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An Assessment of Performance of Industrial Development Centres (IDCs) in Nigeria

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Abstract

The study assessed the performance of Industrial Development Centres (IDCs) in Nigeria. The study specifically aimed to determine the extent to which IDCs have met the service targets set for meeting their objectives for developing small-scale businesses in Nigeria and to identify problems (if any) that hindered the IDCs from meeting their targets from 1990 to 1999. The results of the study showed that at 1% level, each of the selected IDCs performed poorly towards meeting the targets set regarding the number of small-scale business they aimed to offer services to during the period covered by the study. The reasons attributed for poor performance was the failure of the IDCs' supervising Ministry to provide adequately necessary physical, human and financial resources required for offering services to small-scale businesses.

Key words: Small-Scale Businesses, Industrial Development Centres, Zones, performance

Introduction

Prior to 1954, the Nigerian economy was mainly agrarian, both in production for domestic consumption and export. Industrialisation in Nigeria was anchored on making Nigeria producer of primary raw materials for British industries and importer of British manufactured goods. From 1954 to 1960, the Nigerian government pursued the programmes of 'processing of raw materials for export' and 'import Substitution Industries' (ISIs). After early 1960s, the Nigerian government pursued the programme of ISIs more vigorously than the 'processing of raw material for export' programme. The ISIs programme was aimed at alleviating very specific problems within Nigeria. An example of such problems was the need to produce certain commodities within Nigeria. The programmes of export processing and ISIs were characterized by the establishment of few industries in urban centres. However, these programmes did not generate employment opportunities proportionally to the number of accumulating manpower. Even in the agricultural sector, the increase in agricultural output did not generate enough jobs for the unemployed. With improved health and welfare packages financed by international agencies, the population of Nigeria was increasing at a rapid rate leading to further aggravation of unemployment and under-employment. Other problems that were being generated include regional economic disparities, undue concentration of wealth and powers in the hands of few people in urban centres, wasteful utilization of productive resources and mass migration of youths from rural areas to urban centres. From 1970s onward, the effects of ISIs programme became glaringly manifested in the economy of the country. For example, Nigeria experienced a decline in GDP as a result of weak manufacturing base, which was not export oriented and was mainly dependent on external influence (UNIDO, 1985). In order to address the various problems discussed above, the Federal and State governments decided to try an alternative industrialization strategy-the development of small-scale businesses. Therefore, since 1960s, both Federal and State governments set up various programmes and agencies to provide assistance to small-scale businesses in Nigeria. Industrial Development Centres (IDCs) were among the agencies set up by the Federal Government to render assistance to small- scale businesses in Nigeria. The IDCs were set up to provide assistance to small-scale businesses in the following areas: Selection of machinery and equipment for small-scale units, guidance on choice of technologies of production, guidance on choice of raw materials, advice on plant layout, installation of machinery and equipment, training of

plant personnel on handling of improved machines, advice on product improvement, quality control and standardization, assistance on plant maintenance and repairs, advice on diversification of product mix, assistance to resolve operation problems, conduction of industry outlook surveys, feasibility studies and market surveys, identification of new small-scale businesses opportunities, designing of sales promotion and advertising campaigns, designing of book-keeping system for small-scale businesses, assisting of small-scale businesses owners on accounting and cost analysis, financial counseling, credit arrangement, and provision of training on: marketing management, personnel management, and product management and conduction of research studies on specific topics or problems. The IDCs are also to assist the states in the management and supervision of small-scale businesses throughout the federation free of charge.

Literature review

Development of small-scale businesses

A survey of available empirical evidence indicated a general tendency for small-scale businesses to be relatively more important in less developed countries (LDCs)-including Nigeria- than in the developed economies. However, while the average size of enterprise was smaller in LDCs, the size distribution was such that a few large firms dominated the markets for particular products. Sutcliffe(1971) states ‘there is an enormous number of very small firms and a small number of very large firms but there is a lack of medium sized factory industry which is common in more industrialized countries’. Anderson (1982), identified the three phases through which manufacturing activities, classified according to scale, pass during the process of industrialization as: (1) The phase in which household manufacturing is predominant, accounting for one-half to three-quarters or more of total manufacturing employment; (2) The phase in which small workshops and factories emerge at a comparatively rapid rate, and act to displace household manufacturing in several sectors; and e (3) The phase in which large-scale production becomes predominant, displacing the remaining household manufacturing activities and a large share(though not the whole) of workshop and small factory production.

Anderson went on to state that these phases are not totally separate and that there is some overlap between them. Furthermore when the informal sector activities are sufficiently disaggregated, many of them are found to provide

earning opportunities after relatively long period of time and are likely to thrive, rather than disappear as industrialization proceeds. According to Schmitz (1982), these changes are in part the result of the varying relationships between small and large industrial plants in LDCs. Where both produce competitive products, large scale (modern) plants will in time drive the small-scale out of businesses. Where, however, they are complementary to one another, as in the case of sub-contracting for example, both small and large scale plants will tend to grow together. Staley and Morse (1965) asserted that small industrial activities will also flourish where locational factors are such as to encourage the spatial dispersion or decentralization of such activities, as for example is the case with factories processing dispersed raw materials or supplying local market with a final product that is expensive to transport. Anderson (1982), affirmed that in more advanced stages of industrialization large firms tend to predominate for a variety of reasons: ‘economies of scale with respect to plant; economies of scale with respect to management and marketing; possibly superior technical management efficiency; preferential access to supporting infrastructure services and external finance; and concessionary finance along with investment incentives and tariff structures that in theory are neutral between large and small-scale, but in practice favour large-scale enterprises’. Anderson also posited that available empirical evidence suggests that part of the growth of large-scale enterprises is rooted in the expansion of once small firms through the size distribution. The encouragement of small-scale businesses is an integral part of the industrialization programmes of most LDCs. Surveys in developing countries as well as developed countries generally confirmed that small-scale businesses (especially) have great potential for generation of employment opportunities, enhancing effective mobilization of capital and ensuring a more equitable distribution of income while promoting economic growth.

According to Schmitz (op. cit.) the potential of small-scale businesses is not always realized due to problems by indigenous entrepreneurs which he classified as ‘internal’ constraints (relating to entrepreneurial competence) and ‘external’ or ‘environmental’ constraints such as exploitation of small firms by large firms, through a variety of mechanism which contribute to accumulation of large capital in large enterprises and prevention or retardation of expansion of small-scale enterprises as a result of difficulties with respect to access to product markets, technology, raw materials and credits. Staley and Morse (op cit 1965), suggested that both internal and external constraints can in principle, be modified by suitable government

policies. The policy maxim they suggested are: (a) Promotion or modernization of products, technology, business and management methods; (b) promotion of selective growth (to help small-scale business firms); (c) Promotion of management improvement; (d) Promotion of technological improvement and adaptation of technology to local conditions; (e) Promotion of complementarity among different types and sizes of industry(creation of inter-industry linkages, sub-contracting etc. Staley and Morse the following ten major policy areas or measures as being necessary the above policy maxims in less developed countries: (1) The provision of industrial advisory services(extension or counselling services) ;(2) Training of owner-managers and supervisory personnel; (3) The provision of industrial research services; (4) The provision of developmental finance; (5) The provision of factory sites and buildings(industrial estates); (6) The provision of common facility services; (7) Facilitating the procurement of materials and equipment; (8) The provision of marketing aids (the supply of market information, joint market promotion efforts to help in export marketing etc); (9) Provision of labour relations services; and (10) Stimulation of inter-firm contacts and assistance.

Global concepts of industrial development centres

Globally, Industrial Development Centres(IDCs) are described as institutions set up to provide assistance to small and medium scale enterprises to facilitate their establishment, growth ,development and survival(Kwaplong,2000). According to researchers, the need for the establishment of IDCs is borned out of the realization that no nation can industrialize without giving adequate attention to small-scale and medium scale enterprises development(Kwaplong, 2000,Schmitz,1982, and Staley and morse,1965). In highly industrialized nations like Japan, United Kingdom and United states of America, IDCs (with different appellations) have contributed towards the development of small and medium scale businesses by offering services which assisted small and medium scale businesses to alleviate problems that militate against their development. In India , Indonesia , Malaysia, South Korea, Hong Kong , Sub-Saharan countries and other nations in the world , IDCs have been established to render assistance to small and medium scale businesses. The following are examples of the contributions made by the IDCs in Sub-African countries : (1) In Ghana, a rural industrial development centre launched in 2003 by UNIDO linked rural producers of products with markets in urban centres,

trained a total of 18 groups involving 647 people. Through the techniques developed during the training, one group proved that it could produce in two days what it would have produced previously in one month(UNIDO,2004); (2) In South Africa, an Industrial Development Centre-The Foundation for Economic and Business Development (FEBDEV)- that has been in existence over 20 years ago, has trained more than one million new entrepreneurs to create jobs and wealth that will assist the country to solve many of its economic problems.(Bridges org, 2003); (3) An Industrial Development Centre in Kenya named ‘Appropriate Technologies’ and founded in 1991 has assisted more than 1,000 local manufacturers in Kenya to produce new technologies (Bridges org., 2002); and(4) An Industrial Development Centre with an appellation ‘Volunteers in Technical Assistance (VITA)’ with branches in some African countries has assisted more than 50,000 small and micro entrepreneurs in Benin Republic, Guinea, Morocco and South Africa(Bridges org.,2002).

Theoretical framework

Organisation performance is premised on the classical theory of firms which presupposes that firms exist to maximize profits. In the Nigerian economic system, the general concept of organization or company is one that makes profits and declares dividends every year. Studies carried out on performance of government development outfits like IDCs in the past, however, did not employ profit as a criterion for evaluating performance since the objectives of the government development agencies are not congruous with profit maximization. Studies carried out in the past on performance of the developmental agencies, employed the following criteria: (1) The extent of meeting targets set; (2) The extent of meeting the demand of the beneficiaries of their services; and (3) The extent of impact of services rendered on the beneficiaries. Okoye (1992) employed these criteria in evaluating six Agricultural Development programs in Nigeria. Philips (1991) employed criterion 1 among others to assess the performance of National Economic and Reconstruction Fund (NERFUND). Enterprise Department of the United Kingdom Government for International Development (DFID) employed criterion 1 to assess its performance on the development of entrepreneurship in Asia, Sub-Saharan Africa, Latin- America, the Caribbean and Eastern Europe (Bridges org., 2002). This study employed criterion 1 to assess IDCs’ performance.

Statement of research problems

The performance of the IDCs cannot be ignored, judging from their unique importance in the development of small-scale businesses in Nigeria, their long existence and the enormous amount of money expended on them. All the small-scale development schemes and programmes(excluding IDCs) that were in existence at the time of carrying out this report , provided assistance in the area of finance. The establishment of the IDCs was based on the recognition that although shortage of finance might be the major problem inhibiting the growth and development of small-scale businesses, it is in most cases a symptom of other problems-poor planning, lack of managerial skill, lack of cost accounting, project design etc. IDCs were established to offer assistance that could alleviate these other problems. The Federal Government has since the 1960's spent a lot of money on the establishment and running of the IDCs in the Federation. For example, the Federal Government has provided workshops, machines, offices and other amenities like motor vehicles running to several millions. The Federal Government, on the average, spent more than N500,000 per quarter on the smallest IDC in the Federation. In 1997, the Federal Government expended N39 million to strengthen three of the IDCs in the Federation, and N81 million on the development of other IDCs(Budget ,1997). Despite the scenario above, it is surprising that no meaningful research has been carried out to appraise the IDCs. This study attempts to fill the gap of no meaningful research on appraisal of the IDCs in Nigeria.

Research objectives

The focus of the research is the evaluation of twelve Industrial Development Centres (IDCs) in their geographical areas of operations. The specific objectives of the study are determination of the extent to which IDCs have met the service targets set for meeting their objectives for developing small-scale businesses and to identify the problems(if any) that hindered IDCs from meeting their service targets .

Research questions

The following research questions were formulated to serve as a guide in achieving the stated objectives:

1. What were the service targets set by the IDCs for meeting their objectives of development of small- scale businesses?

2. What was the actual performance of the IDCs regarding service targets set for development of small-scale businesses?
3. To what extent did the IDCs meet the service targets set for development of small-scale businesses? And
4. What were the problems (if any) that hindered IDCs from meeting service targets set for development of small-scale businesses?

Research hypothesis

Based on the research questions formulated, the null hypothesis formulated is 'there was no significant difference between the service targets set and the actual performance of the IDCs.

Research setting

Twelve IDCs were chosen for this study. These were made up of three IDCs in each of the four zones in Nigeria: North Western, North Eastern, South Eastern, and South Western zones. The IDCs in each zone included the biggest centre and two of the smaller centres in the zone.

Research methodology

The data collected on performance targets and actual performance of the IDCs were used to test hypothesis 1 (see Tables 1-4)

In selecting the IDCs, a sampling frame was obtained by listing all the IDCs in Nigeria. The frame was divided into geographical locations and sizes of the centres. The geographical locations were grouped into four basic zones- North Western / Central, North Eastern, South Eastern and South Western zones. The selection included the three biggest centres (these were designated as $X_1, X_2, X_3,$ and X_4), and nine of the smaller centres (These were designated as $Y_1, Y_2, Y_3, Y_4, Z_1, Z_2, Z_3$ and Z_4). The smaller IDCs were selected by judgmental sampling method. E-Views 7 Software was used to test the hypothesis formulated for the study.

Results and discussion

The results of the findings of the study regarding targets are presented in Tables 1-4). From 1990-1999 the three IDCs ($X_1, Y_1,$ and Z_1) in the North Central/North Western zone offered services to 538 (29.89%) small-scale

businesses out of the total number of 1800 small-scale businesses they budgeted to offer services to. During the same period, IDC X_1 offered services to 216(28.80 %) small-scale businesses out of the total number of 750 small-scale businesses it budgeted to offer services to; IDCY₁ offered services to 131(29.1 %) small-scale businesses out of the total number of 450 small-scale businesses it budgeted to offer services to; IDCZ₁ offered services to 191(31.83%) small-scale businesses out of the total number of 600 small-scale businesses it budgeted to offer services to.

From 1990-1999 the three IDCs(X_2, Y_2 , and Z_2) in the North Eastern zone offered services to 398(24.12%) small-scale businesses out of the total number of 1650 small-scale businesses they budgeted to offer services to. During the same period, IDC X_2 offered services to 159(21.20%) small-scale businesses out of the total number of 750 small-scale businesses it budgeted to offer services to; IDCY₂ offered services to 139(27.80%) small-scale businesses out of the total number of 500 small-scale businesses it budgeted to offer services to; IDCZ₂ offered services to 100(25.00%)small-scale businesses out of the total number of 400 small-scale businesses it budgeted to offer services to.

From 1990-1999 the three IDCs(X_3, Y_3 , and Z_3) in the South Eastern zone offered services to 448(27.15%) small-scale businesses out of the total number of 1650 small-scale businesses they budgeted to offer services to. During the same period, IDC X_3 offered services to 221(36.83%) small-scale businesses out of the total number of 600small-scale businesses it budgeted to offer services to; IDCY₃ offered services to 89(22.25 %) small-scale businesses out of the total number of 400 small-scale businesses it budgeted to offer services to; IDCZ₃ offered services to 178(27.38 %) small-scale businesses out of the total number of 650small-scale businesses it budgeted to offer services to.

From 1990-1999 the three IDCs(X_4, Y_4 , and Z_4) in the South Western zone offered services to 581(24.72%) small-scale businesses out of the total number of 2350 small-scale businesses they budgeted to offer services to. During the same period, IDC X_4 offered services to 243(22.09%) small-scale businesses out of the total number of 1100 small-scale businesses it budgeted to offer services to; IDCY₄ offered services to 158(28.73 %) small-scale businesses out of the total number of 550 small-scale businesses it budgeted to offer services to; IDCZ₄ offered services to 180(25.71 %) small-scale

businesses out of the total number of 700 small-scale businesses it budgeted to offer services to.

Table 5-16 show results of the hypotheses

At 1% level, t-test and Anova F-test, indicate that there was significant difference between the number of small-scale businesses each of the selected IDCs budgeted or targeted to offer services and the actual number of number of small- scale businesses it offered services to.

Based on the results of the tested hypothesis, it is affirmed that each of the selected IDCs performed poorly towards meeting its performance target. Our IDCs' respondents attributed their poor performance to the following reasons: lack of adequate physical, human and financial resources required for offering services to small- scale businesses. According to our respondents the supervising Ministry of the IDCs which was supposed to provide all resources required by the IDCs failed to provide the resources adequately. The supervising Ministry failed to provide adequate :(1) number of staff that could provide services to Small- scale businesses in certain disciplines and trades such as Accounting, Marketing, Production Engineering, Textiles, Electrical/Electronics; (2) stationery required for offering certain services such as Feasibility Studies and In-plant Studies; (3) financial allocations required for taking care of certain expenses necessary for extension services such as fueling and maintenance of motor vehicles for extension services and provision of out -of -station night allowances for staff during extension tours.

Summary and conclusion

The study attempts to determine the extent to which the IDCs performed towards achieving the targets regarding the number of small- scale businesses they aimed to offer services to from 1990 to 1999. The results of the study show that each of the selected IDCs performed poorly towards reaching the targets set regarding the number of small-scale business they aimed to offer services to during the period covered by the study. The reasons attributed for poor performance was the failure of the IDCs supervising Ministry to provide adequately necessary physical, human and financial resources required for offering services to small- scale businesses.

Recommendation

To obviate the poor performance of the IDCs, it is recommended that the Supervising Ministry of the IDCs should either provide as when due the necessary and adequate physical, human and financial resources required by the IDCs or giving the IDCs autonomy to employ their own staff and source for funds that would be required for staff remuneration and allowances and for running and providing services for small-scale businesses. Sources of fund recommended for IDCs are as follows: contribution by the Association of Small-scale Industrialists, fees from beneficiaries of the IDCs' services, grants from National and foreign donors and International organizations.

References

- Anderson,D.(1982) '*Small Industry in Developing Countries: A Discussion of Issues*'. *World Development*. Vols. 10 & 11.November, pp. 913-948.
- Bridges(2002). *Supporting Entrepreneurship in Developing Countries. Survey of the Field and Inventory Initiatives*.Bridges Org. 12 ,Plein Street, 7550 Durbanville, South Africa.
- Federal Ministry of Finance(1997). *Approved Budget. Vols. 1 and 2. Revenue and Recurrent Expenditure, 1997 ,Fiscal year*.
- Kwaplong, K.U(2000) *Global Concept of Industrial Development Centres(IDCs) :The Nigerian Experience-* Being a paper presented at a seminar organized by the Federal Ministry of Industries, Abuja.
- Okoye, A.A.(1983) '*The Role of Strategic Management in Enhancing performance of Agricultural and Rural Development Programmes in Nigeria*'. A Ph.D. Thesis, Department of Business Administration, Unniversity of Ilorin, Ilorin, Nigeria.
- Philips,0. (1987) '*Promoting Small-Scale Industries through Government Policies*' in Igwe, B.U.N, Akinbinu and Banwo, P.A.(eds) *Small-Scale Industries and the Development of Nigeria*.Proceeding of the National Conference, NISER, Ibadan.
- Schmitz, H.C.(1982). '*Growth Constraints on Small Manufacturing in Developing Countries: A Critical Review*'. *World development*. Vol. 10, No.6pp.429-450.

Staley, E. & Morse, R.(1965), *Modern Small- Scale Industry for Developing Countries*. McGraw Hill, New York.

Surcliffe, R.B.(1971). *Industry and Underdevelopment*, Addison- Wesley, London.

UNIDO(1985). *Industry and Development in the World Global Report*, UNDO, Vienna.

UNIDO(2004). *Industrialisation, Environment and the Millenium Development Goals in Sub –Saharan Africa: The New Frontier on the fight against Poverty*, Development Report, UNIDO, Vienna.

Table 1: Targeted/Actual Recipients of IDCs in the North Western/Central Zone

Year	IDCs											
	X ₁			Y ₁			Z ₁			Total		
	Target ed Recipients	Actual Recipients	% Recipient/ Targeted	Target ed Recipients	Actual Recipients	% Recipient/ Targeted	Target ed Recipients	Actual Recipients	% Recipient/ Targeted	Target ed Recipients	Actual Recipients	% Recipient/ Targeted
1990	75	27	36.00	45	15	33.33	60	20	33.33	180	62	34.44
1991	75	23	30.67	45	14	31.11	60	21	35.00	180	58	32.22
1992	75	25	33.33	45	16	35.56	60	19	31.67	180	60	33.33
1993	75	23	30.67	45	16	35.56	60	21	35.00	180	60	33.33
1994	75	22	29.33	45	14	31.11	60	23	38.33	180	59	32.78
1995	75	18	24.00	45	13	28.89	60	17	28.33	180	48	26.67
1996	75	20	26.77	45	11	24.44	60	21	35.00	180	52	28.89
1997	75	17	22.69	45	10	22.22	60	16	26.67	180	43	23.89
1998	75	18	24.00	45	12	26.67	60	15	25.00	180	45	25.00
1999	75	23	30.67	45	10	22.22	60	18	30.00	180	51	28.33
Total	750	216	28.80	450	131	29.11	600	191	31.83	1800	538	29.89

Source: IDCs' Records and Calculations from Records.

Table 2: Targeted/Actual Recipients of IDCs in the North Eastern Zone.

Year	IDCs											
	X ₂			Y ₂			Z ₂			Total		
	Targeted Recipients	Actual Recipients	% Recipient/Target	Targeted Recipients	Actual Recipients	% Recipient/Target	Targeted Recipients	Actual Recipients	% Recipient/Target	Targeted Recipients	Actual Recipients	% Recipient/Target
1990	75	23	30.67	50	18	36.00	40	12	30.00	165	53	32.12
1991	75	22	29.33	50	12	24.00	40	12	30.00	165	46	27.88
1992	75	15	20.00	50	19	38.00	40	11	27.50	165	45	27.27
1993	75	16	21.33	50	15	30.00	40	10	25.00	165	41	24.85
1994	75	12	16.00	50	15	30.00	40	11	27.50	165	38	23.03
1995	75	15	20.00	50	16	32.00	40	10	25.00	165	41	24.85
1996	75	16	21.33	50	10	20.00	40	9	22.50	165	35	21.21
1997	75	14	18.67	50	12	24.00	40	8	20.00	165	34	20.61
1998	75	12	16.00	50	10	20.00	40	9	22.50	165	31	18.79
1999	75	14	18.67	50	12	24.00	40	8	20.00	165	34	20.61
Total	750	159	21.20	500	139	27.80	400	100	25.00	1,650	398	24.12

Source: IDCs' Records and Calculations from Records.

Table 3: Targeted/Actual Recipients of IDCs in the South Eastern Zone.

Year	IDCs											
	X ₃			Y ₃			Z ₃			Total		
	Targeted Recipients	Actual Recipients	% Recipient/Target	Targeted Recipients	Actual Recipients	% Recipient/Target	Targeted Recipients	Actual Recipients	% Recipient/Target	Targeted Recipients	Actual Recipients	% Recipient/Target
1990	60	24	40.00	40	13	32.50	65	21	32.31	165	58	35.15
1991	60	24	40.00	40	12	30.00	65	25	38.46	165	61	36.97
1992	60	25	41.67	40	9	22.50	65	20	30.77	165	54	32.73
1993	60	22	36.67	40	10	25.00	65	19	29.23	165	51	30.91
1994	60	22	36.67	40	8	20.00	65	18	27.69	165	48	29.09
1995	60	21	35.00	40	8	20.00	65	19	29.23	165	48	29.09
1996	60	23	38.33	40	9	22.50	65	17	26.15	165	49	29.70
1997	60	18	30.00	40	5	12.50	65	12	18.46	165	35	21.21
1998	60	25	41.67	40	7	17.50	65	13	20.00	165	45	27.27
1999	60	17	28.33	40	8	20.00	65	14	21.54	165	39	23.64
Total	600	221	36.83	400	89	22.25	650	178	27.38	1650	448	27.15

Source: IDCs' Records and Calculations from Records.

Table 4: Targeted/Actual Recipients of IDCs in the South Western Zone.

Year	IDCs											
	X ₁			Y ₄			Z ₁			Total		
	Targeted Recipients	Actual Recipients	% Recipient/Target	Target ed Recipients	Actual Recipients	% Recipient/Target	Target ed Recipients	Actual Recipients	% Recipient/Target	Target ed Recipients	Actual Recipients	% Recipient/Target
1990	110	30	27.27	55	21	38.18	70	20	28.57	235	71	30.21
1991	110	24	21.82	55	22	40.00	70	22	31.43	235	68	28.94
1992	110	27	24.55	55	18	32.73	70	19	27.14	235	64	27.23
1993	110	25	22.73	55	19	34.55	70	21	30.00	235	65	27.66
1994	110	27	24.58	55	15	27.27	70	21	30.00	235	63	26.81
1995	110	25	22.73	55	16	29.09	70	18	25.71	235	59	25.11
1996	110	23	20.91	55	17	30.91	70	16	22.86	235	56	23.83
1997	110	26	23.64	55	11	20.00	70	14	20.00	235	51	21.70
1998	110	19	17.27	55	10	18.18	70	15	21.43	235	44	18.72
1999	110	17	15.45	55	9	16.36	70	14	20.00	235	40	17.02
Total	1,100	243	22.09	550	158	28.73	700	180	25.71	2,350	581	24.72

Source: IDCs' Records and Calculations from Records.

Table 5: Test for Equality of Means Between Series for IDCX

Date: 10/09/12 Time: 17:17

Sample: 1990 1999

Included observations: 10

Method	df	Value	Probability
t-test	18	51.59695	0.0000
Anova F-test	(1, 18)	2662.245	0.0000

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	1	14257.80	14257.80
Within	18	96.40000	5.355556
Total	19	14354.20	755.4842

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
TARGET	10	75.00000	0.000000	0.000000
ACTUAL	10	21.60000	3.272783	1.034945
All	20	48.30000	27.48607	6.146073

Table 6: Test for Equality of Means Between Series for IDCY₁

Date: 10/09/12 Time: 17:25

Sample: 1990 1999

Included observations: 10

Method	df	Value	Probability
t-test	18	44.19015	0.0000
Anova F-test	(1, 18)	1952.770	0.0000

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	1	5088.050	5088.050
Within	18	46.90000	2.605556
Total	19	5134.950	270.2605

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
TARGET	10	45.00000	0.000000	0.000000
ACTUAL	10	13.10000	2.282786	0.721880
All	20	29.05000	16.43960	3.676007

Table 7: Test for Equality of Means Between Series for IDCZ₁

Date: 10/09/12 Time: 17:45

Sample: 1990 1999

Included observations: 10

Method	df	Value	Probability
t-test	18	50.55765	0.0000
Anova F-test	(1, 18)	2556.076	0.0000

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	1	8364.050	8364.050
Within	18	58.90000	3.272222
Total	19	8422.950	443.3132

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
TARGET	10	60.00000	0.000000	0.000000
ACTUAL	10	19.10000	2.558211	0.808977
All	20	39.55000	21.05500	4.708042

Table 8: Test for Equality of Means Between Series for IDCX₂

Date: 10/09/12 Time: 16:53

Sample: 1990 1999

Included observations: 10

Method	df	Value	Probability
t-test	18	49.77118	0.0000
Anova F-test	(1, 18)	2477.170	0.0000

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	1	17464.05	17464.05
Within	18	126.9000	7.050000
Total	19	17590.95	925.8395

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
TARGET	10	75.00000	0.000000	0.000000
ACTUAL	10	15.90000	3.754997	1.187434
All	20	45.45000	30.42761	6.803821

Table 9: Test for Equality of Means Between Series for IDCY₂

Date: 10/09/12 Time: 18:03

Sample: 1990 1999

Included observations: 10

Method	df	Value	Probability
t-test	18	35.92084	0.0000
Anova F-test	(1, 18)	1290.307	0.0000

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	1	6516.050	6516.050
Within	18	90.90000	5.050000
Total	19	6606.950	347.7342

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
TARGET	10	50.00000	0.000000	0.000000
ACTUAL	10	13.90000	3.178050	1.004988
All	20	31.95000	18.64763	4.169737

Table 10 :Test for Equality of Means Between Series for IDC Z₂

Date: 10/09/12 Time: 18:12

Sample: 1990 1999

Included observations: 10

Method	df	Value	Probability
t-test	18	63.63961	0.0000
Anova F-test	(1, 18)	4050.000	0.0000

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	1	4500.000	4500.000
Within	18	20.00000	1.111111
Total	19	4520.000	237.8947

Category Statistics

Variable	Count	Mean	Std. Err.	
			Std. Dev.	of Mean
TARGET	10	40.00000	0.0000000	000000
ACTUAL	10	10.00000	1.490712	0.471405
All	20	25.00000	15.42384	3.448875

Table 11: Test for Equality of Means Between Series for IDCX₃

Date: 10/09/12 Time: 17:02

Sample: 1990 1999

Included observations: 10

Method	df	Value	Probability
t-test	18	43.31625	0.0000
Anova F-test	(1, 18)	1876.298	0.0000

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	1	7182.050	7182.050
Within	18	68.90000	3.827778
Total	19	7250.950	381.6289

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
TARGET	10	60.00000	0.000000	0.000000
ACTUAL	10	22.10000	2.766867	0.874960
All	20	41.05000	19.53533	4.368232

Table 12: Test for Equality of Means Between Series for IDC Y_3

Date: 10/09/12 Time: 18:21

Sample: 1990 1999

Included observations: 10

Method	df	Value	Probability
t-test	18	42.19172	0.0000
Anova F-test	(1, 18)	1780.141	0.0000

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	1	4836.050	4836.050
Within	18	48.90000	2.716667
Total	19	4884.950	257.1026

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
TARGET	10	40.00000	0.000000	0.000000
ACTUAL	10	8.900000	2.330951	0.737111
All	20	24.45000	16.03442	3.585405

Table 13: Test for Equality of Means Between Series for IDC Z₃

Date: 10/09/12 Time: 22:14

Sample: 1990 1999

Included observations: 10

Method	df	Value	Probability
t-test	18	37.62978	0.0000
Anova F-test	(1, 18)	1416.000	0.0000

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	1	11139.20	11139.20
Within	18	141.6000	7.866667
Total	19	11280.80	593.7263

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
TARGET	10	65.00000	0.000000	0.000000
ACTUAL	10	17.80000	3.966527	1.254326
All	20	41.40000	24.36650	5.448515

Table14: Test for Equality of Means Between Series for IDCX₄

Date: 10/09/12 Time: 17:09

Sample: 1990 1999

Included observations: 10

Method	df	Value	Probability
t-test	18	70.20818	0.0000
Anova F-test	(1, 18)	4929.188	0.0000

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	1	36722.45	36722.45
Within	18	134.1000	7.450000
Total	19	36856.55	1939.818

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
TARGET	10	110.0000	0.000000	0.000000
ACTUAL	10	24.30000	3.860052	1.220656
All	20	67.15000	44.04337	9.848397

Table 15: Test for Equality of Means Between Series for IDCY₄

Date: 10/09/12 Time: 22:24

Sample: 1990 1999

Included observations: 10

Method	df	Value	Probability
t-test	18	27.29721	0.0000
Anova F-test	(1, 18)	745.1379	0.0000

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	1	7683.200	7683.200
Within	18	185.6000	10.31111
Total	19	7868.800	414.1474

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
TARGET	10	55.00000	0.000000	0.000000
ACTUAL	10	15.80000	4.541170	1.436044
All	20	35.40000	20.35061	4.550535

Table 16: Test for Equality of Means Between Series for

IDCZ₄

Date: 10/09/12 Time: 22:33

Sample: 1990 1999

Included observations: 10

Method	df	Value	Probability
t-test	18	53.82511	0.0000
Anova F-test	(1, 18)	2897.143	0.0000

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	1	13520.00	13520.00
Within	18	84.00000	4.666667
Total	19	13604.00	716.0000

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
TARGET	10	70.00000	0.000000	0.000000
ACTUAL	10	18.00000	3.055050	0.966092
All	20	44.00000	26.75818	5.983310