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DEVELOPMENT AND USE OF A BUSINESS REPORTING MODEL IN ABS

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ABSTRACT : The Australian Bureau of Statistics (ABS) is developing a 'business reporting model', to promote a better understanding of the reporting requirements it places on businesses, and to facilitate more flexible and effective means of data capture. The model can be regarded as a mapping or translation between items recorded in business information systems, and the various data requirements of ABS business surveys.

Typically, national statistical agencies collect a wide range of data from businesses using many different surveys. Business group structures are divided into smaller statistical units, which are defined and delineated, so as to be able to provide the particular data items required dissected in various ways e.g. by industry, institutional sector or geographic area. Large business structures are often quite complex, a considerable number of statistical units may be created, and these attract many different questionnaires.

In some instances data requests have been duplicated by different surveys. While this is undesirable from the perspective of data providers (and the agency), it has often been unavoidable under the organisational structures and data capture methods adopted. With independent approaches and sometimes differing procedures used by survey areas, there are risks the data reported will be inconsistent and present a less than coherent picture of the activities of the selected business units.

The paper outlines aspects of the initial development of a business reporting model for the ABS. It covers our initial work based on the small labour related data set, its expansion to include additional collections, the development of a prototype system and the results of subsequent testing with a small group of respondents. The paper concludes by outlining proposals for further development of the model and its links with other ABS provider related initiatives such as key provider management and special collection arrangements for the largest businesses.

DEVELOPMENT AND USE OF A BUSINESS REPORTING MODEL

Introduction

1 The Australian Bureau of Statistics (ABS) is developing a 'business reporting model', to promote a better understanding of the reporting requirements it places on businesses, and to facilitate more flexible and effective means of data capture. The model can be regarded as a mapping or translation between items recorded in business information systems, and the various data requirements of ABS business surveys. The relationships between the items may be quite simple or quite complex.

2 Typically, national statistical agencies collect a wide range of data from businesses using many different surveys. Business group structures are divided into smaller statistical units, which are defined and delineated, so as to be able to provide the particular data items required dissected in various ways e.g. by industry, institutional sector or geographic area. Large business structures are often quite complex, a considerable number of statistical units may be created, and these attract many different questionnaires.

3 In some instances data requests have been duplicated by different surveys. While this is undesirable from the perspective of data providers (and the agency), it has often been unavoidable under the organisational structures and data capture methods adopted. With independent approaches and sometimes differing procedures used by survey areas, there are risks the data reported will be inconsistent and present a less than coherent picture of the activities of the selected business units.

Conceptual standards

4 In common with many statistical agencies, the ABS has in recent years placed increasing emphasis on aligning its standards for statistical units, data items and classifications with the structures used by businesses and the information they hold. The conceptual standards are based broadly on user requirements, international and national standards, and data availability considerations.

5 The ABS introduced a new economic units model in 1989, which, for the first time, placed specific emphasis on data availability requirements in the delineation of the two producing units defined, the management unit and the establishment unit. For several years prior to the introduction of the new units model, there was a growing recognition that the way in which large businesses, in particular, operated and structured their accounts did not correspond well to the 'statistical model' then applied by the ABS. Large diversified groups typically operate a number of 'divisions' that do not necessarily correspond closely with the legal entity structure of the group, and the lowest level accounting units do not necessarily correspond to single locations.

6 The ABS had traditionally used legal entity based enterprise units to provide production account statistics for its subannual surveys of capital expenditure, profits and stocks, and location based establishments to provide production account statistics for its annual censuses of agriculture, mining and manufacturing. While recognising this approach would lead to some statistical inconsistency, it was accepted, since, firstly, the enterprise based statistics were published only at the 2 or 3 digit industry level, and, secondly, agency cost and response burden considerations made establishment based subannual statistics not feasible.

7 Inherent in the adoption of the newly defined management unit and establishment was a judgement that it was better for the ABS to seek data in respect of units understood and used by the business, and which could provide a specified set of data, than to ask businesses to supply data according to the previous concepts.

8 Since the late 1980s, the ABS has undertaken a substantial program of business profiling for the largest businesses i.e. determining the statistical structure of the business, usually through a personal visit to the company secretary / accountant. Applied correctly, this ensures that businesses are able to readily provide the required data in accordance with their latest structure and enables the ABS and the business to address any reporting problems.

9 The ABS spends considerable effort testing the availability of new or revised data items and undertakes observational studies and post enumeration studies to ensure that data of reasonable quality is obtained, without placing undue load on data providers. It develops data item standards including standard question wordings for its business surveys, which are applied consistently across surveys as far as possible. Whenever changes are proposed to existing items there is extensive discussion and testing normally undertaken before changes are implemented.

10 Nevertheless, there is a continual 'tension' and 'balancing' required between satisfying user requirements and not overloading providers, particularly those selected in many surveys. While much data is 'available', some of it cannot be provided readily and has to be extracted at considerable cost to the provider and sometimes at the cost of reduced quality. While individual requests may appear reasonable, the totality of requirements also needs to be considered and these may show a quite different picture.

11 The ABS has started to implement an Input Output approach to compiling the Australian National Accounts (ANA). It is moving towards implementing the recommendations of the 1993 System of National Accounts (SNA). These involve extra demands on the source surveys used for the ANA compilation and hence data providers, in addition to the existing and emerging demands from users in general. It is already evident that in respect of the latest annual reference period (1994-95) user requirements and provider load have moved 'out of balance' and the ABS is reviewing its strategies. Apart from taking a harder look at user requirements and data availability issues, the ABS is also reviewing its collection strategies in the light of these requirements.

Data requirements

12 The ABS seeks a wide range of data from businesses. It conducts monthly, quarterly and annual business surveys, the latter with various periodicities - regular, cyclical and ad hoc. The data sought is quite diverse, from standard financial information, commodity data and employment details, through to R&D activity, IT operations and waste management / environment protection. Survey of particular industries or sectors typically request additional data items relevant only to those types of business.

13 The data sought is generally held in various information systems within the businesses e.g. statutory accounts, management accounts, ledgers, invoice systems, asset registers, payroll systems, personnel management systems, and the like. While the same statistical unit may be selected in different surveys, the source of the data and the person completing the return may be different. This may be true even of data items on the same questionnaire e.g. financial information may be sourced from the statutory or management accounts by the accountant, commodity data may be completed by the production manager, and employment details by the payroll area (as an example).

14 The availability and quality of data reported for annual surveys appears to be considerably superior to that reported for subannual surveys. This is due to the firmer basis of business records for annual data (full and final accounts available) and greater time given for its provision. Often preliminary estimates are required to be published from subannual surveys according to timetables which some businesses are unable to meet or for which 'guestimates' will be provided.

15 The business population and their collective information sources are not as homogeneous, as for households, for example. Different form types and questions may be required depending on the size, industry or sector of the business. While businesses are subject to various legal and regulatory requirements, and accounting standards are required to be applied, there are still considerable variations in practice. Much of the data held will be geared to the operating requirements of the business, which may not be the same as for another business with similar characteristics, or correspond precisely with the ABS requirement.

16 It is in this broad environment that the ABS is developing a business reporting model aimed at better understanding the transformation processes, and developing more appropriate, flexible and holistic approaches to addressing the reporting and provider load issues for large businesses that, because of their size and significance, tend to receive multiple requests.

Origins of the project

17 In mid 1993 the ABS established a small team to undertake data confrontation investigations in respect of its key business surveys - the Data Confrontation Project. The major objectives of the ABS were to:

- take stock of how well our major economic data sets were integrated / relatable, and to identify the key contributing factors to any inconsistencies, from the many elements of the statistical process involved

- identify any gaps or overlaps in the reporting of data by large business groups, which may contribute to discrepancies in statistical output and the national accounts

- address concerns that, to our major respondents, present data capture methods appear inefficient, overlapping to some extent, burdensome, unpredictable, and not taking advantage of the latest technologies e.g. electronic data capture

- consider whether our data management practices, internal processes, and organisational structure are appropriate to our current and future environments

- develop and implement agreed improvements arising from the work undertaken in the above areas.

18 The broad outcomes of the Data Confrontation Project were reported on at the International Conference on Survey Measurement and Process Quality, in Bristol, United Kingdom, 1 - 4 April 1995 (1). Since that time, the ABS has considered and approved the 38 recommendations made in the final report of the project. Data confrontation has now been institutionalised as a major part of the key provider management (KPM) workstream discussed later in this paper. Development of the model was originally scheduled on the Data Confrontation Project Work Program towards the end of its life. It commenced under that project, but is now a separately funded project.

What is a business reporting model?

19 The business reporting model has been described in the opening paragraph of this paper as a 'mapping or translation between items recorded in business information systems, and the various data requirements of ABS business surveys'. In its simplest representation, it can be considered as being the process by which a business respondent extracts information from the sources available to complete an ABS questionnaire. There is an 'implicit model' underpinning the completion of any questionnaire, assuming the data is readily available. The business reporting model is aimed at making these transformations explicit and to address the collective requirements of the ABS in a single integrated model, albeit with different 'aspects' or 'views'.

20 Of course two similar businesses may have to go through different processes to provide the same data. Issues relating to the tailoring of the model to individual business, and the level of detail that needs to be contained within the model, are addressed later. It should be recognised that if the extraction of data from business information systems is to be automated for transfer to the statistical agency, either by manipulation within the business or the statistical agency, then a 'model' is required to undertake that transformation from the raw data to the various agency data requirements.

Objectives

21 The principal objectives of the development of the business reporting model are twofold. Firstly, to develop and promote a better understanding within the ABS and within the business community of the collective requirements of the ABS and how they might be satisfied. While there is clearly much information on these issues, it tends to be specific to individual projects and their data requirements, and is not comprehensive. There is no overriding focus from the ABS perspective or from the businesses concerned, particularly for the very largest for which the significance and load are the greatest.

22 Secondly, to facilitate different and more flexible reporting from those businesses for whom the load is greatest and which, from their perspectives, are seeking better methods of complying with ABS data requirements. These methods may take a number of forms, but are particularly aimed at automating the extraction of data from business records and transmitting it in machine readable form to the ABS. This reduces clerical effort in the business and rekeying by the ABS. There is potential for significant quality improvements and the collection of more information than traditionally sought.

23 These two principal objectives should be complementary. However they need to be considered separately in terms of the tasks that are undertaken, so that there is a clear focus and understanding of the objective(s) of each task.

24 Allied to the principal objectives outlined above, the development aims to lead to:

- a better understanding within the ABS of its demands on large business respondents an the nature of the reporting problems they have
- a better understanding by businesses of how they might meet ABS requirements
- the provision of the means by which individual businesses might report in a manner mos appropriate to their requirements
- a rationalisation of duplicated items and / or questionnaires (or other survey instrument) completed by the business

- a further improvement in the alignment between ABS data items and the information held in business records

- improvements in the quality and consistency of reported data, in part, through a more precise definition of ABS requirements.

25 Whatever means of data capture is used, the model has the potential to reduce the number of survey forms directed at a business, via the rationalisation and consolidation of requirements across surveys. It may result in a 'composite survey instrument', which can be applied to whatever mode of capture is determined to be appropriate e.g. paper form, spreadsheet, electronic questionnaire, EDI, etc..

Initial model development

26 At the beginning of this project, it was recognised that the various survey areas needed to be involved in the development and that their support and input was critical to its success. An advisory group consisting of representatives, at senior management level, from the survey areas was established. The purpose was to provide practical advice and assistance to the developers and to act as a sounding board for determining the scope of the work and how it should proceed. This proved extremely useful in the formative stages, as a range of issues of principle and practice were addressed. This arrangement might have resulted in more effective progress on the project, if it had been possible to sustain it on a regular basis.

27 An early focus of discussion was the possible role of the national accounts in providing a 'model' or 'framework'. While this was recognised as a valid option, and subsequent developments don't preclude incorporating this as an extension of the model, it was decided that greater priority and focus should be given to the business sources and what is required to extract / transform the data to meet survey requirements. Any further transformations to meet national accounts requirements can then be made as a logical extension of the model. This approach avoided the danger of imposing a national accounts model on business reporting or excluding other data requirements.

28 The ultimate scope of the model was deemed to be all regularly reported data to the ABS, although it was recognised that for practical purposes this might occur progressively and that for particular purposes different 'modules' might be the focus of attention e.g. that relating to a particular type of data source within businesses.

Illustration

29 Figure 1 illustrates how wages data required for several ABS surveys might be sourced from a number of different information systems e.g. personnel records, payroll records, profit and loss statement and balance sheet. ABS surveys that collect this data are linked to the various sources. Data reported will come from specific sources, such as personnel records and / or payroll records in the case of the Survey of Employment and Earnings (SEE). Wages / salaries are identified as two separate data requirements, derived from different sources, since the respective survey outputs are currently on different bases (cash and accrual accounting).

30 These different bases arise because of the data requirements and sources used by the respective surveys. The annual Economic Activity Survey (EAS) targets the management unit and the financial data reported is on a standard accrual accounting basis. The biennial survey of Major Labour Costs (MLC) and the quarterly SEE target a hybrid unit and seek detailed dissections of data usually only available from personnel or payroll records. Wages reported are therefore generally on a cash payments basis.

Labour data model

31 Some earlier work was undertaken by the ABS Large Business Unit (LBU) on the electronic capture of data sourced just from payroll records. A 'data model' underpins this collection. Figure 2 shows the 'data model', which covers all data requested by the surveys of Average Weekly Earnings and Employment and Earnings. It covers Job Vacancies and Overtime Survey items, with the exception of job vacancies, because computerised pay systems do not hold that information. For the MLC survey, all data items which can be extracted from a pay system are included. The remaining items could only be accommodated in a data model referencing the company accounts.

32 The figure shows how various data in respect of a selected pay period, or all pay periods in the reference period, are selected and / or aggregated to derive the necessary estimates as responses to ABS requirements. For the single 'business source' (a payroll), it lists the data items required by the ABS and the period or periods to which they relate. It can be regarded as a table or spreadsheet summarising the requirements of several surveys from that single source.

33 Conceptually it can be regarded as one of a number of 'modules' within the proposed business reporting model, with the payroll as the business source for this particular module. It should be noted that the model doesn't show any mappings other than 1:1, since each item sought is an output requirement of a survey.

Source items

34 A major issue in the development of a business reporting model is the level of detail at which the mapping / transformations are represented, particularly in terms of the data required from business sources to report against a specific ABS item. Ultimately this depends on the intended uses of the model. In early development this issue was left open. Should the model be 'tailored' to fit the available data from individual respondents, or be a generic representation of the 'typical' business? Is the agency prepared to transform raw data from individual businesses, or does it want the reported data to mimic questionnaire response(s)?

35 Our prototype business reporting model took the generic approach, recognising that for practical application to an individual business, it would need to be adapted to the actual sources and items maintained by that business. In the early stages of development there was a need to describe a general form of the model to officers within the ABS and with contacted businesses for the purposes of

exploring the concepts and issues. Nevertheless the level of detail to be incorporated and the manner of its potential application remain substantive issues.

36 Data held within business information systems may be reported directly as an item on ABS questionnaires. Alternatively, and more commonly, it may need to be aggregated, merged with other data, or dissected into more than one item, i.e. the mapping is not simply 1:1. Different systems and different levels of detail are maintained by individual businesses so the processes and transformations applied will vary. This is currently the situation with the completion of paper questionnaires of course and we do not have comprehensive knowledge of the processes / transformations now applied.

37 In summary, the available options are to identify mappings:

- only at the level of detail specifically required by the ABS for the production of output (the level specified on questionnaires, without, necessarily, detailing individual source items)

- at the lowest level of detail in the items typically held by businesses, consistent with a 1:1 or m:1 mapping between these items and ABS requirements

- for every detailed item held by any business, by developing a comprehensive framework for classifying source items to ABS requirements.

38 The final option takes advantage of the extent of commonality between sources and items held to develop a solution generally applicable. The option is somewhat akin to tailoring the application of the model to an individual business, but without the resource cost, to the statistical agency at least, that implies. Independently tailored solutions for individual businesses, particularly large ones, would be costly. However, these could be considered for a small number as a trial to learn more about the information held and the transformations required, or as a permanent solution for those businesses significant enough to warrant it.

The prototype

39 For discussions within the ABS and with business respondents, a prototype model was developed using the Lotus IMPROV spreadsheet. This is a developmental product, now not expected to be released to an operational environment. Apart from its ready availability within the ABS at the time, the main advantage of the product was its ability to show different views of quite substantial amounts of data.

40 It was recognised that the business reporting model would have a number of different dimensions e.g. source item, business source, data item (input and output), survey, reference period, statistical unit, etc.. For different purposes, different views of the model would be required. For example, the respondent might receive a view of the model representing the surveys they were selected in, survey areas could take a view representing just their survey, users may wish to see all surveys / data items targeting a particular business source, or see the complete model, and so on.

41 Figure 3, the *complete view* represents ABS data requirements (data items). It contains:

- business source - in which business records the data items are held
- collected by ABS - which surveys collect the data items, separated into quarterly and annual surveys
- output items - which output items are derived from the data items and which users (e.g.National Accounts) require them.

42 Figure 4, the *respondent summary view* contains the same information. However, several columns are collapsed and rows hidden to provide the respondent with only the information they require to meet ABS data requirements. The 'collected by ABS' columns are collapsed to simply show the respondent whether the data item is required annually or quarterly. The 'users' rows were hidden because respondents do not need to know this information.

43 Surveys included in the prototype model were:

- EAS and selected related annual 'industry' surveys - Manufacturing, Mining and Utilities,Agricultural Finance
- Government Financial Statistics (quarterly and annual)
- SEE (quarterly)
- MLC (annual survey, conducted irregularly)
- Business Surveys (three separate quarterly surveys of capital expenditure, stocks and sales, and company profits)

- Survey of Balance Sheet Information (quarterly)
- Engineering Construction Survey (quarterly)
- Foreign Investment Survey (quarterly and annual)

Exploratory interviews

44 In early 1995, exploratory interviews were held with 7 large businesses in Melbourne and Sydney. The prototype model was shown to representatives from the financial sections of these businesses to gauge the viability of providing data using it. Feedback from these interviews was very positive and all agreed to be involved in further feasibility studies / pilot tests. The view of the model used was the respondent perspective for data required from a Management Unit.

45 Following the exploratory interviews, contact was made with a further 11 groups in order to expand the number included within a proposed feasibility study to about 12 in total. All the additional approaches were to large businesses chosen at random. An approach letter was sent to the selected businesses asking them to participate in a feasibility test. This was followed up by phone contact. In total, 15 businesses agreed to participate, the 7 groups originally visited and 8 of the 11 groups approached by letter. There were no strong or particular reasons for the refusals. Overall the responses were viewed as strong support, at least for the principles involved in the development of a business reporting model.

Feasibility test

46 A feasibility test of the business reporting model with the 15 selected businesses was undertaken from mid to late 1995. The objectives of the feasibility test were to:

- gauge the level of acceptance of the model by businesses
- better understand the structure of business' accounts and the steps require to provide data to the ABS
- determine whether businesses could electronically link ABS data items to the items in their accounting systems
- discuss the businesses' willingness to commit resources to develop electronic methods of extracting and reporting data.

47 The feasibility test only covered the requirements of a subset of those surveys listed previously as being incorporated within the prototype model. These surveys were the EAS (1994-95), the Survey of Company Profits, the Survey of New Capital Expenditure and the Survey of Stocks and Sales (all September quarter 1995). The test was run in parallel with normal survey operations. Not all of the selected units were in scope for all of the surveys, with some units only receiving the annual EAS form.

48 The model was converted to Lotus 123 and Microsoft Excel, to suit the software availability of the participating businesses, with the unfortunate consequence of losing much of the 'integrated' presentation. In essence, the businesses were therefore asked to complete electronically a series of survey 'questionnaires', where more than one was required, within the one 'spreadsheet'.

49 There was a later than expected despatch of the test, due to delays with the spreadsheet conversions. Four businesses were exempted when they were followed up, because they had different software versions or there was little benefit due to their being selected only in the annual survey. All of the remaining businesses responded, in part or full.

50 The test coincided with the despatch of the actual EAS forms, creating a greater perception of duplicated effort, despite the nature of the 'parallel run' being made clear in the establishment of the arrangements. The 1994-95 forms incorporated considerably extra detail for the reasons outlined earlier in this paper. It is therefore likely that the test was undertaken at the worst possible time and that the extra load strongly coloured business perceptions.

51 Follow up interviews were conducted with the nine businesses, including some who did not participate. All of the groups thought the concept of the model was a good idea, and in particular considered that data keyed into a spreadsheet was less labour intensive than completing paper forms. However most did not consider the test vehicle used provided enough benefit to commit resources to implementation at this stage. Reasons given included the perceived duplication of effort, the limited value of automating extraction of readily available data for an annual form, the fact that the ABS could not guarantee that the data requirements would not change, and the variety of sources and contacts involved in providing the required data.

52 It is clear that the public relations aspect of selling the test was less than fully successful and that the discussions with businesses placed too much emphasis on data capture issues. In making the arrangements for the feasibility test, the ABS was careful to make it clear that the work was experimental, and it provided no binding commitment to future development and implementation. Therefore it is not surprising that businesses were also noncommittal in the general circumstances surrounding the feasibility test.

53 There was relatively less emphasis placed on the model itself and how it might be further developed and used. Rather than being seen just as a means to an end, the model can and should be seen as an end in its own right. While this has always been recognised, the two objectives behind the model development have been seen to be complementary. Nevertheless there needs to be a clearer focus on just what each element is intended to achieve.

54 Some of the lessons learnt were that:

- businesses are supportive of the concept, or, perhaps more specifically, the

objectives that the development is intended to serve. Of course the groups involved were all volunteers and perhaps biased towards an interest in the issues. Some initial enthusiasm may have waned or been tempered by the experience of both the test and the 1994-95 forms. Those making the commitment to participate were not necessarily those who completed the model or the forms.

- any further testing involving data capture, will have to address the appearance or actuality of duplicated effort on the part of the participating businesses. Some trade-offs may have to be provided. The actual data content sought in any such testing needs to be more carefully considered in the light of this and other experience. It is more likely that adequate solutions will be found if they are focused on repeating data requirements, and sourced from a limited number of information systems within the business.

- the existence of centralised information systems within the businesses was not as great as might have been expected. However the test involved a small sample and was focused at the group level. It also involved some quite large and diversified businesses, suggesting that contact might need to be made at lower levels, and / or the type of approach used here might be more appropriate to medium sized businesses. For the very large businesses there might need to be individual tailored solutions.

- respondents are reluctant to commit resources to build or amend computer systems to map data, due to changes to ABS data requirements from year to year. They would be reluctant to do this simply for a test, unless there was an ABS commitment to proceed further and / or to keep data requirements stable. The greatest value to respondents in doing this is where surveys are regularly repeated (subannual surveys) and, perhaps, seek information from multiple points within the group (multi unit groups). This suggests that the labour employer surveys, where some electronic data capture has already been undertaken, is one of the 'natural' targets.

Overseas developments

55 The ABS is aware of a number of related developments being pursued by overseas statistical agencies and is actively following their progress. It is interested to learn from the experiences of these and any other agencies undertaking work, and to share its own experiences. To date, we have focused on work undertaken by Statistics Netherlands (2), the US Bureau of the Census (3), and the UK Office of National Statistics (4). Of these agencies, Statistics Netherlands seems to be the only agency incorporating some of the reporting model aspects covered in this paper. The other agencies seem more involved in establishing the use of electronic questionnaires and reporting.

Key provider management

56 Before considering future options for the development and use of the business reporting model, it is necessary to describe three closely related

developments within the ABS. The first is the progressive introduction of Key Provider Management (KPM) from the beginning of 1995-96, for selected large businesses. Its introduction resulted from the consideration of the early findings of the Data Confrontation Project.

57 KPM involves a nominated ABS officer being responsible for all aspects of the relationship between the ABS and the business concerned. This includes:

- explaining ABS statistical requirements to the business
- determining and maintaining the business profile in full (statistical and reporting units)
- becoming familiar with the operations of the business and its information systems
- applying data confrontation techniques as data is reported and resolving inconsistencies
- negotiating the most appropriate reporting arrangements, including data capture.

58 At the time that the feasibility test of the business reporting model took place, arrangements for the introduction of KPM were at a very formative stage. With the benefit of hindsight, it would have been better to undertake the model testing under the umbrella of KPM, and to have targeted those businesses selected for KPM.

59 The original aim was to have 50 groups being managed by the end of 1995-96, but this will be delayed by some months, by the subsequent decision to conduct an empirical study into how the data requirements of the labour employer surveys can be best satisfied. This study can be seen as real model development in its own right, including the objective of establishing an appropriate units dimension for these surveys. This issue was raised in priority over other work because of serious quality concerns regarding these surveys.

60 Surveys in scope of KPM currently include EAS and the associated annual surveys, the three quarterly business surveys previously described, SEE and the Monthly Retail Survey. The ABS proposes to expand the function in 1996-97 to cover 150 groups, and to possibly include other surveys.

61 KPM is aimed at ensuring that the ABS develops a very thorough understanding of the largest businesses, their information systems, their reporting difficulties, their preferred means of data supply, and the best way the ABS should interact with these key providers. It is therefore inextricably linked with the model development.

Top 50 groups

62 The second development is the currently consideration by the ABS of the complete enumeration, or coverage by other means, of the Top 50 groups in its surveys. The aim is to further ensure accurate and complete representation of the very largest contributors within its statistical outputs.

Large Business Survey Unit

63 The third development is the recent decision by the ABS to devote resources to the preparation of a 'business case' for the formation of a Large Business Survey Unit (LBSU). The LBSU concept is to (eventually) place the responsibility for all large business data capture and processing of register based surveys into a single organisational unit. It would incorporate the KPM approach.

64 This is seen as perhaps the ultimate step in ensuring a consistent approach to the reporting and processing of data in respect of large businesses. The development would involve substantial systems development work and significant changes to existing structures, procedures and resourcing (5). The LBSU mandate would be to:

- fully achieve ABS data quality and integrity goals for large businesses
- capture and process the required data in the most efficient way from the perspectives of both key providers and ABS client survey areas.

Model development

65 There are close links between KPM, complete 'coverage' of the top 50 groups, the proposed introduction of an LBSU, and the further development of the business reporting model. It is considered that the main, but not exclusive, focus of 'model work' in the near future should be to further elaborate and articulate the model itself. The empirical study into satisfying the data requirements of the labour employer surveys, and testing the feasibility of introducing a quarterly economy wide survey (incorporating a number of existing surveys) will both aid the delineation of the model. Both could have major implications for existing surveys.

Proposal 1 Fully delineate the business reporting model to cover all repeating data requirements and surveys directed at businesses.

66 This should incorporate source items at the lowest level of detail typically held by businesses, consistent with a 1:1 or m:1 mapping with ABS data item requirements. Sources should be identified for all items, with an indication where more than one source is used or that the availability of data is questionable / variable.

Proposal 2 Determine the form in which it would be most useful to demonstrate and provide the model for information purposes, both within the ABS and to the business community. Develop the required product(s).

67 A prospective form would be a stand-alone software product, for use on standard PCs, incorporating more detailed definitions and instructions, and other help facilities, beyond that possible with paper questionnaires. Much of this meta data is available or being accumulated through the development of data management facilities within the ABS. An information paper on the model should be produced, in the first instance for ABS consumption, and then for discussions with business associations, software houses, and individual businesses.

Proposal 3 Undertake a full tailored application of the model with 2-3 large businesses.

68 This would provide further testing and refinement of the model, and provide a guide for wider application and consideration of data capture options. With the complete 'coverage' of the top 50 groups, there would be fewer problems in terms of the data capture operation, and there would need to be offsets offered to businesses to cope with the increase in load that would otherwise occur.

Proposal 4 Undertake a survey of business reporting preferences.

69 The survey would provide harder evidence of the extent and nature of demand for alternative data capture options. It would facilitate better targeting of products and businesses to respond to those demands.

Proposal 5 Determine selected applications of the model for data capture.

70 It is almost certainly unrealistic to suggest that a single, albeit large and integrated, model could be applied to capture all reported data, at least using a single form and method. Further work on the model and provider requirements needs to be undertaken before this can be implemented. The most prospective targets are the subannual surveys. Alternative data capture options should be mostly targeted at these surveys and at the (small number) of very large businesses in the KPM population.

Proposal 6 Review policy and procedural issues affecting the feasibility of model implementation in data capture.

71 A repeating theme is that if the ABS is to implement substantially different forms of data capture, particularly by electronic means, then it must keep its requirements relatively constant or stable, for businesses to be prepared to commit resources to redevelop / amend their systems. At the very least, the ABS should be prepared to provide advice on what is fixed and what is not, and to commit to providing businesses with sufficient forewarning when requirements change. However there will be ad hoc demands placed on businesses beyond that satisfied by the model or any particular forms of data capture that are put in place.

Proposal 7 Review systems support aspects associated with the use of alternative data capture options.

72 There are substantial systems issues for survey areas in the adoption of different data capture methods. Apart from the methodological issues involved, there are changes potentially required to individual systems to enable the loading and processing of data captured by non-traditional means. The LBSU development raises a number of broadly similar issues. These include the possible need for centralised loading and processing of data reported electronically and the possible development of an Input Data Base able to support the processing and extraction of data for use by multiple survey areas. Substantial systems development work will be required to support an LBSU.

73 The view of the authors is that proposals 1-3 should be treated as the highest and most immediate priority, with expansion of proposal 3 to a greater number of groups possible, depending on the rate of progress and degree of success achieved. The other proposals are, to some extent, dependent on these and other developments, and the resolution of some particular issues. They should only be undertaken after consideration of the further work proposed and relevant developments e.g. Quarterly Economy Wide Survey, Redevelopment of the Survey of Employment and Earnings, and the LBSU development.

References

1 Billing, J. (1995), Australian Bureau of Statistics, 'Data Confrontation in Business Surveys', presented at the International Conference on Survey Measurement and Process Quality, Bristol, United Kingdom.

[Paper is available on request and is being considered for publication in the Journal of Official Statistics. A summary was published in the volume of contributed papers from the conference.]

2 Keller, W. and Ypma, W., Statistics Netherlands, (1995), 'Electronic Data Interchange for Statistical Data Collection'.

3 McDonald, J. and Ambler, C., US Bureau of the Census, (1994), 'CSAQ - An Alternative to Paper Report Forms', presented at Eighth International Roundtable on Business Survey Frames, Heerlen, The Netherlands.

4 Baird, D. and Walker, G., UK Office of National Statistics, (1995), 'A Data Collection Strategy for UK Business Statistics'.

5 Raine, M., Pentony, P. and Struik, J., Australian Bureau of Statistics, (1996), 'A Proposal to form a Large Business Survey Unit'.

[Internal ABS paper available in edited form on request.]

Abbreviations used in this paper

ABS Australian Bureau of Statistics
ANA Australian National Accounts
EAS Economic Activity Survey
EDI Electronic Data Interchange
LBU Large Business Unit
LBSU Large Business Survey Unit
KPM Key Provider Management
MLC Major Labour Costs
SEE Survey of Employment and Earnings
SNA System of National Accounts

Status: **For Information** ↵
Classification: **Unclassified** ↵
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Figure 1 Data Model - Wages Illustration

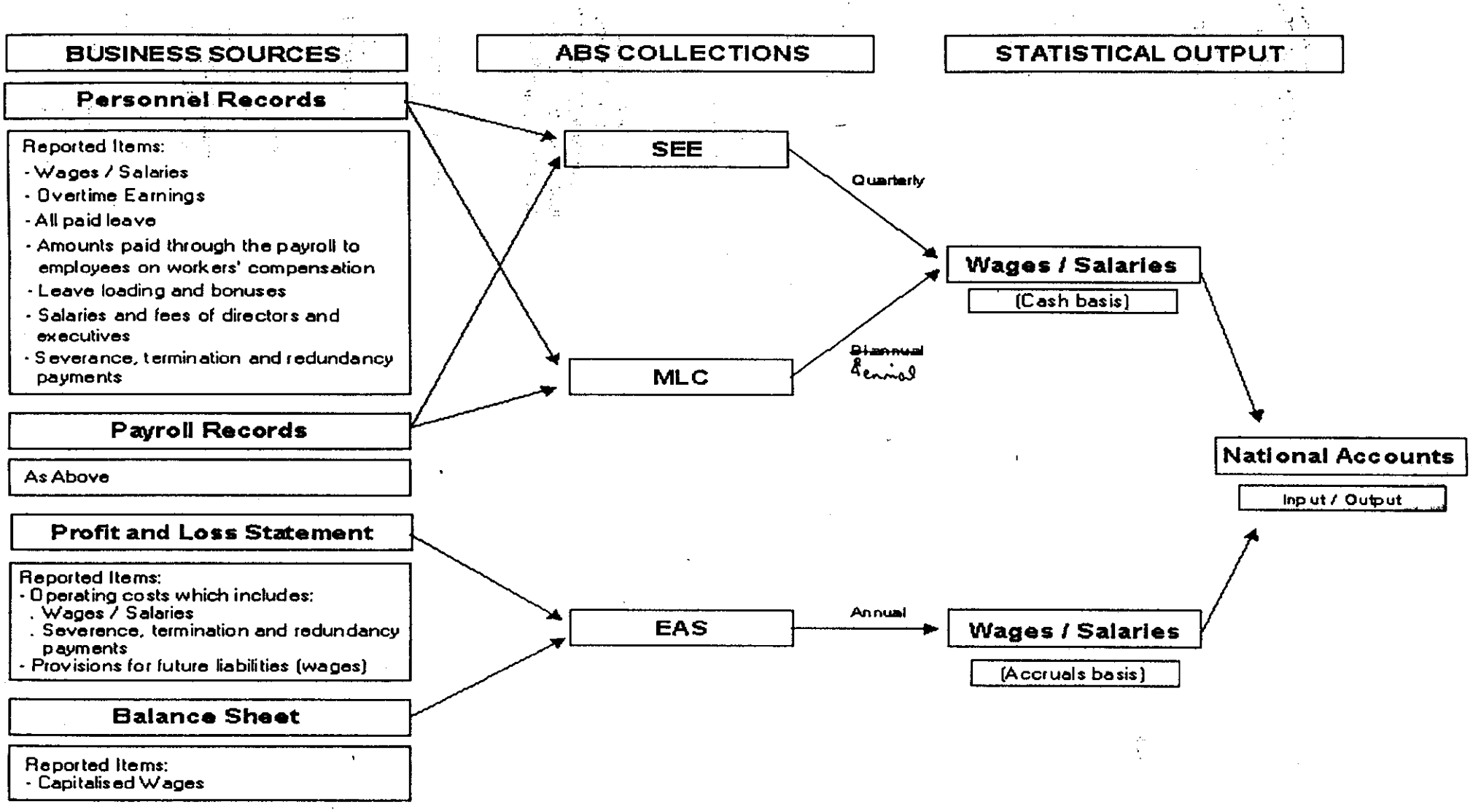

Figure 2 **Payroll Data Model**

	QUARTERLY LABOUR SURVEYS - Aggregate data for each pay period																			
	Fortnightly Reporting - SEE, AWE, JVO and MLC																			
	Total emps	Full time males	Full time females	Part time males	Part time females	Full time adult males	Full time adult females	Emps in Super scheme	Emps paid O/ time	Hours paid O/ time	Gross W&S	Gross Earning	Gross Earning full time adult males	Gross Earning full time adult females	Gross Earning all other males	Gross Earning all other females	O/time full time males	O/time full time females	Termination payments	Fees director, etc.
	No.	No.	No.	No.	No.	No.	No.	No.	No.	Hours	$	$	$	$	$	$	$	$	$	$
Fortnight 1											XXXXXX								XXXXXX	XXXXXX
Fortnight 2	XXXXXX										XXXXXX								XXXXXX	XXXXXX
Fortnight 3											XXXXXX								XXXXXX	XXXXXX
Fortnight 4	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX
Fortnight 5											XXXXXX								XXXXXX	XXXXXX
Fortnight 6	XXXXXX										XXXXXX								XXXXXX	XXXXXX
Fortnight 7											XXXXXX								XXXXXX	XXXXXX
Quarter											Derive								Derive	Derive

Footnote: "XXX" indicates a requirement for data to be reported.

Figure 3 **Business Reporting Model - Complete View (Selected Fields)**

				Business Source					Collected by ABS					Selected output items			
									Collected quarterly				Collected annually (selected)				
				Personnel records	Payroll	Profit & Loss	Balance Sheet	Other business record	PAF	STX	SCP	SEE	EAS	Sales of goods & services	Govt Subs	Operating income	Total income
ABS Data Requirements	Income items	Sales of goods				Y			Y	Y	Y		Y	Y		Y	Y
		Income from services				Y			Y		Y		Y	Y		Y	Y
		Government subsidies for pollution abatement				Y			Y		Y		Y		Y	Y	Y
		Other government subsidies				Y			Y		Y		Y		Y	Y	Y
		Rent,leasing and hiring income				Y			Y		Y		Y			Y	Y
		Interest income				Y			Y		Y		Y				Y
		Dividends received				Y					Y		Y				Y
		Royalties income				Y					Y		Y				Y
		Other income				Y					Y		Y				Y
	Expense items	Wages and Salaries				Y			Y		Y	Y	Y				
		Termination payments				Y			Y		Y	Y	Y				
		Employer cont. to super funds				Y			Y		Y		Y				
		Fringe Benefit tax				Y			Y		Y		Y				
		Payroll tax				Y			Y		Y		Y				
		Workers' compensation costs				Y			Y		Y		Y				
		Insurance premiums				Y			Y		Y		Y				
		Interest expenses				Y					Y		Y				
		Depreciation				Y			Y		Y		Y				
		Bad debts written off				Y					Y		Y				
		Purchases				Y			Y		Y		Y				
		Motor vehicle running expenses				Y			Y		Y		Y				
		Outward freight and cartage				Y			Y		Y		Y				
		Rent, leasing and hiring for motor vehicles				Y			Y		Y		Y				
		Other rent, leasing and hiring expenses				Y			Y		Y		Y				
		Contract, subcontract and commission				Y			Y		Y		Y				
		Repair and maintenance expenses				Y			Y		Y		Y				
		Royalties expenses				Y			Y		Y		Y				
		Other expenses				Y			Y		Y		Y				
		Dividends paid									Y						
	Assets	Opening trading stocks	Raw materials, fuels, containers				Y		Y				Y				
			Work in progress				Y		Y				Y				
			Finished goods				Y		Y				Y				
		Closing trading stocks	Raw materials, fuels, containers				Y		Y	Y			Y				
			Work in progress				Y		Y	Y			Y				
			Finished goods				Y		Y	Y			Y				
		Other current assets					Y						Y				
		Non-current assets					Y						Y				
	Liabilities	Current liabilities					Y						Y				
		Non-current liabilities					Y						Y				
Users of output	National Accounts															Y	
	Input Output													Y	Y	Y	

Footnote: "Y" indicates the data item is used in the source, survey or output item.

Figure 4

Business Reporting Model - Respondent View

				Business Source					Collected by ABS
				Personnel records	Payroll	Profit & Loss	Balance Sheet	Other business record	Collect
ABS Data Requirements	Income items	Sales of goods				Y			Q
		Income from services				Y			Q
		Government subsidies for pollution abatement				Y			Q
		Other government subsidies				Y			Q
		Rent,leasing and hiring income				Y			Q
		Interest income				Y			Q
		Dividends received				Y			Q
		Royalties income				Y			Q
		Other income				Y			Q
	Expense items	Wages and Salaries				Y			Q
		Termination payments				Y			Q
		Employer cont. to super funds				Y			Q
		Fringe Benefit tax				Y			Q
		Payroll tax				Y			Q
		Workers' compensation costs				Y			Q
		Insurance premiums				Y			Q
		Interest expenses				Y			Q
		Depreciation				Y			Q
		Bad debts written off				Y			Q
		Purchases				Y			Q
		Motor vehicle running expenses				Y			Q
		Outward freight and cartage				Y			Q
		Rent, leasing and hiring for motor vehicles				Y			Q
		Other rent, leasing and hiring expenses				Y			Q
		Contract, subcontract and commission				Y			Q
		Repair and maintenance expenses				Y			Q
		Royalties expenses				Y			Q
		Other expenses				Y			Q
		Dividends paid							Q
	Assets	Opening trading stocks	Raw materials, fuels, containers				Y		Q
			Work in progress				Y		Q
			Finished goods				Y		Q
		Closing trading stocks	Raw materials, fuels, containers				Y		Q
			Work in progress				Y		Q
			Finished goods				Y		Q
		Other current assets					Y		A
		Non-current assets					Y		A
	Liabilities	Current liabilities					Y		A
		Non-current liabilities					Y		A

Footnotes: "Y" indicates the data item is used in the source, survey or output item. "Q" indicates the data item is collected quarterly. "A" indicates the data is collected annually.