32 per cent. The small training category outperformed the

corresponding non-training small category by 89.5 to 10.5 per cent

2. It was also established that the performance of the training and non-training enterprises in the 19 selected statistics was size dependent (Table 4.8). The performance decreased for training enterprises from small to large enterprises while on the other hand it increased for the non-training enterprises from small to large enterprises.

3. From summary statistics, it was established that the data received from the research were comparable to the data held by the NSSF and were hence to a fair degree accurate and valid.

## ***Results from the informal sector***

### ***Introduction***

The category 3 questionnaire investigated as to who were in the informal manufacturing sector, in terms of age, employment level, age of the business operator, his level of education and his starting capital. It also established his preferences in terms of his training need, duration of training, timing of training, his preferred mode of funding the training and his preference for organization for the funding of the training. In other words this section investigated the character of the informal manufacturing enterprises in Nairobi with a view of proposing appropriate measures that can be applied to enhance improved industrial training delivery to all the levels of industry in Kenya. Here below were the findings.

1. It was established that (Table 4.15) that the mean employment was 2.68 persons and that the mode was 3 persons. In view of this it was concluded that most informal manufacturing businesses in the informal sector on average were operated by 3 persons.

2. It was established (Table 4.16) that the mean age of the informal manufacturing enterprises was 17.9 years, while the median age was 19 years and the mode was 20 years. It was hence apparent that the informal sector businesses especially in the manufacturing sector may not be considered extremely young. This was especially so when the mean ages of the large enterprise category (46.5

years), the medium enterprise category (27.5 years) and the small enterprise category (34 years) were considered

3. It was established (Table 4.17) that the mean age of the main informal manufacturing enterprises operator was 39 years, the minimum age was 18 years, the median was 37 years, the mode was 45 years and that the maximum age was 54 years. What transpired from this analysis was that the main informal manufacturing operator seemingly would appear to exit from the business around the age of 55.

4. It was established (Table 4.18) that almost half (47.4 per cent) of the informal sector respondents were of primary level of education, 42.1 per cent were of secondary level of education and that only 10.5 per cent were of college level of education. By examining the data more closely it was established that 52.6 per cent of the respondents were of secondary level of education or higher. This goes against the common belief that informal sector operators are largely of primary level of education.

5. The mean starting capital was established as Kshs 12,592/=, the minimum starting capital was Kshs. 100/=, while the maximum starting capital was Kshs. 100,000/= .The range of the starting capital is very large (Table 4.19).

6. It was established that 31 (81.6 per cent) out of 38 informal manufacturing enterprise operators trained somewhere else before starting their own businesses (Table 4.20). It can be argued that this possibly indicates the importance of training in entrepreneurship development. It was noted that only 18.4 per cent did not train anywhere initially.

7. It was established (Table 4.21) that 33 (86.8 per cent) of the 38 informal manufacturing enterprise respondents would like to be trained possibly on a continuous basis so as to be able to operate their businesses in a better way. Only 4 (10.5 per cent) out of the 38 respondent indicated that they did not need further training in order to be able to operate their businesses in a better way while 1 (2.7 per cent) out of 38 respondents did not respond.

8. It was established (Table 4.22) that only 9 (23.7 per cent) out of 38 informal enterprise respondents preferred to be trained in business related courses while 24 (63.1 per cent) out of 38 respondents preferred to be trained in technical related courses and that only 5(13.2 per cent) out of 38 respondents did not indicate the need to be trained.

9. It was established (Table 4.23) that the preferred duration of the training course was at least one month (alternatives c and d) by 19 (50per cent) out of 38 informal enterprise respondents.

10. It was established that 28 (73.6per cent) (alternatives a, and c) out of 38 respondents preferred training when the businesses were less active i.e. during the weekend and in the evenings (Table 4.24).

11. It was established that 26 (68.4 per cent) out of 38 informal manufacturing enterprise respondents were willing to pay for their training (Table 4.25).

This indicates that 12 (31.5per cent) out of 38 respondents were not willing to pay for it.

12 It was established (Table 4.25) that the mean preferred fee was Kshs. 1494/= per course while the minimum was nil and the maximum was Kshs. 10,000/= while median was Kshs. 500/=.

13. It was established (Table 4.26) that 24 (63.2 per cent) out of 38 informal manufacturing enterprise respondents preferred the pooling of resources into a training fund while 9 (23.7 per cent) out of 38 informal manufacturing enterprise respondents preferred to handle their training individually while 5(13.1 per cent) out of the 38 respondents did not respond.

14. It was established (Table 4.27) that 21(55.6 per cent) out of 38 informal manufacturing enterprise respondents had heard about the DIT while 14(36.8 per cent) out of the 38 informal manufacturing enterprise respondents had not heard about the DIT. 3 (7.9 per cent) out of the 38 informal manufacturing enterprise respondents did not respond.

15. It was established (Table 4.28) that 26 (68.4 per cent) out of 38 informal manufacturing enterprise respondents favored joining the DIT operated ITLF while only 4

(10.5 per cent) out of 38 informal manufacturing enterprise respondents preferred starting a new fund for the informal sector while 8 (21.1 per cent) out of the 38 informal manufacturing enterprise respondents did not respond.

## ***The incidence of Ebt among manufacturing enterprises in Nairobi***

### ***Introduction***

This part of the investigation was informed and directed by objective no. 1 of this investigation. The investigation established the incidence of various types of Ebt in enterprises and further drew comparisons of the various types of Ebt among training and non-training enterprises. Here below are the findings:

1. From Table 4.29 it was established that the most prevalent types of Ebt among the large manufacturing training enterprises in a descending order were, i) formal in-house training by outsiders (100per cent), ii) training through trade buyers/suppliers(75 per cent) ,iii) external training by training source(62.5 per cent), iv) formal in-house training by staff (62.5 per cent), v) in-formal training by co-workers(37.5 per cent), vi) in-formal training by self teaching (37.5 per cent), vii) external training by distance learning(37.5per cent) and viii) training through foreign networks (12.5 per cent). In summary it was noted that 8/8 i.e. 100 per cent of the large training manufacturing enterprises practiced one form or the other of Ebt.

2. From Table 4.30 it was established that the most prevalent types of Ebt among the large manufacturing non-training enterprises in a descending order were, i) formal in-house training by outsiders (87.5 per cent) ii) in-formal training by co- workers, iii) formal in-house training by staff (50per cent), iv) external training by training source (50per cent), v) training through trade buyers/suppliers (25 per cent), vi) in-formal training by self teaching (12.5 per cent)and vii) external training by distance learning (12.5 per cent). In summary it was noted that

7/8 i.e. 87.5 per cent of the large non- training manufacturing enterprises practiced one form or the other of Ebt.

3. From Table 4.31 it was established that the most prevalent types of Ebt among the medium manufacturing training enterprises in a descending order were, i) formal in-house training by outsiders (93 per cent), ii) formal in-house training by staff (76 per cent), iii) external training by training source (76 per cent), iv) in-formal training by co- workers (36 per cent, v) external training by distance learning (14 per cent), vi) training through trade buyers/suppliers (14 per cent), vii) in-formal training by self teaching (7per cent) and viii) training through foreign networks. In summary it was noted that 14/14 i.e. 100 per cent of the medium training manufacturing enterprises practiced one form or the other of Ebt.

4. From Table 4.32 it was established that the most prevalent types of Ebt among the medium manufacturing non- training enterprises in a descending order were, i) in-formal training by co-workers (83 per cent), ii) formal in-house training by staff (50 per cent), iii) formal in-house training by outsiders (50 per cent), iv) training through trade buyers/suppliers (50 per cent), v) external training by training source (50 per cent), vi) in-formal training by self teaching (33 per cent), vii) training through foreign networks (33 per cent) and viii) external training by distance learning (17 per cent). In summary it was noted that 6/6 i.e. 100 per cent of the medium non- training manufacturing enterprises practiced one form or the other of Ebt.

5. From Table 4.33 it was established that the most prevalent types of Ebt among the small manufacturing training enterprises in a descending order were, i) formal in-house training by outsiders (100 per cent), ii) formal in-house training by staff (87.5 per cent), iii) external training by training source (87.5 per cent), iv) in-formal training by co-workers (50 per cent), v) in-formal training by self teaching (37.5 per cent), vi) external training by distance learning (25 per cent), vii) training through trade buyers/suppliers (12.5 per cent) and viii)

training through foreign networks (12.5 per cent). In summary it was noted that 8/8 i.e. 100 per cent of the small training manufacturing enterprises practiced one form or the other of Ebt.

6. From Table 4.34 it was established that the most prevalent types of Ebt among the small manufacturing non-training manufacturing training enterprises in a descending order were, i) Formal in-house training by outsiders (57 per cent), ii) external training by training source (47.6 per cent), iii) in-formal training by co-workers (38 per cent), iv) formal in-house training by staff (38 per cent), v) in-formal training by self teaching (9.5 per cent), vi) training through foreign networks (9.5 per cent), vii) external training by distance learning (4.8 per cent) and viii) training through trade buyers/suppliers (4.8 per cent). In summary it was noted that 17/21 i.e. 81 per cent of the small non- training manufacturing enterprises practiced one form or the other of Ebt.

7. From Table 4.35 it was established that the most prevalent types of Ebt among all categories of manufacturing training enterprises in a descending order were, i) formal in-house training by outsiders (97 per cent), ii) formal in-house training by staff (77 per cent), iii) external training by training source (77 per cent), iv) in-formal training by workers (40 per cent), v) training through trade buyers/suppliers (30 per cent), vi) In-formal training by self teaching (23 per cent), vii) external training by distance learning (23 per cent)and viii) Training through foreign networks (10 per cent). In summary it was noted that 30/30 i.e. 100 per cent of all the training manufacturing enterprises practiced one form or the other of Ebt.

8. From Table 4.36 it was established that the most prevalent types of Ebt among all categories of manufacturing non- training enterprises in a descending order are, i) formal in-house training by outsiders (63 per cent), ii) external training by training source (48.5), iii) formal in-house training by staff (43 per cent), iv ) in-formal training by co-workers (23 per cent), v) training through trade buyers/suppliers (17per cent), vi) in-formal training by self teaching (14 per

cent), vii) training through foreign networks (11 per cent), and viii) external training by distance learning (11 per cent). In summary it was noted that 30/35 i.e. 85.7 per cent of all the non-training manufacturing enterprises practiced one form or the other of Ebt.

9. From Table 4.37 it was established that the most prevalent types of Ebt among all categories of manufacturing enterprises in a descending order were, i) formal in-house training by outsiders (77 per cent), ii) external training by training source (63 per cent), iii) formal in-house training by staff (58 per cent), iv) in-formal training by co-workers (45 per cent), v) training through trade buyers/suppliers (23 per cent), vi) in-formal training by self teaching (18 per cent), vii) external training by distance learning (15 per cent) and viii) training through foreign networks (11 per cent). In summary it was noted that 60/65 i.e. 92 per cent of all the manufacturing enterprises practiced one form or the other of Ebt.

10. It was established from Table 4.38 that the incidence of Ebt among formal large training enterprises is higher in every type of training when compared to incidence of Ebt among the formal large non-training enterprises. Formal in-house training by outsiders, formal in-house training by staff, external training by training source and training through trade buyers/suppliers were the four most prevalent types of Ebt training among the formal large enterprises.

11.. It was established from Table 4.39 that the incidence of Ebt among formal medium training enterprises is higher in some types of training when compared to incidence of Ebt among the formal non training medium enterprises and vice versa. Formal in-house training by outsiders, formal in-house training by staff, external training by training source and in-formal training by co-workers were the four most prevalent types of Ebt training among the formal medium enterprises.

12. It was established from Table 4.40 that the incidence of Ebt among formal small training enterprises was higher in every type of training when compared to the non-training enterprises.

13. Table 4.41 shows that the incidence of Ebt among training enterprises in large, medium and small categories was 100 per cent. This is to be contrasted with the incidence of Ebt among non-training enterprises which show an incidence 87.5 per cent among large enterprises, 100 per cent among medium enterprises and 81 per cent among small enterprises. This is also to be contrasted with the incidence of Ebt among all training enterprises (100 per cent), incidence of Ebt among all non-training enterprises (85.7 per cent) and the overall incidence of Ebt among all enterprises (training or non-training) of 92 per cent. At an overall level of 92 per cent it is reasonable to conclude that the incidence of Ebt among the manufacturing enterprises in Nairobi was high.

### ***The variance of the Innovativeness, the Growth, the Productivity and the Enterprise Performances indices among training and non-training manufacturing enterprises in Nairobi***

#### ***Introduction***

This section investigated the relationship between Ebt training and enterprise performance in order to answer the research question no. 2 which states as follows: To what extent has industrial training resulted in improved enterprise performance among participating enterprises in Nairobi in terms of growth, innovativeness and productivity? Specifically, this section on analysis of variance sought to find out whether the differences of the relevant indices were significant to a certain level among the training and the non-training manufacturing enterprises. The results were as below:

1. Plate 4.10 shows the computer analysis of the variance of the Innovativeness index among large training and large non-training manufacturing enterprises. From Plate 4.10 it was established that the F statistic was 0.205234 and that the relevant degrees of freedom were 15(1 in the numerator and 14 in the denominator). It was also established from

appropriate F-statistic tables that the critical F-statistic for the above stated degrees of freedom was 8.68 at the 0.01 level of significance and 4.80 at the 0.05 level of significance. In this case the F-statistic was neither equal nor greater than the critical F-statistic at either the 0.05 or at the 0.01 level and hence there were no grounds on which the Null hypothesis (HO2) could have been rejected. The Null hypothesis (HO2) was hence upheld and it was concluded that there was no significant difference between the Innovativeness (I) indices for the large training and large non-training enterprises.

2. Plate 4.11 shows the computer analysis of the variance of the Growth index among large training and large non-training manufacturing enterprises. From Plate 4.11 it was established that the F statistic was 0.85688 and that the relevant degrees of freedom were 15(1 in the numerator and 14 in the denominator). It was also established from appropriate F-statistic tables that the critical F-statistic for the above stated degrees of freedom was 8.68 at the 0.01 level of significance and 4.80 at the 0.05 level of significance. In this case the F-statistic was neither equal nor greater than the critical F-statistic at either the 0.05 or at the 0.01 level and hence there were no grounds on which the Null hypothesis (HO1) could have been rejected. The Null hypothesis (HO1) was hence upheld and it was concluded that there was no significant difference between the Growth (G) indices for the large training and large non-training enterprises.

3. Plate 4.12 shows the computer analysis of the variance of the Productivity index among large training and large non-training manufacturing enterprises. From Plate 4.12 it was established that the F statistic was 1.98 and that the relevant degrees of freedom were 15(1 in the numerator and 14 in the denominator). It was also established from appropriate F-statistic tables that the critical F-statistic for the above stated degrees of freedom was 8.68 at the 0.01 level of significance and 4.80 at the 0.05 level of significance. In this case the F-statistic was neither equal nor greater than the critical F-statistic at either the 0.05 or at the 0.01 level

and hence there were no grounds on which the Null hypothesis (HO3) could have been rejected. The Null hypothesis (HO3) was hence upheld and it was concluded that there was no significant difference between the Productivity (P) indices for the large training and large non-training enterprises.

4. Plate 4.13 shows the computer analysis of the variance of the Enterprise Performance index among large training and large non-training manufacturing enterprises. From Plate 4.13 it was established that the F statistic was 0.490731 and that the relevant degrees of freedom were 15(1 in the numerator and 14 in the denominator). It was also established from appropriate F-statistic tables that the critical F-statistic for the above stated degrees of freedom was 8.68 at the 0.01 level of significance and 4.80 at the 0.05 level of significance. In this case the F-statistic was neither equal nor greater than the critical F-statistic at either the 0.05 or at the 0.01 level and hence there were no grounds on which the Null hypothesis (HO4) could have been rejected. The Null hypothesis (HO4) was hence upheld and it was concluded that there was no significant difference between the Enterprise (E) performance indices for the large training and large non-training enterprises.

5. Plate 4.14 shows the computer analysis of the variance of the Innovativeness index among medium training and medium non-training manufacturing. From Plate 4.14 it was established that the F statistic was 0.002107 and that the relevant degrees of freedom were 19(1 in the numerator and 18 in the denominator).

It was also established from appropriate F-statistic tables that the critical F-statistic for the above stated degrees of freedom was 8.29 at the 0.01 level of significance and 4.41 at the 0.05 level of significance. In this case the F-statistic was neither equal nor greater than the critical F-statistic at either the 0.05 or at the 0.01 level and hence there were no grounds on which the Null hypothesis (HO2) could have been rejected. The Null hypothesis (HO2) was hence upheld and it was concluded that there was no significant difference between the Innovativeness (I)

indices for the medium training and medium non-training enterprises.

6. Plate 4.15 shows the computer analysis of the variance of the Growth index among medium training and medium non-training manufacturing. From Plate 4.15 it was established that the F statistic was 1.704305 and that the relevant degrees of freedom were 19(1 in the numerator and 18 in the denominator). It was also established from appropriate F-statistic tables that the critical F-statistic for the above stated degrees of freedom was 8.29 at the 0.01 level of significance and 4.41 at the 0.05 level of significance. In this case the F-statistic was neither equal nor greater than the critical F statistic at either the 0.05 or at the 0.01 level and hence there were no grounds on which the Null hypothesis (HO1) could have been rejected. The Null hypothesis (HO1) was hence upheld and it was concluded that there was no significant difference between the Growth (G) indices for the medium training and medium non-training enterprises.

7. Plate 4.16 shows the computer analysis of the variance of the Productivity index among medium training and medium non-training manufacturing. From Plate 4.16 it was established that the F statistic was 0.880971 and that the relevant degrees of freedom were 19 (1 in the numerator and 18 in the denominator). It was also established from appropriate F-statistic tables that the critical F-statistic for the above stated degrees of freedom was 8.29 at the 0.01 level of significance, and 4.41 at the 0.05 level of significance. In this case the F-statistic was neither equal nor greater than the critical F-statistic at either the 0.05 or at the 0.01 level and hence there were no grounds on which the Null hypothesis (HO3) could have been rejected. The Null hypothesis (HO3) was hence upheld and it was concluded that there was no significant difference between the Productivity (P) indices for the medium training and medium non-training enterprises.

8. Plate 4.17 shows the computer analysis of the variance of the Enterprise Performance index among medium training and medium non-training manufacturing enterprises. From Plate 4.17 it was established that the F statistic

was 0.148729 and that the relevant degrees of freedom were 19 (1 in the numerator and 18 in the denominator). It was also established from appropriate F-statistic tables that the critical F-statistic for the above stated degrees of freedom was 8.29 at the 0.01 level of significance, and 4.41 at the 0.05 level of significance. In this case the F-statistic was neither equal nor greater than the critical F-statistic at either the 0.05 or at the 0.01 level and hence there were no grounds on which the Null hypothesis (HO4) could have been rejected. The Null hypothesis (HO4) was hence upheld and it was concluded that there was no significant difference between the Enterprise (E) performance indices for the medium training and medium non-training enterprises.

9. Plate 4.18 shows the computer analysis of the variance of the Innovativeness index among small training and small non-training manufacturing enterprises. From Plate 4.18 it was established that the F statistic was 4.299546 and that the relevant degrees of freedom were 28 (1 in the numerator and 27 in the denominator). It was also established from appropriate F-statistic tables that the critical F-statistic for the above stated degrees of freedom was 4.23 at the 0.05 level of significance. In this case the F-statistic was greater than the critical F-statistic at the 0.05 level of significance and hence there were enough grounds on which to reject the Null hypothesis (HO2) and hence conclude that there were significant differences at the 0.05 level of significance between the Innovativeness (I) indices among the small training and the small non-training enterprises.

10. At the 0.01 level of significance (Plate 4.18) on the other hand, there were no grounds on which the Null hypothesis (HO2) could have been rejected since the F-statistic was lower than the critical F-statistic at the same level. The Null hypothesis (HO2) was hence upheld and it was concluded that there were no significant difference between the Innovativeness (I) indices for the small training and small non-training enterprises at the 0.01 level of significance.

11. Plate 4.19 shows the computer analysis of the variance of the Growth index among small

training and small non-training manufacturing enterprises. From Plate 4.19 it was established that the F statistic was 0.015075 and that the relevant degrees of freedom were 28 (1 in the numerator and 27 in the denominator). It was also established from appropriate F-statistic tables that the critical F-statistic for the above stated degrees of freedom was 7.72 at the 0.01 level of significance, and 4.23 at the 0.05 level of significance. In this case the F-statistic was neither equal nor greater than the critical F-statistic at either the 0.05 or at the 0.01 level of significance and hence there were no grounds on which the Null hypothesis (HO1) could have been rejected. The Null hypothesis (HO1) was hence upheld and it was concluded that there was no significant difference between the Growth (G) indices for the small training and small non-training enterprises.

12. Plate 4.20 shows the computer analysis of the variance of the Productivity index among small training and small non-training manufacturing enterprises. From Plate 4.20 it was established that the F statistic was 0.065674 and that the relevant degrees of freedom were 28 (1 in the numerator and 27 in the denominator). It was also established from appropriate F-statistic tables that the critical F-statistic for the above stated degrees of freedom was 7.72 at the 0.01 level of significance, and 4.23 at the 0.05 level of significance. In this case the F-statistic was neither equal nor greater than the critical F-statistic at either the 0.05 or at the 0.01 level and hence there were no grounds on which the Null hypothesis (HO3) could have been rejected. The Null hypothesis (HO3) was hence upheld and it was concluded that there was no significant difference between the Productivity (P) indices for the small training and small non-training enterprises.

13. Plate 4.21 shows the computer analysis of the variance of the Enterprise Performance index among small training and small non-training manufacturing enterprises. From Plate 4.21 it was established that the F statistic was 3.938995 and that the relevant degrees of freedom were 28 (1 in the numerator and 27 in the denominator). It was also established from appropriate F-statistic tables that the

critical F-statistic for the above stated degrees of freedom was 7.72 at the 0.01 level of significance, and 4.23 at the 0.05 level of significance. In this case the F-statistic was neither equal nor greater than the critical F-statistic at either the 0.05 or at the 0.01 level and hence there were no grounds on which the Null hypothesis (HO4) could have been rejected. The Null hypothesis (HO4) was hence upheld and it was concluded that there was no significant difference between the Enterprise (E) performance indices for the small training and small non-training manufacturing enterprises.

14. From Plate 4.22 it was established that the F statistic was 4.994308 and that the relevant degrees of freedom were 64 (1 in the numerator and 63 in the denominator). It was also established from appropriate F-statistic tables that the critical F-statistic for the above stated degrees of freedom was 4.00 at the 0.05 level of significance. In this case the F-statistic was greater than the critical F-statistic at 0.05 level of significance and hence there were enough grounds on which to reject the Null hypothesis (HO2) and hence conclude that there were significant differences at the 0.05 level of significance between the Innovativeness (I) indices among the all training and the all non-training enterprises.

### ***The co relational analysis of the Innovativeness (I), the Growth (G), the Productivity (P), the Enterprise Performance (E) and the Ebt training (TR) indices of manufacturing enterprises in Nairobi***

#### ***Introduction.***

This section investigated the relationship between Ebt training and Enterprise performance in order to answer the research question no. 2 which states as follows: To what extent has industrial training resulted in improved enterprise performance among participating enterprises in Nairobi in terms of growth, innovativeness and productivity? Specifically, this section on co

relational analysis sought to find out whether there were significant correlation relationships among the Ebt (TR), the Innovativeness, the Growth, the Productivity and the Enterprise Performance indices among the large, the medium and the small training and non-training categories of manufacturing enterprises. The findings were as below:

1. Plate 4.1 shows the computer generated correlations amongst the various indices for large training manufacturing enterprises. It was established from plate 4.1 that the Pearson correlation between, a) TR and I (at -.04 was negligible), b) TR and G (at -.109 was negligible), c) TR and P (at .275 was low) and d) TR and E (at .094 was negligible). Other correlations were also low except for the below.

The correlation between, a) I and E (at 0.512 was moderate, b) the correlation between G and E (at 0.914 was very high and it was at significance level of 0.01). This means that there was a probability of less than one per cent that the very high correlation at 0.914 was by chance.

2. Plate 4.2 shows the computer generated correlations amongst the various indices for large non- training manufacturing enterprises. It was established from plate 4.2 that the Pearson correlation between, a) TR and I (at -0.372 was low), b) TR and P (at -0.289 was low) and c) TR and E (at 0.360 was low). All other correlations were rather low except the below mentioned. The correlation between, a) TR and E (at 0.510 was moderate), b) G and E (at 0.972 was very high and a significance of 0.01). This means that there was a probability of less than one per cent that the very high correlation at 0.972 was by chance.

3. Plate 4.3 shows the computer generated correlations amongst the various indices for medium training manufacturing enterprises. It was established from plate 4.3 that the Pearson correlation between, a) TR and I (at .491 was moderate), b) TR and G (at -0.049 was negligible), c) TR and P (at -0.115 was negligible), d) TR and E (at 0.359 was also low). Other correlation were also low except the below mentioned. The correlation between, a) G and E (at 0.569 and at a

significance level of 0.05 was moderate but was at 95 per cent level of confidence which was quite appreciable), b) I and E (at 0.923 was very high and at 0.01 level significance). This means that there was a probability of less than one per cent that the very high correlation at 0.923 was by chance.

3. Plate 4.4 shows the computer generated correlations amongst the various indices for medium non- training manufacturing enterprises I t was established that the correlation between, a) TR and I (at 0.797 was substantial by any standards), b) TR and G (at .086 was negligible) and c) TR and P (at -0.450 was moderate) All other correlations were low except the below mentioned.

The correlation between, a) G and I (at -0.452 was moderate), b) P and G (at 0.563 was moderate), c) TR and E (at 0.907 was very high and at a significance level of 0.05) and d) I and E (at 0.953 was very high and at a significance level of 0.01). The probability of the coefficient of correlation being at 0.907 by chance being less than five per cent and the probability of the coefficient of correlation between, I and E being 0.953 by chance being less than one per cent is a very important finding.

4. Plate 4.5 shows the computer generated correlations amongst the various indices for small training manufacturing enterprises I t was established that the correlation between, a) TR and G (at -0.091 was negligible) and b) TR and P (at 0.026 was negligible). All other correlations were low or negligible except the below mentioned. The correlations between, a) TR and E (at 0.637 was substantial), b) G and E (at 0.645 was moderate), c) P and E (at 0.526 was moderate),d) G and P (at 0.617 was substantial),e) TR and I (at 0.878 was high and at 0.01 level of significance was very, very high) and f) I and E (at 0.875 and at 0.01 level of significance was again very, very high as to rule out the possibility that these happenings were by pure chance.

5. Plate 4.6 shows the computer generated correlations amongst the various indices for small non- training manufacturing enterprises It was established that the correlation between, a) TR and I (at 0.336 was low), b) TR and G (at -0.082 was negligible), c) TR

and P (at 0.173 was negligible) and d) TR and E (at 0.303 was low). All other correlations were low with an exception of the ones mentioned below: The correlation between, a) G and E (at 0.427 was moderate), b) I and E (at 0.973 was very high and at 0.01 level of significance was decidedly quite high).

6 .Plate 4.8 shows the computer generated correlations amongst the various indices for all non- training manufacturing enterprises It was established that the correlation between, a) TR and I (at 0 .169 was negligible), b) TR and P (at 0 .135 was negligible). All other correlations are low with an exception of the ones mentioned below. The correlation between, a) TR and G (at 0.507 was moderate and at 0.01 level of significance was quite high), b) TR and E (at 0.485 was moderate but at 0.01 level of significance was also high), c) I and E (at 0.613 was substantial but also at 0.01 level of significance was quite high) and d) G and E (at 0.883 was very high and at 0.01 level of significance is very high).

7. It was established from Plate 4.9, that the correlation between, a) TR and I (at 0.192 was negligible) and b) TR and P (at -0.058 was negligible). All other correlations are low with an exception of the ones mentioned here below. The correlation between, a) TR and G (at 0.359 was low but at 0.01 level of significance it was some what substantial), b) TR and E (at 0.383 was low but at 0.01 level of significance could be considered considerable), c) I and E (at 0.627 was substantial but at 0.01 level of significance can be considered high) and d) G and E (at 0.842 was high and at 0.01 level of significance ought to be considered very high).

***The results of the regression of the Innovativeness, the Growth, the Productivity and the Enterprise Performance indices on the Ebt Training index among the training and non-training manufacturing enterprises in Nairobi.***

***Introduction***

This section investigated the relationship between Ebt and enterprise performance in order to answer the research question no. 2 which states as follows: To what extent has industrial training resulted in improved enterprise performance among participating enterprises in Nairobi in terms of growth, innovativeness and productivity? Specifically, this section investigated the following relationships, a) the regression of the I, G, P and E indices for all training enterprises on the Ebt index, b) the regression of the I, G, P and E indices for all non-training enterprises on the Ebt index. The results were as below:

1 .Plate 4.26 shows the regression of the Innovativeness (I) index on the Ebt index for all training enterprises What was noted was the manner in which the Innovativeness (I) index plot to a fair extent mimicked the changes in the Ebt training (TR) index plot and hence it could be reasonably and generally considered that changes in the Ebt could translate into changes in the Innovativeness of the enterprise.

2. Plate 4.27 shows the regression of the Growth (G) index on the Ebt index for all training enterprises What was noted was the manner in which the Growth (G) index plot to a fair extent mimicked the changes in the Ebt training (TR) index plot and hence it could be reasonably and generally considered that changes in the Ebt could translate into changes in the Growth of the enterprise..

3. Plate 4.28 shows the regression of the Productivity (P) index on the Ebt index for all training enterprises. What was noted was the manner in which the Productivity (P) index plot to a fair extent mimicked the changes in the Ebt training (TR) index plot and hence it could be reasonably and generally considered that changes in the Ebt could translate into changes in the Productivity of the enterprise..

4. Plate 4.29 shows the regression of the Enterprise Performance (E) index on the Ebt index for all training enterprises. What was noted was the manner in which the Enterprise (E) performance index plot to a fair extent mimicked the changes in the Ebt training (TR) index plot and hence it could be reasonably and generally considered that changes in the

Ebt could translate into changes in the Enterprise performance of the enterprise.

5. Plate 4.30 shows the regression of the Innovativeness (I) index on the Ebt index for all non- training enterprises. What was noted was the manner in which the Innovativeness (I) index plot to a fair extent mimicked the changes in the Ebt training (TR) index plot and hence it could be reasonably and generally considered that changes in the Ebt could translate into changes in the Innovativeness of the enterprise.

6. Plate 4.31 shows the regression of the Growth (G) index on the Ebt index for all non- training enterprises. What was noted was the manner in which the Growth (G) index plot to a fair extent mimicked the changes in the Ebt training (TR) index plot and hence it could be reasonably and generally considered that changes in the Ebt could translate into changes in the Growth of the enterprises.

7. Plate 4.32 shows the regression of the Productivity (P) index on the Ebt index for all non- training enterprises. What was noted was the manner in which the Productivity (P) index plot to a fair extent mimicked the changes in the Ebt training (TR) index plot and hence it could be reasonably and generally considered that changes in the Ebt could translate into changes in the Productivity of the enterprise.

8. Plate 4.33 shows the regression of the Enterprise Performance (E) index on the Ebt index for all non- training enterprises. What was noted was the manner in which the Enterprise (E) performance index plot to a fair extent mimicked the changes in the Ebt training (TR) index plot and hence it could be reasonably and generally considered that changes in the Ebt could translate into changes in the Enterprise performance.

### ***General views on training from the formal manufacturing enterprises and key informants***

#### ***Introduction***

The investigation in this section sought to draw, in descriptive statistics, the views among the formal manufacturing

enterprise respondents as well as the views among the DIT management members on salient matters regarding industrial training. It also sought to highlight where there is convergence of these views as well as where there are differences with a view to making appropriate recommendations for the improved delivery of industrial training. The views are summarized here below:

1. The stakeholders (72 per cent) favored the conversion of the DIT into a Semi-autonomous Government Agency.
2. The stakeholders favored the maintaining of the current sector based levy system by 45 per cent while 43 per cent were against and 12 per cent had no any opinion.
3. The stakeholders (79 per cent) favored the admission of the Jua Kali into ITLF in organized groups as a separate industry with its own training committee and a different mode of levy contribution.
4. The stakeholders (57 per cent) favored the linkage of levy reimbursement to levy contribution.
5. The stakeholders (88 per cent) favored the introduction of a levy system that supports the training of all cadres of the workforce of the contributing enterprises.
6. That the performance of the DIT, was neither outstanding nor dismal.

### ***The perceived constraints hindering industrial training delivery***

#### ***Introduction***

The investigation of the constraints hindering the efficient industrial training delivery was based upon the research question number 3 of this study. The question states as follows: What are the perceived constraints that the DIT has encountered in the delivery of industrial training amongst its present and potential customers? The results are here below:

1. The major constraints identified by formal training manufacturing enterprises to have been hindering effective industrial training delivery were as follows: a) the levy contribution was not sufficient, b) the Industrial Training Act was out-dated., c) the

stake holders were not fully involved, d) the long process of the reimbursement of training expenses, e) government bureaucracy, f) delayed communication and non-communication by the DIT, g) lack of information on the DIT registered trainers, h) lack of enough operational funds by the DIT, i) lack of sufficient qualified operational and administrative staff by the DIT, lack of information on the DIT programmes, j) Demotivated staff with wrong attitudes, k) instructional staff who were not current with the technological changes in industry and l) weak oversight on the DIT by the parent ministry.

2. The major constraints identified to have been hindering industrial training delivery by formal non-training manufacturing enterprises were: a) lack of relevance of the training programmes offered by the DIT, b) low level of reimbursement for the training undertaken, c) cash flow problems in the prospective training enterprise, d) obsolete equipment in the DIT training centers, e) slowdown of the manufacturing activity being experienced in Kenya at the time of the study, f) failure by the DIT to honour reimbursement claims by enterprises, g) lack of information on the DIT, h) lack of sufficient reimbursement funds, i) bureaucracy in the reimbursement of training expenses, j) delayed communication and non-communication by the DIT, k) government control and bureaucracy, l) poor management in the running of the DIT, m) lack of global exposure of DIT staff, n) non-compliance in levy contribution by some employers, o) inadequate support to DIT by the government of Kenya, p) lack of transport for levy compliance officers, q) demotivated DIT staff, r) limitations in levy coverage and s) lack of transparency in DIT activities.

3. The major constraints identified by the key informants to have been hindering effective industrial training delivery were as follows: a) lack of qualified and experienced instructional and administrative staff to run the DIT activities, b) low level of government funding which subsequently translated into low level of levy collection, c) government bureaucracy which resulted in delayed or non-response to industry, d) obsolete equipment in DIT

training centers, e) lack of commitment by some employers which results into a high default rate and failure by DIT to collect levy, f) delayed communication and non-communication which results in a low level awareness of DIT activities, g) demotivated DIT staff characterized by wrong attitudes to their work and lack of technological changes prevalent in industry, h) the prevalent mode of levy collection which requires many persons to be employed as enforcement officers for it to be effective, i) an out-dated Industrial Training Act, j) lack of transport for operational staff and especially the levy collection enforcement officers, and k) too little levy contribution by the government of Kenya as an employer even when the ITA binds the government.

### ***The interventions perceived as appropriate to remedy the situation.***

#### ***Introduction***

The investigation of the perceived interventions to improve industrial training delivery was based upon the research question number 4. The research question states as follows: What are the perceived interventions to improve the delivery of industrial training offered by the DIT to its present as well as potential customers?

Here below are the results:

1. The major proposals suggested by formal training enterprises were as follows: a) privatize or convert the DIT into a Semi-Autonomous Government Agency, b) strengthen oversight over the DIT by the parent ministry, c) sub-contract the levy collection to the Kenya Revenue Authority, d) motivate the DIT staff, e) introduce transparency by adopting benchmarks on training approvals and reimbursement, f) introduce linkage between levy contribution and reimbursement, g) train all cadres of staff employed by the contributing employer, h) improve awareness of DIT programmes through stepped up customer care and through the regular communication with the stake

holders, i) acquire separate skilled management for training in the DIT, j) acquire new equipment and rehabilitate the old equipment in addition to up-dating the instructional staff on technological developments in the Kenyan industry.

2. The major proposals suggested by formal non-training enterprises to improve the industrial training delivery were as follows: a) introduce linkage between levy reimbursement and levy contribution, b) refocus the DIT mandate to training research and promotion of training, c) work closely with industry to identify the skills needed in the Kenyan industry, d) improve on the information dissemination, e) improve reimbursement through timely and full refund, f) reduce government control on the DIT, g) recruit appropriate staff and at the same time put in place measures to ensure their motivation and retention, h) train all cadres of staff employed by the contributing employer, i) improve oversight over the DIT by the relevant ministry, j) revise the ITA, k) reposition the DIT to be proactive, creative, loud and transparent, and l) improve on financial support by the government.

3. The major interventions proposed by the key informants were as follows: a) revise the ITA and convert the DIT into a SAGA, b) change the mode of levy contribution from per capita to one based on a percentage of the payroll or wage bill, c) bring on board all categories of employers and enterprises, d) train all cadres of staff employed by the contributing enterprise, e) introduce linkage between levy reimbursement and levy contribution, f) equip the DIT training centers with appropriate new equipment, rehabilitate the old and make ICT a cornerstone of the DIT technical training for the foreseeable future, g) recruit more staff and institute retention and motivational measures for them, h) introduce regular further training for instructional staff in industry to acquaint them with technological changes, i) enhance service delivery to the employers by appropriate and timely training approvals and timely training reimbursement, j) provide appropriate operational resources such as vehicles to the levy inspectors, k) step up the awareness

campaign through normal communication with employers and also through the mass media, l) since the ITA binds government, the government should pay the industrial training levy appropriately.

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**APPENDIX : Appendix-1 Tables**

**Table 4.7**

**The comparative descriptive statistics for training and non-training small enterprises.**

<b>Item</b>	<b>Description</b>	<b>Training</b>	<b>Non-training</b>
1	Mean employment (persons)	59	57
2	Mean enterprise age	36	32
3	Mean wage	16,028/=	15,171/=
4	% of enterprises having a training budget	67	43
5	% of enterprises recognizing unions	100	76
6	% of enterprises having high technology	83	24
7	Mean no .of persons trained in 2004 -TA	5	7
8	% of enterprises practicing TQM	33	38
9	% of enterprises doing exporting	83	67
10	% of enterprises doing quality control	100	90
11	% of enterprises engaged in R&D	83	57
12	% of enterprises that are automated	100	76
13	Ebt contribution to PE above very good	83	48
14	Ebt contribution to PT above very good	67	38
15	Innovativeness mean index-I	31.5	24.42
16	Growth mean index-G	2.35	2.26
17	Productivity mean index-P	1.33	1.26
18	Enterprise performance index-E (mean)	35.18	29.96
19	Ebt training mean index-TR	30.62	20.47

**Table 4.8**  
**The summary of descriptive statistics by**  
**category and group (relative performance)**

1	Category	Training(per cent)	Non-training(per cent)
2	Small	89,5	10.5
3	Medium	63	32
4	Large	42	37
5	Small +Medium +Large	89.5	10.5

**Table 4.15**  
**The employment data by number.**

Item	No. of persons employed	Frequency
1	1	8
2	2	9
3	3	13
4	4	4
5	5	3
6	6	1
<b>Total</b>		<b>38</b>

**Table 4.16**  
**The age distribution of informal enterprises**

Item	Age (yrs)	Item	Age (yrs)
1	2	20	19
2	3	21	19
3	4	22	20
4	5	23	20
5	7	24	20
6	8	25	20
7	8	26	21
8	10	27	22
9	10	28	22
10	11	29	23
11	12	30	24
12	14	31	26
13	16	32	26
14	16	33	27
15	16	34	28
16	16	35	29
17	17	36	32
18	18	37	32
19	19	38	37

**Table 4.17**  
**The age distribution of informal operators**

<b>Item</b>	<b>Age (yrs)</b>	<b>Item</b>	<b>Age (yrs)</b>
1	18	20	37
2	18	21	40
3	20	22	41
4	20	23	42
5	25	24	44
6	29	25	45
7	30	26	45
8	32	27	45
9	32	28	45
10	32	29	45
11	33	30	46
12	34	31	48
13	34	32	48
14	35	33	49
15	35	34	50
16	35	35	53
17	37	35	53
18	37	37	54
19	37	37	54

**Table 4.18**  
**The education of the informal manufacturing enterprise operator by level, number and percentage**

<b>Education level</b>	<b>Number</b>	<b>Percentage</b>
PRIMARY	18	47.4
SECONDARY	16	42.1
COLLEGE	4	10.5
<b>Total</b>	<b>38</b>	<b>100</b>

**Table 4.19**  
**The starting capital of informal manufacturing enterprise operators**

<b>Item</b>	<b>Starting capital (kshs)</b>	<b>Item</b>	<b>Starting capital (kshs)</b>
1	100	15	8,000
2	200	16	9,000
3	250	17	10,000
4	450	18	10,000
5	1000	19	12,000

6	1000	20	15,000
7	1500	21	18,000
8	2000	22	18,000
9	2000	23	20,000
10	2500	24	20,000
11	3000	25	30,000
12	5000	26	40,000
13	5000	27	100,000
14	6000		

**Table 4.20**

**The initial training of the informal manufacturing enterprise operator, by alternative, number and percentage**

<b>Alternative</b>	<b>Number</b>	<b>Percentage</b>
a	31	81.6
b	7	18.4
none of above	0	0
<b>Total</b>	<b>38</b>	<b>100</b>

**Table 4.21**

**The training need by informal manufacturing enterprise operators, by alternative, number and percentage**

<b>Alternative</b>	<b>Number</b>	<b>Percentage</b>
a	33	86.8
b	4	10.5
c none of above	1	2.7
<b>Total</b>	<b>38</b>	<b>100</b>

**Table 4.22**

**The preferred training by informal manufacturing enterprise operators, by alternative, number and percentage**

<b>Alternative</b>	<b>Number</b>	<b>Percentage</b>
a) business training	9	23.7
b) technical training	24	63.1
c) none of above	5	13.2
<b>Total</b>	<b>38</b>	<b>100</b>

**Table 4.23**  
**the course duration preference by informal**  
**enterprise operators by alternative, number**  
**and percentage**

<b>Alternative</b>	<b>Number</b>	<b>Percentage</b>
a	7	18.4
b	4	10.5
c	8	21.1
d	11	28.9
e	4	10.5
f none of above	4	10.5
<b>Total</b>	<b>38</b>	<b>100</b>

**Table 4.24**  
**Course timing preference by the informal**  
**enterprise operators, by alternative, number**  
**and percentage**

<b>Alternative</b>	<b>Number</b>	<b>Percentage</b>
a	11	28.9
b	5	13.2
c	17	49.7
d	2	5.3
none of above	3	7.9
<b>Total</b>	<b>38</b>	<b>100</b>

**Table 4.25**  
**the preferred training fee by the informal**  
**manufacturing enterprise operators**

<b>Item</b>	<b>Preferred fee (kshs)</b>	<b>Item</b>	<b>Preferred fee (kshs)</b>
1	50	14	500
2	100	15	500
3	100	16	500
4	100	17	1000
5	100	18	1000
6	200	19	1000
7	200	20	1500
8	200	21	1500
9	200	22	3000
10	300	23	3000
11	300	24	3000
12	500	25	10,000
13	500	26	10,000

**Table 4.26**  
**the preferences of training funding mode among informal manufacturing enterprise operators**

<b>Alternative</b>	<b>Number</b>	<b>Percentage</b>
a	9	23.7
b	24	63.2
none of above	5	13.1
<b>Total</b>	<b>38</b>	<b>100</b>

**Table 4.27**  
**the awareness of the Dit among informal manufacturing enterprise operators**

<b>Alternative</b>	<b>Number</b>	<b>Percentage</b>
a	21	55.3
b	14	36.8
c none of these	3	7.9
<b>Total</b>	<b>38</b>	<b>100</b>

**Table 4.28**  
**The informal manufacturing enterprise respondents preference to join the ITLF or not**

<b>Alternative</b>	<b>Number</b>	<b>Percentage</b>
a	26	68.4
b	4	10.5
c none of above	8	21.1
<b>Total</b>	<b>38</b>	<b>100</b>

**Table 4.29**  
**The incidence of Ebt among large training enterprises**

<b>Item</b>	<b>Type of training</b>	<b>Frequency</b>	<b>%</b>	<b>Ranking</b>
a	Formal in-house training by staff	5/8	62.5	3
b	Formal in-house training by outsiders	8/8	100	1
c	In-formal training by co-workers	3/8	37.5	4
d	In-formal training by self teaching	3/8	37.5	4
e	External training by training source	5/8	62.5	3
f	External training by distance learning	3/8	37.5	4
g	Training through trade buyers/suppliers	6/8	75	2
h	Training through foreign networks	1/8	12.5	5

**Table 4.30**  
**The incidence of Ebt among large non-**  
**training enterprises**

<b>Item</b>	<b>Type of training</b>	<b>Frequency</b>	<b>Percent</b>	<b>Ranking</b>
a	Formal in-house training by staff	4/8	50	2
b	Formal in-house training by outsiders	7/8	87.5	1
c	In-formal training by co-workers	4/8	50	2
d	In-formal training by self teaching	1/8	12.5	4
e	External training by training source	4/8	50	2
f	External training by distance learning	1/8	12.5	5
g	Training through trade buyers/suppliers	2/8	25	3
h	Training through foreign networks	0/8	0	5

**Table 4.31**  
**The incidence of Ebt among medium training**  
**enterprises**

<b>Item</b>	<b>Type of training</b>	<b>Frequency</b>	<b>Percent</b>	<b>Ranking</b>
a	Formal in-house training by staff	11/14	76	2
b	Formal in-house training by outsiders	13/14	93	1
c	In-formal training by co-workers	5/14	36	3
d	In-formal training by self teaching	1/14	7	5
e	External training by training source	11/14	76	2
f	External training by distance learning	2/14	14	4
g	Training through trade buyers/suppliers	2/14	14	4
h	Training through foreign networks	1/14	7	5

**Table 4.32**  
**The incidence of Ebt among medium non-**  
**training enterprises**

<b>Item</b>	<b>Type of training</b>	<b>Frequency</b>	<b>Percent</b>	<b>Ranking</b>
a	Formal in-house training by staff	3/6	50	2
b	Formal in-house training by outsiders	3/6	50	2
c	In-formal training by co-workers	5/6	83	1
d	In-formal training by self teaching	2/6	33	3
e	External training by training source	3/6	50	2
f	External training by distance learning	1/6	17	4
g	Training through trade buyers/suppliers	3/6	50	2
h	Training through foreign networks	2/6	33	3

**Table 4.33**  
**The incidence of Ebt among small manufacturing training enterprises**

<b>Item</b>	<b>Type of training</b>	<b>Frequency</b>	<b>Percent</b>	<b>Ranking</b>
a	Formal in-house training by staff	7/8	87.5	2
b	Formal in-house training by outsiders	8/8	100	1
c	In-formal training by co-workers	4/8	50	3
d	In-formal training by self teaching	3/8	37.5	4
e	External training by training source	7/8	87.5	2
f	External training by distance learning	2/8	25	5
g	Training through trade buyers/suppliers	1/8	12.5	6
h	Training through foreign networks	1/8	12.5	6

**Table 4.34**  
**The incidence of Ebt among small non-training enterprises**

<b>Item</b>	<b>Type of training</b>	<b>Frequency</b>	<b>Percent</b>	<b>Ranking</b>
a	Formal in-house training by staff	8/21	38	3
b	Formal in-house training by outsiders	12/21	57	1
c	In-formal training by co-workers	8/21	38	3
d	In-formal training by self teaching	2/21	9.5	4
e	External training by training source	10/21	47.6	2
f	External training by distance learning	1/21	4.8	5
g	Training through trade buyers/suppliers	1/21	4.8	5
h	Training through foreign networks	2/21	9.5	4

**Table 4.35**  
**The incidence of Ebt among all manufacturing training enterprises**

<b>Item</b>	<b>Type of training</b>	<b>Frequency</b>	<b>Percent</b>	<b>Ranking</b>
a	Formal in-house training by staff	23/30	77	2
b	Formal in-house training by outsiders	29/30	97	1
c	In-formal training by co-workers	12/30	40	3
d	In-formal training by self teaching	7/30	23	5
e	External training by training source	23/30	77	2
f	External training by distance learning	7/30	23	5
g	Training through trade buyers/suppliers	9/30	30	4
h	Training through foreign networks	3/30	10	6

**Table 4.36**  
**The incidence of Ebt among all manufacturing non-training enterprises**

Item	Type of training	Frequency	Percent	Ranking
a	Formal in-house training by staff	15/35	43	3
b	Formal in-house training by outsiders	22/35	63	1
c	In-formal training by co-workers	8/35	23	4
d	In-formal training by self teaching	5/35	14	6
e	External training by training source	17/35	48.5	2
f	External training by distance learning	3/35	8.5	8
g	Training through trade buyers/suppliers	6/35	17	5
h	Training through foreign networks	4/35	11	7

**Table 4.37**  
**The incidence of Ebt among all formal manufacturing enterprises**

Item	Type of training	Frequency	Percent	Ranking
a	Formal in-house training by staff	38/65	58	3
b	Formal in-house training by outsiders	50/65	77	1
c	In-formal training by co-workers	29/65	45	4
d	In-formal training by self teaching	12/65	18	6
e	External training by training source	41/65	63	2
f	External training by distance learning	10/65	15	7
g	Training through trade buyers/suppliers	15/65	23	5
h	Training through foreign networks	7/65	11	8

**Table 4.38**  
**comparison of the incidence of Ebt among large formal enterprises, training and non-training**

Item	Type of training	Training (Percent)	Non-training (Percent)
a	Formal in-house training by staff	62.5	50
b	Formal in-house training by outsiders	100	87.5
c	In-formal training by co-workers	37.5	50
d	In-formal training by self teaching	37.5	12.5
e	External training by training source	62.5	50
f	External training by distance learning	37.5	12.5
g	Training through trade buyers/suppliers	75	25.5
h	Training through foreign networks	12.5	0

**Table 4.39**  
**The comparison of the incidence of Ebt among**  
**medium formal enterprises**

<b>Item</b>	<b>Type of training</b>	<b>Training (Percent)</b>	<b>Non-training (Percent)</b>
a	Formal in-house training by staff	76	50
b	Formal in-house training by outsiders	93	50
c	In-formal training by co-workers	36	83
d	In-formal training by self teaching	7	33
e	External training by training source	76	50
f	External training by distance learning	14	17
g	Training through trade buyers/suppliers	14	50
h	Training through foreign networks	7	33

**Table 4.40**  
**Comparison of the incidence of Ebt among**  
**small formal enterprises**

<b>Item</b>	<b>Type of training</b>	<b>Training (Percent)</b>	<b>Non-training (Percent)</b>
a	Formal in-house training by staff	87.5	38
b	Formal in-house training by outsiders	100	57
c	In-formal training by co-workers	50	38
d	In-formal training by self teaching	37.5	9.5
e	External training by training source	87.5	47.6
f	External training by distance learning	25	4.8
g	Training through trade buyers/suppliers	12.5	4.8
h	Training through foreign networks	12.5	9.5

**Table 4.41**  
**The summary of the incidence of Ebt among various groups and**  
**categories of formal manufacturing enterprises**

<b>Category</b>	<b>Training group %</b>	<b>Non-training group (Percent)</b>	<b>(Percent)</b>
Large	100	87.5	
Medium	100	100	
Small	100	81	
All training enterprises			100
All non-training enterprises			85.7
All enterprises			92

## Appendix-2

### Plates Pate 4.1

#### The co relational analysis of the indices of large training category enterprises

		TR index	I index	G index	P index	E index
TR index	Pearson Correlation	1	-.014	.109	.275	.094
	Sig. (2-tailed)	.	.974	.796	.510	.825
	N	8	8	8	8	8
I index	Pearson Correlation	-.014	1	.119	-.010	.512
	Sig. (2-tailed)	.974	.	.780	.981	.195
	N	8	8	8	8	8
G index	Pearson Correlation	.109	.119	1	-.128	.914**
	Sig. (2-tailed)	.796	.780	.	.762	.002
	N	8	8	8	8	8
P index	Pearson Correlation	.275	-.010	-.128	1	-.099
	Sig. (2-tailed)	.510	.981	.762	.	.815
	N	8	8	8	8	8
E index	Pearson Correlation	.094	.512	.914**	-.099	1
	Sig. (2-tailed)	.825	.195	.002	.815	.
	N	8	8	8	8	8

\*\* Correlation is significant at the 0.01 level (2-tailed).

### Plate 4.2

#### The co relational analysis of the indices of large non-training category enterprises

		TR index	I index	G index	P index	E index
TR index	Pearson Correlation	1	-.372	.510	-.299	.360
	Sig. (2-tailed)	.	.364	.197	.472	.381
	N	8	8	8	8	8
I index	Pearson Correlation	-.372	1	.306	-.289	.521
	Sig. (2-tailed)	.364	.	.462	.488	.186
	N	8	8	8	8	8
G index	Pearson Correlation	.510	.306	1	.011	.972**
	Sig. (2-tailed)	.197	.462	.	.980	.000
	N	8	8	8	8	8

P index	Pearson Correlation	-.299	-.289	.011	1	-.050
	Sig. (2-tailed)	.472	.488	.980	.	.906
	N	8	8	8	8	8
E index	Pearson Correlation	.360	.521	.972**	-.050	1
	Sig. (2-tailed)	.381	.186	.000	.906	.
	N	8	8	8	8	8

\*\* Correlation is significant at the 0.01 level (2-tailed).

**Plate 4.3**  
**The co relational analysis of the indices**  
**of medium training category enterprises**

		TR index	I index	G index	P index	E index
TR index	Pearson Correlation	1	.491	-.049	-.115	.359
	Sig. (2-tailed)	.	.075	.867	.695	.208
	N	14	14	14	14	14
I index	Pearson Correlation	.491	1	.231	.172	.923**
	Sig. (2-tailed)	.075	.	.426	.557	.000
	N	14	14	14	14	14
G index	Pearson Correlation	-.049	.231	1	-.302	.569*
	Sig. (2-tailed)	.867	.426	.	.294	.034
	N	14	14	14	14	14
P index	Pearson Correlation	-.115	.172	-.302	1	.140
	Sig. (2-tailed)	.695	.557	.294	.	.633
	N	14	14	14	14	14
E index	Pearson Correlation	.359	.923**	.569*	.140	1
	Sig. (2-tailed)	.208	.000	.034	.633	.
	N	14	14	14	14	14

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

**Plate 4.4**  
**The co relational analysis of the indices**  
**of medium non-training category enterprises**

		TR index	I index	G index	P index	E index
TR index	Pearson Correlation	1	.797	.086	-.450	.907*
	Sig. (2-tailed)	.	.057	.872	.370	.013
	N	6	6	6	6	6

I index	Pearson Correlation	.797	1	-.452	.047	.953**
	Sig. (2-tailed)	.057	.	.368	.929	.003
	N	6	6	6	6	6
G index	Pearson Correlation	.086	-.452	1	-.563	-.161
	Sig. (2-tailed)	.872	.368	.	.245	.760
	N	6	6	6	6	6
P index	Pearson Correlation	-.450	.047	-.563	1	-.125
	Sig. (2-tailed)	.370	.929	.245	.	.814
	N	6	6	6	6	6
E index	Pearson Correlation	.907*	.953**	-.161	-.125	1
	Sig. (2-tailed)	.013	.003	.760	.814	.
	N	6	6	6	6	6

\* Correlation is significant at the 0.05 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

#### Plate 4.5

#### The co relational analysis of the indices of small training category enterprises

		TR index	I index	G index	P index	E index
TR index	Pearson Correlation	1	.878**	-.091	.026	.637
	Sig. (2-tailed)	.	.004	.830	.951	.089
	N	8	8	8	8	8
I index	Pearson Correlation	.878**	1	.203	.205	.875**
	Sig. (2-tailed)	.004	.	.630	.627	.004
	N	8	8	8	8	8
G index	Pearson Correlation	-.091	.203	1	.617	.645
	Sig. (2-tailed)	.830	.630	.	.103	.084
	N	8	8	8	8	8
P index	Pearson Correlation	.026	.205	.617	1	.526
	Sig. (2-tailed)	.951	.627	.103	.	.180
	N	8	8	8	8	8
E index	Pearson Correlation	.637	.875**	.645	.526	1
	Sig. (2-tailed)	.089	.004	.084	.180	.
	N	8	8	8	8	8

\*\* Correlation is significant at the 0.01 level (2-tailed).

**Plate 4.6**  
**The co relational analysis of the indices**  
**of small non-training category enterprises**

		TR index	I index	G index	P index	E index
TR index	Pearson Correlation	1	.336	-.082	.173	.303
	Sig. (2-tailed)	.	.136	.724	.454	.181
	N	21	21	21	21	21
I index	Pearson Correlation	.336	1	.349	-.125	.973**
	Sig. (2-tailed)	.136	.	.121	.589	.000
	N	21	21	21	21	21
G index	Pearson Correlation	-.082	.349	1	-.301	.427
	Sig. (2-tailed)	.724	.121	.	.185	.054
	N	21	21	21	21	21
P index	Pearson Correlation	.173	-.125	-.301	1	-.059
	Sig. (2-tailed)	.454	.589	.185	.	.800
	N	21	21	21	21	21
E index	Pearson Correlation	.303	.973**	.427	-.059	1
	Sig. (2-tailed)	.181	.000	.054	.800	.
	N	21	21	21	21	21

\*\* Correlation is significant at the 0.01 level (2-tailed).

**Plate 4.8**  
**The co relational analysis of the indices**  
**of all the non-training category enterprises**

		TR index	I index	G index	P index	E index
TR index	Pearson Correlation	1	.169	.507**	-.135	.485
	Sig. (2-tailed)	.	.331	.002	.438	.003
	N	35	35	35	35	35
I index	Pearson Correlation	.169	1	.173	-.137	.613**
	Sig. (2-tailed)	.331	.	.320	.432	.000
	N	35	35	35	35	35
G index	Pearson Correlation	.507**	.173	1	-.120	.883**
	Sig. (2-tailed)	.002	.320	.	.491	.000
	N	35	35	35	35	35

P index	Pearson Correlation	-.135	-.137	-.120	1	-.131
	Sig. (2-tailed)	.438	.432	.491	.	.454
	N	35	35	35	35	35
E index	Pearson Correlation	.485	.613**	.883***	-.131	1
	Sig. (2-tailed)	.003	.000	.000	.454	.
	N	35	35	35	35	35

\*\* Correlation is significant at the 0.01 level (2-tailed).

**Plate 4.9**  
**The co relational analysis of the indices**  
**of all the enterprises**

		TR index	I index	G index	P index	E index
TR index	Pearson Correlation	1	.192	.359**	-.058	.383**
	Sig. (2-tailed)	.	.114	.002	.633	.001
	N	69	69	69	69	69
I index	Pearson Correlation	.192	1	.112	.044	.627**
	Sig. (2-tailed)	.114	.	.361	.721	.000
	N	69	69	69	69	69
G index	Pearson Correlation	.359**	.112	1	-.114	.842**
	Sig. (2-tailed)	.002	.361	.	.350	.000
	N	69	69	69	69	69
P index	Pearson Correlation	-.058	.044	-.114	1	-.017
	Sig. (2-tailed)	.633	.721	.350	.	.888
	N	69	69	69	69	69
E index	Pearson Correlation	.383**	.627**	.842**	-.017	1
	Sig. (2-tailed)	.001	.000	.000	.888	.
	N	69	69	69	69	69

\*\* Correlation is significant at the 0.01 level (2-tailed).

**Plate 4.10**  
**Large category T& NT analysis of variance of the**  
**innovativeness (I) index**

Anova: Single Factor				
SUMMARY				
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	8	227	28.375	20.55357

Column 2	8	216	27	53.14286
ANOVA				
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Between Groups	7.5625	1	7.5625	0.205234
Within Groups	515.875	14	36.84821	
<b>Total</b>	<b>523.4375</b>	<b>15</b>		

**Plate 4.12**  
**Large category T&NT analysis of variance of**  
**the productivity (P) index**

Anova: Single Factor				
SUMMARY				
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	8	8.196167	1.024521	0.032482
Column 2	8	8.191167	1.023896	0.1256
ANOVA				
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Between Groups	1.56E-06	1	1.56E-06	1.98E-05
Within Groups	1.106574	14	0.079041	
<b>Total</b>	<b>1.106576</b>	<b>15</b>		

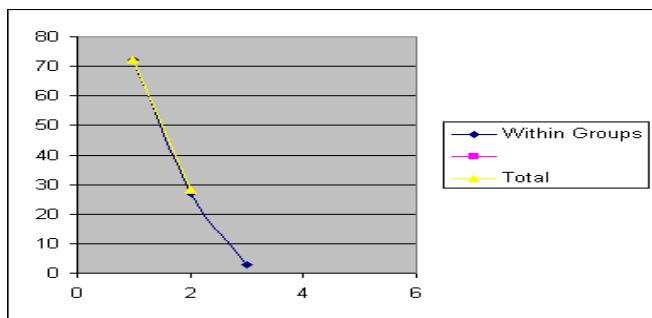
**Plate 4.16**  
**Medium category T&NT analysis of variance of**  
**the productivity (P) index**

Anova: Single Factor				
SUMMARY				
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	14	21.83892	1.559923	1.391479
Column 2	6	6.596083	1.099347	0.022911
ANOVA				
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Between Groups	0.890945	1	0.890945	0.880971
Within Groups	18.20378	18	1.011321	
<b>Total</b>	<b>19.09472</b>	<b>19</b>		

**Plate 4.19**

**Small category T& NT analysis of variance of the growth (G) index**

Anova: Single Factor				
SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	8	18.77958	2.347447	4.941418
Column 2	21	47.54515	2.264055	1.878327
ANOVA				
Source of Variation	SS	df	MS	F
Between Groups	0.040287	1	0.040287	0.015075
Within Groups	72.15648	27	2.672462	
<b>Total</b>	<b>72.19676</b>	<b>28</b>		



**Plate 4.20**

**Small category T&NT analysis of the variance of the productivity (P) index**

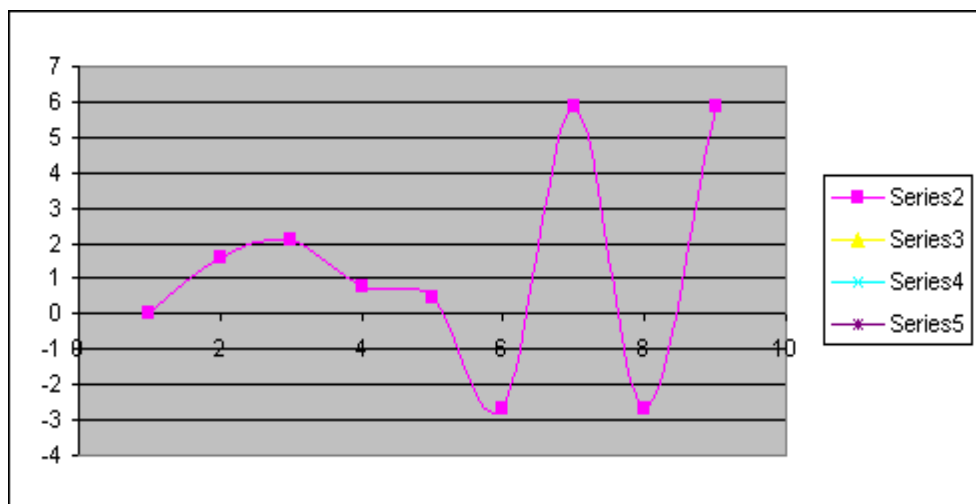
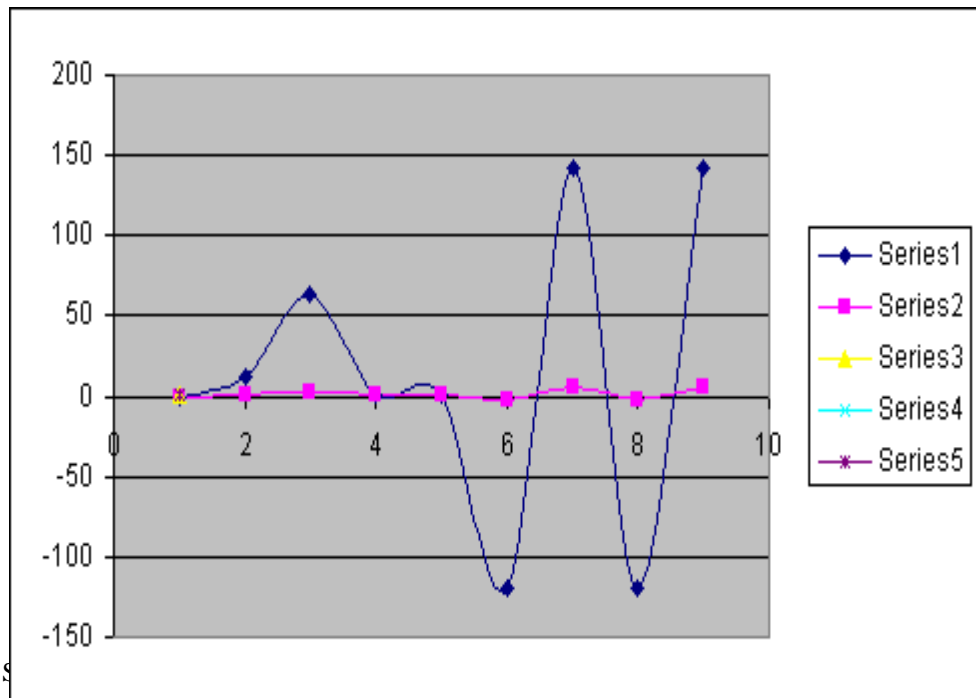
Anova: Single Factor				
SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	8	10.68583	1.335729	0.328955
Column 2	21	26.54983	1.264278	0.492825
ANOVA				
Source of Variation	SS	df	MS	F
Between Groups	0.029576	1	0.029576	0.065674
Within Groups	12.15918	27	0.45034	
<b>Total</b>	<b>12.18876</b>	<b>28</b>		

**Plate 4.26**

**All training categories innovativeness (I index regression on the ebt training (TR) index**

SUMMARY OUTPUT				
Regression Statistics				
Multiple R	0.14166			
R Square	0.020068			
Adjusted R	-0.01493			

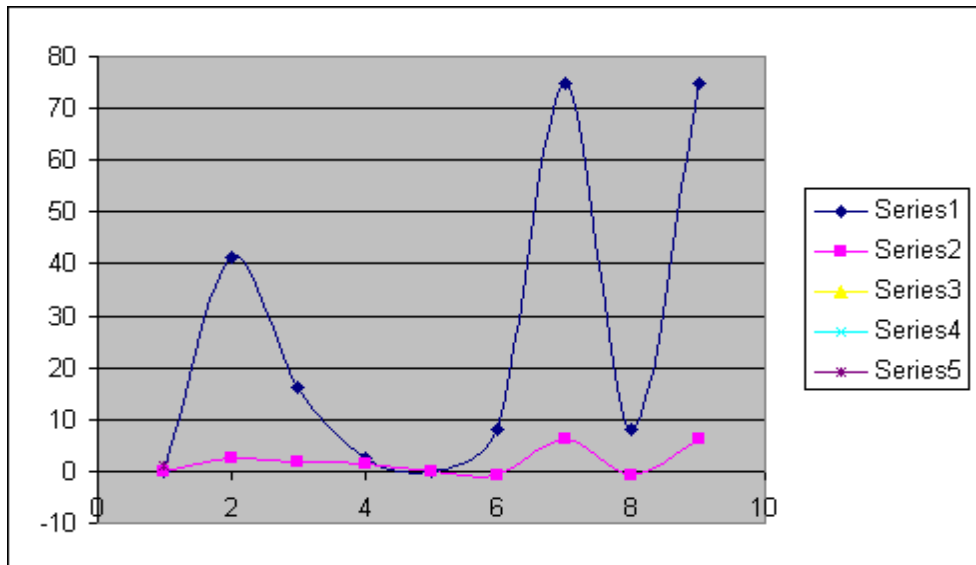
Square					
Standard Error	65.78799				
Observations	30				
ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	2481.713	2481.713	0.573401	0.455236
Residual	28	121185.7	4328.059		
<b>Total</b>	<b>29</b>	<b>123667.4</b>			



Series 1 is the Ebt training (TR) index while series 2 is the Innovativeness (I) index

**Plate 4.27**  
**All training categories growth (G index**  
**regression on the Ebt training (TR index**

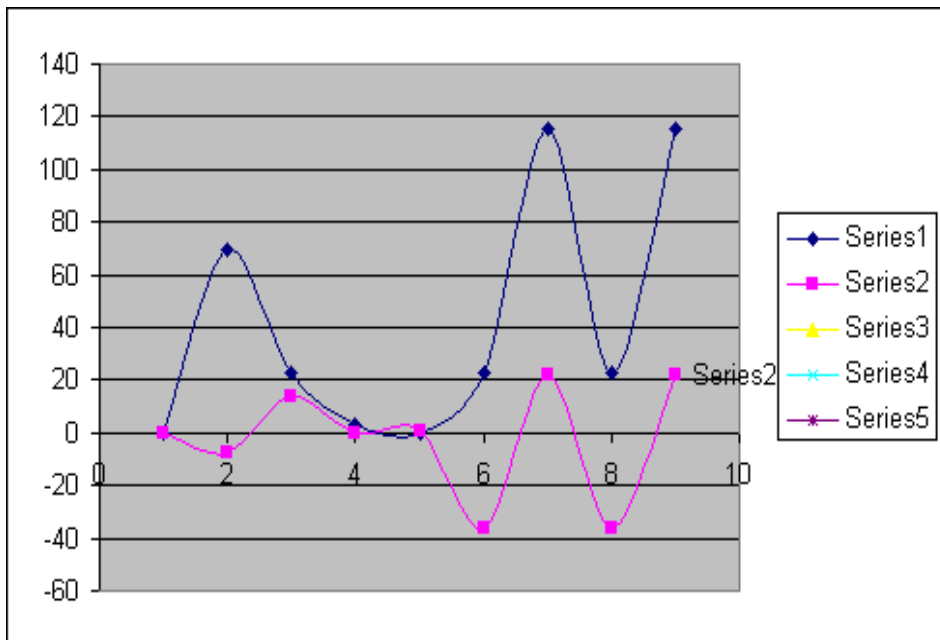
SUMMARY OUTPUT				
<i>Regression Statistics</i>				
Multiple R	0.287631			
R Square	0.082732			
Adjusted R Square	0.049972			
Standard Error	63.64976			
Observations	30			
<i>ANOVA</i>				
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Regression	1	10231.2	10231.2	2.525417
Residual	28	113436.2	4051.292	
<b>Total</b>	<b>29</b>	<b>123667.4</b>		
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	41.33828	16.26952	2.540842	0.016885
X Variable 1	2.691915	1.693928	1.589156	0.123255



Series 1 is the Ebt training (TR) index while series 2 is the Growth (G) index

**Plate 4.28**  
**All training categories productivity (P)) index**  
**regression on the Ebt training (TR) index**

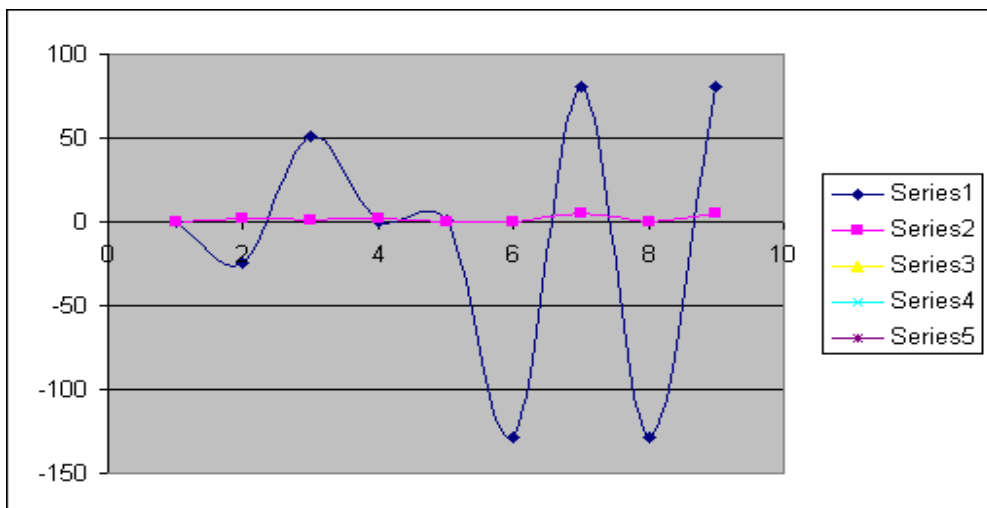
SUMMARY				
<i>Regression Statistics</i>				
Multiple R	0.097194			
R Square	0.009447			
Adjusted R Square	-0.02593			
Standard Error	66.14355			
Observations	30			
ANOVA				
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Regression	1	1168.243	1168.243	0.267029
Residual	28	122499.1	4374.969	
Total	29	123667.4		
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	69.30582	22.60164	3.066406	0.004763
X Variable 1	-7.27328	14.07509	-0.51675	0.60939



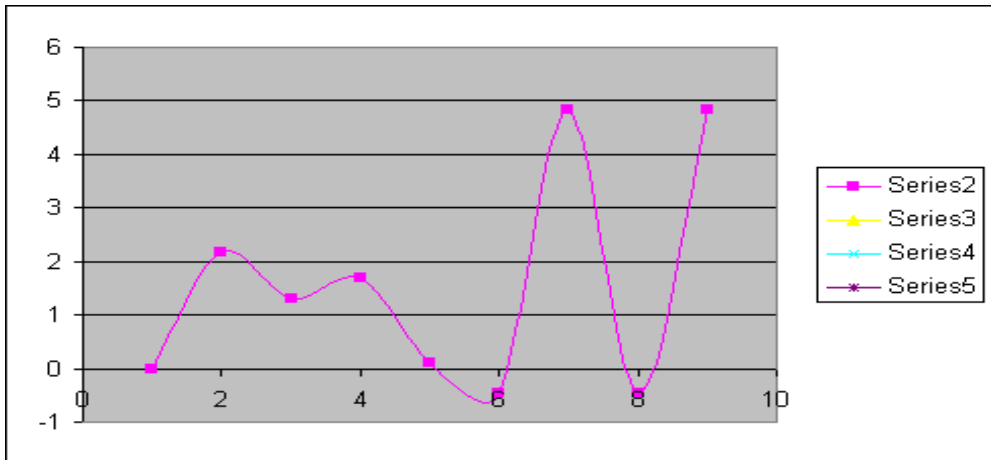
Series 1 is the Ebt training (TR) index while series 2 is the Productivity (P) index

**Plate 4.29**  
**All training categories regression of the enterprise (E)**  
**performance index on the Ebt training (TR) index**

SUMMARY OUTPUT					
<i>Regression Statistics</i>					
Multiple R	0.303355				
R Square	0.092024				
Adjusted R Square	0.059596				
Standard Error	63.32653				
Observations	30				
ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	11380.38	11380.38	2.837823	0.103185
Residual	28	112287	4010.25		
<b>Total</b>	<b>29</b>	<b>123667.4</b>			
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>
Intercept	-24.1095	50.92248	-0.47346	0.639559	-128.419
Variable 1	2.182452	1.295543	1.684584	0.103185	-0.47135



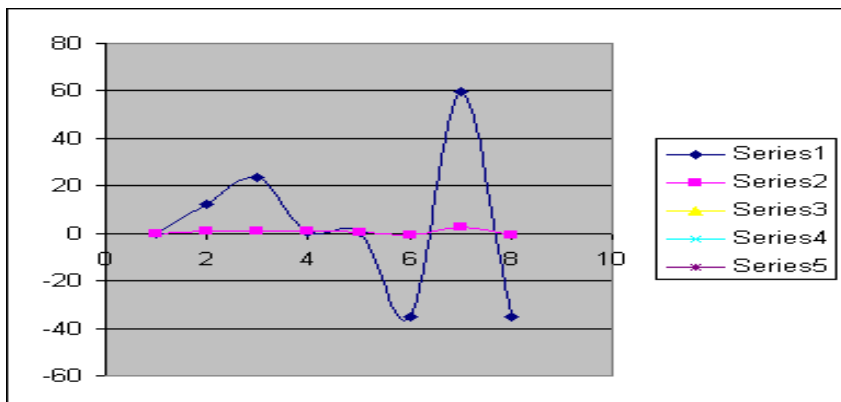
Series 1 is the Ebt training (TR) index while series 2 is the Enterprise (E) performance index

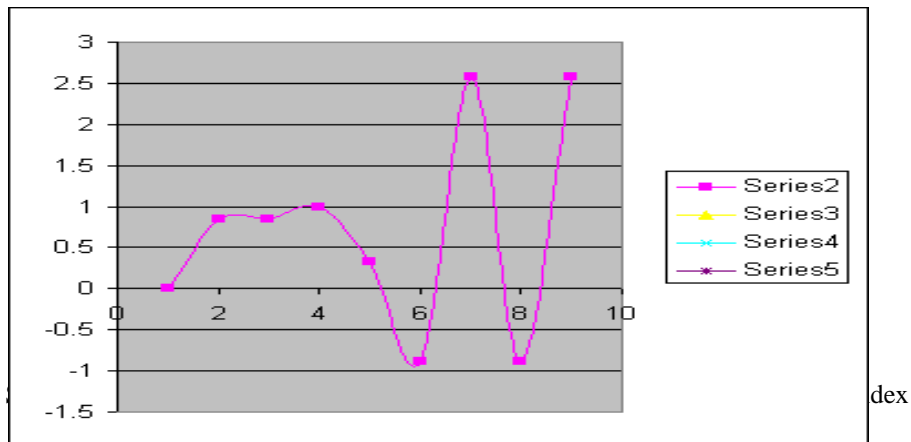


The series 2 is the blown out Enterprise (E) performance index

**Plate 4.30**  
**All non-training categories regression of the innovativeness (I) index on the Ebt (TR) index**

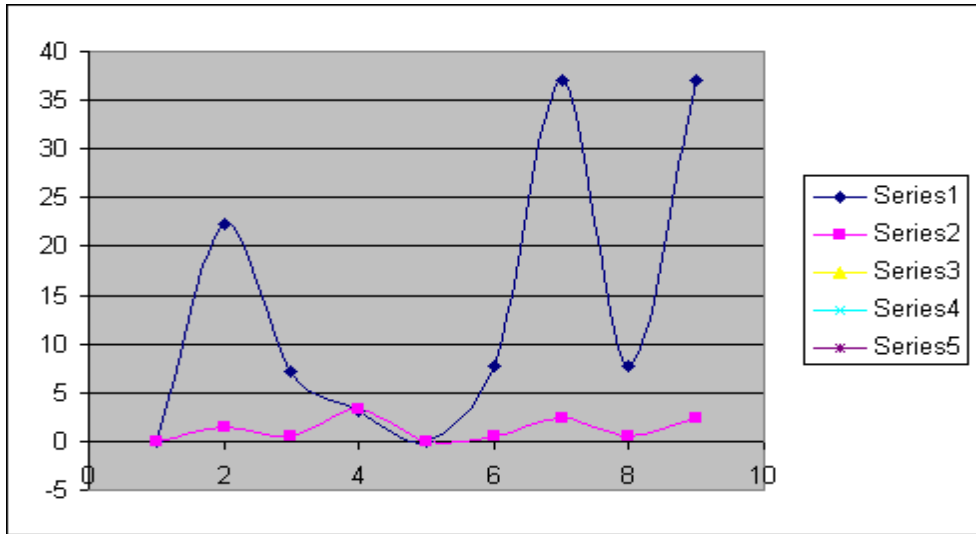
SUMMARY OUTPUT					
<i>Regression Statistics</i>					
Multiple R	0.169276				
R Square	0.028654				
Adjusted R Square	-0.00078				
Standard Error	42.95579				
Observations	35				
ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	1796.281	1796.281	0.973488	0.330991
Residual	33	60891.6	1845.2		
Total	34	62687.89			
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>
Intercept	12.19839	23.31389	0.523224	0.604314	-35.2341
X Variable 1	0.839799	0.851157	0.986655	0.330991	-0.89189





**Plate 4.31**  
**All non-training categories regression of the growth (G)**  
**index on the Ebt (TR) index**

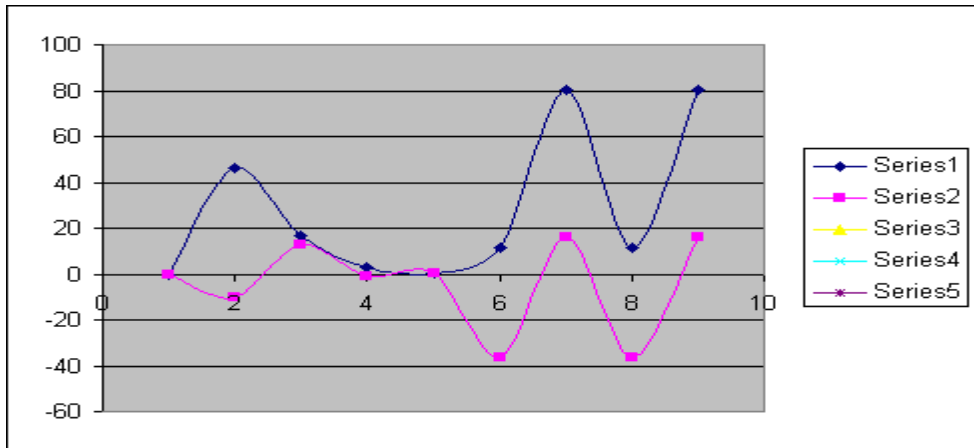
SUMMARY OUTPUT					
<i>Regression Statistics</i>					
Multiple R	0.507153				
R Square	0.257204				
Adjusted R Square	0.234695				
Standard Error	37.5638				
Observations	35				
ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	16123.59	16123.59	11.42675	0.001875
Residual	33	46564.29	1411.039		
<b>Total</b>	<b>34</b>	<b>62687.89</b>			
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>
Intercept	22.36105	7.230988	3.092392	0.004021	7.649495
X Variable 1	1.496973	0.442846	3.380348	0.001875	0.595996



Series 1 is the Ebt training (TR) index while series 2 is the Innovativeness (I) index

**Plate 4.32**  
**All non-training categories regression of the**  
**productivity (P) index on the Ebt training (TR) index**

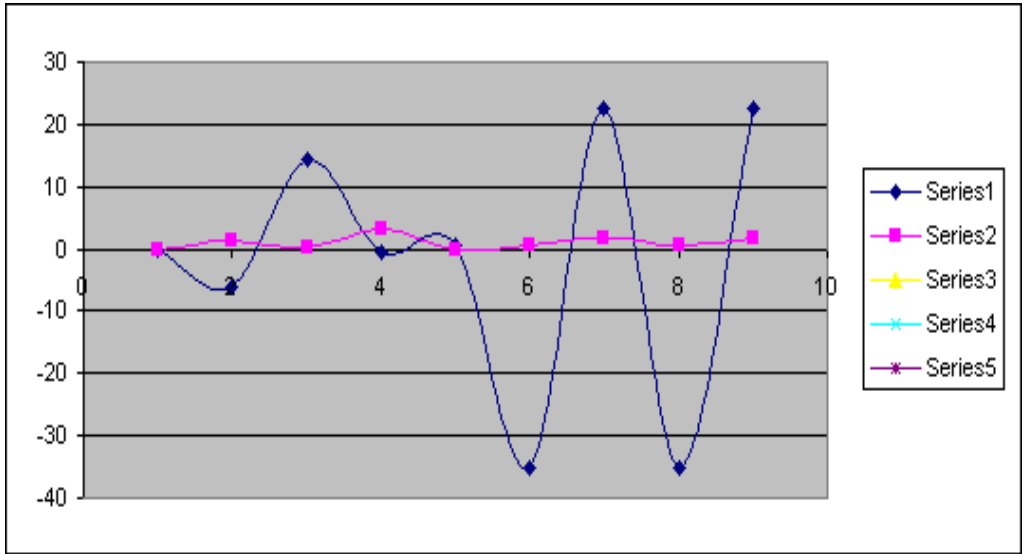
SUMMARY OUTPUT					
<i>Regression Statistics</i>					
Multiple R	0.134748				
R Square	0.018157				
Adjusted R Square	-0.0116				
Standard Error	43.18728				
Observations	35				
<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	1138.223	1138.223	0.610261	0.440258
Residual	33	61549.66	1865.141		
Total	34	62687.89			
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>
Intercept	45.94575	16.8788	2.722099	0.010279	11.60558
X Variable 1	-10.0661	12.8855	-0.78119	0.440258	-36.2818



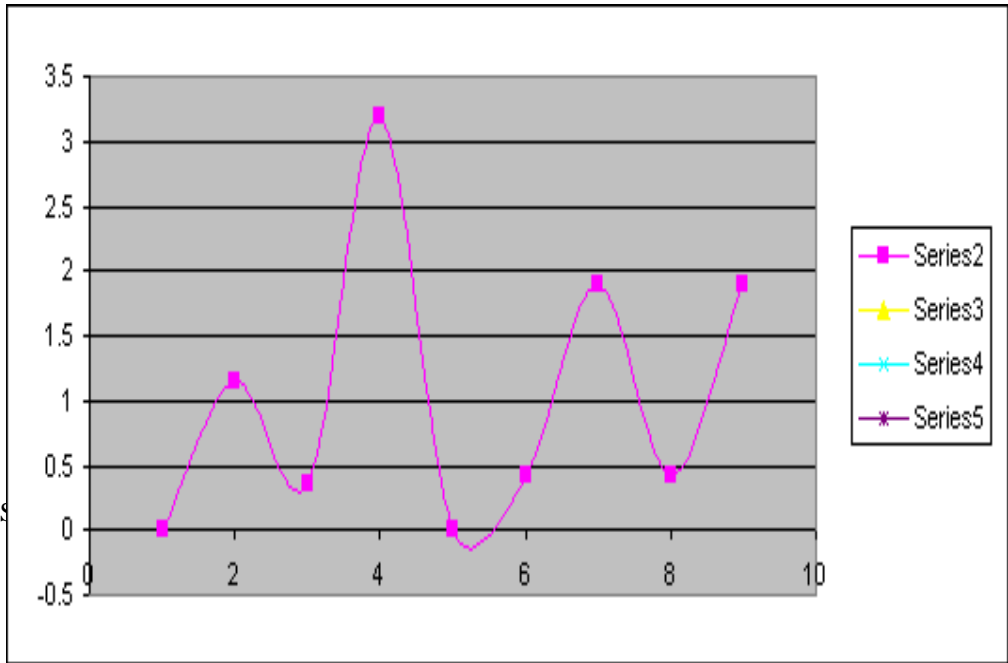
Series 1 is the Ebt training (TR) index while series 2 is the Productivity (P) index

**Plate 4.33**  
**All non-training categories regression of the**  
**enterprise (E) performance index on the Ebt training (TR) index**

SUMMARY OUTPUT				
<i>Regression Statistics</i>				
Multiple R	0.484657			
R Square	0.234893			
Adjusted R Square	0.211708			
Standard Error	38.12379			
Observations	35			
ANOVA				
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Regression	1	14724.92	14724.92	
Residual	33	47962.96	1453.423	
Total	34	62687.89		
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	
Intercept	-6.24304	14.20682	-0.43944	
X Variable 1	1.150685	0.361515	3.182955	



Series 1 is the Ebt training (TR) index while series 2 is the Enterprise (E) performance index



Series 2 is the Enterprise (E) performance index (blown out )