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Industrial Registry Software Development Sri Lanka IP Industrial Statistics Subcomponent Department of Census and Statistics

Final Report

By

Centre for Enterprise Management Information Services Department of Industrial Management University of Kelaniya

June 2004

Senior Project Team

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1. Background

To strengthen industrial statistics operations in Sri Lanka, UNIDO commenced working with the Ministry of Industrial Development (MOID), Department of Census and Statistics (DCS), Board of Investment (BOI) and the Central Bank of Sri Lanka (CBSL), all of which have substantial industrial statistics operations. UNIDO was assisting these four organizations to pool their efforts in a way that will result in dramatic improvements in their overall results. An important component of this assistance is a pilot exercise to update the industrial registry. DCS will have the lead role in this registry updating exercise.

A team from the Center for Enterprise Management Information Services (CEMIS), Department of Industrial Management, University of Kelaniya, Sri Lanka, was requested to submit a proposal for the design and development of this registry. Based on the proposal, CEMIS was tasked with the project in February 2002.

2. Introduction

The industrial sector has been driving the growth of the Sri Lankan economy over the past two decades. Globalisation, which has led to the breaking down of tariff and non-tariff barriers, has meant that government policy has to keep up with the rapidly evolving changes in the market. Hence, statistical information on performance of industries has become vital if policy makers are to make timely informed decisions to facilitate the development of the local industries. One of the obstacles to realize this objective in Sri Lanka is the lack of both an up-to-date registry of factories and of a standard procedure for annual updating.

Industrial statistical data is collected in Sri Lanka by four sources: namely Central Bank, Board of Investment, Ministry of Industrial Development and the Department of Census and Statistics (DCS). They conduct separate surveys to collect this data. However, the success rate of these surveys has varied and in most cases the information found to be divergent. UNIDO assist these four organizations to pool their efforts in a way that would result in dramatic improvements in their overall results. An important component of this assistance is a pilot exercise to update the industrial registry in the Western Province of Sri Lanka. DCS played the lead role in this registry updating exercise and the software for DCS Registry System is developed by the Center for Enterprise Management Information Service (CEMIS) in Sri Lanka

3. DCS Registry System

The initial plan was to develop the registry system based on a model developed for the Central Bureau of Statistics in Indonesia in early 1991, since their was no procedure for monitoring existing enterprises in Sri Lanka. However after the system requirement analysis and subsequent discussion with the UNIDO consultant and senior staff at DCS, it was clear the system developed in Indonesia was inadequate and lacked features that could automate some tedious data manipulation operations.

Hence, though this would involve a radical change to the original system that was planned for at the time of agreement, entailing a substantial increase in design and development time, CEMIS agreed to incorporate them.

The developed system consists of two major components:

- a) Registry support software to provide management information
- b) A list processing module to assist in the use of information on industrial establishments obtained from various sources

Key Modules

a) Import Module¹

The import module was developed to obtain initial data for the new system from five sources: the DCS old registry, BOI, MOID, EPF, and CEB. The structures of the five data sources were different and therefore, five separate modules were developed to import data to a Microsoft Access database. As the data files were prepared, some source data file specifications were modified from the original specifications.

b) Parsing Module

Five modules for each source were developed to arrange data into common format to facilitate matching. Parsed data of each source were stored in a separate table that had some common fields for all the sources. Initially the program was developed in such a way to have DSD codes for all the records before the record could be saved but however this policy was changed during implementation as it was found that the data at the different sources were incomplete.

¹ See Appendix I for list of all modules developed

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c) Editing Module

A separate editing module was developed to correct the data errors found at the parsing stage. Three digit editing code was used by editors to identify the different types of errors. The module supports the review of result of parsing and editing by browsing the data.

d) Manual Entry of Matches Module

Manual matching module was developed to enter manually matched records to the matched table in the system. This module is used to evaluate the computerized matching and for reviewing doubtful cases.

e) Matching module

List processing will be done in the system by matching two strings. One generated from the Registry Support System and the other one from the external database sources, namely BOI, CEB, MOID, and CBSL. The generated string will be converted to upper case and will trim and remove blank spaces in between to 'clean' the data. This generated string will be used for establishment matching. This process will improve the performance of the matching process compared to field-by-field matching in tables.

The initial prototype was developed to give users a facility to select matching of records by word or matching of records through characters. The module facilitated the selection of source to be matched with target tables and the results were displayed on the screen with all targets combined.

However, it was found the prototype matching module developed using the word and character matching technique flagged only the perfect match. Therefore, the system needed to be improved to catch partial matching, and the matching module was modified using the use of bigrams. This new module facilitated the selection of different matching criteria as well as the number of matching records to be displayed with a given minimum level of rating. Matching process would generate a point scale rating between 100 (everything matched) and 0 (nothing matched) to illustrate the closeness of the match.

The module was designed to carry out the matching in the following order. The DCS registry is first matched with MOID, BOI, EPF, and CEB databases. Subsequently, MOID

is matched with BOI, EPF and CEB databases. Then BOI is matched with EPF and CEB databases and finally EPF is matched with the CEB database.

All the matches between records are displayed on the screen and the operator needs to visually check for the correctness and then matching can be recorded in the match table. The match table is capable of recognising all the matching records of different sources. The zooming facility was given in the module to show all the common fields for a selected record if the operator wants more information to decide the match. To facilitate reference of problematic cases to a supervisor, a printing module was also developed to enable the operator to print the common field for a selected record from selected sources.

4. DCS Registry System Development

The DCS Registry System development project commenced in February 2002 with the starting of the systems design phase. As specified previously, it was intimated that the UNIDO developed system for the Central Bureau of Statistics in Indonesia in early 1991, would be used as the reference frame for the DCS Registry System development. It must be reiterated once again that, that except for a few system features that were incorporated, the design and development of DCS Registry System has been unique and the new features that have been included makes the system very easy and efficient to use.

From the very beginning of the project it was obvious that there were going to be serious deviations from the original design and hence a continuous dialogue with the end users and the UNIDO consultant was kept up. A number of different prototypes / systems were demonstrated and discussed at these meetings. The DCS Registry System's functions and features were presented and explained, and input obtained from DCS staff. Due to the innovative nature that the system was taking, there were changes being made to the database design on a regular basis, making the development work rather tedious and led to some overruns of the schedule. However, it was agreed by the end users that the extra time put into the improvements, made the system a much better product.

The system can be installed on a PC based Local area network running Windows NT/2000 and developed with multi-user capabilities. MS-Access is used as the back end of the database.

Visual Basic 6.0 is used as the GUI interface and Crystal reports 8.0 with SQL facility is used to generate management reports.

Taking into account the computer literacy of the probable end users an user friendly graphical user interface was developed. Users with minimum training would be able to use the system. The system comes with an in-built backup facility and systems maintenance features. The system also has a multi-level user names and password protection so that some of the important functions / features could be restricted to privileged users. Because the data contained in the registry, may be used by other software applications, the standard field and table naming conventions scheme was used. The variable naming / file naming scheme was developed after consultation with DCS and UNIDO².

The system was initially installed at the national office of the Department of Census and Statistics for both registry maintenance and list processing. The developed system was successfully used to process the data of the pilot registry development project of the Western Province of Sri Lanka.

5. Conclusion

The first version of the DCS Registry System was developed and demonstrated to the Ministry of Enterprise Development, Industrial Policy and Investment Promotion on the 2nd of March 2003. The final version was installed and commissioned in May 2003. The system was put to official use by the DCS when completing the registry update census of the Western Province in Sri Lanka..

² See Appendix II for database designs

Appendix I

Module		Functions
Import-parsi	ing	
	Import	Access source data
	Parsing	Five submodules for each source: Old DCS, MoID, BoI, CEB, EPF.
	Editing	Browsing function, with sorting by DS and alphabetical name.
Matching	- F	
	Manual entry of	Enables DCS to enter matches manually identified,
	matches	organized by DS.
	List processing for sources	Batched by DS. Uses bigrams for establishment name.
	Printing of suspect matches	Enable DCS to get hard copy of suspect matching
	Browse matches	Would show five-way matches, keyed to the source selected by operator, sequenced by DS & name. Would allow operator to zoom on match details and undo a match.
	Reports	MIS symmetrical results (5 reports) MIS nonsymmetrical results (30 Reports)
RMES		
	Core registry	Creation of the core registry
· · · · · · · · · · · · · · · · · · ·	RMES Selection	Selecting the results of Matching with External Sources
· · · · · · · · · · · · · · · · · · ·	RMES editing	Editing the results of Matching with External Sources
	RMES labels	Printing identification labels to be pasted on each DI-2 questionnaire.
	Reports	 Total number of establishments available for selection in each category, without duplication Total number of <u>selected</u> establishments in each category
DI-2	1 <u></u>	
	Data entry	For entering data from DI-2 questionnaire for RMES sample.
	Browsing	Browsing for qualifying and non-qualifying candidates, sorted by DS & name. Allows operator to enter a record for data correction and editing, including to correct finding of whether candidate qualifies for registry.
DI-2		
	Finalize addition to directory	Assign EIN's to successful candidates.
	Reports	A table showing success rate and reasons for failure for each of the 15 subgroups in the RMES sample.
Registry Management	· · · · · · · · · · · · · · · · · · ·	↓ <u></u>
<i>a</i>	Browse & edit registry	Browse by DS, name, & activity status. Allows operator to edit registry data, add establishments.

Outline of Sub-modules for DCS Registry System

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Appendix II

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Database Structures

a) New Registry

Field Name	Tvne	Leneth	Leneth Description	Acauisition	Source RMES Legacy
		0			1
EIN	Numeric	×	Establishment Identification No (See Page2)	Computed	Computed Computed
NAME_ESTAB	Text	60	Name of the Establishment (ex suffix)	DI-2 or conversion	RMES OID DCS
NAME_ESTAB_SUF	Text	10	Name of the Establishment (suffix)	DI-2 or conversion	RMES OID DCS
NAME_OWNER	Text	60	Name of the owner	DI-2 or conversion	
NAME_CONTACT	Text	60	Name of the contact person	DI-2 or AS02	RMES OID DCS
NAME_POSITION	Text	30	Position of the Contact person	DI-2 or AS02	RMES OID DCS
TEL_EST_PREF	Numeric	e	Prefix to tel No. (for the Establishment)	DI-2 or conversion	RMES OID DCS
TEL_EST	Numeric	9	Telephone . No (for the Establishment)	DI-2 or conversion	RMES OID DCS
TEL_EST2_PREF	Numeric	ę	Prefix to tel No. (for the Establishment)	DI-2 or conversion	RMES OID DCS
TEL_EST2	Numeric	9	Telephone . No (for the Establishment)	DI-2 or conversion	RMES OID DCS
TEL_CONTACT_PREF	Numeric	З	Prefix to Tel No (for the Contact Person)	DI-2 or AS02	RMES OID DCS
TEL_CONTACT	Numeric	9	Telephone . No (for the Contact Person)	DI-2 or AS02	RMES OId DCS
TEL_HO_PREF	Numeric	3	Prefix to tel No. (for the head office)	DI-2	RMES AS02
TEL_HO	Numeric	9	Telephone . No (for the head office)	DI-2	RMES AS02
TEL_HO2_PREF	Numeric	3	Prefix to tel No. (for the head office)	DI-2	RMES AS02
TEL_HO2	Numeric	9	Telephone . No (for the head office)	DI-2	RMES AS02
FAX_EST_PREF	Numeric	ę	Prefix to Fax No. (for the Establishment)	DI-2 or conversion	RMES AS02
FAX_EST	Numeric	9	Fax No. (for the Establishment)	DI-2 or conversion	RMES AS02
FAX_CONTACT_PREF	Numeric	ę	Prefix to fax No. (for the Contact Person)	DI-2 or AS02	RMES OId DCS
FAX_CONTACT	Numeric	9	Fax No. (for the Contact Person)	DI-2 or AS02	RMES OId DCS
FAX_HO_PREF	Numeric	٣	Prefix to fax (for the head office)	DI-2	RMES AS02
FAX_HO	Numeric	9	Fax No (for the head office)	DI-2	RMES AS02
EMAIL_EST	Text	10	E-mail Address (for the Establishment)	DI-2	RMES AS02
EMAIL_CONTACT	Text	10	E-mail Address (for the Contact Person)	ASI	RMES AS02
ADD_LO_FLOOR	Text	2	Location Address : Floor No.	DI-2 or manual parsing	RMES OId DCS
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Numeric2Divisional secretariat Code locationICNumeric2Muncipal council codeNumeric2Muncipal council codeSTRIAL ESTATENumeric4G.N.Division locationSTRATIONNumeric1Form of the OwnershipSTRATIONText9Places of Registration(Multiple)OYEESNumeric4No of EmployeesJISDate8Date of DiscoveryOPERATIONNumeric1Code of Current StatusOPERATIONNumeric2Month of started commercial productionVPENumeric1Code of Current StatusTYPENumeric1Ecablishment TypeTYPENumeric4Description of activity (may differ from orig. ISIC)	DISTRICT	Numeric 2	District Code location	DI-2 or conversion	RMES OId DCS
ICNumeric2Muncipal council codeNumeric4G.N.Division locationSTRIAL ESTATENumeric4G.N.Division locationBESHIPNumeric2Code for location in an indiustrial estateERSHIPNumeric1Form of the OwnershipSTRATIONText9Places of Registration(Multiple)OYEESNumeric4No of EmployeesOYEESDate8Date of DiscoveryCOPERATIONNumeric4Year of started commercial productionCOPERATIONNumeric2Month of started commercial productionCOPERATIONNumeric1Code of Current StatusTYPENumeric1Establishment TypeTYPENumeric4Description of activity (may differ from orig. ISIC)	DSD	Numeric 2	Divisional secretariat Code location	DI-2 or conversion	RMES OId DCS
Numeric4G.N.Division locationSTRIAL ESTATENumeric2Code for location in an indiustrial estateERSHIPNumeric2Code for location in an indiustrial estateSTRATIONText9Places of Registration(Multiple)OYEESNumeric4No of EmployeesDAte8Date of DiscoveryNumericCOPERATIONNumeric4Year of started commercial productionOPERATIONNumeric2Month of started commercial productionCOPERATIONNumeric1Code of Current StatusTYPENumeric1Establishment TypeTYPENumeric4Description of activity (may differ from orig. ISIC)	MC/UC	Numeric 2	Muncipal council code		RMES OId DCS
STATENumeric2Code for location in an indiustrial estateNumeric1Form of the OwnershipNumeric1Form of the OwnershipText9Places of Registration(Multiple)Numeric4No of EmployeesDate8Date of DiscoveryIONNumeric4Year of started commercial productionONNumericNumeric1Code of Current StatusNumeric1Code of Current StatusNumeric1Batelishment TypeNumeric4Dumeric1Dumeric1Sumeric1Code of Current StatusNumeric1Dumeric1Dumeric2Dumeric1Dumeric1Code of Current StatusNumeric1Dumeric2Description of activity (may differ from orig. ISIC)	GND	Numeric 4	G.N.Division location	DI-2 or AS02	RMES AS02
Numeric1Form of the OwnershipText9Places of Registration(Multiple)Numeric4No of EmployeesNumeric4No of EmployeesDate8Date of DiscoveryIONNumeric4Year of started commercial productionONNumeric2Month of started commercial productionTUSNumeric1Code of Current StatusNumeric1Establishment TypeNumeric4Description of activity (may differ from orig. ISIC)	INDUSTRIAL ESTATE	Numeric 2	Code for location in an indiustrial estate	DI-2 or AS02	RMES AS02
IText9Places of Registration(Multiple)Numeric4No of EmployeesDate8Date of DiscoveryIONNumeric4Year of started commercial productionONNumeric2Month of started commercial productionTUSNumeric1Code of Current StatusNumeric1Establishment TypeNumeric4Description of activity (may differ from orig. ISIC)	OWNERSHIP	Numeric 1	Form of the Ownership	AS02	AS02 AS02
Numeric4No of EmployeesDate8Date of DiscoveryDoNNumeric4Year of started commercial productionONNumeric2Month of started commercial productionTUSNumeric1Code of Current StatusNumeric1Establishment TypeNumeric4Description of activity (may differ from orig. ISIC)	REGISTRATION	Text 9	Places of Registration(Multiple)	DI-2	RMES ?
Date 8 Date of Discovery ION Numeric 4 Year of started commercial production ON Numeric 2 Month of started commercial production TUS Numeric 1 Code of Current Status Numeric 1 Establishment Type Numeric 4 Description of activity (may differ from orig. ISIC)	EMPLOYEES	Numeric 4	No of Employees	DI-2 or AS02	RMES OId DCS
IONNumeric4Year of started commercial productionONNumeric2Month of started commercial productionTUSNumeric1Code of Current StatusNumeric1Establishment TypeNumeric4Description of activity (may differ from orig. ISIC)	DATE_DIS	Date 8	Date of Discovery	DI-2	RMES Legacy
ON Numeric 2 Month of started commercial production TUS Numeric 1 Code of Current Status Numeric 1 Establishment Type Numeric 4 Description of activity (may differ from orig. ISIC)	YEAR_OPERATION	Numeric 4	Year of started commercial production	DI-2 or AS02	RMES OId DCS
TUS Numeric 1 Code of Current Status Numeric 1 Establishment Type Numeric 4 Description of activity (may differ from orig. ISIC)	MON_OPERATION	Numeric 2	Month of started commercial production	DI-2 or AS02	RMES
Numeric 1 Establishment Type Numeric 4 Description of activity (may differ from orig. ISIC)	CURRENT_STATUS	Numeric 1	Code of Current Status	DI-2 or manual	RMES Active
Numeric 4 Description of activity (may differ from orig. ISIC)	EST_TYPE	Numeric 1	Establishment Type	AS02	AS02 OId DCS
	CURRENT_ISIC	Numeric 4	Description of activity (may differ from orig. ISIC)	AS02	RMES OId DCS
ENTRY_PATH Numeric I Code Computed	ENTRY_PATH	Numeric 1	Code	Computed	RMES OId DCS
REMARKS Text 60 Special Notes if any Manual	REMARKS			Manual	RMES None

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Field Name	Type	Lengt	Length Description	Acquisition
DISTRICT	Numeric	7	District Code (1 - 25)	Original source file
PROVINCE	Numeric	-	Province Code (1 - 9)	Original source file
DSD_ASI	Numeric	7	DSD code	Copy from AS00 data
MC_UC_ASI	Numeric	7	MC/UC code	Copy from AS00 data
YEAR_OPERATION	Numeric	4	Year establishment began operation	Copy from AS00 data
IDNUMBER	Numeric	6	ID number; reference No of the Establishment	Original source file
PERSON	text	30	Name of the Contact Person	Original source file
NAME	text	60	Name of the Establishment	Original source file
ADDRESS1	text	35	Address1 of the Location	Original source file
ADDRESS2	text	40	Address2 of the Location	Original source file
ADDRESS3	text	40	Address3 of the Location	Original source file
SIZE	text	1	Size class of the Establishment (A,F)	Original source file
			Industrial Classification of the Production (In 4	
ISIC	Numeric	4	Digits)	Original source file
			Industrial Classification of the Production (In 3	
ISIC2	Numeric	e	Digits)	Original source file
ASRESP01	text	,1	Availability of response from 2001 AS	Copy from AS data
ASRESP00	text	-	Availability of response from 2000 AS	Copy from AS data
ASRESP99	text	1	Availability of response from 1999 AS	Copy from AS data
ASRESP98	text	1	Availability of response from 1998 AS	Copy from AS data
ASRESP97	text	1	Availability of response from 1997 AS	Copy from AS data
ASRESP96	text	1	Availability of response from 1996 AS	Copy from AS data
ASRESP95	text	1	Availability of response from 1995 AS	Copy from AS data
ASRESP94	text	1	Availability of response from 1994 AS	Copy from AS data
ASRESP93	text	1	Availability of response from 1993 AS	Copy from AS data
ASRESP92	text		Availability of response from 1992 AS	Copy from AS data
ASRESP91	text	1	Availability of response from 1991 AS	Copy from AS data
ASRESP90	text	1	Availability of response from 1990 AS	Copy from AS data
ASRESP89	text	-	Availability of response from 1989 AS	Copy from AS data

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LATESTRSP	Numeric	4	Year of latest response, if any	Computed at conv.
ASEMP01	Numeric	4	Employment in the 01 AS	Copy from AS data
ASEMP00	Numeric	4	Employment in the 00 AS	Copy from AS data
ASEMP99	Numeric	4	Employment in the 99 AS	Copy from AS data
ASEMP98	Numeric	4	Employment in the 98 AS	Copy from AS data
A SEMP97	Numeric	4	Employment in the 97 AS	Copy from AS data
ASEMP96	Numeric	4	Employment in the 96 AS	Copy from AS data
ASEMP95	Numeric	4	Employment in the 95 AS	Copy from AS data
ASEMP94	Numeric	4	Employment in the 94 AS	Copy from AS data
ASEMP93	Numeric	4	Employment in the 93 AS	Copy from AS data
ASEMP92	Numeric	4	Employment in the 92 AS	Copy from AS data
ASEMP91	Numeric	4	Employment in the 91 AS	Copy from AS data
ASEMP90	Numeric	4	Employment in the 90 AS	Copy from AS data
ASEMP89	Numeric	4	Employment in the 89 AS	Copy from AS data
ASEMP	Numeric	4	Most recent employment in the AS, if any	Computed at conv.
			Code for type of enterprise (branch, etc), Q4 in	
ASTYPE	text	1	00? AS	Copy from AS data
DSD	text	7	Edited DS code (imputed if no ASI data)	Manual parsing
MC_UC		7	Edited MC/UC code ((imputed if no ASI data)	Manual parsing
ADD_LO_FLOOR	Numeric	7	Location Address : Floor No.	Manual parsing
ADD_LO_ASSESMENT	Numeric	8	Location Address : Assessment No.	Manual parsing
ADD_LO_OTHER	Text	20	Location Address : Other	Manual parsing
ADD_LO_STREET_NAME	Text	60	Location Address : Street Name	Manual parsing
ADD_LO_BUILD_NAME	Text	20	Location Address : Building Name	Manual parsing
ADD_LO_VILLAGE_WARD	Text	30	Location Address : Village/Ward Name	Manual parsing
ADD_LO_CITY	Text	30	Location Address : City/Town name	Manual parsing
ADD_LO_POSTCODE	Numeric	S	Location Address : Postal Code	Manual parsing
NAME_ESTAB	text	55	Edited name of estab without suffix	Manual parsing
NAME_ESTAB_SUF	text	15	Edited name of estab: suffix	Manual parsing
TEL EST PREF	Numeric	ъ	Prefix to tel No. (for the Establishment)	Entry from AS quest

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Entry from AS quest	Entry from AS quest	Entry from AS quest	ent AS Entry from AS quest	ecent AS Entry from AS quest) Entry from AS quest	Entry from AS quest	on) Entry from AS quest	Entry from AS quest	Entry from AS quest	Manual Entry
Telephone . No (for the Establishment)	Prefix to tel No. (for the Establishment)	Telephone . No (for the Establishment)	Name of the Contact Person in most recent AS	Position of the Contact Person in most recent AS	Prefix to Tel No (for the Contact Person)	Telephone . No (for the Contact Person)	Prefix to fax No. (for the Contact Person)	Fax No. (for the Contact Person)	Year of AS with most recent contact	Year establishment reported closed
9	б	9	60	30	ŝ	9	ŝ	9	4	4
Numeric	Numeric	Numeric	Text	Text	Numeric	Numeric	Numeric	Numeric	Numeric	Numeric
Manual parsing TEL_EST	TEL_EST2_PREF	TEL_EST2	NAME_CONTACT	NAME_POSITION	TEL_CONTACT_PREF	TEL_CONTACT	FAX_CONTACT_PREF	FAX_CONTACT	YR_CONTACT	YR REPORTED CLOSED

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No. Text 7 Text 1 Numeric 2 Numeric	Field Name	Type	Lengt	Length Description
S Seq. No. Text 7 e code Text 1 RICT Numeric 2 Numeric 2				
e codeTextIRICTNumeric2Numeric2Numeric2Numeric2STRIAL ESTABNumeric4STRIAL ESTABNumeric2STRIAL ESTABNumeric2STRIAL ESTABKext55E_ESTABtext55LO_FLOORtext20LO_FLOORtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext30LO_UILLAGE_WARDtext30LO_OTITYtext30LO_OTITYtext5E_HOtext5HO_FLOORtext5HO_FLOORtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20	RMES Seq. No.	Text	7	Yr(2)-district(2)-source(1)-Seq No (3)
RICTNumeric2CNumeric2JCNumeric2SSTRIAL ESTATENumeric2SSTRIAL ESTABNumeric2E_ESTABELESTABtext55E_ESTABEVEtext15LO_FLOORtext15LO_FLOORtext20LO_STREET_NAMEtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext30LO_OTHERtext30LO_OTHERtext30LO_OTHERtext55E_HOtext55E_HO_SUFtext55HO_FLOORtext55HO_FLOORtext20HO_ASSESMENTtext20HO_ASSESMENTtext20	Source code	Text		Source of candidate
DCNumeric2JCNumeric2JSTRIAL ESTABNumeric4JSTRIAL ESTABNumeric2LO_FLOORtext55LO_FLOORtext55LO_FLOORtext2LO_FLOORtext20LO_FLOORtext20LO_FLOORtext20LO_FLOORtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext55E_HOtext55HO_FLOORtext55HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENTtext20HO_ASSESMENT <td>DISTRICT</td> <td>Numeric</td> <td>7</td> <td>District Code location</td>	DISTRICT	Numeric	7	District Code location
JCNumeric2JSTRIAL ESTATENumeric4JSTRIAL ESTATENumeric2E_ESTABSUFtext55E_ESTABSUFtext15LO_FLOORtext15LO_FLOORtext2LO_FLOORtext2LO_FLOORtext2LO_OTHERtext2LO_OTHERtext20LO_OTHERtext20LO_OTHERtext30LO_OTHERtext30LO_UTIYtext30LO_UTIYtext30LO_OTTYtext30LO_OTTYtext30LO_OTTYtext30LO_OTTYtext30LO_OTTYtext55E_HOtext55HO_FLOORtext2HO_ASSESMENTtext2HO_ASSESMENTtext2	DSD	Numeric	7	Divisional secretariat Code location
STRIAL ESTABNumeric4JSTRIAL ESTABNumeric2E_ESTABSUFtext55LO_FLOORtext55LO_FLOORtext2LO_FLOORtext2LO_FLOORtext2LO_FLOORtext2LO_FLOORtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext20LO_OTHERtext30LO_OTTYtext30LO_OTTYtext55E_HOtext55HO_FLOORtext20HO_ASSESMENTtext20HO_ASSESMENTtext20	MC/UC	Numeric	7	MC/UC code
AL ESTATENumeric2TABtext55TAB_SUFtext55TAB_SUFtext15TOORtext2TOORtext2SSESMENTtext20THERtext20THERtext20TREET_NAMEtext20UILD_NAMEtext20UILD_NAMEtext20UILLAGE_WARDtext30UILLAGE_WARDtext30UILLAGE_WARDtext30UTYtext30UILLOREtext30UILLAGE_WARDtext30UILL	GND	Numeric	4	G.N.Division location
TABFext55TAB_SUFtext15LOORtext15LOORtext2SSESMENTtext20SSESMENTtext20SSESMENTtext20THERtext20TREET_NAMEtext20TREET_NAMEtext20UILD_NAMEtext20UILD_NAMEtext20UILD_NAMEtext20UILD_NAMEtext30UILD_NAMEtext30UILD_NAMEtext20UILD_NAMEtext30UILD_NAME<	INDUSTRIAL ESTATE	Numeric	7	Code for location in an indiustrial estate
[AB_SUFtext15LOORtext2LOORtext2SSESMENTtext20SITHERtext20TILERT_NAMEtext20UILD_NAMEtext20UILD_NAMEtext20UILLAGE_WARDtext30UILLAGEtext30UILLAGEtext30UILLAGEtext30UILLAGEtext30UILLAGEtext30UILLAGEtext30UILLAGEtext30UILLAGEtext30UILLAGEtext30UILLAGEtext30UILLAGEtext30UILLAGEtex	NAME_ESTAB	text	55	Edited name of estab without suffix
LOORtext2ASSESMENTtext2ASSESMENTtext20THERtext20TREET_NAMEtext20TREET_NAMEtext20UILD_NAMEtext20UILD_NAMEtext20UILD_NAMEtext20UILD_NAMEtext30UILD_NAMEtext30UILD_NAMEtext30UILD_NAMEtext30UILD_NAMEtext30UILD_NAMEtext30UILD_NAMEtext30UILD_NAMEtext30UILD_NAMEtext30UILD_NAMEtext30UILD_NAMEtext30UILD_NAMEtext20UILD_NAMEtext20UILD_NAMEtext20UILD_NAMEtext20UILD_NAMEtext20	NAME_ESTAB_SUF	text	15	Edited name of estab: suffix
ASSESMENT text 8 THER text 20 TREET_NAME text 20 UILD_NAME text 20 UILLAGE_WARD text 30 TLLAGE_WARD text 30 TLLAGE_WARD text 30 OSTCODE text 55 text 55 CUF text 15 TLOOR text 2 ASSESMENT text 8 OTHER text 20 THR 15 TOOR text 20 TOOR text 20 THR 15 TOOR text 20 TOOR text 20 THR 15 TOOR text 20 TOOR text 20 THR 15 TOOR TEXT 20 TOOR TE	ADD_L0_FLOOR	text	7	Location Address : Floor No.
TTHERtext20TREET_NAMEtext20UILD_NAMEtext20ULLAGE_WARDtext30UTYtext30UTYtext30OSTCODEtext30OSTCODEtext55SUFtext55SUFtext2SUFtext65JUORtext2MARRtext2OTHERtext20	ADD_LO_ASSESMENT	text	8	Location Address : Assessment No.
TREET_NAME text 60 bUILD_NAME text 20 fILLAGE_WARD text 30 JTTY text 30 OSTCODE text 5 COSTCODE text 55 Levt 55 Levt 55 text 15 SUF text 15 TLOOR text 2 ASSESMENT text 20 OTHER text 20	ADD_LO_OTHER	text	20	Location Address : Other
UILD_NAME text 20 /ILLAGE_WARD text 30 /ITY text 30 OSTCODE text 5 text 55 	ADD_LO_STREET_NAME	text	60	Location Address : Street Name
 'ILLAGE_WARD text 30 XITY text 30 OSTCODE text 5 OSTCODE text 55 LUF text 15 LOOR text 2 ASSESMENT text 6 	ADD_LO_BUILD_NAME	text	20	Location Address : Building Name
TTY text 30 OSTCODE text 5 OSTCODE text 55 Lext 55 Lext 15 SUF text 15 ASSESMENT text 8 OTHER text 20	ADD_LO_VILLAGE_WARD	text	30	Location Address : Village/Ward Name
OSTCODE text 5 text 55 SUF text 15 SUF text 15 ASSESMENT text 8 DTHFR text 20	ADD_LO_CITY	text	30	Location Address : City/Town name
SUF text 55 SUF text 15 LOOR text 2 ASSESMENT text 8 OTHER text 20	ADD_LO_POSTCODE	text	S	Location Address : Postal Code
text 15 text 2 AENT text 8 text 20	NAME_HO	text	55	Edited name of estab without suffix
text 2 AENT text 8 text 20	NAME_HO_SUF	text	15	Edited name of estab: suffix
AENT text 8 text 20	ADD_HO_FLOOR	text	7	Head Office Address : Floor No.
text 20	ADD_HO_ASSESMENT	text	8	Head Office Address : Assessment No.
	ADD HO OTHER	text	20	Head Office Address : Other

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ADD HO STREET NAME	text	09	Head Office Address : Street Name
ADD_HO_BUILD_NAME	text	20	Head Office Address : Building Name
ADD_HO_VILLAGE_WARD text	text	30	
ADD_HO_CITY	text	30	Head Office Address : City/Town name
ADD_HO_POSTCODE	text	5	Head Office Address : Postal Code
TEL_EST_PREF	Numeric	m	Prefix to tel No. (for the Establishment)
TEL_EST	Numeric	9	Telephone . No (for the Establishment)
TEL_EST2_PREF	Numeric	n	Prefix to tel No. (for the Establishment)
TEL_EST2	Numeric	9	Telephone . No (for the Establishment)
TEL_HO_PREF	Numeric	e	Prefix to tel No. (for the head office)
TEL_HO	Numeric	9	Telephone . No (for the head office)
TEL_HO2_PREF	Numeric	ŝ	Prefix to tel No. (for the head office)
TEL_HO2	Numeric	9	Telephone . No (for the head office)
FAX_EST_PREF	Numeric	m	Prefix to Fax No. (for the Establishment)
FAX_EST	Numeric	9	Fax No. (for the Establishment)
FAX_HO_PREF	Numeric	ŝ	Prefix to fax (for the head office)
FAX_HO	Numeric	9	Fax No (for the head office)
EMAIL_EST	Text	10	E-mail Address (for the Establishment)
NAME_CONTACT	Text	60	Name of the contact person
NAME_POSITION	Text	30	Position of the Contact person
TEL_CONTACT_PREF	Numeric	3	Prefix to Tel No (for the Contact Person)
TEL_CONTACT	Numeric	9	Telephone . No (for the Contact Person)
FAX_CONTACT_PREF	Numeric	ę	
FAX_CONTACT	Numeric	9	Fax No. (for the Contact Person)
EMAIL_CONTACT	Text	10	E-mail Address (for the Contact Person)
REGISTRATION	Text	6	Places of Registration(Multiple)

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	Numeric	4	No of Employees
SITUATION/STATUS Text	xt	8	Situation code (from questionnaire)
DATE_FIELDCHECK Date	Ite	~	Date of check/Discovery
YEAR_OPERATION Nur	Numeric	৾৾৾৾	Year of started commercial production
MON_OPERATION Nur	Numeric	2	Month of started commercial production
ISIC Nur	Numeric	4	Description of activity
ABLE_TO_ENTER Text	xt	1	Code
FIT_FOR_REGISTRY Text	xt	-	Code
REMARKS Text	xt 6	00	As needed to record address or other info
ENUMERATOR Text	xt	е М	Code
SUPERVISOR Text	xt	2	Code

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Field Name	Type	Lengt	Length Description	Acquisition
ID_NUMBER	text	7	ID number of the establishment; 'Industry Code'	Original source file
NAME	text	40	Establishment Name	Original source file
ADD_HO	text	40	Head Office Address	Original source file
CPOF	text	20	Head Office Postal Name	Original source file
EMPLOYEES	Numeric	S	Persons Engaaged	Original source file
PMSERIAL	text	7	Production Serial No	Original source file
PRODUCT	text	35	Production Description	Original source file
PMUNIT	text	10	Production Unit	Original source file
CCONTMRS	text	7	Contact Person's Status	Original source file
CCONTACT	text	40	Name of the Contact Person	Original source file
CTEL	text	×	Telephone No. Of the Contact Person	Original source file
CDATEREG	Date	×	Date of Registered	Original source file
CANCEL	Text	-1	Whether cancelled	Copy from sep. file
DATECANCEL	Date	8	Date of cancellation	Copy from sep. file
YRCANCEL	Numeric	4	Year of cancellation	Computed at cony.
REPORT00	Text	1	Whether responded to '00 survey	Copy from sep. file
REPORT99	Text	1	Whether responded to '99 survey	Copy from sep. file
REPORT98	Text	1	Whether responded to '98 survey	Copy from sep. file
REPORT97	Text	1	Whether responded to '97 survey	Copy from sep. file
REPORT96	Text	1	Whether responded to '96 survey	Copy from sep. file
LATESTRSP	text	7	Year of latest response, if any	Computed at cony.
YRGET	Date	4	Year provided by MOID to DCS	Computed at conv.
DISTRICT	Num	7	Edited district code	Manual
DSD	Num	7	Edited DS code	Manual
ADD_LO_FLOOR	Numeric	7	Location Address : Floor No.	Manual parsing
ADD_LO_ASSESMENT	Numeric	×	Location Address : Assessment No.	Manual parsing
ADD_LO_OTHER	Text	20	Location Address : Other	Manual parsing
ADD LO STREET NAME	Text	60	Location Address : Street Name	Manual parsing

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	30 Loca	0 Location Address : Village/Ward Name	Manual parsing
	30 Loca	30 Location Address : City/Town name	Manual parsing
ADD_LO_POSTCODE Numeric		5 Location Address : Postal Code	Manual parsing
NAME_ESTAB Text	55 Edite	55 Edited name of estab without suffix	Manual parsing
NAME_ESTAB_SUF Text	15 Edite	15 Edited name of estab: suffix	Manual parsing
TEL_CONTACT_PREF Numeric		3 Prefix to Tel No (for the Contact Person)	Manual parsing
TEL_CONTACT Numeric	-	6 Telephone . No (for the Contact Person)	
	ric 3 Edite	Numeric 3 Edited ISIC code based on prod. Descrip.	Manual

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_	Type	Lengtl	Length Description	Acquisition
	text	21	Current status of the Establishment	Original source file
	text	35	Name of the Establishment	Original source file
ADD_01 t	text	30	Head Office Address1	Original source file
·	text	30	Head Office Address2	Original source file
-	text	30	Head Office Address3	Original source file
	text	30	Head Office Address4	Original source file
	text	30	Location Address1	Original source file
ADD_S2 t	text	30	Location Address2	Original source file
	text	30	Location Address3	Original source file
PRODUCT1 t	text	35	Description of the Production	Original source file
PRODUCT2 t	text	35	Description of the Production Group	Original source file
CONT_NAME	text	35	Name of the Contact Person	Original source file
CON_TEL	text	6	Telephone Number of the Contact Person	Original source file
, .	Numeric	5	Employment Capacity	Original source file
	Numeric	4	No. of Foreign Employees	Original source file
	text	15	Name of the District	Original source file
ID_NUMBER 1	Numeric	S	Identification number at BOI	Original source file
YEAR_DECLARED 1	Numeric	4	Year declaration was filed, if available	Original source file
GROUPCODE	text	1	Belongs to which BOI group (sec. 17. etc)	Computed at conv.
STATUSCODE	Numeric	7	Codes for STATUSDES	Computed at conv.
YRGET	Numeric	4	Year provided by Bol to DCS	Computed at conv.
YRDROP	Numeric	4	Year dropped/closed by Bol	Computed at conv.
DISTRICT	Numeric	7	Edited district code for location	Manual
DS	Numeric	7	Edited DS code for location	Manual
ADD_LO_FLOOR	Numeric	7	Location Address : Floor No.	Manual parsing
ADD LO ASSESMENT	Numeric	8	Location Address : Assessment No.	Manual parsing

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AUD_LU_UIHEK	lext	20 Location Address : Uther	Manual par
ADD_LO_STREET_NAME	Text	60 Location Address : Street Name	Manual par
ADD_LO_BUILD_NAME	Text	20 Location Address : Building Name	Manual par
ADD_LO_VILLAGE_WARD	Text	30 Location Address : Village/Ward Name	Manual par
ADD_LO_CITY	Text	30 Location Address : City/Town name	Manual par
ADD_LO_POSTCODE	Numeric	5 Location Address : Postal Code	Manual par
ADD_HO_FLOOR	Text	2 Head Office Address : Floor No.	Manual par
ADD_HO_ASSESMENT	Text	8 Head Office Address : Assessment No.	Manual par
ADD_HO_OTHER	Text	20 Head Office Address : Other	Manual par
ADD_HO_STREET_NAME	Text	60 Head Office Address : Street Name	Manual par
ADD_HO_BUILD_NAME	Text	20 Head Office Address : Building Name	Manual par
ADD_HO_VILLAGE_WARD	Text	30 Head Office Address : Village/Ward Name	Manual par
ADD_HO_CITY	Text	30 Head Office Address : City/Town name	Manual par
ADD_HO_POSTCODE	Text	5 Head Office Address : Postal Code	Manual par
NAME_ESTAB	text	55 Edited name of estab without suffix	Manual par
NAME_ESTAB_SUF	text	15 Edited name of estab: suffix	Manual par
TEL_EST_PREF	Numeric	Numeric 3 Prefix to tel No. (for the Establishment)	Manual par
TEL_EST	Numeric	Numeric 6 Telephone. No (for the Establishment)	Manual par
ISIC	Numeric	Numeric 3 Edited ISIC code based on prod. group	Manual

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Field Name	Type L	engtl	Length Description	Acquisition
AREA_NAME	text	15	Name of the Area	Original source file
ID_NUMBER	text	10	ID number; account No.	Original source file
NAME	text	60	Name of the Establishment	Original source file
ADDRESS_L1	text	60	Location Address1	Original source file
ADDRESS_L2	text	60	Location Address2	Original source file
CITY	text	30	Location Postal City	Original source file
TARIFF	text	30	Zone	Original source file
PEAK_LOAD	Numeric		Peak load capacity in kVA	Original source file
YRGET	Numeric	4	Year provided by CEB to DCS	Computed at conv.
YRDROP	Numeric	4	Year dropped/closed by CEB	Computed at conv.
DISTRICT	Numeric	6	Edited district code	Manual
DS	Numeric	6	Edited DS code	Manual
ADD_LO_FLOOR	Numeric	6	Location Address : Floor No.	Manual parsing
ADD_LO_ASSESMENT	Numeric	∞	Location Address : Assessment No.	Manual parsing
ADD_LO_OTHER	Text	20	Location Address : Other	Manual parsing
ADD_LO_STREET_NAME	Text	60	Location Address : Street Name	Manual parsing
ADD_LO_BUILD_NAME	Text	20	Location Address : Building Name	Manual parsing
ADD_LO_VILLAGE_WARD Text) Text	30	Location Address : Village/Ward Name	Manual parsing
ADD_LO_CITY	Text	30	Location Address : City/Town name	Manual parsing
ADD_LO_POSTCODE	Numeric	S	Location Address : Postal Code	Manual parsing
NAME_ESTAB	text	55	Edited name of estab without suffix	Manual parsing
NAME_ESTAB_SUF	text	15	Edited name of estab: suffix	Manual parsing
ISIC	Numeric	ŝ	Edited ISIC code if known from name	Manual
NUMBER OF LISTINGS	Numeric	7	Default is 1, add 1 every time a duplicate is found Manual	d Manual

Field Name	Type I	,engtl	ength Description	Acquisition
ID_NUMBER	text	10	Employer_no	D-file
NAME	text	60	Employer_Name	D-file
Business_nature	text	60	Code of the Production	D-file
ADDRESS1	text	60	Location Address1	D-file
ADDRESS2	text	60	Location Address2	D-file
Coverd_male	Numeric	4	No. of Employee-male	D-file
Coverd_Female	Numeric	4	No. of Employee-female	D-file
YEAR_DECLARED	Numeric	4	Year declaration was filed, if available	D-file?
NAME_ACTIVE		60	Employer Name in active file	Active file
ADDRESS1_ACTIVE	text	09	Location Address1 in active file	Active file
ADDRESS2_ACTIVE	text	60	Location Address2 in active file	Active file
EMPLOYEES_CONTRIB	Numeric	4	Employment in 00-01 for which contributions paid	Active file
IN_ACTIVE_FILE	text	-	Computed based on prior comparison of D-file & active file	Computed by DCS
IN_DFILE	text	-	Computed based on prior comparison of D-file $\&$ active file	Computed by DCS
SECTOR_CODE	text	7	Sector code	Computed at conv.
EMPLOYEES_DEC	Numeric	4	Declared covered employment at time of original declaration (D-form)	Computed at conv.
EMPLOYEES	Numeric	4	Taken from employees_contrib if available; Otherwise from emp. declaration Computed at conv.	on Computed at conv.
YRGET	Numeric	4	Year provided by EPF to DCS	Computed at conv.
YRDROP	Numeric	4	Year dropped/closed by EPF	Computed at conv.
DISTRICT	Numeric	7	Edited district code	Manual
DS	Numeric	7	Edited DS code	Manual
ADD_LO_FLOOR	Numeric	6	Location Address : Floor No.	Manual parsing
ADD_LO_ASSESMENT	Numeric	×	Location Address : Assessment No.	Manual parsing
ADD_LO_OTHER	Text	20	Location Address : Other	Manual parsing
ADD_LO_STREET_NAME	Text	60	Location Address : Street Name	Manual parsing
ADD_LO_BUILD_NAME	Text	20	Location Address : Building Name	Manual parsing
ADD_LO_VILLAGE_WARD Text	D Text	30	Location Address : Village/Ward Name	Manual parsing
ADD LO CITY	Text	30	Location Address : City/Town name	Manual parsing

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ADD_LO_POSTCODE	Numeric	5 Location Address : Postal Code	Manual parsing
NAME_ESTAB	text	55 Edited name of estab without suffix	Manual parsing
NAME_ESTAB_SUF	text	15 Edited name of estab: suffix	Manual parsing
ISIC	Numeric	3 Edited ISIC code	Manual

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