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A critical evaluation of aspects of the tourism information commodity marketplace in Australia and some implications for innovation in tourism

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**A Critical Evaluation of Aspects of the Tourism Information
Commodity Marketplace in Australia and Some Implications
for Innovation in Tourism**

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Abstract

There is a growing body of literature which discusses the importance of systems of innovation (SOI) to modern economies. Systems which are innovative are characterised by organisations and institutions which identify weaknesses in current technologies, pursue new ideas through research and development, develop and produce technological innovations, and apply or distribute these for the collective benefit of the system. The literature suggests a number of structures which contribute to fostering systems of innovation. Efficiency in the production and exchange of knowledge is one of these.

Tourism has been described as an economic system and recent public policy has recognised the importance of the production and exchange of knowledge for innovation in tourism. The distribution (or presentation) of secondary information resources (also referred to as “commodities”) has received particular attention from policy makers. The totality of information resources which is presented to information marketplaces at a point in time can be described as the information stock. Past commentary on the stock of tourism information in Australia indicates that inefficiencies may exist in the presentation and exchange of these resources in the marketplace.

This research proposes a model of the marketplace for the exchange of tourism information commodities, the Tourism Information Commodity Marketplace (TICM). The model is applied to testing and identifying weakness in current production and exchange processes in Australia. In the research, the stock which is presented to the market is located, identified, catalogued and tested against the model to identify whether there are marketplace inefficiencies in the form of leakages. Leakages are the costs which tourism firms and organisations face as they try to address information needs by procuring and applying secondary information commodities.

The research shows that a proportion of the presented stock can be moved efficiently from suppliers to consumers and is capable of meeting information needs of consumers at a point in time. However, a range of presentation and demand-side issues are identified which reduce the potential for knowledge-based innovation in tourism systems. These relate to language, access, availability, reliability, validity and coverage aspects which are associated with the stock and demand-side characteristics.

The implications of this research for policy makers and suppliers of tourism information commodities are that dissemination weaknesses, in particular, must be addressed for the contribution of secondary information resources to innovation in tourism to be fully realised. For informatics researchers, the TICM is a valuable and adaptable tool for depicting and assessing marketplace dynamics where information is the commodity for exchange. It augments the understanding of the innovative potential of tourism stocks for systems of innovation as well as identifying potential barriers.

Statement of Authenticity

The work presented in this thesis is original in content except where referenced, and I hereby declare that I have not previously submitted this material, in whole or in part, for a degree at this or any other institution.

Signature of Candidate

Andrew James Taylor

Acknowledgments

The author has been employed on the development and roll-out phases of the Decipher online tourism information system (<http://www.decipher.biz>) for the past two years. Much of the research here was undertaken concurrently with the development of the project. I would like to sincerely thank the members of the Decipher Technical Team who have encouraged and assisted me in the research.

The author has published the following refereed papers which are of relevance to the research:

- Taylor, A. (2005), ICT and the Tourism Information Marketplace in Australia: Delivering Business Intelligence for Regional Tourism. In Marshall, S., Taylor, W. & Yu, X., (Eds.), *Encyclopedia of Developing Regional Communities with Information and Communication Technology*, Idea Group Reference, Hershey
- Taylor, A. & Puehringer, S., (2005), Market Imperfections in the Tourism Information Marketplace: Highlighting the Challenges for Information System Developers. In *Information and Communication Technologies in Tourism 2005*, 2005, Springer-Vorlage, Wein
- Carson, D., Taylor, A., & Richards, F., (2003), *Delivering Business Intelligence for Regional Tourism in Australia: Analysis of the Decipher Technological Innovation*, Paper presented at the 5th International Conference of IT in Regional Areas, Caloundra

Taylor (2005) and Taylor & Puehringer (2005) discuss aspects of the content of Chapters 3 and 4. Carson, Taylor, & Richards, (2003) address issues which are of relevance to the discussion in Chapter 7 in particular.

This work has been inspired by the enthusiasm of my research supervisor, Dean Carson. He has been very giving of his time and understanding in dealing with an ex-public servant who is new to academia. I am extremely grateful to him for his time and intellect and without his encouragement I could not have completed the task. I would also like to thank staff who have come and gone at the Centre for Regional Tourism Research, and others in the regional tourism network, who have listened to me rant on about aspects of the thesis and have provided feedback. A mention must also go to the Graduate Research College who perform a very important role in supporting high quality postgraduate research at Southern Cross University.

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Chapter 1 - The Role of the Tourism Information Stock for Innovation in Tourism Systems

1.1 Introduction

There is voluminous representation in the literature of growth in the size and importance of the global information, or knowledge-based, economy (Levine & Lippman, 1995; Nelson, 2000; Shipario & Varian, 1999). Most acknowledge the emergent role of knowledge as an enabler of wealth creation and economic growth. At the extreme, some argue that the modern economy is tending towards the development and application of knowledge for the sake of knowledge itself (Johnston, 1999).

Knowledge which is procured by economic systems and their members can be applied to many functions and tasks. One application is the development of innovative processes and products. These may take the form of new and better ways of doing existing 'things' or new 'things' altogether. Knowledge which is applied to innovative processes may be obtained from either within the system, network or organisation, often as tacit knowledge, or through a provider who is external to the system, as secondary and codified knowledge. Systems which successfully apply knowledge and learn to innovate through interactive learning processes to generate favourable economic outcomes can be described as Systems of Innovation (Edquist & McKelvey, 2000).

A distillation of Systems of Innovation (SOI) related literature suggests that one of the key requirements for ongoing innovation is the production and exchange of knowledge (Carson & Richards, 2004; Carson et al., 2003). Knowledge is a high-level concept usually explained in the context of its relationship to data and information (Davenport, 1998). It is represented by familiarity, awareness or understanding which has been gained through the verification and institutionalisation of information into business processes (Carson et al., 2003; Delbridge & Bernard, 1996).

Knowledge can be developed in a cumulative way, or new knowledge may appear through unstructured processes (Niosi, 1993). In all these circumstances, systems are challenged to identify the range of knowledge available to address current and future problems (even poorly understood problems), make that knowledge available throughout the system to increase expertise and abilities, and develop processes to creatively apply expertise through innovative processes or tasks.

Sources of information which are exogenous to organisations and systems are described as secondary information sources. Information resources sourced from secondary suppliers may contribute to the development of knowledge and subsequently to innovative processes. Secondary information can be applied by firms and other organisations to a variety of strategic and business processes including benchmarking, change management, product development, market profiling and reporting (Taylor & Puehringer, 2005). Two key considerations arise in relation to the innovative potential of economic systems. First, innovative potential may be influenced by the availability, or supply, of secondary information resources for application to the information needs of firms and organisations at a given point in time. Secondly, the potential for innovation is affected by the ability of consumers of secondary information resources to efficiently identify, obtain and apply such resources.

Tourism has been widely described on the basis of its systemic characteristics. The provision of tourism products and services at destinations is characterised by the involvement of organisations from a number of sectors of the economy. These include the

- Attractions sector (including cultural, natural and man made attractions);
- Accommodation sector;
- Transport sector;
- Organisational and intermediary sector (constituting tour operators, travel agents etc); and
- Destination sector (incorporating local, regional and national tourism organisations as well as industry associations) (Vanhove, 2005)

The complex nature of the interactions which occur in the provision of tourism products and services has for some time now been recorded in the literature as characteristic of tourism systems (see, for example, Leiper, 1990).

In the Australian context, the Australian Government is currently implementing initiatives from the Tourism White Paper (Department of Industry Science and Resources, 2003), a medium to long term strategy for tourism in Australia. Included are provisions for funding to improve the availability of high quality information for the development of and innovation in tourism. Over \$21 million, a historically large amount, was provided for "...extending the provision of quality research and statistics" (Howard, 2003).

Innovation in tourism systems, and by the firms and organisations comprising them, is influenced by their ability to obtain information resources which meet their need. This is determined by the efficiency with which they can specify their information needs to suppliers of resources, their ability to seek out and identify a 'pool' of secondary information resources which are presented to the public and may meet the need, and their skills and ability at translating the validity of each of these in terms of addressing the needs. These processes of 'specify', 'seek' and 'validate' must be undertaken in order to determine which resources, if any, should be procured.

The aggregation of individual secondary information resources which are appropriate to the knowledge-development needs of a sector and presented in an information marketplace at a point in time can be described as the information stock. Typically, information stocks consist of resources of a number of types (such as publications, maps and tabular datasets) and contain resources in a number of different formats (such as PDF files, charts and hardcopy reports). Information stocks are the choice set from which individual resources can be drawn and applied to knowledge generating processes.

Resources are presented to the marketplace in which they are exchanged by suppliers and intermediaries, for consumption by users with information needs. Intermediaries may act as suppliers in their own right or can present resources on behalf of other suppliers. One form of intermediation which has grown significantly in recent times is Information Communication Technologies (Carson & Richards, 2004; Sharma, Carson, & Taylor, 2005). Some resources, which may be potentially valuable to economic systems, may remain un-presented. These include codified resources that organisations have chosen not to present to consumers. Reasons may include a lack of resources, skills, or mandate to undertake presentation functions. The research here is concerned only with the presented stock of information resources.

While past commentary exists on the presented stock of secondary tourism information resources for Australia, the bounds of the stock itself have never been quantified in terms of detailing the individual resources which comprise it. Commentary has instead focused on a narrow band of information suppliers and has emphasised the lack of availability of information for small geographic areas (Carson & Richards, 2004). The inference is that the stock may be relatively small in terms of the number of information resources and breadth of suppliers contributing to it (Scott, 1999). Without detailed knowledge of the

constitution of the entire tourism information stock, however, it is not possible to assess its potential to contribute to innovation in tourism systems. Hence, while at least some of the past commentary on the stock suggests that a range of supply-side and demand-side inefficiencies may exist in the dissemination and exchange processes associated with tourism information resources, these are yet to be fully identified.

Individual, or discrete, information resources, like other commodities, are disseminated and exchanged through marketplaces (Taylor, 2005). Marketplaces are the arenas within which suppliers and consumers come together to exchange goods and services. They perform the allocation, distribution and exchange functions associated with capitalist economies (Taylor, 1995). It is likely that the marketplace in which tourism information resources are disseminated and exchanged is broadly similar in its structure, agents and characteristics to other information marketplaces. Information marketplaces themselves have, however, received scant attention in the literature with theorists preferring to focus their attention on related aspects such as how to value information itself.

It is possible that, like other commodity marketplaces, information marketplaces are subject to failures. Marketplace failure is indicated by the inability of the market to efficiently facilitate the exchange of goods or services. Leakages from the marketplace are one form of failure and arise where consumers exit the market prior to procuring goods or services. Leakages mean that the true demand for a commodity cannot be ascertained and, in line with Neo-Classical economic theories, traditional determinants of supply are no longer assumed to be influencing the market to move towards an efficient state (Sinden & Worrell, 1979).

There have been no attempts to date to depict and describe the marketplace for tourism information commodities in a systematic way. Hence, assessments of the relative efficiency of the market for moving the presented stock of tourism information commodities from suppliers to consumers has been based on isolated and adhoc commentaries. A lack of existing work in this area has also prohibited the identification and quantification of potential marketplace failures, including leakages.

1.2 Purpose of and Tasks for the Research

This research addresses a gap in the field of tourism informatics by delivering a model of the marketplace for tourism information commodities, the Tourism Information Commodity Marketplace (TICM). The TICM model is delivered with a testing instrument that is applied in the research as a basis for determining the relative efficiency of the marketplace and for identifying any potential leakages. Efficiency is measured by documenting the entire bounds of the presented stock and, based on the characteristics of resources in the stock and assessing the ability of consumers in the marketplace to readily undertake the specify, seek and validate processes.

The purpose of the research is therefore to:

Assess the relative efficiency of the marketplace for tourism information commodities and identify the sources and extent of marketplace inefficiencies.

To test the marketplace, the research will identify, catalogue and assess the presented stock of secondary tourism information resources for Australia. This process will be undertaken through the tasks of:

- Locating and recording the pool of information resources which may comprise the presented stock;
- Assessing the ability of consumers to obtain and apply secondary resources from the stock efficiently

The output from these tasks will be:

1. A comprehensive list of individual resources comprising the presented stock, based on internationally accepted standards for the recording of metadata on these. It will identify the collections associated with each resource and list the organisations who supply them to the marketplace. It will also facilitate an assessment of the accuracy of past commentary on the stock in light of the fully documented resource set.
2. Results from the application of a framework to test the characteristics of resources in the stock against aspects of the marketplace. This will identify the potential for consumers to efficiently obtain and apply tourism information resources.

1.3 Structure of the Thesis in Brief

Chapter One provides an appraisal of the literature about the role of information, particularly secondary information, in determining the innovative potential of economic systems. Requirements for ongoing innovation as systems of innovation (SOI) are identified as well as the types and sources of information which may be available to systems. The relationship between data, information and knowledge is explored and the concept of an information stock, including for tourism, is documented in some detail.

In Chapter Two, some of the pre-existing commentary on the presented stock of information resources for tourism in Australia is critiqued. Commentary is sourced from a number of works and from a range of research-based activities. Chapter Three discusses the nature and role of marketplaces for moving commodities efficiently from suppliers to consumers, including an examination of information commodity marketplaces and of the marketplace for tourism information commodities in particular. Assessments are made about what efficiency in a tourism information marketplace might look like.

The purpose of Chapter Four is to depict and describe a proposed model of the marketplace for tourism information commodities, the Tourism Information Commodity Marketplace (TICM). The agents who interact in the marketplace are identified. Supply and demand-side processes are disaggregated so that factors affecting the movement of commodities in the market can be described. An assessment is then made about what would constitute an efficient TICM. The proposition that leakages from the marketplace may occur is discussed including the likely causes.

Chapter Five is the methodology chapter and it details the research methods used in each phase of the study. Included are sections on methodologies used to identify and catalogue the presented tourism information stock for Australia using Internet Mediated Research and the testing methodology itself. The results of the testing are presented and discussed in Chapter Six. Chapter Seven draws on the results to intimate the possible implications for information suppliers, informatics researchers and public policy makers. Included is a section on the growth of Information Communications Technologies (ICT) as intermediaries in the presentation of information resources and their potential contribution to addressing issues raised by the research (Section 7.6).

1.4 The Role of Knowledge and Information for Innovation in Systems

There has been a proliferation in the past few decades of literature which discusses the size and importance of the global information, or knowledge-based, economy (see, for example, Levine & Lippman, 1995; Shipario & Varian, 1999). Most acknowledge the emergent role of knowledge as an enabler of wealth creation and economic growth. At the extreme, some argue that the modern economy is tending towards the development and application of knowledge for the sake of knowledge itself (Johnston, 1999). In particular, a slice of this literature is concerned with the potential for systems to generate and sustain innovation by applying knowledge, which is sourced either from within or external to the system. Systems of innovation (SOI) are networks of firms, organisations and other parties who apply tacit and codified knowledge to interactive learning processes to generate favourable economic outcomes and, in particular, collaborate to provide innovative outcomes to common problems (Edquist & McKelvey, 2000; Freeman, 1995).

Innovation can be described as the process of developing something new or as adaptations to existing processes in order to improve their efficiency (Edquist, 1997). A set of brand new elements may be combined to create a new product or method and, new elements may be combined to improve an existing product or method. Alternatively, existing elements may be re-arranged or re-combined to achieve the same purpose. Emphasising the economic and efficiency potential of innovation, Edquist, (1997, p1) states that “...innovations are new creations of economic significance.”

Several types of innovation are possible including technological, product, process, information, management and institutional and each of these are likely to benefit tourism (Scott, 1999). Technological innovation includes the design and diffusion of new technologies, for example, energy saving lighting systems for hotels. Innovations of this type are often inventions as well as innovations. Product innovation is somewhat self explanatory and can include new products which meet a consumer need or variations to existing products. Process innovations are introduced for efficiency gains in current procedures or operations. Information innovations include activities where information is collected or applied for strategic or economic gain and management innovations might include the introduction of new initiatives for matching human resources to product demand.

The quantity and depth of literature devoted to SOI as a conceptual framework has burgeoned substantially in the past few decades. The themes of such literature can be loosely grouped into:

- Structures and conditions which are favourable for high innovation potential in systems;
- Characteristics which demark innovative systems, and
- Economic and other outputs which result from innovative systems.

One element which is common to discussion under all three themes is the role of knowledge. It is a well documented premise that systems with better access to knowledge are relatively more sustainable and have higher innovative potential (Freeman, 1995). To be applied to innovative processes, knowledge must first be produced, from within or outside of the system, and then distributed (Breschi & Malerba, 1997; Edquist, 1997). Other systemic requirements for the development and sustainability of SOI have been summarised by Carson et al (2003) as including:

- **Economic competence:** Includes the combined skill set which are available to the system for innovation including resource management;
- **Resource clustering:** Physical proximity of customers, suppliers, knowledge providers and other organisations can affect the development and uptake of innovations and determine the system's capacity to generate and share knowledge;
- **Networks:** Create the environment within which innovations can impact on other requirements. Social and professional interactions between organisations in the system may be more important than the physical location of players;
- **Entrepreneurship:** Includes aspects of vision and risk to promote innovation and requires a 'leader' or a 'lead user';
- **Critical mass:** Refers to the combined organisations who may be able to persevere with developing and diffusing innovations in the system;
- **Public/ private sector interactions:** Influence the political and regulatory framework governing organisations in the system; and
- **Social and cultural capital:** An intangible aspect which represents the social 'will' and drive to develop and implement innovations. Walton (1987) argues that the values, political persuasions and beliefs of organisations and the way in which these are harnessed, labour structures, regulatory agencies, enterprise

relationships, legislation and policy may impact on the drive of an industry towards innovation and on the process of innovation itself.

The production and exchange of knowledge in systems is unlikely to be a one-off process characterised by a linear set of tasks. Rather, the ability of a system to innovate and sustain itself as an SOI is tied to its potential for undertaking and applying the process of learning on an ongoing basis. One way in which learning can occur is for entities to obtain, analyse and apply different types of data and research (Beckman, 1999). Learning can trigger processes which lead to doing existing tasks more efficiently or it may be a catalyst for devising new and better tasks and processes (Cooke & Morgan, 1998). Indeed, innovations which improve access to strategic knowledge or increase the stock of learning in an industry may provide a return beyond pure efficiency gains (Leonard-Barton, 1995). This is because innovations, when managed and implemented carefully, may unlock tacit knowledge which is held within organisations. Because of this, the way that innovation is introduced to an industry can be based on learning and may be an innovation in itself.

Knowledge is a high-level concept which is usually explained in the context of its relationship to data and information (Davenport, 1998). It is represented by familiarity, awareness or understanding which has been gained through the verification and institutionalisation of information into business processes (Carson et al., 2003; Delbridge & Bernard, 1996). Knowledge can be highly codified (usually making it relatively easy to distribute) or tacit. It may be globally relevant to the operation of sectors, or focused on local circumstances. It can be applied to general processes of innovation, or specifically to a single aspect of production or exchange. Knowledge can be developed in a cumulative way, or new knowledge may appear 'out of the blue' (Niosi, 1993). In all these circumstances, systems are challenged to identify what knowledge may be relevant to current and future problems (even poorly understood problems), make that knowledge available throughout the system, and develop processes to combine existing learning with information to develop innovative processes.

Western economies are now commonly described, even across paradigms, as knowledge economies. They are characterised by frenetic technological and scientific change which is based on the organisation, dissemination and application of information (see for example, Beijerse, 2000). The development of systems and processes through which information is

captured and applied so that individuals, firms and systems can learn from it is termed knowledge management.

Effective knowledge management is now recognised, particularly by larger organisations (McAdam & Reid, 2001) as central to the establishment and maintenance of competitiveness in an internationalised economy and especially within sectors of national economies such as tourism. While the literature provides many definitions of knowledge management, some commonalities are evident. Efficient knowledge-management includes:

- Identification of existing information and knowledge with the view to augmenting, refining and exploiting it for competitive gain and learning;
- Identification of information and knowledge gaps and processes to address them;
- Responsiveness to systems and technologies which may enhance and take advantage of knowledge management capacity; and
- Active promotion of the importance of and use of information by organisations.

Efficient knowledge-management processes promote a culture which is strategically and purposively conducive to competing in the global economy by maximising the potential contribution of available information. A system in which these principles are applied can be said to have embarked on a path of adaptive learning. Information is collected, constructed, organised, analysed and disseminated. The outcome is knowledge from which organisations learn and consequently adapt their production activities (Johnston, 1999). Given the hierarchical relationship of knowledge to information, it is pertinent to define these succinctly and to introduce the role of data (Table 1.1).

Information varies in its origins, structure, organisation and the ways in which it can be disseminated. These factors amalgamate to determine whether and how individual pieces of information can be applied to particular information needs or business functions. In recent decades, a body of literature has emerged suggesting that information has replaced land and labour as a key input to some production process (Carlsson, 2003; Leonard-Barton, 1995; Vincent, 1990).

In the pre-global but post industrial western economies, information was generally seen by firms as a requirement to assist in post-production functions such as pricing, distribution

and product promotion. While new technologies began to enable the generation and capture of data during production and exchange processes, the impetus to purposefully capture, organise, analyse and learn from by-product information sets was generally low (Turner, 2000). Mature economies are now described as information economies where the production and application of information is critical to overall production and efficiency (Dilnutt, 1999).

| Concept | Definition |
|----------------------|---|
| Data | Discrete or isolated facts concerning a subject or group of subjects. These are most commonly structured records of an activity or event. Data is usually depicted as the raw building block for information and as having no inherent meanings per se. |
| Information | Contextualised data which is arranged so that it can be analysed and applied to decision making processes. Invariably, information contains a message of some form which can influence and inform the perception of the user of the information. Creating information from data requires some combination of contextualisation, arrangement, calculations, categorisation and summarisation. |
| Knowledge | The outcome of the application of skills and resources to transform what were contextualised facts (information) into resources for learning. Knowledge is represented by information which has been analysed, understood and verified with subsequent application to business processes and activities. Typically, knowledge is built up from information by applying processes like comparisons, implications analysis, and communication to elicit opinions and evaluations. |
| Innovation potential | Innovation potential is represented by the capacity to use knowledge to develop new products and processes or to refine existing processes. |

Table 1.1 - Data, information, knowledge and innovation defined (adapted from Carson et al, 2003; Davenport, 1998)

Information can be sourced from either within the system or externally in the form of secondary information. In both instances, two types of information are commonly discussed. System-bound, or explicit, information is recorded or recordable information which can be expressed in the form of words or numbers. Explicit information includes data, metadata, manuals, files, procedures and other documents. Secondly, information may be embedded in the minds and experiences of the people within organisations as implicit or tacit information which is also colloquially known as ‘know-how’ (Beijerse, 2000).

Explicit information is generally codified and organised according to a set of rules, classifications or frameworks which relate pieces of data or sets of information. While knowledge possesses intrinsic meaning from which lessons can be learnt, information does not have these attributes. Rather, information is usually static and independent of individuals in the organisation. Relative to tacit information, explicit information is easy to transfer and disseminate. Secondary information which is exchanged between its producers and its consumers is invariably explicit. The generation of new knowledge or the refinement of existing knowledge is usually achieved through the application of previous learning, combined with the organisation and dissemination of sets of explicit information.

Tacit information, by contrast, is intangible and dependent on human translation. It is not readily transferred or disseminated since this requires some form of embodiment. Moreover, tacit information can be dynamic as individuals may relate different information sets to contextual circumstances. As well as being an elusive entity in its own right, academics have struggled to describe and model the processes through which tacit information is created, diffused, exchanged and disseminated. Consequently there is little in the literature which formalises or models the production and exchange of tacit information in marketplaces (Feeney & Grieves, 1994).

Externally sourced, or secondary, knowledge and information is therefore important to innovation at the both the organisational and systemic levels. For entities who are engaged in the Australian tourism industry, the potential for secondary information to contribute to innovation is growing in line with global trends (Scott, 1999). Secondary information can help establish a competitive advantage in a globalised, competitive and demand-elastic industry. It can be used to benchmark a destination against other regions or competitors, promote evidenced-based approaches to management and reporting, develop or diversify products or services, and guide future decision pathways.

1.5 Tourism as a Systemic Activity

While significant conjecture exists in the literature on whether conceptually a tourism industry exists, there is widespread acceptance of the systemic nature of tourism (see, for example, Leiper, 1990; Vanhove, 2005). Tourism systems can be described as consisting of four major parts (Mill & Morrison, 1985) – markets, travel, destinations, and marketing.

Tourism systems are dynamic in the sense that changes in conditions associated with any one of these parts can affect the travel behaviour and preferences of tourists.

A further component of tourism which is regularly identified in literature, but is omitted by Mill and Morrison is the amalgam of organisations, agencies and entities that interact with tourists in the provision of tourism products and services at destinations. These are usually labelled as comprising the supply-side of tourism. In Australia, there is a predominance of small-to-medium sized tourism firms (employing less than 100 staff) who supply tourism products and services for tourism (Carson & Sharma, 2002; Department of Industry Science and Resources, 2003; Vanhove, 2005). It is difficult to identify the sectoral boundaries which support or generate tourism at any destination (Stear, Buckley, & Stankey, 1988). Overlaying this framework are the regulating bodies and promotional organisations.

In addition to existing entities and associations in the system, the competitive pressures associated with attracting visitors and generating yield from tourism product may lead to collaborative initiatives and networks. Such groups may focus on developing innovative solutions to the perceived needs of the tourism system (Cooke & Morgan, 1998) and can involve both formal and informal players. Formal players include legislated bodies, such as local councils, who are directly responsible for tourism development or regulation. Informal players include firms, research bodies and local interest groups.

1.6 Information Stocks – the Aggregation of Secondary Knowledge Resources

At any given time a finite number of information resources which are drawn from secondary sources may be presented and available to organisations or economic systems. The aggregation of these resources can be described as a stock of secondary information resources. A stock is built from resources of various types and in multiple formats. It forms the choice set from which information needs requiring externally sourced information, rather than the adaptation of tacit knowledge, can be addressed (Taylor, 2005). The aggregation of information resources which are of relevance to the information needs of tourism systems can be described as the tourism information stock. The stock consists of those resources which are presented for consumption by suppliers and

intermediaries. At any time, there may also be a number of resources which are not presented for exchange and subsequent consumption by third parties.

To date, the composition of the tourism information stock has not been bounded or recorded. It is important to delineate that the information stock for a given industry or sector does not obviate the inclusion of resources produced for other sectors. Hence, while the bulk of the tourism information stock is likely to be comprised of tourism-specific commodities, a section of the stock is built from related commodities which were not presented with the explicit purpose of addressing information needs of entities in tourism systems (see Figure 1.1). For example, an information commodity produced for the financial sector containing forecasts for exchange rates in the medium-term has relevance for some organisations in the tourism system because of the influence of exchange rates on visitor behaviour.

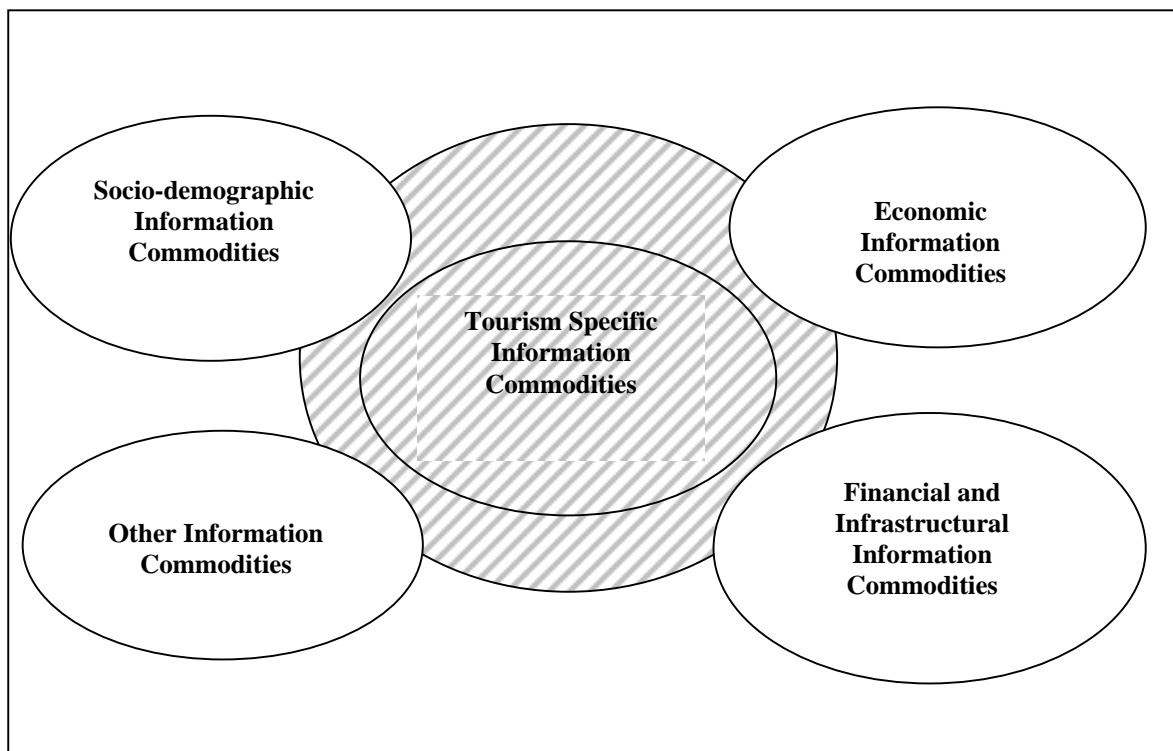


Figure 1.1 – The Tourism Information Stock

The types of resources which may comprise the secondary information stock for tourism include (Carson et al., 2003):

- Statistical collections (unit record files);
- Numerical tables (summaries of URFs etc.);
- Charts, maps, other manipulable images, and static images;

- Unpublished reports and papers (i.e. with flexible formatting);
- Published reports and papers (inflexible formatting);
- Newsletters, brochures and interpretive ('bites' of information); and
- Multimedia resources.

The entire set of individual resources in the presented Australian tourism stock have not been identified and catalogued and this is one of the tasks of the research. However, it is possible to pre-suppose a typology of these resources based on their content. This typology includes, but is not limited to development plans, directories, forms, how to guides, industry news items, links, magazines, maps, market analysis, media files, newsletters, policies, profiles, programs, publications, tabular data and mission statements (Carson et al., 2003).

The presented stock is comprised of resources of the types identified above which suppliers or intermediaries make available for consumption by presenting them to the information marketplace. This occurs where firms and organisations have made a conscious decision to make available, on a commercial or non-commercial basis, information resources. While other resources may exist which are of value, if they are not presented they do not form part of the presented stock.

Tourism information resources typically cover topics relating to tourism enterprises, products, marketing and distribution activities, destinations, trips, tourism agents/intermediaries, visitors and visitor experiences (Carson & Sharma, 2002). Formats and methods of delivery can include hard copy publications disseminated through libraries and bookshops, statistical software for tabular data and online resource collections such as the Sustainable Tourism Cooperative Research Centre online Bookshop (<http://www.crctourism.com.au/CRCBookshop>). Access to resources may be restricted to members of associations and some resources may have a retail price while others are provided free-of-charge to the general public.

An assortment of information suppliers have previously been identified as responsible for contributing resources to the tourism stock. Suppliers represent government agencies, industry associations, consultancy firms, research agencies, and enterprises themselves. They range from tourism-focused national organisations such as Tourism Research Australia (TRA), and data specific agencies, such as the Australian Bureau of Statistics

(ABS), to small localised agencies with data and research collections such as Visitor Information Centres and local tourism authorities or networks (Carson, 2005).

Suppliers have varying motives for engaging in the system to contribute information commodities to the stock. Firstly, some are legislated to do so, like TRA and the ABS. Secondly, organisations may be chartered by their members and constituents to undertake research and supply information commodities. Industry associations and consultants, for example, fall into this category. Other suppliers may generate information resources as a result of their reporting activities to shareholders, members or government agencies. The annual reports of hotel chains, for example, may be a source for benchmarking data for others in the industry. Some suppliers, as previously mentioned, have indirectly contributed to the stock through the collection of administrative data or through research activities undertaken for other industries or geographic regions. Suppliers may, of course, be motivated by a combination of these and motivations may change over time.

1.7 Characteristics of Information Stocks

Having identified the types and formats of information resources which comprise the presented tourism stock, attention can now be given to the general characteristics of information stocks. To understand the nature and bounds of the tourism stock it is necessary to identify aspects of commonality amongst the resources which comprise it. In the case of tourism, Taylor (2005) has identified several of these which, in the right mix, indicate that the stock is appropriate to the information needs of tourism organisations and businesses at a given time. These characteristics are:

Language: Refers to the discourse which is used by suppliers to convey the results of analysis, data collections and other research in the stock. The language which is attached to these can influence the meaning of interpretation and analysis and consequently, learning processes. Language is particularly important for the accurate conveyance of meaning where information from multiple research projects or data collections is used concurrently. It may also determine the accuracy with which messages on the possible application of a given resource to particular business functions are delivered and received by information users.

Suppliers, information users, and other interested parties for some information stocks in Australia have recognised the importance of language. A discourse for health information resources is, for example, maintained by the Australian Institute of Health and Welfare (2005) and includes a data dictionary and classification framework which contribute to standardisation of the discourse for this field. In tourism, some attempts have been made at standardising the discourse associated with information collections and resources. These include the Framework for Australian Tourism Statistics (Australian Bureau of Statistics, 2003b), the National Tourism Information Model (Carson & Sharma, 2002) and the work of Scott (2000). The National Tourism Information Model, in particular, has recognised the importance of a “...universe of discourse” (p21), or common language, for the efficient distribution of tourism information.

Access: Describes not only the ways in which users of information resources can obtain advice on how to physically access (procure) resources in the stock, but also how they can access information on the content of resources. The latter is used to determine which, out of a set of potential information resources in the stock, should be procured to address information needs at any given time. Access characteristics enable educated choices to be made about the procurement of resources from the stock without having to know about every resource in the stock.

Physical access characteristics are likely to be inextricably linked to the format of individual resources. Hard copy only resources, for example, cannot be procured fully through online access mechanisms and tabular data cannot be re-codified in hard copy format. This highlights another important access characteristic which is access to expert information and guidance on the applicability of a resource to specific information needs. For resources which provide results of complex analysis or research, clarification on the appropriateness of the resource to particular needs may be important. Access to staff members or to pre-existing metadata, which in this context is simply information about information, on this characteristic can avert unnecessary resource usage by information users and, importantly, the incorrect application or interpretation of information resources.

Timeliness: Timeliness describes the temporal lag between data collection or research activity and its public release in the form of information commodities. This aspect of the stock has a bearing on the relevance of resources to prevailing information needs. Information resources which are based on research or data collection activities from outdated reference periods may negate their usefulness for some applications. For industries such as tourism, where sudden global shocks can trigger widespread changes in consumer behaviour, timeliness is an important characteristic (Taylor, 2005).

Timeliness also refers to the availability of resources for longitudinal research and analysis activities. While one-off studies and research can suffice for some information needs, ongoing analysis and benchmarking requires that the stock delivers resources which are updated and maintained. Longitudinal information sources can produce variants such as time-series and seasonally adjusted data.

Availability: While timeliness relates to the ability of the stock to input information to address current information needs, availability relates to the continuance, or otherwise, of information collections and resources over time. The appropriateness of the stock can be reduced if there is inconsistency in the range of information which is collected and analysed over time. Changes to availability characteristics can derive from alterations to collection methodologies or from changes to coding, classification or output frameworks. The most obvious example of a change in availability is the discontinuation of a given information collection which has previously persisted and contributed to the stock over time.

Availability also describes the extent to which information and data from collections are made publicly available. Some suppliers, for example, may release only a limited amount of data and information. Reasons may include that suppliers are attempting to entice consumers to obtaining related information resources or the suppliers themselves are not equipped (in terms of skills, technologies, dissemination mechanisms, or a combination of these) to present the full range of potential information to the marketplace. For a stock to be high in availability, a significant proportion of data and information from collections from each supplier would be available in the marketplace.

Validity: This characteristic describes the degree to which information consumers can glean, both pre and post-procurement, the relative value of information commodities to their information needs both now and in the future. Issues relating to the validity of individual resources are often conveyed by suppliers through metadata. Metadata generally explains the purpose, limitations and possible applications for the resource. Other methods used to convey validity attributes can include brochures and other marketing-based paraphernalia, intermediary experts who, while not directly acting as custodians of the resource are aware of and can explain validity issues, and supplier experts who can be contacted either directly or indirectly for advice on validity issues.

The validity of an information stock can be difficult to quantify since information resources which are not produced specifically for a given stock may still be highly valid. This occurs where resources contain generic ‘lessons’ or knowledge which transcend geographic boundaries, topics, industries or sectors.

Reliability: Relates to both the statistical reliability of the research or data and its reliability when applied to circumstances and business processes other than those for which it was primarily intended. In terms of technical reliability, considerations include sample size, sampling procedures, benchmarking processes (if used), and issues relating to possible bias the data. Reliability issues of a technical nature are often laid out in metadata which is provided by suppliers in association with information resources (see, for example, Australian Bureau of Statistics, 2002b). Reliability is affected by the application of information to different analytical processes by information users. For example, sample sizes may determine a dataset to be reliable at the national level of geography but not at regional levels.

Coverage: Characteristics of the stock which enable it to meet particular geographic, spatial, or temporal aspects of information needs of users. The spatial coverage of research and data collections is determined by factors such as the methodology used and sample size. In Australia, there is only one collection which obtains data from every person and dwelling in the country – the Census of Population and Housing, conducted by the ABS. Operating collections of this magnitude is prohibitive to all but the national statistical agency which is funded

and legislated to undertake the Census. The benefits of a census include that it returns reliable data at low levels of spatial analysis. In the case of the Census, data is available and reliable for areas as small as street blocks which are equivalent to around 200 dwellings. To produce reliable output while keeping costs down, many suppliers and researchers are limited to collection activities which will only produce reliable coverage at national and state levels. The reliability of output at regional levels suffers accordingly.

The temporal aspects of coverage relate to ability of the stock to address and measure the impacts of fluctuations in the demand and supply of products and services. Tourism demand is highly seasonal in some regions in Australia, for example. Therefore, providing information resources which are based on peak-season research activities may distort the overall information picture. It is common for larger information resource suppliers to present seasonally adjusted information to the stock.

1.8 Conclusion

The ability of economic systems to generate and sustain innovations is interrelated to the stock of information resources which is available for meeting information needs at a given time. SOIs apply strategic information resources from the stock for creating knowledge and learning processes so that existing things can be accomplished more efficiently and new ways of doing things can be uncovered. The characteristics of information stocks are determined by the composition of secondary information resources. This in turn establishes the relative potential for the stock to serve as an ongoing basis for learning in the system. A key factor, therefore, in the production and exchange of knowledge in SOIs is efficiency in the dissemination and exchange of information resources from the stock.

**Chapter 2 – An Analysis of Existing Commentary on the
Tourism Information Stock for Australia**

2.1 Introduction

Tourism SOIs rely on the efficient production and exchange of knowledge from both within the system and from external sources. The concept of a stock of secondary tourism information resources was introduced in the previous chapter as representing the aggregation of individual information resources which are offered by information suppliers. In theory, after identifying their information needs, tourism organisations can draw appropriate resources from the stock to use as inputs to business processes and, subsequently, to ongoing learning in the system. The characteristics of information stocks which were outlined in the previous chapter suggests that the composition and innovative potential of the stock is, at least in part, determined by language, access, availability, coverage, reliability and validity aspects of the resources which comprise it.

In this chapter, a range of existing commentary on and analysis of the tourism information stock for Australia is examined. The work to date includes academic pieces, research studies, focus groups and research reports. The purpose of this critical examination is twofold. Firstly, existing commentary is analysed to document stock-related issues which have been raised by information consumers and others. Secondly, issues raised about individual resources in the stock are assessed for their potential to identify requirements for testing the ability of consumers to efficiently procure and apply resources in the stock.

2.2 Requirements of the Tourism Information Stock

Critical appraisal of the ability of the tourism information stock to meet the needs of the system must, of course, be based on comparing what exists in the presented stock to what is required from it. While this is a sensible and simple proposition, accurately determining and recording the information requirements of Australia's tourism entities has seemingly proven difficult for researchers and industry organisations alike (Prosser, 2000). Some discussion on this point will help to highlight some of the structural and capacity issues that may account for this. While there is almost universal agreement in the literature of the importance of measuring the demand for and supply of tourism product (see, for example, Vanhove, 2005), research and discussion on the overall knowledge needs for tourism has to date been slender.

The complex and systemic nature of tourism at destinations has already been highlighted as a characteristic which may, given certain conditions, facilitate ongoing innovation. Elements in the system may combine forces to build their innovation potential on an ongoing basis. However, the interaction of such a breadth of firms and organisations from many sectors may also hinder the precise identification of the whole-of-system information needs. Under these circumstances, actors may not be convinced of the utility of individual or groups of information resources.

Further complicating this, the structure of the supply-side of tourism is dominated by small firms (Sheldon, 1997). According to some of the literature, small firms are less likely to recognise the relationship between innovation potential and information or data (McAdam & Reid, 2001). Even the measurement of core supply and demand elements for tourism has been the subject of much conjecture over the years because of these fundamental structural characteristics. As an indication, the Survey of Tourist Accommodation (Australian Bureau of Statistics, 2005c) which provides baseline data for assessing the demand for accommodation product, has undergone several major methodological changes in the past few years to meet the ongoing information needs of the accommodation sector and other users of output from the survey.

It is also feasible to assume that the information needs for tourism, like other industries, are dynamic and responsive to maturation in the sector. As they mature, sectors of the economy may continually adjust their information needs in line with global knowledge management trends (see for example, Lester, 2001; Nelson, 2000; Turner, 2000). In more recent times, the push to promote the value of information as a knowledge resource has gained momentum, especially at the Federal level. However, historically there has been a disparate approach amongst regions and even amongst individual destinations to this aspect of knowledge management (see, for example, Centre for Regional Tourism Research, 2003).

Enhanced information-value awareness combined with developments in technologies for collecting, managing and disseminating information is likely to appreciably change the information and knowledge requirements of economies and their sectors as they try to keep pace in an increasingly competitive global economy. There are some signs that a maturation process is occurring in tourism in Australia. The Tourism White Paper, for example, places strong emphasis on the role of information for sustaining Australia's

tourism competitiveness and growth (Department of Industry Science and Resources, 2003). The Decipher online information system, to which State Tourism Organisations have contributed development resources, is a further example of a growing recognition of the innovation potential of information resources when they are applied to business tasks (Taylor, 2005).

Hence, the absence of a holistic and comprehensive information needs analysis for tourism may be attributed to a number of factors. These are most likely due to the structure of tourism and the dynamic nature of tourism systems. Despite this, past commentary on the stock, as well as directly annotating issues with existing resources, also provides clues as to what is required from the stock by identifying existing gaps. We now move on to examine the past commentary in detail.

2.3 Past Commentary on the Tourism Information Stock for Australia

Having highlighted the issues which may hinder the identification of information needs for tourism, it is unsurprising that past attempts to document the relative ability of the stock to meet information needs have not been numerous. Despite this, a number of research efforts have been undertaken. The context for these has been twofold: firstly to identify and document the information requirements of the industry and its sectors; and secondly to critically analyse existing resources to determine their ability to meet the identified needs. Discussion in this section summarises the outcomes to date.

Amongst academics, there is debate about what information is of core value to firms and organisations who are involved in tourism. Some observers have gone so far as to suggest, rather pessimistically, that the information needs of tourism entities can never be holistically or systematically addressed because of an ongoing lack of funding for collection and dissemination and a lack of understanding of the value of tourism (Scott, 1999). Vanhove (2005) proposes a model of a general Tourism Information System (TIS) in which a large number of required information items for management of destinations are listed. The impetus for the TIS is to arm local, regional and national tourism organisations with evidence which promotes the economic value of tourism. The inference from Vanhove's model is that information serves a political as well as strategic purpose but this aspect of discussion is outside of the focus of the research.

Items in the TIS are listed under the following types (condensed summary from Vanhove, 2005):

- Actual demand - this includes visitor numbers, lengths of visits and trips, demographic profiling items, consumption of products and expenditure items;
- Potential demand – including trends in generating regions, promotional information and information on consumer awareness of destinations and their products;
- Other market information – incorporates items recording consumer choice patterns, strategic destination audits and competitiveness measures;
- Day tourism – numbers and profiles; and
- Supply – including products, destination labour markets, infrastructure, capacity and cultural items.

The TIS includes 21 ‘basic’ information items, which are considered as core to requirements of destinations, and 33 secondary items considered as important.

Carson (2001) has proposed a National Tourism Information Model (NTIM) which models the complete sphere of tourism information to enable information users to “...locate, preserve and interpret tourism information resources” (p18). The NTIM suggests that ‘constellations’ of required information exist concerning organisations, institutions, users, products and services. Figure 2.1 shows the NTIM constellations. Augmenting the model is a data dictionary from which data collection agencies can identify possible information elements and their domains.

As well as academic work which identifies components of the stock, several research activities have elicited some analysis and opinions from agents in tourism systems themselves. The most comprehensive of these initiatives was commenced in 1999 by a national tourism research body, the Centre for Regional Tourism Research. It held workshops with tourism operators and managers of tourism associations (Prosser, 2000). Subsequently, in 2001 a national forum was held to identify the needs of regional and local tourism associations (Kelly, 2001).

The results of these were supplemented by a series of focus groups in 2002 and 2003 to determine the current data or information needs in regional tourism. Workshops and focus groups were conducted in Adelaide, Lismore, Canberra, Ballina and Sydney with participants stemming from State Tourism Organisations (eight participants), Regional

Tourism Organisations (13), Local Tourism Organisations (24), industry associations (seven), and individual tourism businesses (18) (Carson & Richards, 2004).

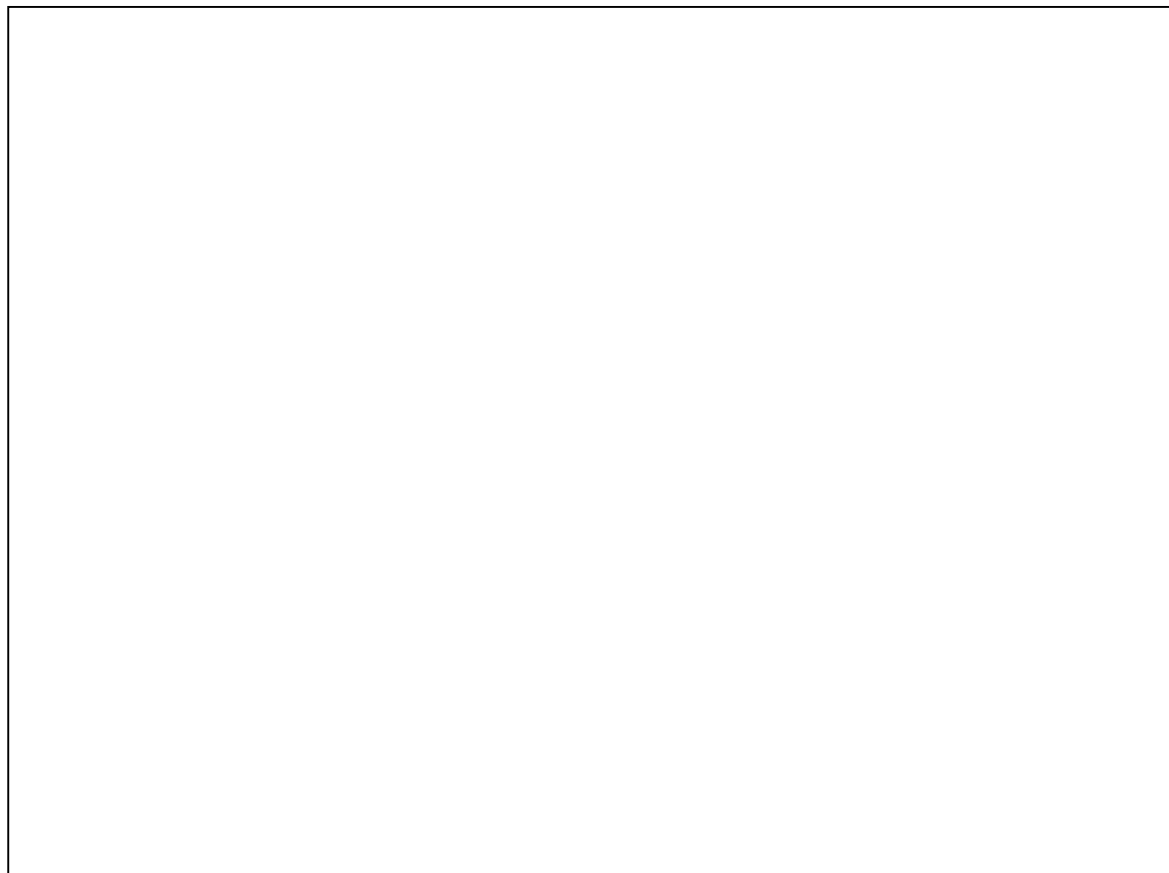


Figure 2.1 - Summary of Constellations of Tourism Knowledge (Source: Carson, 2001)

Importantly, participants in the focus groups were asked to record the perceived barriers to obtaining and using this information. Questions included:

- What do you believe are the current local level information/data needs?
- What would you use this information/data for?
- What are the current barriers to gaining and using this information/data?

Source: (Carson et al., 2003)

The commentary from these and a suite of other known studies in the field is summarised in Table 2.1.

| Authors/ Agency | Activity | Reference period | Main Findings |
|----------------------------|--|-----------------------------|--|
| (Hunt & Prosser, 1998) | Scoping paper | 1998 | <ul style="list-style-type: none"> • Operators are searching for more and better information for consumer analysis. • A lack of accurate and timely local and regional data exists. • Operators find it difficult to access and apply currently available research. |
| (Scott, 1999) | Tourism Research in Australia – work in progress report. | 1999 | <ul style="list-style-type: none"> • A framework for identifying domains of tourism research is required. • The industry is in need of a clearing house facility for research and information. • Current data collections are not timely. • Low level industry and geographic data is required. • Replicated case studies are required to compare individual studies. • Information resource gaps exist in the areas of future markets, travel decision processes, forecasts, travel behaviour in destinations, impact assessments and integrated regional planning resources. |
| (Prosser, 2000) | Focus groups held around regional Australia | February and March 2000 | <ul style="list-style-type: none"> • Urgent need for research on tourism's potential contribution to social and economic change in regional communities. • Information gaps exist on: local and regional economic modelling; pricing, financing and business planning; consumer behaviour, market research and marketing; infrastructure, transport and information technology; training and accreditation; destination development; local and regional data collection methods; communication, extension and technology transfer; and product development. |
| (Carson & Richards, 2004) | Industry workshops held around Australia | Nov 2002 to Sept | <ul style="list-style-type: none"> • The industry is not convinced of the utility and value of information products. |

| Authors/ Agency | Activity | Reference period | Main Findings |
|-----------------------|---|---------------------|--|
| | | 2003 | <ul style="list-style-type: none"> • Low awareness of secondary information available to the industry. • Conversely, a high value is placed on tacit rather than codified knowledge. • Little understanding of the relationship of information products to business processes. • Industry experience with information commodities is concentrated on a few well-known suppliers. • Direct experience in collecting, processing and analysing secondary information is sparse. • Structural inhibitors to the effective diffusion and uptake of knowledge products exist. • Existing procurement systems do not exist. |
| (Ernst & Young, 2001) | Exploratory and detailed interviews with more than 100 key industry agents and representatives to establish tourism information user requirements for Decipher. | 1999 | <ul style="list-style-type: none"> • The available information is: out of date or not timely; not available at the regional or sub-regional level; not sector specific; generally poor comparability between regions; characterised by anomalies in methods and differences in the collection of data (i.e. between IVS, DTM/NVS, STA, OAD AVSTATS) which as a result constrain the use of major collections; hard to find. • Operators have difficulty interpreting and understanding raw data. The breadth of information application is wide but the range of information used is narrow. • There is a perception of a lack of timely and accurate information. • Generally budget allocations for information procurement are low. • Perception that freely available information is not targeted to information needs. |

| Authors/ Agency | Activity | Reference period | Main Findings |
|---|---|-----------------------------|---|
| | | | <ul style="list-style-type: none"> • Level of sophistication in the use of information is low. • Identification of 19 information products which maximise the flow and application of strategic information across the TIM. |
| (Centre for Regional Tourism Research, 2003 and Kelly & Taylor, 2003) | National Data Summit on local tourism data sets | September 2003 | <ul style="list-style-type: none"> • Data needs at the local level include; purpose of visit; why visitors aren't visiting; types of visitors; activities; accommodation; influencing consumer behaviour; economic impact of tourism; attitudes of communities to tourism; future trends and indicators. • Many collections replicate what is known and don't add to the stock of knowledge. • Qualitative data exploring visitor and operator experience is required. • Standard collection methods and data definitions should be employed to enable comparisons to state/territory and national data sets. |
| Centre for Regional Tourism Research (unpublished research) | Analysis of local government strategic tourism planning in Australia (currently unpublished). | August to December 2004 | <ul style="list-style-type: none"> • Local governments possess limited skills for obtaining and applying information to strategic planning processes. • Application of information is shallow and unsophisticated. • Focus is on visitor-related information at the expense of enterprise, destination and impact research. |

Table 2.1 - Summary of Research Findings relating to the stock of secondary tourism information in Australia

The phases of research which culminated in the national focus groups have demonstrated the difficulty which organisations (particularly small businesses and local tourism associations) have traditionally experienced in articulating their data, information and knowledge needs. The extent of the problem was indicated by the necessity to use scenario-building exercises to stimulate discussion in order to identify information and knowledge needs. The results of the focus groups (augmented with material from the 1999

roadshow and 2001 Australian Regional Tourism Convention) are summarised in Table 2.2

based on the nature of data or information required and the applications of that data.

Figure removed due to copyright restrictions

Table 2.2 - Information Needs of Regional Small Tourism Firms and Local Tourism Associations
(source: Carson et al., 2003)

As well as suggesting that difficulties exist in the area of information specification, existing commentary also proposes that structural, capacity and technological barriers have persisted to impinge the effective application of information resources to learning and innovation processes in tourism systems in Australia (Kelly & Taylor, 2003). These are indicated by comments which effectively suggest that tourism firms and agencies struggle to undertake the tasks which are required to convert data or information into strategic knowledge (see, for example, Carson & Richards, 2004; Hunt & Prosser, 1998).

Related to this observation is the assertion, derived from the commentary, that the value of secondary information as a resource is not fully realised by agents in tourism systems (Carson & Richards, 2004). Instead, a relatively high emphasis has seemingly been placed on tacit, or internal, knowledge and know-how. There are also indications of a restricted use of the stock whereby agents are primarily experienced in using commodities from a limited range of suppliers who produce national data collections. These include resources from the TRA and ABS.

Commentary which raises concerns specifically about existing resources in the stock can be summarised under several themes. Firstly, there is a widespread desire for improved and higher quality data collections for small geographic (especially local) levels. This point is interesting given prior observations that organisations in local areas lack the skills and resources to undertake sophisticated analysis, interpretation and application of information resources (Ernst & Young, 2001). Timeliness is also raised as a prominent issue with improvements noted as a requirement for the better application of information by the industry. Similarly, criticism has been aired about seemingly persistent methodological changes to key data sets, particularly those originating from the larger suppliers, although some changes (such as the switch from the National Tourism Monitor to the National Visitor Survey from TRA) have been noted as net long-term improvements.

Remarks about tourism-specific resources are mostly on data collections which are managed by large public sector suppliers such as the Australian Bureau of Statistics, Bureau of Tourism Research (now Tourism Research Australia) and the Federal tourism department. Those attracting the greatest proportion and most critical of the commentary are statistical collections which produce tabular output for manipulation or analysis by users. Given the problems that users themselves have acknowledged they have in undertaking these tasks (Centre for Regional Tourism Research, unpublished), it is perhaps of little surprise that this area of the stock has traditionally attracted the most criticism.

The analysis of the commentary also shows that industry players have been consistent in their recognition of the need for more information of a better quality. However, such statements have tended towards the non-specific. The specific requirements are generally not spelt out. Some of the comments distilled in this section allude to the issue, of the capacity for enterprises and organisations in tourism to understand and use information routinely and productively. This is alluded to in discourse which speaks of capacity issues which are centred around the skills, culture, awareness and finances needed for productive data and information procurement and management (for example, Ernst & Young, 2001; Carson & Richards, 2004).

It may be that the structure of tourism in Australia contributes much to capacity issues for information use. Tourism supply is non-homogeneous and is dominated by SMEs who are time and skills poor (Sheldon, 1997). This important observation on capacity is recognised

as a potential contributing factor (or range of factors) to the low level of information application in tourism which has been a common theme of past commentary. However, a more detailed analysis of this aspect of tourism industries is beyond the scope of the research here.

Overall, significant structural and capacity issues have been identified in the commentary. To what extent these are attributable to characteristics of the stock is unclear. A thread of commonality nevertheless exists. Organisations have difficulties transforming secondary information commodities into knowledge resources which can be applied to strategic business processes. The problem is not restricted to agents from particular sectors and instead it is seemingly pervasive across the industry.

2.4 Conclusion

The analysis of existing research and commentary on the stock of secondary tourism information resources has identified several production, dissemination, exchange and application issues. However, the focus of the work to date has been largely on the limitations of data collection activities undertaken by the prominent public sector suppliers. It is therefore feasible to suggest that:

- The stock may be constituted by more than just the tourism-specific resources which have been the subject of criticism and suggestions to date; and
- That part of the stock which has not been identified may or may not be efficient at meeting the information needs of the industry.

This highlights the need to augment the existing commentary with a systematic and methodical approach to analysing the whole tourism stock. To facilitate such an analysis, an understanding of what constitutes efficiency in the stock is required and this is the focus of the subsequent chapter.

Chapter 3 – Marketplaces for Information
Presentation and Exchange

3.1 Introduction

In the previous chapter it was proposed that there may be a larger stock of presented tourism information resources than has been acknowledged in the commentary and research to date. However, the commentary also demonstrates that at least part of the stock continues to be exchanged through distribution and procurement activities. Earlier discussion proposed that the efficient production and dissemination of knowledge is a key element in the development and sustainability of SOI. Distribution processes are undertaken by information suppliers and intermediaries who process, analyse, manipulate, format and assemble research and data into discrete information commodities. Information commodities include publications, codified tabular data, how-to guides, case studies, market briefings and so on.

It is feasible to suggest that the presentation and procurement activities for tourism information resources occur in a marketplace. Marketplaces are the arenas within which suppliers, who disseminate goods and services, and consumers, come together. They perform the allocation, distribution and exchange functions associated with capitalist economies (Taylor, 1995). It is likely that the marketplace in which tourism information is disseminated and exchanged is similar in its structure and characteristics to other information marketplaces. Information marketplaces themselves have received little attention in the literature with theorists preferring to focus their attention on related aspects such as how to value information (Feeney & Grieves, 1994; Kingma, 2001; Levine & Lippman, 1995; Vincent, 1990). It is also possible that, like other commodity marketplaces, information and marketplaces may be subject to failure. In this chapter, the characteristics of commodity, information as a commodity, and tourism information marketplaces are discussed to establish a context for modelling the Australian tourism information marketplace.

3.2 Characteristics of Marketplaces

A marketplace is an economic construct which is used to describe and depict two of the core functions performed by economic systems. Firstly, marketplaces help to determine the level of output and consumption of goods and services and, secondly, they determine how goods and services are to be distributed in societies (Mansfield, 1985). A marketplace is most often defined as the place where groups of buyers and sellers interact to exchange

goods and services. In this context, buyers are most often referred to as ‘consumers’. The exchange processes which take place in a marketplace may do so by direct contact between suppliers and consumers or can be brokered and facilitated by intermediaries. A simplified representation of a marketplace, its elements and its dynamics are shown below (Figure 3.1).

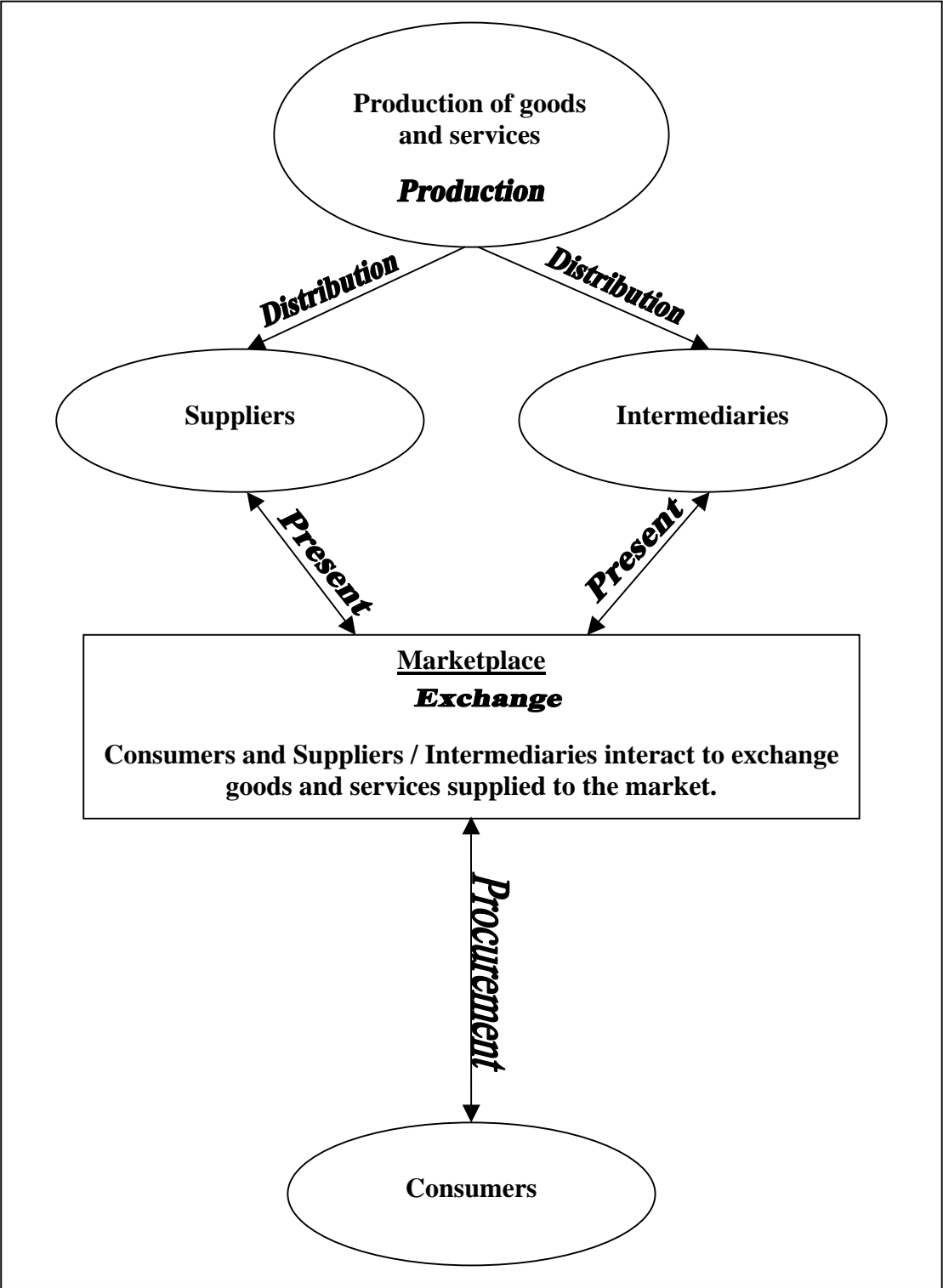


Figure 3.1 – Marketplace Elements and Dynamics (source: author)

Traditionally, economics textbooks describe the role of marketplaces as the mechanisms through which an agreed price for the exchange of particular goods and services is reached. At such a price, suppliers are content to provide their wares to the market and consumers are content to procure in order to satisfy their needs and gain utility (Frank, 2003). Utility can be described as the amount of satisfaction gained by consumers from a basket of goods and services or an individual good or service.

Marketplaces can be stable in location and constitution or, alternatively, may be dynamic and flexible, existing only at a given place or at a certain point in time. For example, the marketplace for real estate in a town is fixed geographically. However, it is dynamic in its constitution, offering a range of product types like residential and commercial real estate. A car auction creates a marketplace which exists only for the duration of the auction and exists only at the location of the auction, although some consumers may be located elsewhere. The dynamics of marketplace interactions are most often expressed in terms of past or current movements in demand and supply and the predicted movement for these.

Demand and supply are depicted graphically as curves on a price axis and a quantity axis. Sets of assumptions are used to map the behaviour of consumers and suppliers under certain circumstances. Expected behaviour leads to determinations about commodity prices (Frank, 2003). Variations in these assumptions enable economic models to predict the likely impacts of changes in marketplace circumstances and behaviour. This area of economics is known as marketplace behaviour and is the cornerstone of Neo-classical economics. While some assumptions are varied in the models to predict impacts on demand and supply, a set of core assumptions underpins all Neo-classical modelling of markets. Assumptions include that consumers are rational, entering the marketplace in order to maximise their utility; and that consumers and suppliers have perfect information about each other and about the minimum price which can be fetched for a commodity.

Micro-economic literature is reasonably consistent in explaining the determinants of demand and supply in markets (see, for example, Frank, 2000; Frank, 2003; Kingma, 2001; Mansfield, 1985). These are summarised in Table 3.1 and 3.2.

| Factors | Potential Impacts on Demand | Examples |
|---------------------------------------|---|--|
| Consumer incomes | <ul style="list-style-type: none"> • Determine the quantity of a commodity that consumers will purchase at any given time and price. • Demand for most commodities increases as consumer incomes increase. • Demand for some commodities tends to decline as incomes rise. | <ul style="list-style-type: none"> • The demand for luxury cars increases as incomes increase. • The demand for low quality watches decreases as incomes increase |
| Consumer tastes | <ul style="list-style-type: none"> • Determine the level of demand for some commodities relative to others. | <ul style="list-style-type: none"> • Consumer tastes have orientated towards electronic forms of communication in recent years, such as email and Short Message Services. |
| Prices of substitutes and complements | <ul style="list-style-type: none"> • The demand for some commodities increases the demand for complementary goods or services. • For substituting commodities, and increase in the price of one increases the demand for the substitute. | <ul style="list-style-type: none"> • Increased demand for swimming pools increases demand for pool cleaning services. • Increased price of petrol increases the demand for LPG for vehicles. |
| Consumer expectations | <ul style="list-style-type: none"> • The expectations of consumers about the future may influence their demand patterns at the present. • If consumers expect their incomes to rise they may increase current consumption of certain commodities | <ul style="list-style-type: none"> • Consumers who expect the price of cars to fall may delay their purchase. • An imminent pay rise leads to an extra family holiday. |
| Government policy | <ul style="list-style-type: none"> • Taxes and charges can alter the demand for commodities affected. | <ul style="list-style-type: none"> • Taxes on air travel can shift demand towards other forms of transport |

Table 3.1 – Marketplace Determinants of Demand (source: Frank, 2003 and adapted by author)

| Factors | Potential Impacts on Supply | Examples |
|---------------------------------------|--|---|
| Costs | <ul style="list-style-type: none"> • Increased costs tend to decrease the supply of commodities and vice-versa. | <ul style="list-style-type: none"> • Business tax increases cause a hotel chain to cancel the development of a new hotel. |
| Technological advancement | <ul style="list-style-type: none"> • Technology can reduce the costs of producing commodities. • Technology-based systems may diffuse commodities to previously untapped markets. | <ul style="list-style-type: none"> • Computerised internet-based booking systems enable hotel chains to better manage rooms, obtain greater yield and manage the supply of rooms to the marketplace in “real time”. • Remote communities can now order books over the internet. |
| Other suppliers | <ul style="list-style-type: none"> • Competition and the number of suppliers of similar commodities will determine the quantity that is supplied and affect prices and demand. | <ul style="list-style-type: none"> • New attractions and tour operators at a destination increases the supply of tourism product overall. |
| Price expectations | <ul style="list-style-type: none"> • Suppliers expecting greater prices in the marketplace may increase production or supply. | <ul style="list-style-type: none"> • An upcoming major festival may cause suppliers to produce or order additional stocks of souvenirs. |
| Government policy and global factors. | <ul style="list-style-type: none"> • Subsidies, taxes and incentive schemes can influence supplier decisions about the supply of commodities. • Geo-political events may causes suppliers to alter their behaviour in anticipation of market shocks or developments. | <ul style="list-style-type: none"> • Fuel taxes may influence the supply of bus tours. • Economic shocks from terrorist events cause airlines to re-route or cancel certain routes. |

Table 3.2 – Marketplace Determinants of Supply (source: Frank, 2003 and adapted by author)

While most of the literature on marketplaces describes the exchange functions on the basis of price, there is recognition of the existence of marketplaces for intangibles and non-monetary goods and services. Examples include a healthy natural environment or national security. Marketplace theory describes such items as public goods. Public goods differ from other commodities in that their consumption by one person will not exclude another person from consuming and gaining utility from it. Unlike a chocolate bar, for example,

many people can 'consume' a council maintained bridge by crossing it. Thus, a different set of marketplace dynamics operates for goods and services which are not exclusive.

Further to this, some marketplaces facilitate the trade of intangibles by attaching a monetary value to them. For example, the Carbon Emissions Trading scheme, operating amongst several countries around the world, has established a marketplace for carbon emissions (The European Union, 2005). Under this scheme, companies are issued with permits allowing them to emit certain quantities of carbon-dioxide each year. A company who does not have a large enough emissions 'bank' to cover their outputs must purchase them from a company who does. Attaching a price to intangibles is one way of rationalising their use. This principle also applies to goods such as roads where a toll may be imposed on users to rationalise their use.

3.2.1 Marketplace Failure

Marketplaces can be subject to failure, a term that is widely used in the economic literature (see, for example, Sinden & Worrell, 1979) . Marketplace failure is indicated by the inability of the market to clear goods or services efficiently. Failure may be symptomatic of a number of underlying issues including external influences. In essence, any factor which reduces the optimality of marketplaces, as measured by their ability to allocate scarce resources efficiently, can contribute to marketplace failure. For example, a situation where there is only one supplier in the market is a form of failure known as a monopoly.

Leakages from the market are another form of failure. Here, suppliers or consumers exit the market prior to procuring the goods or services they entered to consume. One obvious circumstance under which this may occur is where the demand for a commodity exceeds its supply. Consumers disengage with the marketplace upon learning about a lack of supply for their desired commodity and suppliers may be tempted to raise prices knowing that remaining consumers may be forced to pay the elevated price. It is possible that consumers who have disengaged from a particular market may re-engage with suppliers in a different marketplace to procure a substitute commodity. Suppliers may also leak from the marketplace given certain circumstances. For example, a supplier may obtain information of strategic value which prompts them to disengage with consumers and hold back goods for more favourable times.

The effect of leakages of these types is to mask the potential true demand for goods or services. In the case of consumers exiting, suppliers are left with less than perfect information about the potential level of demand for their services and goods. Because of this, they may not obtain the optimal price which should have eventuated had the demand from all consumers been represented in the market. Marketplaces may also fail if stock is not presented because of, for example, high costs associated with presenting. Identifying this type of failure is difficult because it can remain unknown and may not be easily distinguished.

3.3 Information Marketplaces

Secondary information is becoming widely and increasingly described as a commodity which has both intrinsic and explicit value (Turner, 2000). Information of this type is produced by suppliers, disseminated in various formats as discrete commodities and exchanged between suppliers and consumers. The process in which consumers physically obtain an information commodity can be termed procurement. Given this, it can be seen that the high-level activities which characterise commodity marketplaces are also common to the arenas in which information resources are exchanged.

Given the similarities in the production, processing and exchange aspects for information, it is feasible to expect that these can and have been modelled in order to make predictions on demand and supply in information marketplaces. However, models of information marketplaces, where information resources are treated as exchangeable commodities, are absent to the extent that they do not provide a high-level viewpoint for predictive marketplace analysis in the way that traditional micro-economic marketplace models do (Frank, 2000; Frank, 2003).

At least part of the problem in describing and depicting information marketplaces can be traced to the nature of information itself and to the applications for which it is sought and applied. There is great diversity in the definition of information in the literature (see Table 3.3). Not only have a great range of definitions been proposed, but they are dependent on schools of thought and may change according to the applications of information over time (Feeney & Grieves, 1994).

| Source | Definition of Information | Implied nature of Information |
|--|--|---|
| Blumenthal, 1969 | Codified data which conveys meaning within context. | A building block for knowledge. |
| Bell, 1979 | A rearrangement of data into patterns or designs. | Organised data. |
| Burch, 1989 | Formatted, modelled and organised data to increase the level of knowledge for the recipient. | An input to knowledge. |
| Frank, 2000 | Data which is shaped and organised with value added due to context. | Value added to data. |
| Arrow, 1984 | Information is a reduction in uncertainty. | A tool for altering probabilistic outcomes. |
| Stonier, 1990 | A function of complexity. | A context for explaining complexity. |
| Frank, 2003 | An input to decision making and risk management. | A tool for explaining and rationalising consumer behaviour. |
| Organisation for Economic Co-operation and Development, 1982 | Knowledge concerning a fact or event. | An expression of knowledge. |

Table 3.3 – Definitions for Information (Source: adapted from Feeney, 1994)

Four broad definitional positions can be extrapolated from the table above:

1. Information is a building block for knowledge;
2. Information is an explanatory tool which can demystify complexity and the probabilities of certain events occurring;
3. Information is a factor in consumer and supplier behaviour; and
4. Information is an expression of knowledge itself.

3.3.1 Valuing Information

In any marketplace, the price which is sought by suppliers will, under normal circumstances, reflect the costs of production plus an augmentation for profit. For many products, the marginal cost of production (the additional cost of producing one more unit)

decreases as the amount produced increases, thanks to economies of scale. Under these conditions, the price of commodities represents some inherent value (costs).

The value of an item is also representative of the utility which can be gained from its consumption by a particular person at a particular time minus the disutility of obtaining (procuring) and using it (Sinden & Worrell, 1979). Value, then, is an indicator of the relative importance of an item to an individual. Valuing an item requires consideration of the parameters of time, place, individual and decisions.

There is a large body of literature discussing the value of information, in the field of Knowledge Management. However there is little discussion in this area about valuing information based on its exchange in marketplaces. For this reason, little has been said about what information commodity marketplaces might look like, who might be engaged in these, how they behave, and how their efficiency can be assessed.

A number of information valuation methods have been suggested from the perspective of firms, governments and community organisations (Davenport, 1998; Feeney & Grieves, 1994; Sinden & Worrell, 1979). Feeney & Greives (1994) have found that around forty percent of all literature which discusses the value of information is based on the econometrical notion that information reduces uncertainty in markets. The value of information in this context is based on the degree to which it does so while being unavailable to competitors. Allocation processes in markets are adjusted according to the exclusivity of the information and its role in reducing risks for consumers and suppliers. Attaching a nominal value to information using this approach is a matter of calculating the cost or savings according to the value of the risks which are impacted on by the availability of the information.

A second information valuation method is to calculate the costs associated with producing it and pricing information outputs accordingly. The Australian Bureau of Statistics, for example, employs a cost-recovery based charging regime for its information products (Australian Bureau of Statistics, 2004a). Its prices are based on program budgets and anticipated sales. Difficulties arise when whole information sets are divided into discrete and small information commodities which can be applied to different contexts. For example, the ABS may be hard pressed to sell many copies of a full database of results

from the Census of Population and Housing held every five years. The Census costs around \$250 million to run and process (Australian Bureau of Statistics, 2004d) but the results are distributed in various formats and through smaller discrete products. Establishing the demand for these products is difficult and so prices are often set with cognisance to the costs of converting the raw data into particular information products.

The value-added method is somewhat more conceptual. It identifies stages in the development and application of information which add value by addressing information needs (Feeney & Grieves, 1994). Initially, information may be interpreted, validated and applied by its supplier. The supplier may then hand over the synthesised information to a user who may add further value through more complex interpretation and analysis. The key challenge of the value-added method is in measuring the net added value at each stage. Assigning an asset value within an accounting framework is a further method for placing a value on information. Vincent (1990) notes that for information to be classified as an asset it must demonstrate a contribution to future cash flows, be of benefit to a particular enterprise while access to others is controlled, and be in a useable form indicating that the enterprise has already invested in the information.

Attempts have also been made to measure and compare the value of the knowledge economies of individual countries (Australian Bureau of Statistics, 2005d; Davenport, 1998; Department of Industry Science and Resources, 1999). The ABS approach incorporates indicators of innovation and entrepreneurship, human capital and information and communications technology which recognises that knowledge is a key part of economic systems (Australian Bureau of Statistics, 2002a). While there are elements which demonstrate some of the effects of marketplace influences on the production and exchange of knowledge, the framework does not provide a model which represents information marketplaces themselves.

3.4 The Attributes of Information as a Commodity

The discussion above indicates that information possesses some unique attributes which may impact on the ability to describe and model the marketplace in which it is exchanged. A review of the literature on the nature of information as a commodity, relative to others, throws up some common themes under which comparisons and contrasts to other commodities can be extrapolated.

1. Costs of Production

Costs have a major impact on both the quantities of good or services which are supplied to a marketplace and the prices at which they are offered. Costs are traditionally described as either fixed or variable (Mansfield, 1985). Fixed costs are those associated with inputs to the production process, including land, labour and capital inputs, which, up to certain levels of production, do not vary according to the amount of goods or services which are produced. For example, the liquor license fee for a hotel does not increase according to its room occupancy rates.

Conversely, variable costs increase as production increases because larger outputs of goods or services require more inputs. For example, the costs of water usage for a hotel increase in line with higher room occupancy rates. Importantly, variable costs increase as production increases but at a decreasing rate due to economies of scale (Mansfield, 1985). The phenomenon of decreasing marginal costs is the basis by which economic rationalists explain the supply of goods in terms of the costs of producing additional units. As well, marginal costs help firms to determine their break-even point and to flag potential profit and loss situations.

The production of information, by contrast, generally entails relatively large fixed costs to produce the first unit but then lower, or even close to zero, marginal costs for additional units (Kingma, 2001). To present the results of a survey, for example, the organisation must conduct the survey, process and validate the results, compile them into some form of output and transfer them to an output media such as a compact disk (CD). The cost of producing a second compact disk with the same information set is far less than the fixed costs incurred in producing the first CD. Because of this characteristic, it is difficult to establish and predict the cost functions for firms and organisations who engage in the production of information commodities.

2. Valuing Commodities

From the consumer perspective, assessing the value of information commodities may be difficult. For most commodities and services, their value is represented by the price that consumers are willing to pay at a given time. The price reflects the utility, or pleasure, that the consumer is hoping to obtain from the consumption. At least part of the utility is derived from the knowledge that only they can consume the commodity at any one time.

For example, a chocolate bar which is entirely eaten by a consumer cannot be simultaneously eaten by another.

Information, on the other hand, can benefit more than one consumer at the same time (Kingma, 2001). The benefits of information about a tourist destination which is broadcast on television, for example, can be shared amongst many consumers. A proxy for the value of such information is the sum of the individual benefits. Clearly, measuring the net benefit to individuals may prove difficult. For these reasons, information is frequently described as a public good. Public goods typically can be shared or enjoyed by more than one consumer at the same time. This is not to say that information products cannot be made to be exclusionary, so that benefits are shared by a restricted number of consumers. This can be achieved through registered use and limited distribution.

A second value-related issue can be traced back to our discussions on the nature and definition of information itself. If, as many authors characterise, information provides building-blocks for the development of knowledge, then a fundamental challenge to valuing information becomes evident. The benefits of information are stringently linked to a particular point in time (when consumption takes place) and to the context within which information is consumed. Hence, while a particular information commodity may provide utility to meet an information need at one point in time, the same resource may not deliver the same level of utility at another time.

The main impact of difficulties in measuring the value of information is that the efficiency of the marketplace, in terms of its ability to reach a stable state, cannot be readily established (Shipario & Varian, 1999). The value of information may not be realised until it is consumed because it is an 'experience good' whose benefits may or may not be appropriate to the problem, question or information need at hand. The quality and usefulness of a book on 'How to Run a Successful Bed and Breakfast', for example, cannot be fully established until after it has been read. The book may provide only high-level advice or even incorrect advice.

3. Characteristics of Consumption

Information is only desirable and valuable if it addresses the current need and the context in which that need has developed. A tour operator who is dependent on international visitors may not get value from the consumption of information about domestic visitors to

the region. One must first consume information before knowing whether it was the right information to consume. Its ability to generate marginal benefits is not known until it is consumed. Indeed, information is also accumulative which means that it can be enhanced by new information even after it has been consumed (Vincent, 1990).

The consumption attributes of information have been recognised and at least partially addressed by some information resource suppliers. Metadata, which is information about information, is widely used to assist potential consumers of information commodities in understanding the scope and applications for the content of resources before they consume it. Indeed, international standards for the recording metadata for such purposes have gained prominence in recent years (see International Organisation for Standardisation, 2000; 2004).

4. Opportunity Costs

The consumption of information can potentially shift large opportunity costs onto firms and organisations. The opportunity cost, or cost-benefit measure, of consuming a particular good or service is the foregone utility or benefits of the consumption of others, including time. An obvious example of the potential opportunity cost of information is the time spent by executives and others poring through information-based reports. In many cases, the opportunity cost cannot be calculated or valued because the value of information is not known until it is produced and consumed.

As well, the opportunity cost of not consuming information is almost impossible to measure. Hence, it is quite often the employment of the information generators themselves - analysers and disseminators (such as librarians) – which is targeted first when rationalisation and cost-cutting occurs within firms. Companies may fail to recognise the value of their existing information sources and streams or, put another way, the opportunity cost of not having these.

5. Information as a Public Good

In many respects, information is produced and consumed according to public good principles. That is, the supplier of the information is not engaged in the information marketplace with the intention of profit maximisation (Edquist, 1997). A prime example is

the provision of public health information through sources such as government agencies. On the consumption side, public goods are non-diminishable and non-exclusive so that the consumption of the good by one person does not reduce the amount available to another, and the good cannot be partitioned off from those who have not paid for it.

Public goods are generally supplied by public organisations and econometric models do exist for depicting their optimal supply. These are often focused on determinations of the public's willingness to pay. However, the efficiency of such markets and the success of public policy are inextricably linked to the ability of the provider to improve the position of the public in general, regardless of any willingness or ability to pay. This measure is known as net social gain. Assessing the net social gain obtained by the provision of information is likely to be problematic given the attributes of information described above.

3.5 The Notion of a Tourism Information Marketplace

Analysis of the existing presentation and exchange mechanisms for items in the stock of tourism information resources points to the existence of a marketplace for tourism information commodities. The commentary identifies a range of suppliers and their collections as well as documenting some of the intermediaries. It also informs us about issues related the application of individual tourism resources to particular tasks. According to the representation of a marketplace earlier in the chapter, the existing commentary points to a marketplace for tourism information commodities which is similar in structure to other commodity marketplaces.

Other literature is available which expands on the notion of a tourism information marketplace. Carson et al. (2003), for example, suggest that dissemination and exchanges of tourism information is tending towards online marketplaces, thanks to the development of Information Communication Technology systems. While traditionally presentation may have occurred through libraries and other physically identifiable outlets, a range of online dissemination and exchange technologies has now been developed. Taylor (2005) has proposed that tourism information marketplaces are becoming decentralised and are increasingly characterised by intermediation of the type provided by online systems.

It is likely that both formal and informal tourism information marketplaces exist in Australia and around the world. Tourism has been described as an information intensive

industry and activity (Carson & Sharma, 2002; Leiper, 1997; Sheldon, 1997), where the consumption of tourism product generates data and information which may be of value to others in the system (Leiper, 1997). The amount of information on or about tourists and agents in the tourism system which is being collected, whether deliberately or through administrative systems, is growing as technological improvements enable greater data capture, improved storage and more refined analysis of these (Sheldon, 1997).

One area of potential differentiation for tourism information marketplaces viz other information markets is the composition of agents on the consumer (demand) side. The provision of tourism product in Australia is dominated by small-to-medium sized tourism enterprises (SMTEs) (Prosser, 2000; Vanhove, 2005). It is these agents who form the bulk of the potential demand for tourism information commodities. Previous research and commentary has suggested that SMTEs in particular do not realise the inherent value of secondary tourism information as well as finding it difficult to access, analyse and apply to strategic business tasks. This would suggest that leakages may exist in the marketplace, where the true demand for commodities is not known.

3.6 Conclusion

Despite the existing commentary about suppliers, consumers and exchange processes in relation to aspects of the tourism information marketplace, a holistic construct of the tourism information marketplaces has yet to be proposed. Such a construct would facilitate the identification and depiction of the agents, processes and interactions which occur in the marketplace. Importantly, it would form a basis from which assessments about marketplace efficiency for dissemination and exchange can be derived. Efficiency can be measured by the relative presence or absence of marketplace failure, as described above, and one form of failure is leakages. Leakages have been purported to exist by the existing commentary but no work has been done to identify where, how and why these may be prevalent.

Chapter 4 – A Model of the Tourism Information Commodity Marketplace

4.1 Introduction

It has been proposed that the marketplace in which tourism information commodities are disseminated and exchanged may be subject to forms of market failure and, in particular, to leakages. To date, however, there has been no holistic analysis of the structure and attributes of the marketplace for tourism information commodities. This suggests a clear need for the development of a research instrument which represents, dissects and analyses the marketplace and serves as a basis for assessments about its relative efficiency.

In this chapter, a theoretical construct, the Tourism Information Commodity Marketplace (TICM) is described. The TICM depicts the demand and supply-side processes that precede the exchange of secondary information commodities, presented by suppliers and intermediaries, and procured by consumers to address their information needs. This construct allows purposeful assessments to be made of the relative efficiency with which information commodities in the presented stock are moved around the marketplace from suppliers to consumers. From this, criteria for assessing the efficiency in the operations of the TICM can be proposed and methods developed to test the marketplace's efficiency.

4.2 General Considerations of the TICM Construct

In the previous chapter, it was proposed that the marketplace for tourism information commodities is similar in structure to other commodity markets and also resembles the structure of other information markets. The main agents in the marketplace are suppliers, consumers and intermediaries. Each fulfils roles and undertakes processes which culminate in the exchange of information commodities. The broad roles of agents in the TICM are similar to those expressed in micro-economic literature on markets. Suppliers and intermediaries are the providers of the commodities, consumers enter the market because they seek to gain utility from a commodity and intermediaries may facilitate the exchange of these.

Although the high-level structure of the TICM is likely to be similar to that for other marketplaces, our distillation of the literature has suggested that the nature of information commodities may impose some unique market-specific conditions. Information has several attributes which can influence the operations of the markets in which it is disseminated and exchanged. A short re-summation shows that these include:

- The cost functions for firms and organisations which produce information where generally large fixed costs are incurred to produce the first unit with lower, or even close to zero, marginal costs for additional units (Kingma, 2001);
- The non-exclusivity of information which prohibits the calculation of marginal utility for consumers (Kingma, 2001);
- The experiential nature of information meaning that its true worth cannot be established before it is consumed (Shipario & Varian, 1999);
- The accumulative nature of information allowing it accumulate in value even after it has been consumed (Vincent, 1990);
- Non-measurability of opportunity costs of consuming or not consuming information (Taylor & Puehringer, 2005); and
- Public good aspects of information provision where suppliers are engaged in the market to optimise social benefits (Edquist & McKelvey, 2000).

This is not to suggest that the TICM is the only marketplace in the economy which is in some way unique. Production, dissemination and exchange processes are inherently variable between markets (Levine & Lippman, 1995). However, the overall behaviour and processes which are characteristic of other commodity markets are more likely to be consistent with the textbook models. In these models, the quest by consumers for utility and the desire of suppliers to maximise profits drives the market to some form of stable state. In the case of the TICM, the commodity itself is not conducive to analysis of this type because of the reasons outlined above. Hence, while the shape of the marketplace may be familiar, the processes which occur within it are not. The obvious point of interest which arises from this realisation is, given the potential for divergence in marketplace behaviour, how might the efficiency of the TICM be assessed?

4.3 Agents in the Tourism Information Commodity Marketplace

The TICM model is a construct of the marketplace for secondary information commodities (Taylor, 2005). Suppliers in the TICM produce information commodities and present these to the marketplace. Consumers, or information users, identify secondary information needs and enter the marketplace to procure commodities to address these at a given point in time or to address anticipated needs. Intermediaries facilitate exchange processes by undertaking presentation and exchange functions, or by brokering these. It is now germane

to examine in detail the roles of agents in the marketplace and the processes which occur prior to the exchange of commodities.

4.3.1 Tourism Information Suppliers

Suppliers to the TICM undertake research and data collection activities which generate information commodities. Some are commissioned to perform production functions specifically for tourism, such as Tourism Research Australia (TRA). Others produce relevant information through administrative processes or by undertaking research in a related field. Some suppliers are motivated by commercial imperatives while others are not. Often, intermediary organisations can be considered as suppliers. For example, State and Territory Tourism Organisations may combine resources from other suppliers into a compendium resource and then present this to the marketplace.

Having gathered and stored the results of data collections and research, suppliers undertake one or more of the processes of aggregation, manipulation, analysis and formatting. These processes turn what was previously raw data into information commodities. Commodities can include case studies, development plans, directories, how-to-guides, newsletters, magazines, maps, media files, publications, tabular data in various formats and visioning documents (Taylor & Puehringer, 2005). Some suppliers commoditise research and data from a number of other suppliers into a single compendium-type product (see for example, Department of Industry Science and Resources, 2005). More complex commodities include statistical software packages, like CDMOTA, which is supplied by TRA. Here, users can effectively re-commoditise information from a data collection using software developed by the supplier.

The impetus for presenting specific commodities to the marketplace may vary significantly amongst suppliers and even between their individual data collections. Some, such as the ABS, are mandated to produce commodities which are relevant and meaningful for tourism or to components and sectors within. Sometimes, consultative processes between suppliers and consumers facilitate the identification of required commodities including types and content. At the other extreme, some suppliers contribute indirectly to the stock of tourism information commodities by commoditising research and data from collections undertaken primarily for other sectors or industries (for example, Westpac Banking Corporation, 2004).

Commoditisation processes can range from the application of labour intensive, high resource-cost and complex processes to small alterations to existing data. These may involve the application of frameworks for manipulating and outputting data or the development and application of classifications to translate data and research into discrete commodities. A range of statistical and research techniques may be applied. Quite clearly, some level of expertise is needed to perform commoditisation functions. The level of complexity varies in line with the methods employed and the types of commodities which are required. Commodities may represent the outcomes of new research or information collections or may be based on value-adding to existing secondary information which has been provided by other suppliers.

Presentation functions on the supply-side may occur by direct interaction between suppliers and consumers or through intermediaries. A number of channels and methods may be utilised to transfer commodities to market including online presentation mechanisms, physical bookshops, direct ordering or subscription and statistical clearinghouses. Alternatively, suppliers may adopt a minimalist policy in order to reduce the costs associated with presentation. For example, a supplier may announce the availability of a commodity but only present it upon being approached by individual consumers.

There may also exist a stock of un-presented resources. The nature of these is outside the bounds of the research. However, the research has identified examples of resources which were previously un-presented but have subsequently been presented. An example is information presented by Sensis which is an administrative dataset of firms involved in tourism and their characteristics. These are identified through their listings in the White and Yellow Pages directories. The un-presented stock may be dynamic with resources being added to this stock when they are withdrawn from the marketplace by suppliers or intermediaries.

4.3.2 Tourism Information Consumers

Consumers enter the marketplace to satisfy information needs. Needs may be generated internally through the realisation that information can contribute to a particular strategic or business processes (Taylor & Puehringer, 2005). Alternatively, information may be required for reporting to external bodies. Some consumers have ongoing needs where up-to-date versions of commodities are procured on a regular basis. Information needs may be highly dynamic and may be current or anticipated against future projects. At the broadest level, needs may arise from the following stimuli:

- Statutory reporting requirements – such as the reporting of occupancy rates for calculating bed taxes;
- Other reporting requirements – including annual reports shareholder reports;
- Requirements for innovation; and
- Requirements for growth and sustainability (Carson, 2005).

Having identified their information needs, consumers must specify these in a meaningful way to suppliers or intermediaries. The specification process communicates the nature of the need including the likely types of commodities required. Also of relevance are the temporal aspects of information requirements, its geographical scope and requirements in relation to methodological rigour and statistical reliability. The aim of activities relating to needs specification is to develop a mutual understanding between the consumer and potential suppliers of the information requirements of the consumer at a point in time. It may involve feedback loops where either party may seek points of clarification. The specification phase is the first in a lineal progression towards mutual identification of a ‘pool’ of possible commodities which may be desired by the consumer.

Following the specification of their needs, consumers move on to identifying and assessing the range of commodities in the marketplace which might address those needs. This requires that they undertake activities to seek out appropriate commodities. The seeking activities aim to gather information about the ‘pool’ of potential commodities. Subsequently, each information commodity which is identified as having potential value to the need at hand must be individually validated to ascertain whether it should be procured. The validation process rationalises individual resources in the pool by assessing their relative potential contribution to addressing the information need.

4.3.3 Tourism Information Intermediaries

Intermediaries are organisations or firms who are involved in commoditisation, presentation and exchange processes in the TICM. They also include financial intermediaries who, in some cases, require firms and other tourism organisations to obtain information-based support for funding applications and other financial aspects. Alternatively, intermediaries can operate facilities through which exchanges occur between suppliers and consumers. Statistical clearinghouses are an example of intermediation of this type. Some intermediaries, such as corporate websites or sales teams, form the presentation or commercial arms of TICM suppliers. Others are contracted, formally or informally, by consumers to find, assess and procure information commodities on their behalf. Consultants are an example of the latter type of intermediation. With improvements in ICT and reductions in storage costs for information, there are signs that intermediation is a growing phenomenon in the TICM (Carson et al., 2003).

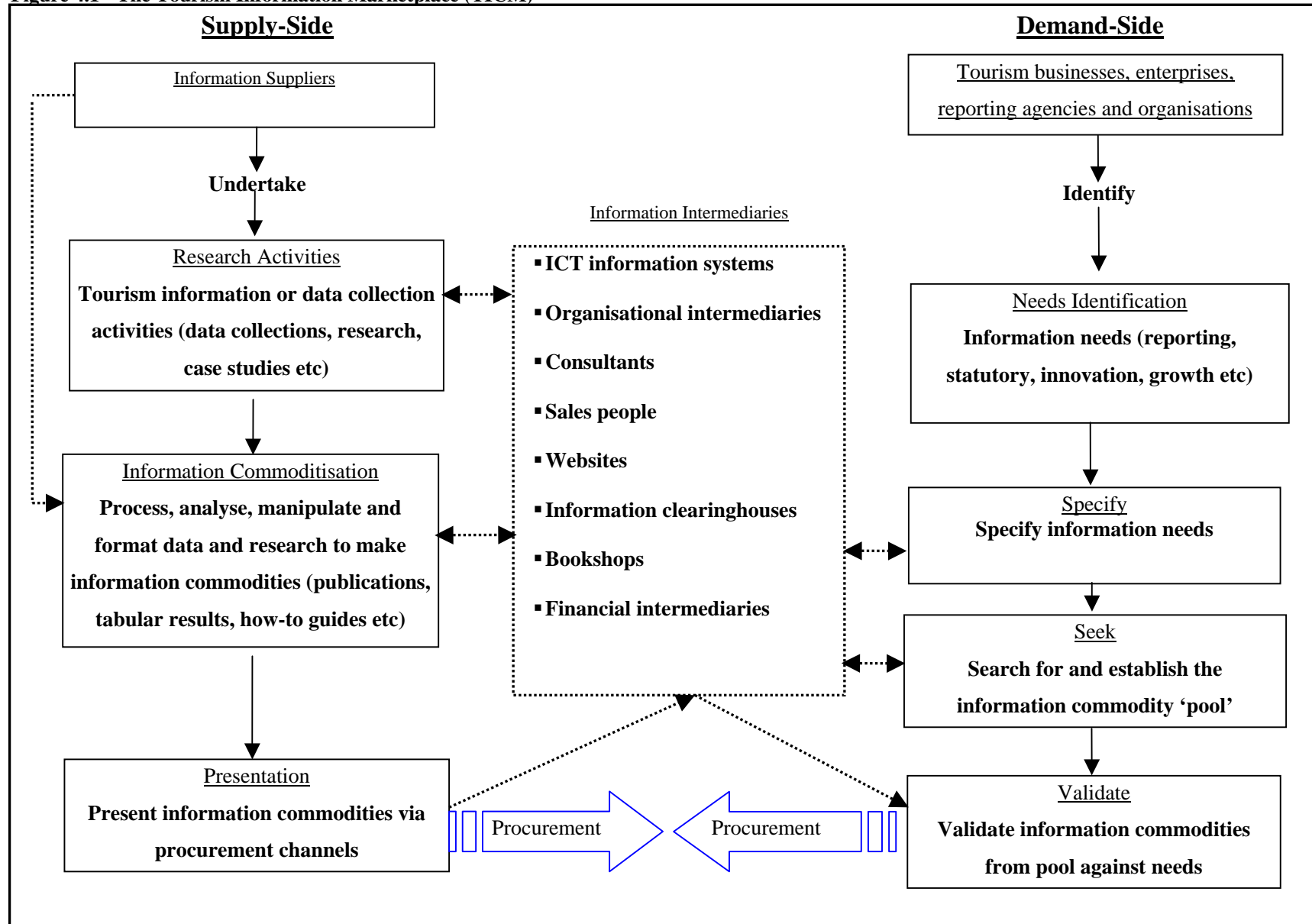
4.4 The TICM Model

Bringing together the components of suppliers, consumers and intermediaries who engage to facilitate the exchange of tourism information commodities, the marketplace in which these occur is depicted in the TICM model (Figure 4.1).

4.4.1 Disaggregating Supply-Side Processes

The high level depiction of the TICM in Figure 4.1 requires further disaggregation so that the processes underpinning the supply of and demand for commodities can be identified. A more detailed breakdown of these will facilitate a greater understanding of the efficiency drivers and potential for market failure in the form of the leakages. On the supply-side, Figure 4.2 proposes and identifies a set of sequential processes which trigger production and exchange. These commence with the research agendas of suppliers which drives the development of commodities. For the sake of simplicity, the supply-side disaggregation omits the important consultative interactions which occur between suppliers and intermediaries and directly between suppliers and consumers. One example is the Tourism Research Committee in Australia which is comprised of the heads of the research sections of State and Territory tourism organisations (Richards, 2004).

Figure 4.1 - The Tourism Information Marketplace (TICM)



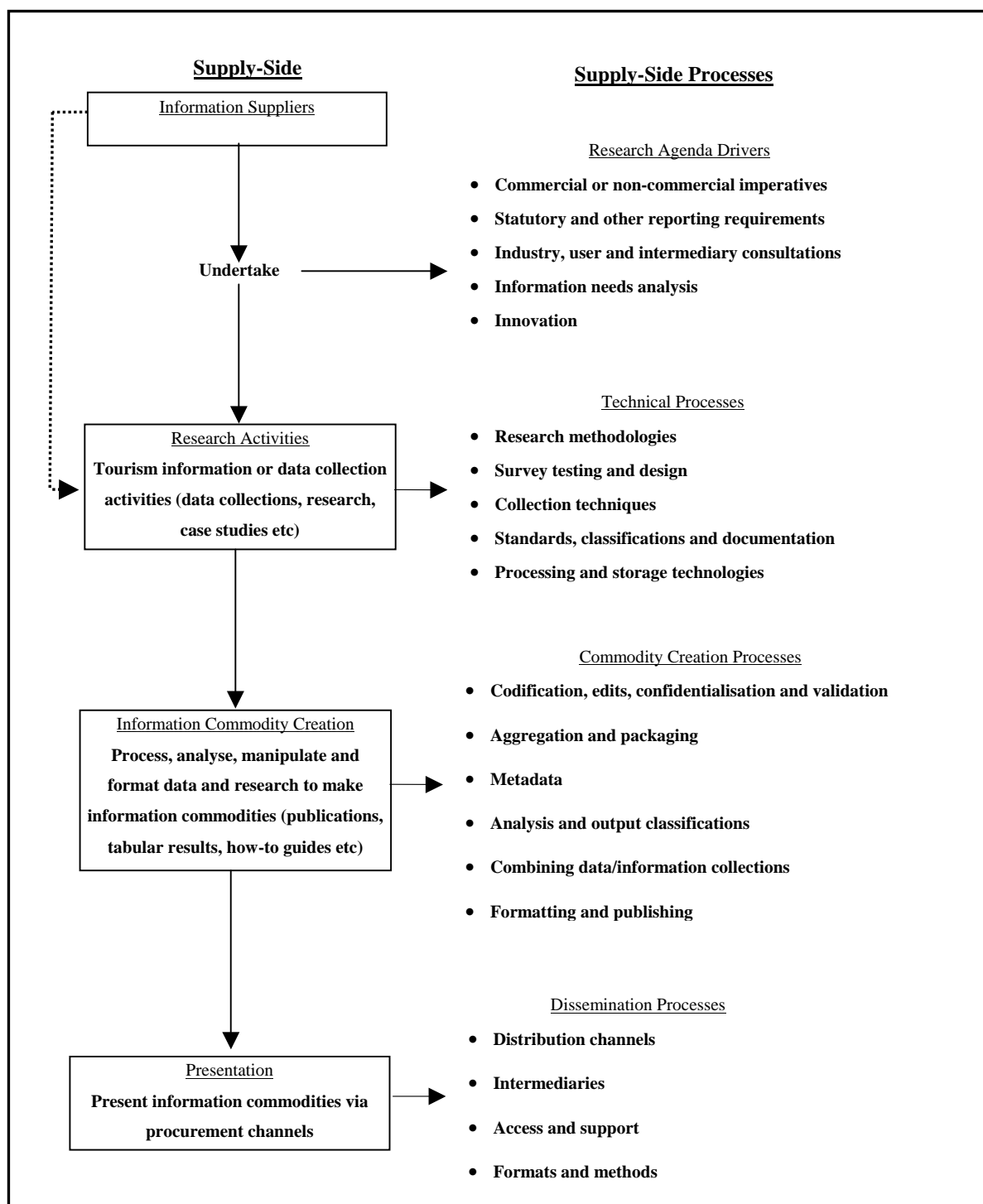


Figure 4.2 - Supply-side Processes for Commodity Production and Dissemination in the TICM

4.4.2 Assessing Supply-Side Efficiency in the TICM

Supply-side efficiency in marketplace theory is said to occur when suppliers are able to provide the right quantity of a commodity at prices which consumers are willing to pay (Mansfield, 1985). In a perfect marketplace scenario, the quantity supplied is cleared in the market because consumers want all that is supplied at the prevailing price. The key assumptions on the supply-side are that firms enter the market in order to maximise their

profits and have perfect information about the intentions of other suppliers and about consumer preferences (Frank, 2003). Based on these assumptions, firms can plot their cost functions and decide what quantity of a commodity to produce and at what price to disseminate it to the marketplace. Indicators of inefficiencies (or supply-side failure) in standard commodity marketplaces are an excess in supply or a shortage of commodities relative to market demand.

Using the TICM approach, we immediately see that these efficiency measures on the supply-side of the TICM are not appropriate. As the model suggests, suppliers as a group are driven into the marketplace by non-commercial as well as commercial imperatives. Suppliers of information commodities for tourism operate on a range of business models, many of which are not based on the traditional marketplace drivers of profit maximisation (Carson et al., 2003). Tourism Research Australia, for example, is legislated to produce a large range of information commodities, most of which are provided free of charge to consumers. Even for those suppliers in the TICM who are commercially focused, price determination is not, as we have discussed, a clear cut matter because of the valuation and costs of production aspects associated with the production of information commodities.

Alternative criteria must therefore be developed to assess the appropriateness of the stock for meeting the needs of tourism firms and organisations and to determine whether the marketplace itself is efficient. Hypothetically, this is a simple proposition. In a perfectly efficient TICM all the information commodities which are produced and presented would be an exact match for the information needs of consumers. Consumers would know exactly which commodities to procure in order to meet their needs at a specific point in time.

Moreover, in an efficient TICM, the transfer of commodities around the marketplace would not attract externalities in the form of additional costs including time and resources expended on the specify, seek and validate processes. Based on their knowledge of the suitability of each commodity to information needs at a point in time, consumers may be willing to pay for individual commodities. Suppliers could then enact some form of pricing regime which is reflective of the relative demand for their individual commodities.

The reality may be far removed from this supposed ideal. Resources may remain un-presented to some or all consumers or may not be presented to those who require it. In

addition, resources may be presented to the wrong information marketplace altogether. Causes may include a lack of skills or experience in presenting resources which are targeted to the needs of particular information markets or the costs associated with doing so. Alternatively, there may be a lack of awareness of the potential value of un-presented resources. In the TICM model, this aspect of the stock can be assessed as a demand-side issue because it is an issue of 'access', one of the criteria on the demand-side of the TICM (see section 4.5)

The most significant implication of these suppositions is that the efficiency of the marketplace, as indicated by market failures, cannot be ascertained by analysing the supply-side and demand-side processes in isolation. Modelling the production and pricing functions of suppliers to determine the appropriate supply of commodities will not deliver benchmarks against which efficiency issues can be isolated. Conversely, there is no basis for the modelling of the demand function which depicts consumer behaviour in other commodity markets. The supply and demand functions cannot, therefore, be brought together to identify the optimal market quantity and the price at which commodities should be disseminated. Instead, as the commentary suggests, there may be a range of stock-related (supply) as well as demand-side issues which impact TICM efficiency, and the two are inextricably linked.

4.4.3 Demand-Side TICM Processes

Although consumers in the TICM operate in a marketplace with inherently different attributes and dynamics to other commodity markets, it is still appropriate to assume that they act rationally. In non-information commodity markets, consumers are driven by knowledge of the utility they will gain by consuming one unit of a commodity. Commodities also attract opportunity costs which are the foregone utility that could have been obtained by consuming a different commodity. The basis of opportunity cost notions is that individuals have a pre-conceived order of preference for commodities based on utility. For example, Consumer A might prefer coffee over tea and therefore knows that, all other things being equal, the utility obtained by consuming a cup of coffee is greater than consuming a cup of tea.

We have already established that the utility of information cannot be realised until it is consumed. Likewise, the opportunity cost of consuming or not consuming information is

possibly not known. This is because its utility can only be measured against its ability to meet information needs at a point in time. Until the commodity is consumed and digested this cannot be accurately established or measured (Feeney & Grieves, 1994).

Given this, unless their behaviour is non-rational or random, consumers are forced to undertake a series of processes and steps on the way to the procurement of tourism information commodities. These are necessary in order to develop informed decisions about the range of information commodities which have the potential to meet identified information needs. Entry into the TICM by consumers, including enterprises, industry associations, local tourism organisations, regional tourism organisations, researchers, consultants, is driven by the recognition of an information need. This may relate to a current need, for example to document performance in the past period, or to an anticipated future need, such as the development of a five year destination or marketing plan. Consumers must then undertake the steps of specifying the need, seeking commodities which may address it and validating each of these in order to determine which, if any, should be procured. Figure 4.3 disaggregates the demand-side steps and processes in the TICM.

4.4.4 Assessing Efficiency in the TICM

In Figure 4.3 it is proposed that a range of tasks, grouped under the process headings of “Specify”, “Seek” and “Validate”, must be undertaken in order for consumers to maximise their potential for procuring commodities which are allied to specific information needs. Having established that the demand function for TICM commodities cannot be determined, the efficiency of the demand-side of the marketplace must be assessed against the ability of consumers to undertake the specify, seek and validate processes efficiently. Meanwhile, the supply of resources may not be efficient because not all valuable resources are presented, some are partly presented, or some are presented to the wrong marketplace. These presentation issues affect the seek phase in the TICM because of its impact on the ability of consumers to access relevant information resources at a point in time.

Because the processes which lead to procurement are sequential, the broad criteria for efficiency against these are best summarised in a process map (Figure 4.4). It can be seen that a range of both stock-related (supply-side) and consumer-based (demand-side)

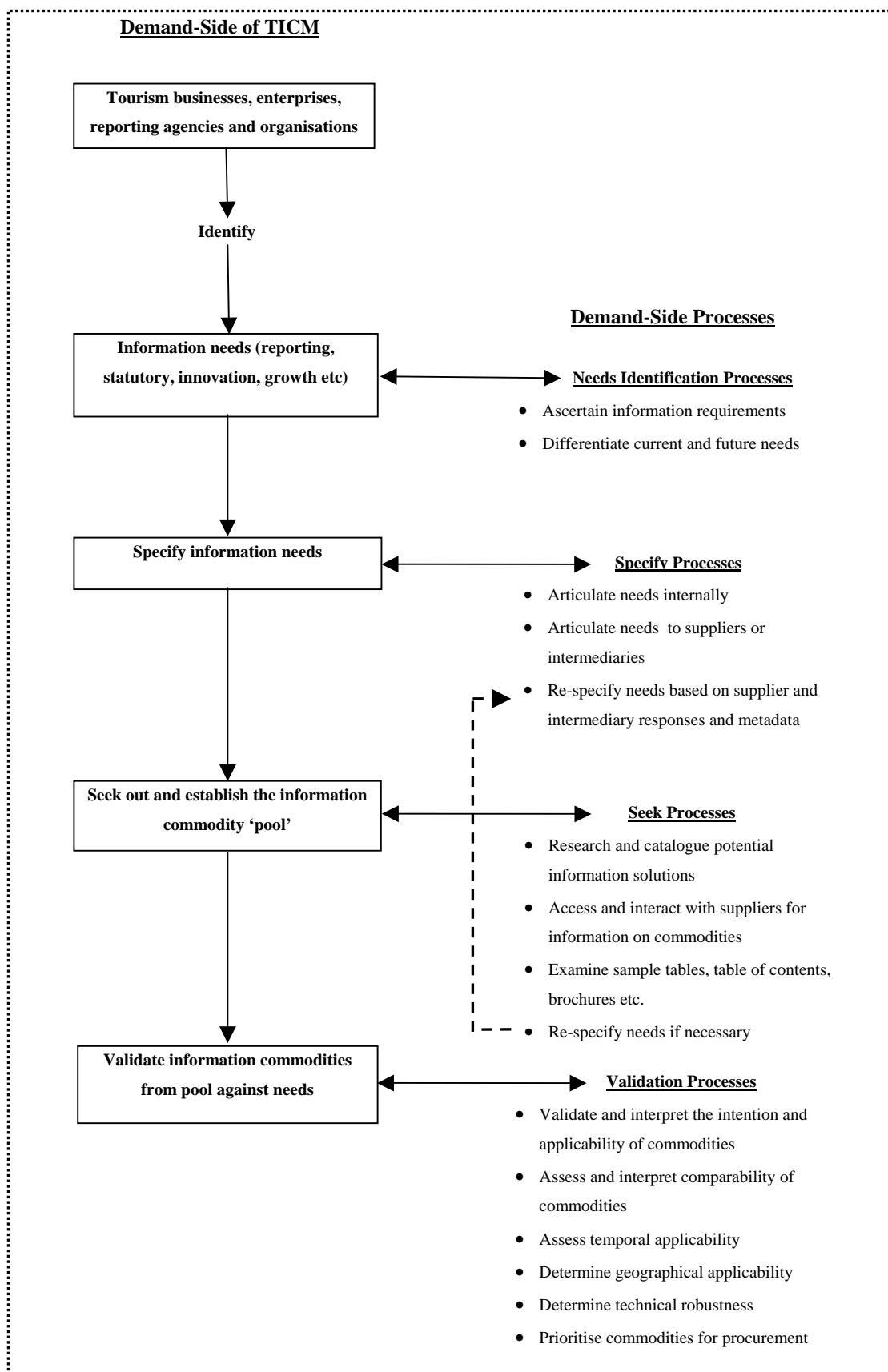


Figure 4.3 Demand-side Processes in the TICM

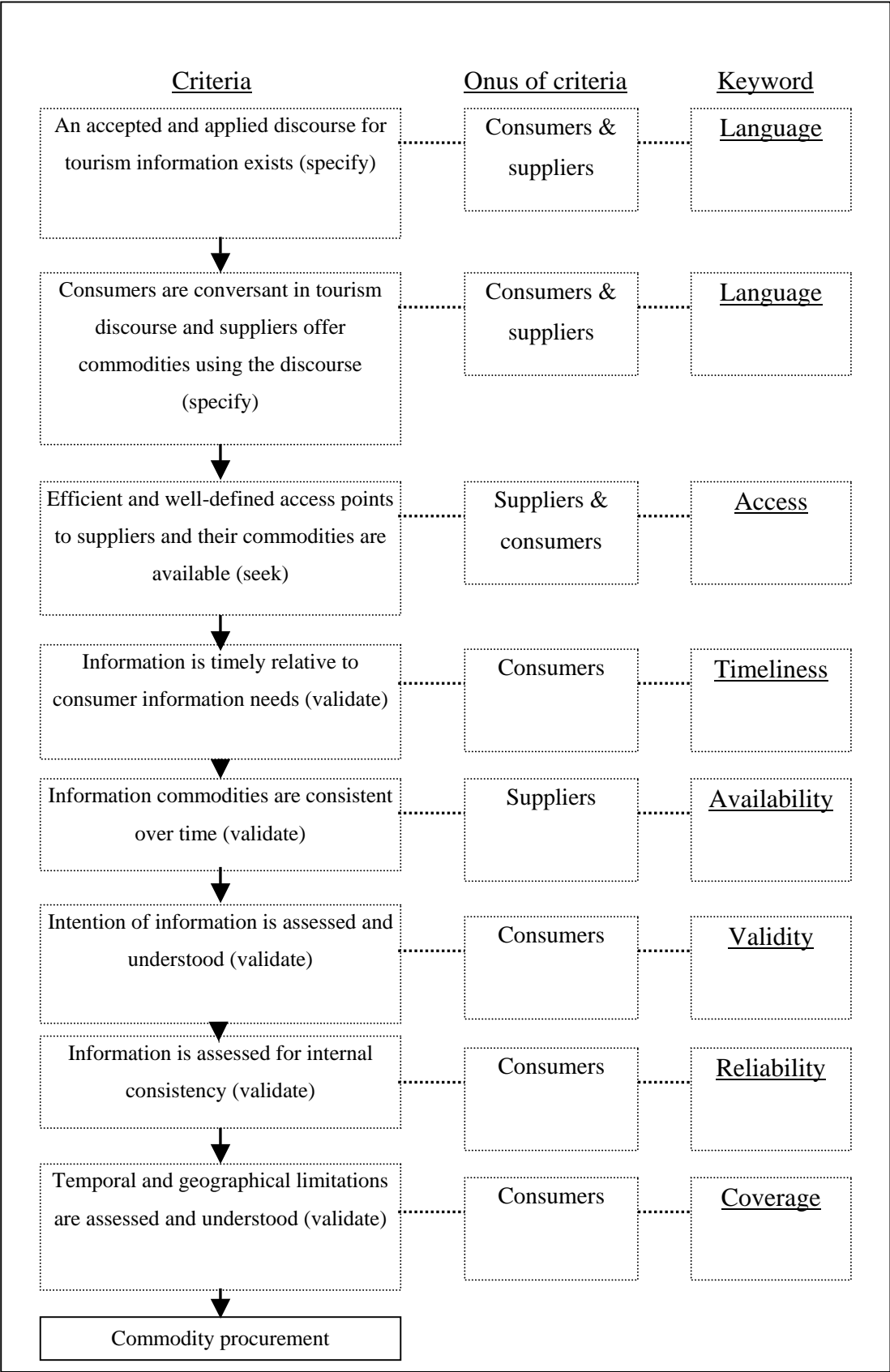


Figure 4.4 – Criteria for Efficiency of Operations in the TICM

criterion determines the relative efficiency of the marketplace. But it is on the demand-side of the marketplace that the impacts of both of these are felt. Each criterion can be tagged with a keyword which encapsulates the process. These keywords were also used to describe attributes of the stock in Chapter 2 and are shown in the right-hand side boxes in Figure 4.4.

Having identified the conditions under which the TICM is likely to operate efficiently, it is logical to suggest that the prevalence of a converse set of conditions would indicate marketplace inefficiency. A closer examination of the demand-side (based on associated keywords) and the supporting literature reveals that the steps towards information commodity procurement may indeed be subject to inefficiencies (Taylor & Puehringer, 2005). Potential inefficiencies are in the form of leakages whereby consumers disengage because of the costs which are associated with fulfilling the requirements of the specify, seek and validate processes. The potential leakages are represented in Figure 4.5.

4.5 Examination of TICM Leakages

Having proposed that leakages in the demand (specify, seek, validate) and supply (presentation) sides of the TICM may impact on the efficiency of the marketplace, it is now sagacious to examine these in light of existing literature and commentary on the TICM for Australia:

Language (specify stages) – Carson & Sharma (2002) note that the supply of tourism information commodities in Australia is not bounded by a standard data model. Several attempts to produce standard classifications of tourism information have nevertheless been made. These include the Framework for Australian Tourism Statistics (Australian Bureau of Statistics, 2003), the National Tourism Information Model (Carson, 2001) and the work of Scott (2000). The National Tourism Information Model, in particular, has recognised the importance of a ‘universe of discourse’, or common language, for the efficient distribution of tourism information. It is the first attempt to create an encompassing language, data dictionary and data model for tourism research and information in Australia (Carson, 2002). Despite its availability, the industry has been slow to adopt consistent language and terms, especially in discourse associated with research, data and information.

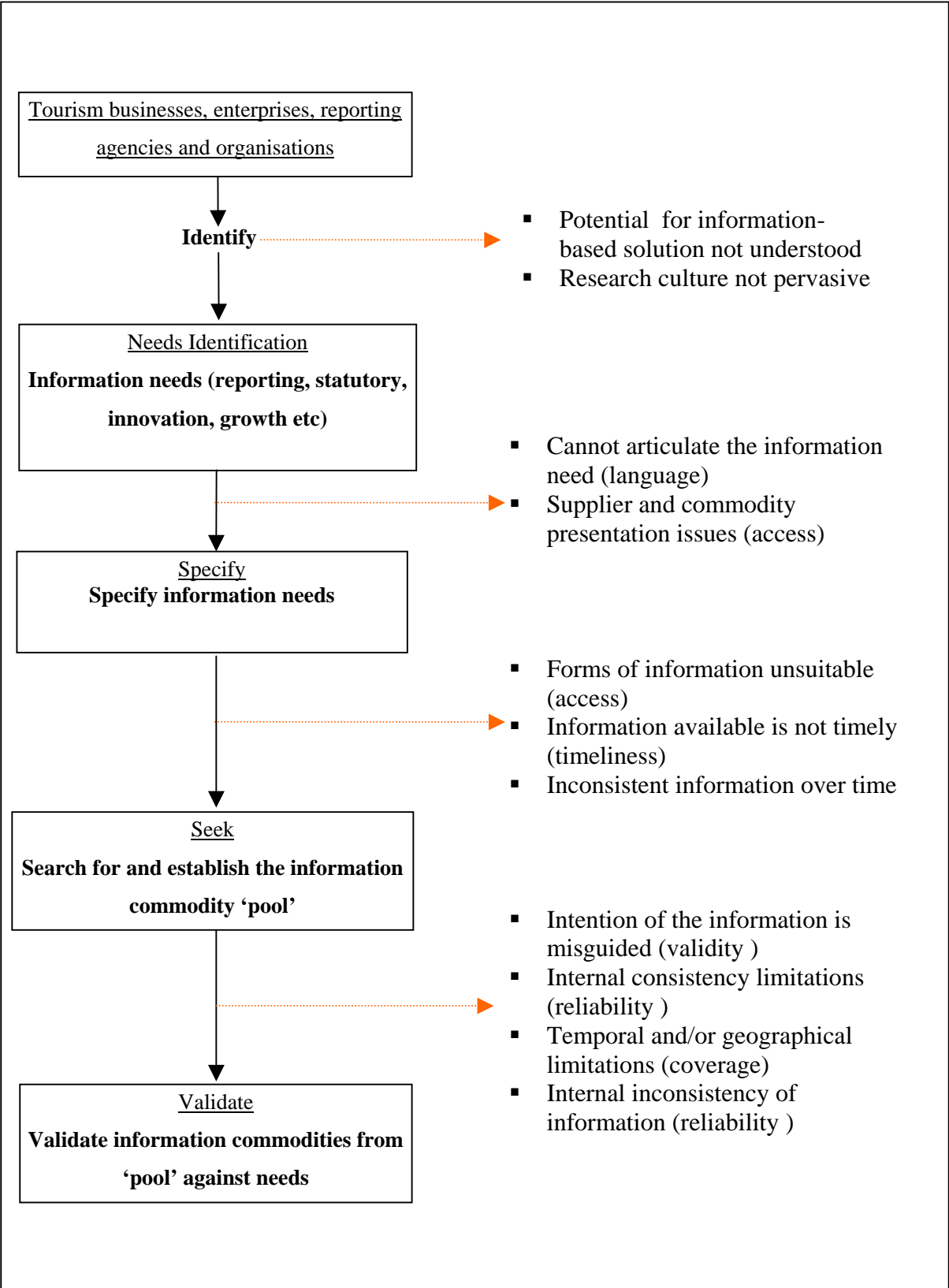


Figure 4.5 – Potential TICM Leakages and Possible Causes

The importance of consistency in language is not limited to the content of information resources per se. Researchers such as McGrath & Moore (2005) have argued that consistency in the high-level descriptors which map processes and exchanges in an industry, known as the information architecture, is crucial to bringing about the capture of change in dynamic systems. Given the information-intensity of tourism, this aspect may be particularly important. Hence, the content of secondary information resources should ideally relate back to widely accepted information architecture.

The impacts of a deficiency of or ambiguity in the discourse for tourism are most prominent in the specify stages of the TICM, but also extend to the seek stages. They include:

- Consumers cannot articulate their information needs to suppliers in the specify phase;
- Different suppliers may produce commodities on similar topics using a non-confirmed discourse;
- The process of seeking commodities to address information needs may consume additional business and organisational resources, including time; and
- Consumers may, without appropriate guidance from suppliers, shy away from commodities whose discourse is unfamiliar, too complex or confusing or may withdraw from the TICM altogether.

Measuring the impact of language issues on dissemination and exchange processes in the marketplace is difficult because, on the demand-side, there has been no assessment of the ability of consumers to efficiently specify their information needs. Another unknown is the extent to which language ambiguity or inconsistencies confuse and ‘scare’ consumers out of the market. Indicators from the supply-side can, however, form an adequate proxy based on the language which is used in the content of individual commodities. Measurements around the prevalence of and language associated with resource content and metadata may be the best proxy which is available.

Access (seek stages) – The efficient procurement of tourism information resources requires well-defined and well-organised access points through which

consumers can communicate with suppliers about their information needs (Carson, 2005). Access to core information about the set of appropriate commodities which are presented to the marketplace can be obtained from intermediaries or directly elicited from suppliers. The seek phase requires some form of contact between suppliers and consumers or between consumers and intermediaries.

Having identified their information needs, consumers must determine which suppliers to contact and, in the case of larger suppliers, which section, office or area. Some consumers may develop a degree of familiarity with the access mechanisms associated with individual suppliers, by, for example, procuring the same resource from the same supplier on a regular basis. However, anecdotal evidence (Kelly, 2004) suggests that tourism businesses, in particular, are inexperienced and non-proficient at establishing:

- Which supplier, if any, may assist in the seek phase;
- Whether a particular section, area or office should be approached; and
- The most efficient and cost effective mechanism through which the supplier may be contacted.

The type of information which needs to be solicited through access to suppliers and their experts includes information about or from:

- Supplier catalogues, lists of products/ services and contacts details for individual suppliers;
- The nature, content and possible applications of particular commodities; and
- Supplier or intermediary facilities through which consumers can obtain more detailed information about commodities, including metadata, and where and how to procure them.

Degrees of access vary, ranging from direct access to information experts to no means of access at all. Currently most of the larger suppliers in Australia, such as the Australian Bureau of Statistics and Tourism Research Australia, provide access through dedicated information services including internet-based and person-to-person facilities. These facilities may also be used to promote and market the supplier's information products and services.

The provision of such services is indicative of the latent costs which are associated with the seek stage. The Australian Bureau of Statistics, for example, operates a National Information and Referral Service (NIRS), which is effectively a call centre operated by information and corporate experts (Australian Bureau of Statistics, 2005e). As well as identifying resources which may meet the enquiry, the service distributes consumers to the appropriate area in the organisation when the information need requires a higher level of specialisation. The NIRS effectively reduces the seek burden for consumers by absorbing it into the organisational structure of the supplier. As an indication of the potential costs associated with the seek stage in the TICM, in 2003/4 the ABS spent over \$7 million staffing its Client Services area, a major component of which was the provision of access to statistics and information via the NIRS, internet and fax (Australian Bureau of Statistics, 2004d).

The magnitude of the access issue is highlighted by the number of suppliers identified in the Decipher project in Australia. Decipher currently provides a single point of access to information and contact details for commodities from more than two-hundred and twenty individual information suppliers (<http://www.decipher.biz>). Decipher represents the first large-scale attempt to simplify and streamline access to tourism research and strategic information for tourism firms and organisations in Australia. Whereas previously tourism businesses and organisations incurred costs associated with the time and other resources expended on seeking resources from multiple access points, they can now access a comprehensive warehouse of commodities at one place. Having only recently been made available to the industry, however, it remains to be seen whether the new technology will be widely diffused and adopted in the target markets. Previous research would suggest that, despite the existence of a clear market need, the diffusion of innovative technologies may be dependent on factors other than those of a technical nature (see, for example, Carson et al., 2003).

An important efficiency consideration in the access stage is the provision of and quality of metadata, or information which is about information. Metadata affords consumers access to information about the commodity itself in order to assist with

other processes in the TICM (for example validation). While international metadata standards such as the Dublin Core Initiative (Sugimoto S, 2002) are widely accepted, the types of, extent and clarity of metadata imparted with tourism data and information varies a great deal. It would be somewhat logical to expect that the levels of sophistication and extensiveness of metadata on individual resources increases with the level of sophistication of the resource itself. Traditionally in tourism this is not the case, as commodities such as the complex and detailed statistical databases on international and domestic visitors, which are supplied on a quarterly basis by Tourism Research Australia, demonstrate.

Consumers who come up against access issues may be prompted to withdraw from the marketplace because of the costs which may be incurred in attempting to gain access to information about individual commodities. Moreover, where such information is ambiguous or inconclusive, the ability of the consumer to accurately determine which commodities to procure is clouded. Access efficiency can be measured by the provision of pathways to experts on the content of commodities. The provision of metadata on commodities also indicates that suppliers are attempting to reduce the access burden.

Timeliness (seek stages) – Timeliness describes the temporal lag between the commencement of data collection activities or research by suppliers and the release of output from these in the form of information commodities. The importance of timeliness to the tourism industry is underscored by the impacts of recent geo-political shocks on the industry. These have highlighted the high elasticity of demand for international tourism products (Blake & Sinclair, 2002). To respond effectively, tourism businesses require information on the current and likely future implications of such shocks. Until recently, lags of twelve to eighteen months were not unusual for national tourism-specific data sets (Carson et al., 2003). This situation is improving with advances in technology and increased efficiencies in the collection, codification and processing of data.

While suppliers, and particularly the larger ones, are making considerable headway in reducing temporal lags, consumers must, as part of the validation process, determine what impacts these have on the validity of the commodity

relative to the purpose for which it was sought. Timeliness can be measured by comparing the reference date of the information in a commodity to its release date. The reference date refers to the time period, or date range, for which the data or research is collected. Examples include particular months, quarters and years. Output from the Census of Population and Housing (Australian Bureau of Statistics, 2004d), for example, is not made publicly available for around a year after the reference date due to processing, validation and analysis requirements.

Availability (seek stages) – Availability relates to the assurance that information commodities are based on data and research that will continue to be collected. This includes consistency in collection methodology components, such as input, output and coding frameworks, over time. Consistent availability also facilitates the presentation of time series, trend and seasonally adjusted data. Given the seasonal and highly elastic nature of tourism product demand in many regions, information in these formats is potentially of high value.

While availability issues are mostly related to the stock, it is consumers who must ascertain the impacts of these on their ability to satisfy information needs through particular commodities. Major changes to collection methodologies are one example of changes in availability. The main national level collection on tourist accommodation, the Survey of Tourist Accommodation, has, for example, been subject to a number of methodological changes in recent years causing ‘breaks-in-series’ to occur. A more far-reaching availability issue becomes apparent when whole collections, research activities or commodities are withdrawn from the marketplace. Recent funding cutbacks for some public sector suppliers have restricted their capacity to continue to deliver some knowledge commodities. For example, the only national compendium of tourism information was discontinued in 2002 (Australian Bureau of Statistics, 2002b).

Validity (validate stages) – Validity describes the degree to which information consumers can ascertain the value of information commodities relative to the current information needs. Information not produced specifically for tourism may still be highly valid where it contains generic ‘lessons’. Prominent suppliers usually provide guidance on the validity of their products by making metadata available.

Establishing the validity of information before it is procured may require the application of high-level analytical skills and an experienced understanding of the attributes of content. Additionally, the validity of an individual commodity may be augmented when it is combined with others to form a more complete information 'picture'. Given that the existing commentary has suggested that, in general, tourism firms and others lack the skills to adeptly determine the value of information against their needs, there is potential for leakages at this stage in the TICM. The presence or absence of advice from suppliers on the valid application of individual commodities to information-based tasks can be used as a measure of the extent of validity issues in the stock. This includes advice on particular types of analytical tasks and the validity of particular levels of spatial analysis.

Reliability (validate stages) – In terms of statistical reliability, technical considerations include sample size, sampling procedures, benchmarking processes (if used), and issues of bias in data collection. A range of technical skills at the user end are required for accurate assessments of the extent and implications of reliability aspects. This may be further complicated by the intended application for the information. For example, sample sizes may determine a dataset to be reliable at the national level but not at the regional level. Tourism firms and organisations have also been found to be lacking in their understanding of the impacts of reliability issues (Scott, 1999).

Appropriate metadata, once again, can assist by conveying reliability issues to consumers. However, some reliability concerns relate to highly specialised or technical aspects of data collection and output activities. There is a danger that, in communicating such information, the metadata itself becomes too technical to be absorbed and thus understood by potential consumers. Should metadata be too difficult to interpret, so that the relative reliability is unknown to consumers, leakages may occur at this stage in the TICM. The magnitude of reliability issues can be measured, therefore, by the provision, or otherwise, of suitable metadata which explains any implications of reliability issues for the analysis and application of information commodities by consumers.

Coverage (validate stages) – Coverage, in the broader sense, refers to both the geographic scope and temporal scope of the information. The application of most data collections and research is influenced by the geographic areas from which information was drawn. National and state data sets are usually established for purposes of national and state level analysis and coverage at regional levels may suffer as a result. Some knowledge products contain generic, or globally, relevant content which transcends the geographic or even industry and sector specific bounds. For example, a market profile examining the accommodation preferences of inbound American tourists to Europe will be of relevance to Australian accommodation providers because of the generic nature of at least some of the content. Similarly, information commodities which are not produced specifically for tourism firms and organisations may still be relevant as information resources.

Locating, accessing and applying resources with global relevance requires a degree of interpretive skills and a knowledge of the likely circumstances, or needs, which may be addressed by the generic content, either exclusively or in conjunction with other information resources. Coverage is also related to reliability in that it is a determinant of the spatial reliability for information.

Temporal coverage involves the timeframe of reference for data collection activities or research. Accounting for temporal influences on data and research can be particularly important for tourism analysis because of seasonality effects. Hence, conducting a survey of visitors to a destination only during peak periods may not produce accurate visitor and market profiles for all visitors to that destination. Some suppliers apply techniques which smooth out the effects of seasonality and are able to provide trend-based or time-series analysis. This is only possible where the coverage of information is consistent over a number of years.

Coverage is measurable by assessing the spatial regions for which the content has been collected and is available as output from data or research collections. The provision of time-series and trend analysis is also indicative of higher levels of temporal coverage. However, only data collections can provide information on this statistical basis.

4.6 Conclusion

The TICM depicts the flow of the tourism information stock as it moves around the marketplace. Unlike in other commodity marketplaces, dissemination and exchange in the TICM may be driven by non-commercial as well as commercial imperatives. The model suggests that the potential for inefficiencies in the marketplace exists. These may be in the form of supply-side inefficiencies, which are reflected in the stock, or demand-side inefficiencies, which are evident as consumers undertake specify, seek and validate tasks to determine which, if any, commodities they should procure. There are indications that inefficiencies may be substantive so that consumers are forced from the marketplace. Measuring the extent of potential leakages and inefficiencies requires testing of the relative efficiency of the current stock against the processes identified on the demand-side of the TICM.

Chapter 5 – Methodology

5.1 Introduction

The TICM model has proposed that consumers with information needs must undertake a series of processes on the way to determining which information resources to procure. There is anecdotal evidence, founded on existing literature and prior commentary about the stock, and augmented by our analysis of the TICM model, of demand-side leakages in the marketplace which may be attributable to limitations in the presented stock. Leakages may be in the form of consumers exiting the marketplace prior to procuring resources or may be represented by resource and other costs associated with undertaking the presentation, specify, seek and validate processes. On the supply-side, past commentary has suggested that the stock is relatively small and confined to output from a relatively small number of large suppliers. There may also be a number of potential suppliers who do not engage in the marketplace by presenting resources to the stock.

To determine the validity or otherwise of these statements and to and pinpoint the possible causes, it is necessary to locate, identify, catalogue and test the presented tourism stock for Australia (see Section 1.1 in Chapter One). These research tasks will facilitate informed discussion on the issues that past commentators and the literature have anticipated. Table 5.1 demonstrates the relationship between the research aim, the tasks for the research and the corresponding methods which were applied. It should be noted that the research is based on the assumption that consumers have perfect knowledge about the actual resources which comprise the stock. That is, they are aware of their existence and of all the information about individual resources which is publicly available.

5.2 Justification for the Research

A number of studies indicate that actors on the demand-side of the TICM may lack the skills, methods and know-how to efficiently identify and apply information resources to knowledge-based innovations processes. Concurrently, past commentary suggests that the characteristics of at least some of the collections of resources which make up the stock may contribute to leakages from the TICM. These were discussed in Chapter 4 as being attributable to language, access, availability, timeliness, validity, reliability and coverage aspects of the stock. An efficient TICM would, by contrast, exhibit limited leakages so that the procurement of appropriate resources by consumers occurs with the minimal imposition of un-factored costs.

| Purpose of the Research | Tasks | Methodology components |
|--|---|--|
| Assess the relative efficiency of the marketplace for tourism information commodities and identify the sources and extent of marketplace inefficiencies. | Locate and identify the current stock of tourism information resources in Australia (Phase One – part one). This will identify suppliers, intermediaries and the range and types of resources which may comprise the presented stock, including assessments about the validity of their content and information gaps. | <ul style="list-style-type: none"> • Internet mediated research (IMR) to locate the stock • Content analysis to identify the stock (include or exclude) by: <ol style="list-style-type: none"> 1. Testing resource characteristics against characteristics of information stocks; 2. Assessing the application of NTIM keywords; and 3. Consulting with tourism experts and academics. |
| | Catalogue the identified stock (Phase One – part 2). This will provide a structured record of resources in the presented stock with a suite of metadata recorded against each according to international standards. | <ul style="list-style-type: none"> • Creation of a cataloguing framework (system of metadata). • Application of ISO/IEC 11179, the International Standard for the Specification and Standardization of Data Elements (International Organisation for Standardisation, 2000) and the Dublin Core metadata standard to record the stock and associated metadata. |
| | Test the stock to identify the relative efficiency of the Australian TICM (Phase Three). This will provide assessments on the efficiency of the TICM in Australia and give a basis for a holistic assessment of past commentary on the presented stock. | <ul style="list-style-type: none"> • Develop a testing framework based on the TICM model. • Record data against information collections. • Compile and analyse results |

Table 5.1 – Research Purpose, Tasks and Methodologies

Locating, identifying and cataloguing the current stock of tourism information resources for Australia (Phase One of the research) will add to the body of knowledge on tourism informatics both within Australia and internationally. It will facilitate an objective assessment on the constitution and characteristics of the tourism and other information stocks. Comparisons and assessments of this nature are possible because the stock is

proposed to be catalogued according to accepted international standards for the recording of metadata on information resources. Identifying the stock will also facilitate a holistic assessment of identification of gaps in the availability of strategic tourism intelligence.

Testing the stock (Phase Two) will enable assessments about the relative efficiency of the TICM to be made. This will augment existing research by identifying the extent to which supply and demand-side impediments to the procurement and application of information resources in tourism systems exist. The testing of the stock will also enable past commentary on the stock to be more accurately assessed.

The outcomes of the research will have implications for policy makers, suppliers and tourism information consumers. Policy makers will, for the first time, be able to identify and critically assess the influence of marketplace dynamics on development of a knowledge-based ethos amongst tourism firms and organisations. This may help to allocate funding in a more strategic fashion, based on evidence from the research. Suppliers should benefit from a more rounded understanding of the processes which occur as dissemination and exchange functions are performed in the market. They may be able to adjust their outputs to minimise possible leakages. Consumers will, for the first time, have available a complete stock-take of tourism information commodities from which to draw and apply to strategic processes and innovations tasks.

5.3 Methods for Locating and Identifying the Current Stock of Tourism Information Resources

The initial task for the research was to locate, identify and catalogue, according to recognised international standards, the current stock of tourism information resources for Australia. Collectively, these tasks form Phase One of the research. Phase One was divided into three discrete tasks:

1. Locate existing resources;
2. Identify whether they should be included in the stock; and
3. Catalogue those which should be included in the stock

Leaving aside, for now, the methods employed to catalogue the stock (task three), this section describes the research methods and techniques which were applied to physically

locate and identify the current stock. The terms “locating” and identifying” have specific meaning in the context of Phase One of the research:

Locating the stock – research methods used to identify the physical location of tourism information resources.

Identifying the stock – methods and techniques employed to assess whether the located resource can be considered to be part of the tourism information stock.

Phase One was conducted as part of the research-based work program for the population of the Decipher online tourism information system (<http://www.decipher.biz>). Decipher is an online tourism information warehouse which has been under development since 1999. It delivers business intelligence and research to Australian tourism firms and organisations (Carson et al., 2003). The author has been actively engaged in the development of the content for the system (see Acknowledgements section, p4). Decipher was initially developed as a joint research program between the Sustainable Tourism Cooperative Research Centre, State and Territory tourism bodies and tourism industry associations and is now being rolled-out as a commercial entity in Australia.

The Decipher system delivers resources to users through a number of pathways and the delivery of these is tailored according to individual user preferences and, indeed, according to session preferences. These include the geographic, topic and search preferences for information delivery. The ability of Decipher to tailor the delivery of resources is possible because of an enforced hierarchical and referential information structure and a complex system of metadata management. The enforced hierarchy links each discrete piece of information, regardless of its format or content, to an information collection. In turn, each collection is assigned to an information supplier who is the custodian of the collection. Discrete information resources are termed packets. Figure 5.1 depicts the online architecture for Decipher including the enforced information hierarchy.

As depicted, suppliers may be custodians of more than one collection and collections may yield multiple packets of more than one format. For example, output from the International Visitor Survey, which is undertaken on behalf of Tourism Research Australia, yields unit record files, publications in PDF format, tabular datasets in various formats and case studies in PDF formats.

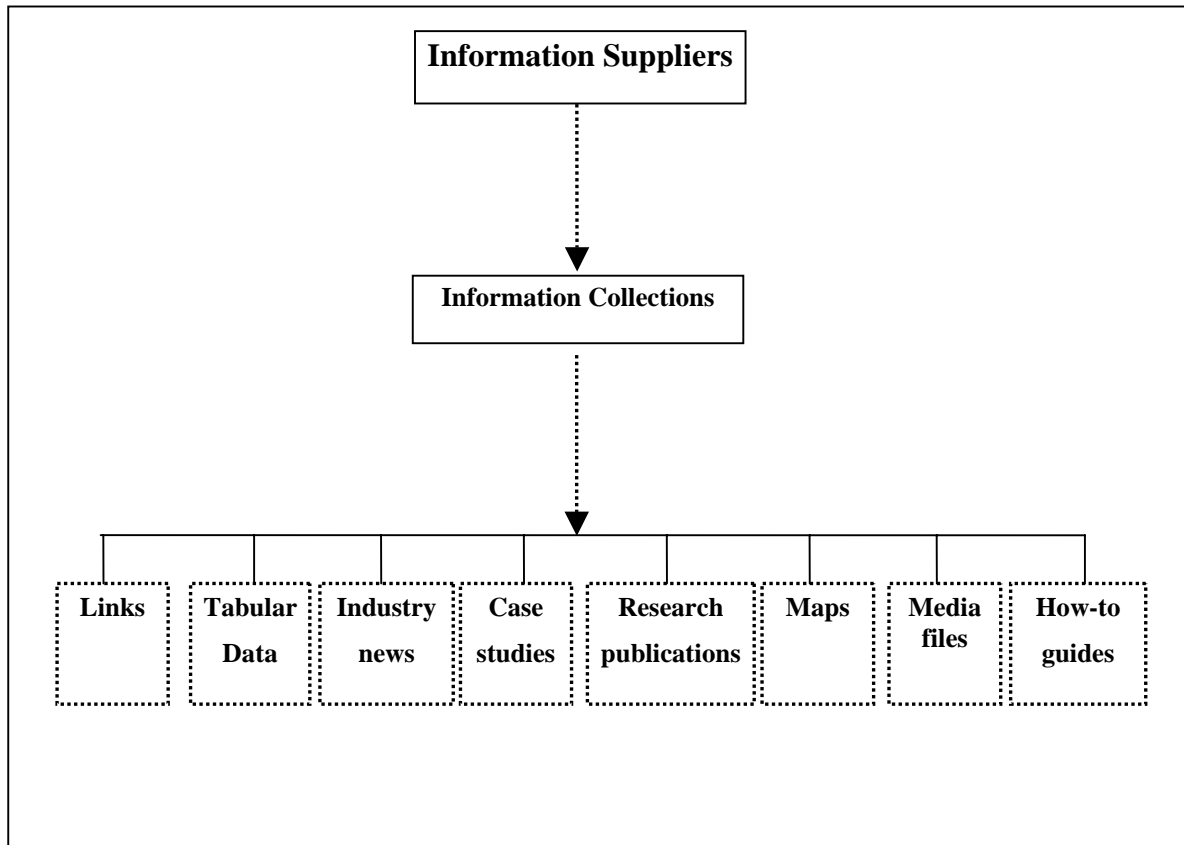


Figure 5.1 – Hierarchical Relationship between Suppliers, Collections and Packets in the *Decipher* Online Architecture

For the purpose of the research, the following definitions were applied:

Tourism Information Supplier – An organisation or individual who has made publicly available (presented) tourism business intelligence or research through one or more information collections. In general, suppliers are the custodians of information collections and the packets which derive from them.

Tourism Information Collection - A collection represents research and data collection activities which are undertaken on a homogeneous methodological basis. A collection in this context is a descriptor which identifies the parent group to which a homogenous set of information commodities or discrete information and research items belong. Some of the characteristics of information resources which are derived from the same collection include that they may be:

- Derived from the same tourism information supplier;
- Based on the same data collection methods including sampling methods;
- Derived from research which has applied consistent methods;

- Based on the same geographical scope so that information from the collection is attributable to a common geographical level;
- Based on the same temporal scope so that the research and analysis relates to the same time periods; and
- Outputted using common input and output classifications and frameworks.

Individual information commodities which are derived from the same collection share at least some of these commonalities. The referential hierarchy described above necessitates that each discrete packet should be attached to a collection. Hence, a one off piece of research can, using this method, comprise a collection in its own right.

Tourism Information Packet – A discrete ‘item’ of tourism information or research output. Packets are available in the forms which were identified as comprising the stock in Chapter One.

5.3.1 Locating Potential Tourism Information Resources using Internet Mediated Research

The research method employed in Phase One was a variation of Internet Mediated Research (IMR). Much of the literature on IMR discusses its application to primary research techniques which involve collecting data and information from third parties (see for example, Hewson, Yule, Laurent, & Vogel, 2003). The tasks in Phase One, to locate potential information resources and identify them as such for cataloguing as part of the stock, necessitated the adoption of a variation of IMR.

The internet has significantly broadened the selection of research-based resources which are conveniently available for scholars in all fields. It has provided unprecedented access to academic journals, books and databases. However, internet content is generally not subject to the rigorous academic standards which are applied to the publication of research through more traditional channels such as academic journals. Consequently, while internet content may purport to be academically sound, there is potential for embedded political, commercial or personal bias in relation to the information and the messages it delivers. This necessitates that the researcher applies tools to critically assess the academic rigor of materials published on the internet (O'Dochartaigh, 2002). In some respects, the skills and

tools required are similar to those needed for critical reviews of literature or assessments about the quality and value of secondary data collections or individual pieces of research.

As has been noted, a portion of the total supply of tourism research and information commodities originates from government or semi-government bodies. These organisations are subject to regulatory and reporting constraints which, under normal circumstances, would prevent them from publishing research for political, commercial or personal gain. Hence, it is unlikely that public sector tourism organisations at any level will supply the TICM with politically or commercially biased information collections and commodities.

The starting point for the IMR was a well-known repository of information about some of the stock. The Directory of Tourism Statistics (Australian Bureau of Statistics, 2004c) is the only national catalogue of tourism information collections. It houses information on collections of tourism research and data along with some core metadata elements for these. The directory lists...

“...the ABS collections where tourism is involved, and includes many other sources of tourism-related data. The directory provides a description of the collection and the data content. It also includes descriptions and sources of tourism classification and methodology developed by ABS including the Australian Tourism Satellite Accounts (ATSA)...”

“The purpose of this Directory is to provide researchers with a ready reference to sources of statistical information about tourism. The ABS has endeavoured to include sources of tourism-related data which are available to the public and which relate to the latest five years.”

(Australian Bureau of Statistics, 2004c)

From 2000 onwards, users have been able to add, update and remove collections from the electronic version of the Directory. The Directory currently lists collections from four private suppliers, ten State and Territory suppliers, four Federal government organisations and one international organisation, for a total of nineteen supplier entries. The Directory itself is dominated by entries for collections which are supplied by the Australian Bureau of Statistics, Tourism Research Australia, the Federal Department of Industry, Tourism and

Resources, Tourism Australia and the State and Territory Tourism Organisations (STOs). These organisations formed the logical starting point for locating tourism information resources using IMR.

In addition to identifying and describing the collections which they have listed in the Directory of Tourism Statistics, all nineteen organisations provide a dedicated page for ‘pushing’ research-related content. These provide a combination of direct access to resources (such as publications in PDF format), links to themed resource pages or links resource items of other suppliers. For example, the ABS maintains a themed tourism page which can be accessed through a Universal Resource Locator (URL) provided in the directory. The ABS’s Tourism theme page houses information about ABS and non-ABS tourism information collections as well as reference materials, including maps of tourism regions, and classificatory frameworks.

After locating information resources through the structured IMR process, further resources may be located by ‘following’ URLs which are provided on the pages which have just been accessed. This process, sometimes described as ‘snowballing’ IMR, was the main method used to locate resources for the research (see Figure 5.2 for an example). To minimise the potential of under-capture of resources which were either not represented at all on the internet or were not accurately represented, the following methods were employed:

- Subscription by the author to all relevant tourism industry association newsletters and research organisation newsletters. A large number of industry newsletters are produced in Australia, most of which contain ‘grabs’ about research-related issues or commentary from the results of research and data collections including visitor surveys. Around twenty-five newsletters were identified and subscribed to. Most of these are disseminated in electronic formats but this does not preclude them from describing or reporting on resources which are not presented to the marketplace on the internet;
- Using NTIM keywords (Carson & Sharma, 2002) to search the internet for references on resources. Here, the Google search engine (<http://www.google.com.au>) was employed. Each keyword was selected as the search text for resources within Australia and then overseas. The first five

pages of returned content were scanned for possible tourism information resources. A number (estimated to be around 50) of discrete tourism

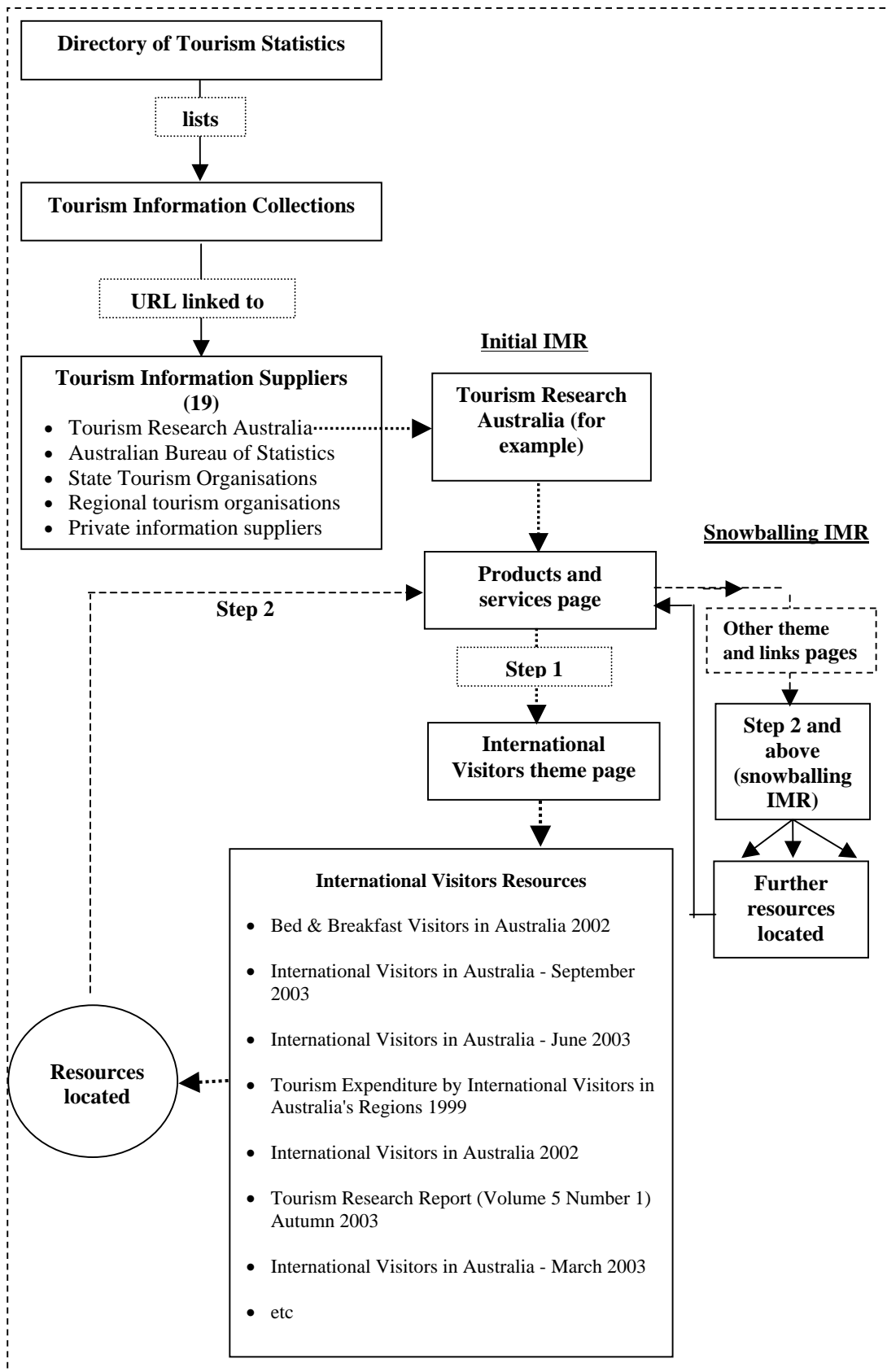


Figure 5.2 –Overview of Snowballing IMR Methods for Locating Information Resources in Phase One

information resources which were not identified through the snowballing IMR technique were uncovered using this variation of IMR;

- Perusal of conference proceedings obtained in hardcopy format from libraries. These resources provide a less direct pathway to the location of information resources because most references are to resources which are of an academic, rather than strategic nature; and
- Perusal of reference sections and of libraries and searches of library catalogues.

It is worth noting that very few individual resources or collections were located using the methods outlined above, with around 95 percent of the stock being located using IMR. This would indicate that the extent of under-capture from the dissemination of resources in non-electronic formats is likely to be minimal.

5.3.2 Identifying the Stock of Tourism Information Resources

Having physically located and recorded the location of possible resources for the stock, these were individually assessed to determine whether the content was of benefit to tourism firms and organisations. For expediency, the locating and identification tasks in Phase One of the research were undertaken sequentially and not independently of the cataloguing of the stock. The identification stage in Phase One required each resource to be downloaded, opened and analysed. It was thus logical to record the necessary metadata, outlined in methods for Phase Two of the research, while the resource was being accessed and analysed for inclusion or otherwise in the stock. Metadata was only recorded for resources which were determined to be part of the stock.

Hence, the order of research in Phase One was firstly to locate resources using IMR and record their physical location (URL, library catalogue number etc) and, secondly, undertake the identification process by analysing their content. This sequence is shown in the diagram below (Figure 5.3), with the identification stage highlighted.

In the identification process, individual resources were examined to ascertain whether their content had least some inherent strategic value for tourism information consumers in

Australia. Several methods were used to complete the identification task and determine whether an individual resource should be included in the stock:

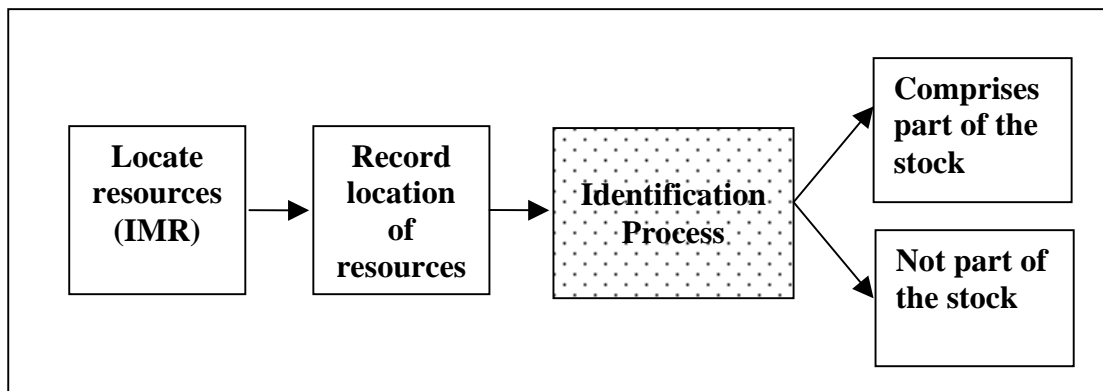


Figure 5.3 – Sequence of Research Activities in Phase One

1. Identify whether resource characteristics match those which are common to information stocks in general. In particular, for the affirmative, the resource should be:
 - Codified or secondary by nature and not, for example, only available by word of mouth;
 - Of a resource type identified as constituting information stocks (see Section 1.7);
 - Originating from an information supplier or information custodian;
 - Of strategic value to the industry on either an individual basis or when combined with other information resources in the process of analysis and reporting (see points 1-5 below); and
 - Consisting not exclusively of marketing, political or tourism product information.
2. An analysis of the content of each resource to determine whether NTIM (Carson & Sharma, 2002) keywords can be applied to describe their content at a broad level (see Appendix 1). Recognising that the NTIM provides a framework of discourse for tourism, the ability to assign keywords to resources is indicative of the resources relevance for tourism.

3. A comparison of the content of individual resources against the functional business requirements for tourism information resources, as expressed by Ernst and Young (2001). Nineteen requirements were identified including, for example, a “Short-term outlook for tourism across Australian regions” (p23). A resource whose content fulfils any of the nineteen requirements was assessed as being in the stock.
4. Assessing the resource for elements of ‘global relevance’. A resource is globally relevant where it contains generic lessons or learnings which may transcend the geographic or sectoral boundaries. Resources which are globally relevant to tourism and its sectors may, for example, have been created for dissemination in a different information marketplace or may simply be a generic resource containing significant content which is of relevance to some organisations in the tourism industry. Additionally, a resource may originate from overseas and be intended for presentation in the tourism information marketplaces of other countries but may still be of value for operators in Australia.

Contrary to sector-specific (for example, accommodation-specific information resources) or geographically specific resources (such as a tourism management plan for a particular destination), the determination of global relevance may be relatively difficult. For example, the publication “Customers with Disabilities - What Do Guest Accommodation Owners Need to Know” was supplied to the market by the Disability Rights Commission in the United Kingdom (Disability Rights Commission, 2004). This resource contains practical advice for owners of accommodation and hospitality establishments on how to effectively cater for customers with disabilities and is aimed at establishments in the United Kingdom. However, the resource is also relevant to Australian establishments because a significant component is generic in nature. Generic aspects include a range of suggestions about the fit out of establishments to accommodate disabled persons, including the ideal height for reception counters for persons in wheelchairs. Resources whose content was of global relevance were considered to be part of the stock.

5. Identify whether tourism firms, industry associations and other tourism organisations in Australia have applied the content of a resource to meet information needs. Here, the potential application of the resource is the key factor so that application may be actual or suggested. For example, if an STO recommends on its website that destination managers procure and apply particular resources; these are considered to be part of the stock. Alternatively, if the research section of an STO produces a report which is drawn from and references other resources, the referenced resources are considered to be part of the stock.

5.4 Methods for Cataloguing the Stock of Tourism Information Resources

5.4.1 Aims and Outcomes for Cataloguing the Stock

The aims of the cataloguing process were to: a) construct a cataloguing framework for the recording of information about the tourism information stock and b) perform the cataloguing of individual resources determined to be part of the stock by entering information against entries in the framework. The desired output from this phase was a standardised and indexed catalogue of the tourism information stock for Australia in an electronic format. The catalogue then served as the basis for testing the relative efficiency with which information resources can be moved around the TICM.

In terms of this body of work, the desired outcomes of the cataloguing processes were singular - to facilitate testing of the stock. However, the construction and population of the catalogue was also designed to enable:

1. Access to metadata on resources to facilitate and streamline their uploading to the Decipher online system;
2. A standardised dissemination framework to assist users in obtaining resources which are matched to their information needs using Decipher information pathways; and
3. Formation of a standardised system of metadata management for tourism information resources for application in future research.

Hence, the contribution of the research in this phase is broader than its output, which is represented by the catalogue. The focus of this section is on the methods used to construct the cataloguing according to the requirements listed above.

5.4.2 A System of Metadata for Tourism Information Resource Cataloguing

Definitions of a catalogue usually discuss the creation and maintenance of lists of some sort along with brief notes on items which are on the list (see, for example, Delbridge & Bernard (Eds), 1996). A catalogue introduces several vital components to what may have previously been an unorganised grouping of information resources. These are order, classifications, and descriptions (see, for example, Boll, 1970). The information which is recorded against entries in an information catalogue is termed metadata. Metadata is simply information about information (or data about data). Metadata is commonly recorded against a series of elements which aim to define and capture the order, classification and descriptions for resources.

The metadata framework for the research was adapted from recognised international standards for recording metadata against information resources including the ISO/IEC 11179 - the Standard for the Specification and Standardization of Data Elements (International Organisation for Standardisation, 2000), and the Dublin Core standard. Systems of metadata generally employ several types of metadata types, each of which performs specific functions. In the cataloguing stage of the research, several types of metadata were collected and these are described in table (Table 5.2).

| Type of Metadata | Definition | Example elements from the research |
|------------------|--|---|
| Administrative | Administrative metadata is used to organise, manage, maintain and deliver information resources. | <ul style="list-style-type: none"> • Supplier • Method of procurement • Location • Versioning elements • Price • Type of resource |
| Descriptive | Identifying or describing elements which relay content, structure and possible applications for resources. | <ul style="list-style-type: none"> • Index of content topics • Index of geographic coverage • Resource description • Warnings on data limitations |
| Technical | Metadata used to maintain system functionality or metadata functionality. | <ul style="list-style-type: none"> • Advice on applications of the resource • Index of relevance to tasks |

| Type of Metadata | Definition | Example elements from the research |
|------------------|--|--|
| | | <ul style="list-style-type: none"> Warnings of resource limitations |
| Application | Elements to indicate the use of the information resource by users of administrators. | <ul style="list-style-type: none"> Products incorporated into Sections and pages available from User names Download frequency |

Table 5.2 – Types of Metadata Employed, Definitions and Examples (Source: partly adapted from Baca, 1998, p3)

Individual elements in the metadata framework were constructed according to testing requirements which aim to record the aspects of the stock and its resources are detailed in the TICM model in Chapter Four. To test the robustness of the metadata framework, elements were matched to processes and steps in the TICM (Table 5.3), with a particular focus on the demand-side tasks of specify, seek and validate. Supply-side tasks of presenting the stock to the marketplace were assessed through the identification of the stock (see section 5.3.2).

The cataloguing work was completed online using the Decipher administrative system as the front-end application. Data was stored in SQL Server databases. The administrative system was built to specification to accommodate the required metadata elements. Figure 5.4 below is a screen shot showing the resource metadata page in the administrative system.

It is recognised that the stock of resources, collections and suppliers which have been located, identified and catalogued in this research will be almost immediately superseded. Several factors are attributable including:

- The emergence of new suppliers or amalgamation of existing suppliers;
- The creation of new or discontinuation of existing collections;
- The creation of new or discontinuation of existing resources; and
- Updates to existing resources (new versions).

Hence, the catalogue developed through the research is a comprehensive snapshot of the available resources at a point in time, rather than a definitive and up-to-date list.

5.5 Phase Two: Methods for Testing the Stock of Tourism Information Resources

5.5.1 Introduction

Having located, identified and catalogued the stock of information commodities, the next contribution of the research was to test the extent to which, if any, the postulations about leakages in the TICM may be in evidence based on the current stock. A testing framework was required in which a comparative analysis of information collections could be established. The aim of the framework was to provide a detailed assessment of information collections based on the efficiency with which their resources could be expected to be moved through the TICM. A combination of 'hard' (or quantitative) and 'soft' (indicative and qualitative) measures were devised to measure the efficiency of the stock in the TICM.

| | Phase | Potential Leakage | System of Metadata Requirements | Metadata Element(s) |
|--|----------------|-------------------|--|---|
| <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> Tourism businesses, enterprises, reporting agencies and organisations </div> <p style="text-align: center;">↓</p> <p style="text-align: center;">Identify</p> <p style="text-align: center;">↓</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> Information needs (reporting, statutory, innovation, growth etc) </div> <p style="text-align: center;">↓</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> Specify information needs </div> <p style="text-align: center;">↓</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> Seek out and establish the information commodity 'pool' </div> <p style="text-align: center;">↓</p> | SPECIFY | Language | <ul style="list-style-type: none"> • Elements to record discourse used in resource (and whether standard) • Elements to record use of classifications, standards and recognised indexes • Elements to enable indexing of content topics | <ul style="list-style-type: none"> • Keywords • Type of resource • Sector/market • Geography • Reference data • Collection name • Collection description • Resource type • Keywords • Sector/market • Type of resource |
| | | SEEK | Access | <ul style="list-style-type: none"> • Elements to record locational attributes of the resource • Provide records about methods for locating the resource • Elements to record resource access methods • Elements to record supported access and information options |
| | | | Timeliness | <ul style="list-style-type: none"> • Collection identification element |


| | | | | |
|---|-----------------|--------------|--|---|
|  | VALIDATE | | <ul style="list-style-type: none"> • Collection frequency element • Identity reference date to which content of the resource relates • Identify release date | <ul style="list-style-type: none"> • Collection frequency date • Reference date • Collection frequency |
| | | Availability | <ul style="list-style-type: none"> • Elements to record collection start date or period • Elements to record past releases • Elements to indicate changes in methodologies over time. | <ul style="list-style-type: none"> • Collection start date • Frequency • Resource reference date • Navigation alert • Collection name • Collection ID |
| | | Validity | Elements to record existence of validity-related metadata. | <ul style="list-style-type: none"> • Keywords • Global relevance • Resource description • Geography • Section/market |
| | | Reliability | Elements to indicate overall reliability or reliability-related issues. | <ul style="list-style-type: none"> • Navigation alert • Collection name • Collection id • Collection description • Geography • Global relevance |
| | | Coverage | Elements to record geographic scope and coverage. | <ul style="list-style-type: none"> • Geography |

Table 5.3 – Metadata Elements Matched to TICM Processes

| | | | |
|-----------------------------|--|--|---|
| ■ Packet Name | Numbers and Types of Tourism Businesses in Australia, 199 | <input type="checkbox"/> | |
| Packet Description | Shows the number of tourism businesses by type of business for the latest (available) years. Add the Description | | |
| ■ Packet Type | Tabular | | |
| Packet Sub Type | Mega Table | | |
| ■ Collection | Sensis Pty Ltd. - Yellow Pages@ directories and related p | <input type="checkbox"/> | |
| Meta Location | | <input type="checkbox"/> | |
| Market Specific | Please select a market specific Local Government Small Business | | |
| ■ Reference Date | <input type="radio"/> Multi Year <input checked="" type="radio"/> Other Reference Types | | |
| | A particular year | | |
| | 2003 | | |
| Page Count | 0 | | |
| ■ Cost | Yet to be agreed | \$ | <input type="checkbox"/> |
| ■ Price | Set Amount | \$ | 5 <input type="checkbox"/> |
| ■ Keywords | <input type="checkbox"/> | | |
| | Characteristics | | Select KB Elements |
| ■ Geographic Reference | <input type="checkbox"/> | | |
| | <input checked="" type="checkbox"/> Australia | | Select Region(s) |
| ■ Global Relevance | Not considered relevant outside | <input type="checkbox"/> | |
| Navigation Alert | listed in the Yellow Pages. While not every business in Australia is listed, this source is one of the more reliable estimates of the numbers and types of businesses who are engaged in the tourism industry. | <input type="checkbox"/> | |
| Packet Default Presentation | Click here to Set Default Table Display | | |
| Mega Table Name | Sensis MT Aug 04 | | |
| | | <input type="button" value="Save and finish"/> | <input type="button" value="Cancel and Go back"/> |

Figure 5.4 – Cataloguing the Stock Using the Decipher Administration System

5.5.2 Collections as the Basis of Testing

Rather than developing methods to test individual resources in the stock, the testing framework was constructed to identify whether the characteristics of collections were such that potential inefficiencies could be identified at this level. The framework was aimed at collection level because individual resources sourced from collections are largely homogeneous. A further reason for aiming testing at the collection level is the inherently dynamic nature of the stock at packet level. We have already identified some aspects of the changing composition of the stock and at the individual resource level these include the

creation of new or discontinuation of existing resources and updates to existing resources. For example, there are a number of resources in the stock which are updated with new versions on a daily or weekly basis. Focusing testing at the resource level would have significant impacts on the ability to make general observations and comparative assessments on the efficiency with which the stock can pass through the TICM from suppliers to consumers with information needs.

5.5.3 Constructing a Testing Framework

At the meta-level, output from testing was required to provide:

- A set of 'hard' indicators with which quantitative comparisons between collections and quantitative-based commentary on the stock can be based;
- Indications of the contribution, if any, of collections to leakages in the TICM;
- Measures on which a ranking of collections can be based;
- A comparative basis on which to make qualitative assessments about the characteristics of individual collections in relation to the issues raised by the TICM model; and
- A basis for commentary on the overall nature and characteristics of the stock.

To fulfil the meta-requirements for this phase of the research, a series of required attributes for the testing framework were mapped against the proposed leakages in the TICM. These were recorded in question format. Detailed measures were then devised for each required attribute. A coding framework was constructed to enable quantitative results to be drawn from the testing. Results were drawn from the detailed measures using a coding framework and the relationship between the required testing outputs, required attributes and the detailed testing items is shown below (Figure 5.5).

The required attributes for the testing were related to TICM processes and are shown below (Table 5.4). Data recording on the collections identified in the stock was undertaken by inputting data against each variable for each collection. Data is recorded against around 130 collections using an SPSS database.

5.6 Limitations of the research

Perhaps the main qualification required for the research is to emphasise that it has identified, critically analysed and tested issues which are primarily supply-related. It is

likely that a range of demand-limitations exist which are reflective of the structure of tourism in Australia and may influence the efficiency of the TICM. Not least of which is the potential capacity constraints of a large portion of tourism industries who are SMEs. The ability of these organisations to incorporate and understand the routine application of information to business processes may be constrained by their size and skills (Sheldon, 1997). The commentary and literature discussed in Section 2.3 supports this suggestion with several references to the complex structure and dynamics of the supply side of tourism in Australia (for example, Ernst & Young, 2001; Department of Industry Science and Resources, 2003)

The locating, identifying and cataloguing of the presented stock, which comprised Phase One of the research, produced a large volume of resources which could not be logically associated using the definition of a collection outlined earlier. Applying the definition produced a sample of around one-hundred-and-thirty information collections for testing. The body of resources which are associated with this sample does not, it is recognised, constitute the entire stock which is available in the marketplace. Omitted from testing were collections of loosely associated resources which typically are produced on an ad hoc basis by suppliers who are not prominent in the marketplace; both in terms of the volume of resources contributed and frequency of release to the marketplace.

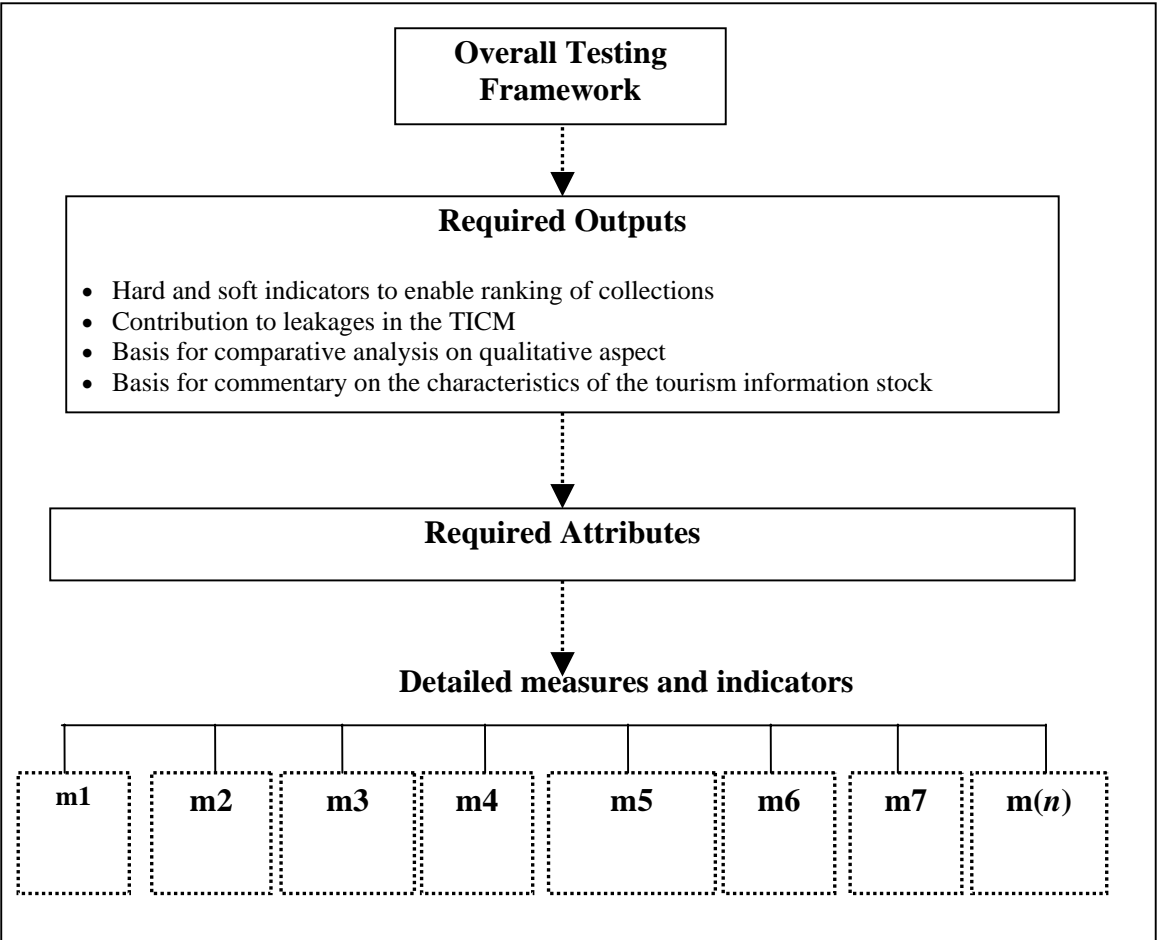


Figure 5.5. - Relationship Between Required Outputs, Required Attributes and Testing Measures.

| Process | Mnemonic | Variable Definition | Variable Codes | Categories |
|--------------|----------|---|----------------|------------|
| Presentation | collecti | Unique collection identifier | n.a. | n.a. |
| Presentation | collname | Collection name | n.a. | n.a. |
| Presentation | supplier | Responsible organisation | n.a. | n.a. |
| Specify | discours | Does the collection use a tourism discourse? | 1=yes, 2=no | 2 |
| Specify | ntimdis | Does the collection utilise a discourse broadly consistent with the NTIM? | 1=yes, 2=no | 2 |
| Specify | framecla | Does the collection employ standardised frameworks or classifications in the collection and output of information? | 1=yes, 2=no | 2 |
| Seek | explain | Are key terms explained or defined clearly in glossaries, collection metadata or similar? | 1=yes, 2=no | 2 |
| Seek | directx | Do direct user pathways to collection experts in suppliers or intermediaries exist? | 1=yes, 2=no | 2 |
| Seek | indirect | Do indirect user pathways to collection experts in suppliers or intermediaries exist? | 1=yes, 2=no | 2 |
| Seek | specpnt | Are consumer access points to suppliers specified in collection metadata or resource metadata? | 1=yes, 2=no | 2 |
| Access | update | Do access points exist through which updated versions of resources can be automatically obtained (eg subscription) | 1=yes, 2=no | 2 |
| Access | protocol | Are protocols and/or standards for responding to consumer enquiries in place? | 1=yes, 2=no | 2 |
| Access | ancillin | Does ancillary metadata about the collection and its resource exist to help with seek issues (eg. catalogue entries, fact sheets, fliers, brochures etc)? | 1=yes, 2=no | 2 |
| Access | nummeth | How many methods to collection | 0 - n | 2 |

| Process | Mnemonic | Variable Definition | Variable Codes | Categories |
|--------------|----------|---|--|------------|
| | | experts (email, call centre, intermediary etc) of access are provided to consumers through collection or resource metadata? | | |
| Access | webresol | Is a web-based facility maintained by supplier or intermediary to help resolve access issues? | 1=yes, 2=no | 2 |
| Access | weeklag | How many weeks lag are there between information collection and release as information commodities? | 0 - n, 999 – <i>Not available/not determinable</i> | 2 |
| Access | improve | Are improvements in timeliness evident over time? | 1=yes, 2=no | 2 |
| Availability | availiss | Is the collection subject to availability issues? | 1=yes, 2=no | 2 |
| Availability | withdraw | Have collection resources in particular formats been withdrawn from the TICM? | 1=yes, 2=no | 2 |
| Validity | validiss | Is the collection subject to validity issues? | 1=yes, 2=no | 2 |
| Validity | intentv | Is metadata which provides guidance on the intention of the collection and its resources readily available to consumers? | 1=yes, 2=no | 2 |
| Validity | samplevw | Is a sample view of collection resources provided to enable consumers to determine the validity, structure and content of resources prior to procurement? | 1=yes, 2=no | 2 |
| Validity | globrel | Is the collection applicable to tourism through global relevance (i.e. a non-tourism specific or non-Australian collection)? | 1=yes, 2=no | 2 |
| Reliability | reliabil | Is the collection subject to reliability issues? | 1=yes, 2=no | 2 |
| Reliability | reexpla | Are the types, nature and characteristics of reliability issues recognised and explained to consumers using metadata? | 1=yes, 2=no | 2 |

| Process | Mnemonic | Variable Definition | Variable Codes | Categories |
|----------|----------|--|---|------------|
| Coverage | impacte | Are any negative impacts of reliability on the validity and coverage of resources explained? | 1=yes, 2=no | 2 |
| Coverage | geogsc1 | What geographies is the information available for (1)? | 1=Australia, 2=States, 3=Multiple tourism regions, 4=Single tourism region, 5=Below tourism region level | 5 |
| Coverage | geogsc2 | What geographies is the information available for (2)? | 1=Australia, 2=States, 3=Multiple tourism regions, 4=Single tourism region, 5=Below tourism region level | 5 |
| Coverage | geogsc3 | What geographies is the information available for (3)? | 1=Australia, 2=States, 3=Multiple tourism regions, 4=Single tourism region, 5=Below tourism region level | 5 |
| Coverage | geogsc4 | What geographies is the information available for (4)? | 1=Australia, 2=States, 3=Multiple tourism regions, 4=Single tourism region, 5=Below tourism region level | 5 |
| Coverage | geogsc5 | What geographies is the information available for (5)? | 1=Australia, 2=States, 3=Multiple tourism regions, 4=Single tourism region, 5=Below tourism region level | 5 |
| Coverage | tabular | Does the collection produce publicly released tabular data? | 1=yes, 2=no | 2 |
| Coverage | seasonal | Are seasonal adjusted resources available from the collection? | 1=yes, 2=no | 2 |
| Coverage | trend | Are trend series estimates available from the collection? | 1=yes, 2=no | 2 |
| Coverage | timeser | Are time-series data or longitudinal research available from the collection? | 1=yes, 2=no | 2 |
| Comments | comments | Qualifying comments | n.a. | n.a. |

Table 5.4 – Required Attributes for Testing in the Research

In the cataloguing stage, however, groups of loosely associated resources were still grouped into collections and associated with a supplier using the collection name “Other Publications and Resources”. In some cases, this collection contained only one resource.

The implication of this particular limitation for the research is that testing on groups of loosely associated resources or a single ad hoc resource could not be undertaken. The disparate nature of resources attributed to these collections prohibited accurate recording of data against the measures outlined in the methodology. Despite this, the cataloguing of the loosely grouped resources did facilitate some important and interesting observations on this portion of the stock with both a positive and negative implications for TICM efficiency. These are discussed in Chapter Seven

Aiming the testing of the stock at collection level may have also limited the depth of data obtained through the testing of the stock. This is identified as a further limitation of the research. Testing each resource would have, of course, produced a larger volume of data for analysis. However, for the reasons outlined in Section 5.5.2, testing at collection level was considered to be appropriate to meet the objectives of the research and to provide sufficient material on which a comparative analysis of the stock and its collections can be made.

The research is limited to information resources which have been presented by suppliers to the marketplace. Hence, those resources which are produced but not presented are outside of the focus of this research. There is a chance that such resources could alter the overall composition and characteristics of the stock and therefore the research outcomes. Further research on this aspect is warranted to identify un-presented strategic information resources and their characteristics.

5.7 Summary of Methodology

The research approach was driven by the development of the TICM model which:

- Facilitated the identification of suppliers, collections and the presented stock;
- Identified the range of metadata necessary to describe the characteristics of the stock and its positioning in the marketplace; and

- Proposed questions on the likely efficiency of marketplace processes as a result of the understanding of the marketplace which was gained through the TICM model.

A testing framework was designed in order to test the Australian TICM using the presented stock for tourism in Australia. This aimed to capture the extent of leakages in the marketplace including their locations and their likely causes.

Chapter 6 – Results and Discussion

6.1 Introduction

In this chapter the results of the analysis of the Australian TICM are presented and discussed. Frequency and percentage results for most variables are presented in a summary table (Table 6.1) and subsequently discussed. Other notable results are then identified before the results from a comparative analysis of collections are detailed. Finally, a qualitative assessment of the results is given.

6.1.1 General Results

The tourism stock at February 2004 was found to be comprised of around 2,100 individual information resources which were sourced from about 220 suppliers. The number of collections which were analysed was 132, with the remainder of the collections being of loosely affiliated or one-off resources. Just under a third (49) of the analysed collections was presented to the market by the larger information suppliers including the State Tourism Organisations. Further discussion on suppliers and their presentation of the stock is provided in section 6.3.

6.1.2 Summary of Results Against TICM Processes

Most of the data items collected was on the basis of affirmative or negative values (i.e. 'true' or 'yes' and 'false' or 'no'). The results, from the perspective of the affirmative, are summarised in the table below (Table 6.1).

6.1.3 Description of Results for Specify Variables

Very few (just under seven percent) collections provided their information using a discourse which was broadly consistent with the NTIM (Carson & Sharma, 2002) or with the Framework for Australian Tourism Statistics (Australian Bureau of Statistics, 2003b). However, nearly half of all collections conveyed their information using a broadly consistent (internally and across the stock) discourse.

Frameworks and classifications were, as expected, most commonly applied to the output of statistical collections, particularly those contributed by larger suppliers. In total around half of all collections provided output based on classifications or frameworks including for all collections from the ABS.

| TICM Process | Variable definition | Frequency | Percent (%) |
|---------------------|---|------------------|--------------------|
| Specify | Does the collection use a tourism discourse? | 56 | 42.4 |
| Specify | Does the collection utilise a discourse broadly consistent with the NTIM? | 9 | 6.8 |
| Specify | Does the collection employ standardised frameworks or classifications in the collection and output of information? | 64 | 48.5 |
| Specify | Are key terms explained or defined clearly in glossaries, collection metadata or similar? | 89 | 67.4 |
| Seek | Do direct user pathways to collection experts in suppliers or intermediaries exist? | 88 | 66.7 |
| Seek | Do indirect user pathways to collection experts in suppliers or intermediaries exist? | 89 | 67.4 |
| Seek | Are consumer access points to suppliers specified in collection metadata or resource metadata? | 75 | 56.8 |
| Seek | Do access points exist through which updated versions of resources can be automatically obtained (eg subscription)? | 46 | 34.8 |
| Seek | Are protocols and/or standards for responding to consumer enquiries in place? | 32 | 24.2 |
| Seek | Does ancillary metadata about the collection and its resource exist to help with seek issues (eg catalogue entries, fact sheets, fliers, brochures etc)? | 58 | 43.9 |
| Seek | Is a web-based facility maintained by supplier or intermediary to help resolve access issues? | 41 | 31.1 |
| Seek | Are improvements in timeliness evident over time? | 7 | 5.3 |
| Seek | Is the collection subject to availability issues? | 69 | 52.3 |
| Validate | Have collection resources in particular formats been withdrawn from the TICM? | 17 | 12.9 |
| Validate | Is the collection subject to validity issues? | 100 | 75.8 |
| Validate | Is metadata which provides guidance on the intention of the collection and its resources readily available to consumers? | 64 | 48.5 |
| Validate | Is a sample view of collection resources provided to enable consumers to determine the validity, structure and content of resources prior to procurement? | 46 | 34.8 |
| Validate | Is the collection applicable to tourism through global relevance (i.e. a non-tourism specific collection)? | 39 | 29.5 |
| Validate | Is the collection subject to reliability issues? | 91 | 68.9 |
| Validate | Are the types, nature and characteristics of reliability issues recognised and explained to consumers in metadata? | 81 | 61.4 |
| Validate | Are any negative impacts of reliability on the validity and coverage of resources explained? | 53 | 40.2 |
| Validate | Does the collection produce publicly released tabular data? | 30 | 22.7 |
| Validate | Are seasonal adjusted resources available from the collection | 17 | 12.9 |
| Validate | Are trend series estimates available from the collection? | 18 | 13.6 |
| Validate | Are time-series data or longitudinal research available from the collection? | 58 | 43.9 |

Table 6.1 – Summary of Results Against TICM Processes

6.1.4 Description of Results for Seek Variables

More than two-thirds of collections (67 percent) provided some form of explanatory metadata including glossaries and explanatory notes. About the same proportion (66.7 percent) provided direct access to experts. Of those who did not provide for direct access, 29 collections, or 22 percent, facilitated indirect access so that some form of access was available for the bulk of collections (around 90 percent in total). The most common methods for access were telephone and email. Automated facilities to ensure that the consumer receives the latest version of a resource exist for only 34.8 percent of collections and only 24 percent of suppliers have designated procedures for responding to consumer enquiries about collections and their resources.

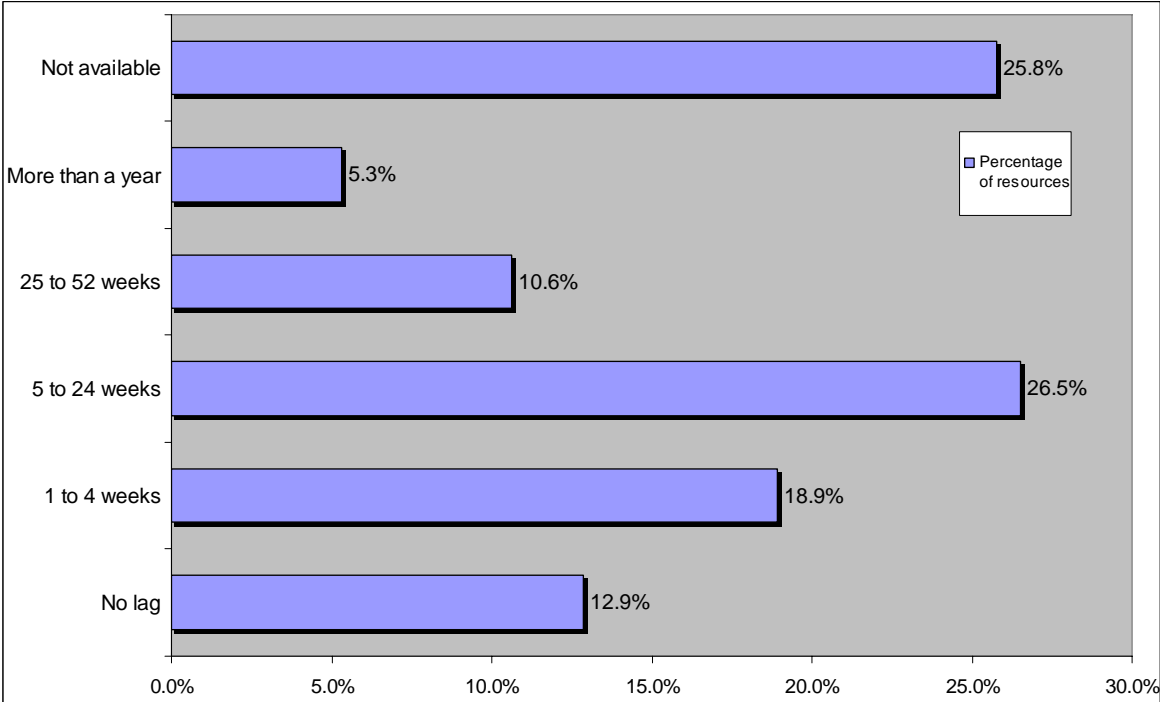
More than a quarter of all collections (27.3 percent) were found to provide resources to the stock on an irregular or intermittent basis, while just fewer than 30 percent did so at intervals of a month or less. Meanwhile, the median time lag between the end of the research or data collection reference period and the public release of the information is 12 weeks. The extent of lag could not be ascertained for around a quarter of collections (Figure 6.1). A small minority of suppliers have publicly stated that they are seeking to improve the lag between research or data collection activities and public release.

6.1.5 Description of Results for Validate Variables

More than half of all collections presented availability issues for users where the content of information resources is subject to major changes or where methodologies have changed over time. For example, output content from State and Regional tourism organisations, such as that in the collection Visitor Surveys from Tourism Queensland seems particularly variable. While other collections have been withdrawn from the marketplace entirely, such as the collection Tourism Indicators (Australian Bureau of Statistics, 2002b).

Around three-quarters of collections appear to have issues relating to validity which may impact on the ability of consumers to determine which commodities could address particular information needs. Most of these relate to the requirement for the content of resources to be explained in terms of possible applications because the potential application of content to information needs is not self-evident and/or because its limitations are not self-evident. Although only around half of collections came with guidance on

validity issues, some suppliers, like the ABS, provide extensive guidance with every resource by using a combination of metadata, sample views, catalogues and brochures.



6.1 – Lag Between Research or Data Collection and Resource Release

A relatively large portion of collections were found to provide resources which were globally relevant (around 30 percent). These include overseas-based or national collections which provide resources to the marketplace that are relevant to regional tourism firms and organisations. Examples include collections from the World Tourism Organisation, and the collection Australian Social Trends (Australian Bureau of Statistics, 2004b).

While slightly less than 70 percent of collections are subject to reliability issues, suppliers more often than not explained the nature of these. Only ten collections fail to provide some detail on the nature and extent of the reliability. More importantly, 53 of the 81 collections with reliability issues (64 percent) provided some interpretation on the possible impacts of these for the validity of the resource. There was, however, great variation in the depth of such explanatory material.

Although some difficulties in the categorisation of geographic scope were evident, the bulk of collections (70 percent, or 82 collections) provided information at the Australia and State or Territory levels only. This was an adequate indication that most collections do not

provide coverage at below State level. Around 30 collections provided users with direct access to tabular data. Of these, less than 15 percent of collections release seasonal or trend series data.

6.2 Comparative Analysis of Collections

A ranking system was applied to collections to determine where in the array each sits in terms of its likely impact on marketplace leakages (see Appendix 2 for results). The ranking system is based on a cumulative score where a higher score indicates that resources from the collection are more likely to be moved efficiently from suppliers to consumers. It should be noted that the scoring system was devised to provide a comparison between collections and a low score does not necessarily mean that the collection is not of value.

The ranking of collections is not intended to be an absolute measure of the efficiency with which resources from each collection can be moved around the TICM. It is more suitable to assess the results in terms of broad domains such as ‘relatively good’, ‘fair’ and ‘relatively bad’. There is further discussion on this point in the subsequent chapter. The scoring system applied to each data item to produce the comparative ranking of collections is shown in the table below (Table 6.2).

The results of the ranking exercise show that the 20 collections which ranked highest (and are least likely to generate leakages in the marketplace) originated from a single supplier – the Australian Bureau of Statistics (ABS). The highest score (27) was for the Survey of Tourist Accommodation. The ABS undertakes collection and research activities and supplies, as a matter of course, resources with features which are conducive to relative efficiency for dissemination and exchange when compared to other suppliers. There are a number of reasons for this which, from the point of presenting a yardstick for other suppliers, is worth documenting.

| Variable | Data item | Score |
|-----------------|--|---|
| discours | Does the collection use a tourism discourse? | Yes:1, No:0 |
| ntimdis | Does the collection utilise a discourse broadly consistent with the NTIM? | Yes:1, No:0 |
| framecla | Does the collection employ standardised frameworks or classifications in the collection and output of information? | Yes:1, No:0 |
| explan | Are key terms explained or defined clearly in glossaries, collection metadata or similar? | Yes:1, No:0 |
| directx | Do direct user pathways to collection experts in suppliers or intermediaries exist? | Yes:1, No:0 |
| indirect | Do indirect user pathways to collection experts in suppliers or intermediaries exist? | Yes:1, No:0 |
| specpion | Are consumer access points to suppliers specified in collection metadata or resource metadata? | Yes:1, No:0 |
| update | Do access points exist through which updated versions of resources can be automatically obtained (eg subscription)? | Yes:1, No:0 |
| protocol | Are protocols and/or standards for responding to consumer enquiries in place? | Yes:1, No:0 |
| ancillin | Does ancillary metadata about the collection and its resource exist to help with seek issues (eg catalogue entries, fact sheets, fliers, brochures etc)? | Yes:1, No:0 |
| nummeth | How many methods to collection experts (email, call centre, intermediary etc) of access are provided to consumers through collection or resource metadata? | 5 or more methods:2, 1-4 methods:1, 0 methods:0 |
| webresol | Is a web-based facility maintained by supplier or intermediary to help resolve access issues? | Yes:1, No:0 |
| weeklag | How many weeks lag are there between information collection and release as information commodities? | >24 weeks:0, 5-24 weeks:1, 2-4 weeks:2, <=1 week's:3 |
| improve | Are improvements in timeliness evident over time? | Yes:1, No:0 |
| availiss | Is the collection subject to availability issues? | Yes's, No:1 |

| Variable | Data item | Score |
|----------|---|--|
| withdraw | Have collection resources in particular formats been withdrawn from the TICM? | Yes:0, No:1 |
| validiss | Is the collection subject to validity issues? | Yes:0, No:1 |
| intentv | Is metadata which provides guidance on the intention of the collection and its resources readily available to consumers? | Yes:1, No:0 |
| samplevw | Is a sample view of collection resources provided to enable consumers to determine the validity, structure and content of resources prior to procurement? | Yes:1, No:0 |
| globrel | Is the collection applicable to tourism through global relevance (i.e. a non-tourism specific collection)? | Yes:1, No:0 |
| reliabil | Is the collection subject to reliability issues? | Yes:0, No:1 |
| relexpla | Are the types, nature and characteristics of reliability issues recognised and explained to consumers in metadata? | Yes:1, No:0 |
| impacte | Are any negative impacts of reliability on the validity and coverage of resources explained? | Yes:1, No:0 |
| geogsc | What geographies is the information available for (1-5)? | Below regions:4, Multiple regions:3, Single region: 2, State's, National only: 1 |
| tabular | Does the collection produce publicly released tabular data? | Yes:1, No:0 |
| seasonal | Are seasonal adjusted resources available from the collection? | Yes:1, No:0 |
| trend | Are trend series estimates available from the collection? | Yes:1, No:0 |
| timeser | Are time-series data or longitudinal research available from the collection? | Yes:1, No:0 |

Table 6.2 – Scoring System for Producing Collection Ranking

Firstly, the ABS is a dedicated information supplier and an actor in many information markets. It is legislated as the national statistical agency and the tourism industry may indeed be benefiting from its experience and expertise in delivering resources to marketplaces. The organisational structure of the ABS ensures that skilled staff is developed to manage and operate each information collection area, strengthening the quality of output from these.

The agency conducts a large program of large data collection activities. It no doubt benefits from economies of scale and, through continuous quality improvement, is enhancing its ability to maximise sample sizes and employ robust sampling methodologies. Both of these affect the reliability and availability measures used in the research here. One of the key outcomes for the ABS is the ability to conduct collections which supply resources at low spatial levels. Importantly, the ABS also consults with information users for most collections which assists in the building of a standardised language and in matching user needs to collection activities.

As well as the supplier related characteristics described above, the ABS incorporates a range of features as standard when it presents resources. These include:

- Adherence to national and international classifications and frameworks for the collection and dissemination of data. This helps to minimise reliability and coverage issues;
- The provision of explanatory notes and glossaries as standard which helps reduce the propensity for language and validity issues;
- Explanations on the impact of reliability and validity issues, which, as the results from the stock testing demonstrate, is infrequently supplied with resources from collections;
- Published and well-maintained access points through which consumers can ascertain the validity of resources for their individual needs. These can often be directly elicited from a collection expert;
- Provision of extensive metadata and previews of results which assist users to determine whether individual resources may be appropriate to their needs (addressing validity issues); and
- The production of tabular, trend analysis and seasonally adjusted data series where appropriate.

Conversely, collections which scored lowest (less than ten) are seemingly those which are supplied to the market infrequently or irregularly and are not data collections. Many of these are supplied by STOs. Interestingly, two of the three collections allocated the lowest score of six are supplied by tourism-specific organisations (the Australian Tourism Export Council and the Australian Tourism Research Institute). Resources from these collections are characterised by an absence of metadata, little or no information on validity and poor access channels, as well as being contributed to the market on an irregular basis.

If nothing else, the ranking results are a reminder of the potential for improvements to be made in dissemination and exchange efficiency in the TICM. While smaller suppliers, it is recognised, are not in a position to conduct research activities on the scale of the ABS, there is scope for these to improve the content of information resources themselves and to improve the metadata and access facilities which are associated with these. Interaction between suppliers and consumers has, as was proposed earlier, traditionally been disjointed and these results indicate that improvements to this aspect of the marketplace dynamics, either by direct communication or through intermediaries, is important for improving overall marketplace efficiency.

6.3 Supplier Results and Discussion

It is important to gauge the distribution of the supply of resources to the stock, especially given that past commentary has been focused on the collections which are disseminated by large public sector suppliers. A total of 2,134 individual information commodities were identified in Phase One of the research and catalogued in Phase Two. Nearly a quarter of individual resources (22 percent) are supplied by the large public sector organisations incorporating Tourism Research Australia and its parent organisation Tourism Australia, the Department of Industry, Science and Resources, and the Australian Bureau of Statistics. This indicates that there is not a substantial concentration of resources amongst this group of suppliers in terms of absolute numbers. However, it is recognised that these suppliers have historically produced the most widely analysed and scrutinised collections.

Of interest is the contribution by the eight State and Territory Tourism Organisations (STOs). Each of these organisations maintains research units which supply commodities to the Australian TICM. The results show that STOs supplied over thirty percent of individual resources to the stock at March 2005. This observation provides somewhat of an interesting perspective since representatives from these organisations have invariably been involved in the consultative groups convened to provide commentary on the tourism information stock (see, for example, Carson & Richards, 2004; Ernst & Young, 2001).

Leaving the large public sector suppliers and the STOs aside, the results indicate that a large number of small suppliers are also engaged in the marketplace. The implications of this are numerous in terms of potential effects on marketplace efficiency. Firstly, smaller suppliers are most likely to distribute one-off or infrequently-updated resources and do so

using informal presentation channels. Consumer awareness of these resources may be low and, indeed, the supplier may be unheard of, as the results indicate. The utilisation of informal or poorly developed presentation channels, including a lower use of intermediaries relative to larger suppliers, places the onus of monitoring for updated or new resources from these suppliers on consumers. Resources from these sources are also more likely to be subject to timeliness and access issues.

Secondly, the presence of a large number of small suppliers in the marketplace may reduce the propensity for efficiency. Smaller suppliers are less likely to be able to draw on funds to conduct research projects and data collections using robust methods supported by comprehensive classifications and metadata frameworks. Hence, there are more likely to be validity and reliability issues associated with resources from these suppliers. The ranking exercise supports this with very few collections from smaller suppliers appearing in the top one-third of the ranking list (See Appendix 2).

6.4 General Discussion of Results Relative to Existing Commentary

Having identified and cross-sectioned the stock of tourism information commodities we are now in a position to make some general comparisons and observations about the results based on past commentary. Findings in Chapter Two from the analysis of existing commentary included:

- Supply to the stock is apparently generated by a few prominent public-sector suppliers;
- There is a lack of relevant data and information for small geographic areas;
- A lack of data about the size and composition of small to medium tourism businesses (SMTEs) is evident;
- The stock is subject to timeliness issues whereby information which is provided is out of date by the time it is publicly available;
- Much of the data in the stock is difficult to apply and interpret; and
- There is a lack of standardised data collections and duplication in these.

The results of the research here indicate that a portion of the commentary has been substantiated, but that in some cases the commentary must be qualified or refuted. In terms of the size and apparent concentration of the stock, the research has shown that there are substantially more suppliers than intimated in the commentary. With over 200

suppliers recorded, there is evidently great diversity in the motivations for supply, the characteristics of suppliers, and their locations. If the notion of global relevance is accepted as a basis for the inclusion of some resources in the stock, it is not surprising that this is the case.

Moreover, the testing of the stock excluded more than one-hundred collections of loosely affiliated resources or collections with one ad hoc associated resource. Despite this, the content analysis of these resources has shown them to be of strategic value to tourism entities. In this sense, it would appear the results demonstrate that past commentary has firmly underestimated the size and scope of the stock.

A lack of data for small geographic, or local, areas is perhaps the most widespread and consistent criticism from pre-existing research and consultative forums. Despite the ongoing commentary, it is difficult to establish to what extent historical influences may have driven or perpetuated commentary of this type. Traditionally, resources supplied to the Australian TICM for low-level spatial units have suffered from reliability issues (Scott, 1999). Suppliers such as the ABS have taken the approach of documenting and publishing the nature and extent of these including explanations about the limitations of output. In our testing framework, such explanations are considered in a positive light because metadata is a key adjunct to user understanding about the potential applications for individual resources.

The negative commentary about low-level data may, therefore, have been self-perpetuated, to some extent, by the willingness of suppliers, including the ABS, to produce qualifying metadata about resource and data limitations. Interestingly, the research here has identified two major national collections (the “Accommodation Data Base” from AAA Tourism and the collection “Yellow Pages Directories and Related Products” from Sensis) which are available for below-tourism region level and have previously, to the knowledge of the author, not been identified as an information resource for tourism organisations. Certainly, there has been only slight past commentary relating to these sources.

Similarly, the collections from Sensis and AAA, amongst others, provide information which is both about SMTEs and is also purposeful for application by SMTEs to strategic and business tasks. The AAA dataset, for example, can be applied to activities like competitor analysis, industry performance monitoring and product gap identification. It is

a real-time dataset in terms of timeliness as well as providing data down to postcode level. A large proportion of entities listed in this dataset can be classified as SMTEs, employing less than ninety persons (adapted from Australian Bureau of Statistics, 2003a).

A range of information collections which supply resources on the economy were identified as included in the stock because they are of relevance to SMTEs, although this association may not have been previously drawn by commentators. For example, the International Trade collection from the ABS now produces data on tourism export earnings (Australian Bureau of Statistics, 2005b). Past commentators may have failed to identify the relationship between economic indicators such as those produced in the ABS collection and tourism. Rather, the focus has been on tourism-specific data and research. What is clear is that the low level of awareness of SMTE-relevant resources has been, and seemingly continues to be, partly due to a lack of knowledge about alternative (non-tourism specific) datasets and collections.

The timeliness of resources in the stock was found to be highly variable with the median number of weeks between data collection or research activities and the public availability of these being twelve. Unfortunately there are no benchmarks to enable a direct comparison of these results with timeliness indicators for information stocks in other industries. Furthermore, the lag appears to be correlated to the size and scope of the data collection with output from, for example, the Census of Population and Housing, which collects data from every person and household in Australia, being delayed for around a year. This delay is representative of logistical aspects of the collection including processing requirements. What may substantiate the claims of the existence of timeliness issues in existing commentary is that relatively few suppliers have publicly expressed an intention to reduce this lag. Evidence of either existing or intended action to address this was found in resources for only seven collections.

Commentary to the effect that resources in the stock are difficult to apply and interpret is seemingly still quite valid. In the past, this has been viewed ostensibly as a supply-side issue which is traceable to a lack of guidance from suppliers on how to apply resources. However, it is again likely that both supply-side and consumer-related factors are contributing to this issue. While the application of information cannot occur until after its consumption (which requires exchange in the marketplace) if users are wary, perhaps based on past experience, of difficulties associated with application, or are not provided

with guidance on application, a range of pre-procurement factors come into play in relation to ascertaining the validity of resources.

Highlighting the potential magnitude of this issue, three-quarters (75.8 percent) of collections were found to be subject to validity issues. Validity represents the ability of consumers to ascertain the value of information resources relative to the information need, a vital determination on the road to procurement. This supports past commentary on the topic. Furthermore, suppliers have not taken up, on a widespread basis, opportunities to reduce the burden on consumers by providing features such as sample views (just under 35 percent). Sample views can be of several types including demonstrations of the variables available in tabular resources, example case studies highlighting possible applications for information from the collections, or a table of contents to assist in validity assessments.

The ability of information consumers to procure and apply resources which are appropriate to their needs is also dependent on their understanding and accounting for reliability issues. The results showing that almost 70 percent of collections are subject to reliability issues are not, per se, a cause for concern. All data collections are likely to be subject to reliability issues due to, for example, imperfect sampling or methodological techniques. Of the collections subject to reliability issues (91), just over half (51) provided guidance on the impacts of reliability issues for application of the data to information-related tasks.

It seems that suppliers have been averse to providing interpretive advice on reliability impacts. This may impart costs onto consumers who must try to decipher metadata on reliability, which is often of a technical nature. At least some consumers will incur time and resource costs which will encourage them to leave the marketplace on this basis. Further research is warranted to determine the reasons for this finding. It is likely, as suggested, that a lack of technical expertise on the demand-side of the TICM for interpreting metadata on reliability is common. Example of the types of interpretation required may include assessments of the impacts of relative standard errors and skills to determine how the research method employed for a collection impact on the reliability of the output for particular tasks. On the surface, suppliers are doing well at advising users of the nature of reliability problems but not of the implications for specific resource applications.

The final high-level issue prevalent in the commentary was a lack of standardisation in data collection activities as well as duplications of effort in these. This part of the commentary appears to remain highly valid and is evidently a supply-side issue. The issue of duplication is particularly interesting. State and Territory Tourism Organisations (STOs), for example, each maintain specialised research units which produce tabular-based resources with a very similar selection of content, invariably derived from the National Visitor Survey and International Visitor Survey. For example, all STOs, other than Australian Capital Tourism (ACT), produce regular 'fast facts' resources which are snapshots of the latest findings from the National Visitor Survey, International Visitor Survey and (usually) the Survey of Tourism Accommodation collections.

Duplication may be indicative of the disparate structures associated with tourism management in Australia, especially for individual destinations. STOs are funded through state and territory budgets and are naturally concerned with promoting their State or Territory's share of tourism employment and income. Duplication of this type generates both real costs and opportunity costs. While the national research body, Tourism Research Australia, does supply collections and resources with state and regional level data, these resources evidently fail to meet the needs which STOs have perceived that their users have. In terms of its impact on the TICM, duplication can potentially confuse users who are trying to decide which, from the pool of resources, to procure. Decisions must be made, for example, on whether to obtain and apply the STO resource or procure the national one and perhaps undertake some value-adding work. This brings into play a range of TICM processes including availability, validity, reliability and coverage.

All 32 collections which output tabular resources have applied frameworks or classifications to collect or output data, indicating, to some extent, that past comments on this issue may be unsubstantiated. Besides this, a similar number of research-based and non-tabular collections incorporated collection frameworks or classifications. What is unclear is whether frameworks are applied consistently over time and between collections derived from the same supplier. An argument could be made that they are not with, for example, the two largest data collections specifically for tourism, the National Visitor Survey and International Visitor Survey, being based on different collection methodologies and, to a lesser extent, different classification frameworks.

6.5 Conclusions

The results of identifying, cataloguing and testing the stock provide some incisive observations about the functioning of the TICM in Australia as well as on the relative efficiency in the movement of the stock within it. In terms of assessing existing commentary on the tourism information stock, some of the results have lent support to issues raised in the commentary while others mean that the validity of some comments come into question. The main findings in relation to the stock include that it is much larger than has been previously proposed and that a large number of smaller suppliers are engaged in the marketplace. There are notable questions about the ability of such suppliers to produce resources which can be moved efficiently in the Australian TICM.

The results suggest that leakages from the marketplace are entirely possible and, in particular, a complex range of problems may be generated for consumers because suppliers have not, as a matter of course, issued guidance about the impacts of reliability issues for the application of resources. Leakages may be caused by a combination of supply-side (presentation-related) and demand-side (ability-related) weaknesses. This suggests that communication and consultation barriers may exist between suppliers and consumers which inhibit the design, production, dissemination and exchange of information commodities that efficiently meet current information needs.

Chapter 7 - Conclusions and Ramifications

7.1 Introduction

In this chapter, the research is evaluated for its contributions to field of tourism informatics, present and future, and for its implications for policy makers, suppliers and tourism organisations. The potential for the TICM approach to model the marketplace and identify the contributions of information stocks for innovation in systems is also discussed. In addition, the potential for Information Communication Technologies (ICT) to impact on the landscape depicted by the construction and testing of the TICM model is discussed. Possible future research is identified prior to the concluding remarks.

7.2 Evaluation of the Research

The TICM instrument has been developed to address the need to model marketplace interactions which occur between suppliers of tourism information and research, consumers of these and the intermediaries who facilitate presentation and exchange process. It addresses a gap in the field of tourism informatics by detailing the structure, agents, interactions and sequential processes of the market and its components (Taylor & Puehringer, 2005). The model is readily adaptable to other sectors in which a marketplace for information resources exists and for which assessments about the relative efficiency of the marketplace, including the identification of barriers to efficiency and imposed costs, are required.

Efficiency assessments are possible through testing the known stock using the framework developed in the research. The testing framework is also transferable to the analysis of information marketplaces other than those for tourism. The Australian Institute of Health and Welfare (Australian Institute of Health and Welfare, 2005), for example have developed an information knowledgebase which catalogues the stock of health information resources, suppliers and collections. The knowledgebase could be augmented by efficiency assessments through the application, with some adaptation, of the testing framework developed here.

Limitations do exist in the framework because it has measured the relative efficiency with which individual collections can be moved around the TICM, rather than individual resources. Additionally, methods used to identify and assess the magnitude of inefficiencies are based on anticipated weaknesses in the marketplace, informed by past

commentary and by suppositions in the TICM model, instead of documented experiences of agents in the marketplace. Despite this, its contribution is significant since the results deliver substantial material with which cross-comparisons on the validity of previous commentary on the stock can be made.

The TICM has assessed the potential for inefficiencies in and leakages from the Australian marketplace on the basis of language, access, timeliness, availability, validity, reliability and coverage. We now move on to the findings in relation to these, drawing together some conclusions:

Language (specify stages) – The research indicates that the absence of a standardised tourism language affects the ability for consumers to specify their information needs and to understand the nature of the content of resources. This supports existing commentary which has proposed that tourism firms and organisations, particularly SMTEs, have difficulty in applying and interpreting secondary information-based solutions to meeting information needs. Language has not only be isolated through the research as an inefficiency in the marketplace in its own right but, because it also impacts on the perceived validity of resources, there are flow-on effects to other processes on demand-side of the TICM.

While collections from larger suppliers are more likely to incorporate forms of standardisation in discourse, the research has shown that around half the stock is comprised of resources from relatively small suppliers. These tend to interact in the marketplace infrequently to deliver results from one-off research activities or data collections. While measurements of the impact of a lack of discourse or ambiguity in meanings across collections through the research are indicative only, the results highlight the potential for this factor to prompt consumers to withdraw from the marketplace and effect leakages.

Access (seek stages) – Access mechanisms and channels have been shown, in the results of the research, to be relatively well developed. Around two thirds of collections provide direct access to experts on the collection using telephone, email, facsimile or dedicated information centres. Just fewer than ninety percent of collections facilitate either direct or indirect contact between consumers and suppliers indicating that suppliers are aware that information consumers may

require clarification, guidance and interpretive assistance on the content of their resources.

One method of further streamlining access is to provide preview, sample or table-of-contents views and metadata to convey the content of resources without the need for consumers to procure them. The research has identified that currently the deployment of this method is chiefly only by larger suppliers to the stock. The importance of efficiency in the pathways for access to suppliers warrants that more suppliers consider the use of these techniques. Hard copy explanatory brochures and product catalogues are a variation on preview-type features and are also relatively effective vehicles for the transfer of metadata on resources.

Timeliness (seek stages) – In recent months there has been significant public debate on the exact constitution of the Australian ‘tourism industry’. Two national reports, from the ABS (Australian Bureau of Statistics, 2005a) and the Productivity Commission (Australian Productivity Commission, 2005) deliver different interpretations about the composition of the industry and its contribution to the economy including employment, investment and export income. The term has been used in the research to describe the actors, in a systemic context, who interact in the delivery of goods and services to tourists and to the organisations who manage, market and monitor tourism in destinations. While it is clear is that definitional aspects are important, of equal importance is the ability to measure change, regardless of which methodologies were applied in order to obtain baseline results.

The ability to monitor and map change in a sectoral context is dependent on timely information about the size and contribution of the sector (McGrath & Moore, 2005). Tourism is widely described as an elastic industry where consumers are readily persuaded by economic, natural, social and geopolitical factors to alter their behaviour and choices (Blake & Sinclair, 2002; Sheldon, 1997). The importance of minimal time-lags for the release of information which measures such changes is obviously of significance and is growing as the demands of the knowledge economy grow. Seemingly, tourism is particularly subject to fallout from geopolitical and nature-event shocks.

Prior commentary on timeliness includes relatively widespread criticism of supplier efforts to reduce lags. The research has now provided a benchmark against which timeliness of the stock can be measured and, consequently, assessments about the past commentary can also be formed. The ‘gap’ currently stands at a median of three months; but whether inherently this is an unnecessarily large gap is open to debate. Certainly some suppliers recognise and are seeking to reduce the size of the gap. With technology-based refinements and developments in the fields of data collection, processing and outputting, it is reasonable to expect the gap to steadily be reduced or for some suppliers to focus efforts on producing more timely indicator-type resources, perhaps at the expense of other more complex and in-depth analysis.

Availability (seek stages) – The cataloguing of the stock in Phase One of the research has exposed its vulnerability in terms of availability. This is largely because a portion of suppliers are engaged by disseminating one-off commodities which are not part of ongoing research programs. To add to the problem, some resources which are updated regularly have been subject to changed methodological bases. This is not all bad news because methodological changes can result in improved reliability and coverage for collections. However, breaks in series place a burden on consumers who must assess the impacts of these on their ability to compare information sourced from before the break to that which is applied afterwards.

Fortunately, larger suppliers like the ABS and Tourism Research Australia, are mindful of this burden and they offer explanatory metadata about the nature and implications of changes to collection and research methods as well as to frameworks. The timing of breaks in series is also important so that transitions to new frameworks are smoothed. For example, concurrent major changes to collections from two major suppliers should be avoided. Hence, major changes to availability can be beneficial by reducing reliability and coverage issues but must be accompanied by appropriate metadata which explains the implications in terms of the application of data and research both past and future to information-based tasks.

Validity and Reliability (validate stages) – The inability of consumers to ascertain the validity and reliability (a determining factor in the overall validity) of individual resources is perhaps the main issue arising from both the commentary and the research results. The problem is traceable to weaknesses on both sides of the Australian TICM. Consumers have been shown, through existing studies, to be lacking in the skills and techniques required to make validity determinations. Meanwhile, according to the current stock, suppliers have failed to generate metadata which guides consumers on potential applications of the resource and on the impact of reliability issues for these.

Impacts of validity and reliability are possibly far reaching and include: a mismatch in information needs to the commodities which are procured; the application of information to tasks which require more reliable data; leakages - where consumers find the burden of determining validity and the time costs associated with it overwhelming and exit the marketplace; and misconceptions about the overall ability of the stock to meet the needs of the industry.

A possible starting point for remedying the leakages associated with validity and reliability aspects is to propose a minimum metadata set to be adopted by suppliers. This would include requirements for the inclusion of metadata on the validity of resources relative to particular tasks. Co-developed language standards may also be required to ensure that the messages contained in metadata are understood by the wider information consumer community.

Coverage (validate stages) – The assessment of findings on coverage must, in a similar way to the timeliness variables, be tempered by the knowledge that the research provides the first holistic scan of the tourism information stock in relation to these aspects. But with such prevalence in the commentary on the inadequacy of the stock to deliver low-level spatial analysis and data, further research would be beneficial for measuring changes to the coverage indices which were used here. It is likely that, regardless of improvements to the coverage of the stock, comments will persist since there will always exist gaps in the spatial coverage of information due to the costs associated with conducting robust low-level data collections and research.

Policy makers have implicitly recognised the importance of coverage to actors in tourism systems. The Tourism White Paper (Department of Industry Science and Resources, 2003) lays out the Government's commitment to enhancing the coverage of three of the major national tourism collections – the Survey of Tourist Accommodation, National Visitor Survey and International Visitor Survey. These enhancements are currently being implemented and it will be interesting to see what impact this has on the perception amongst commentators of the suitability of the coverage of the stock.

7.3 Implications for Tourism Informatics Practitioners and Others

The research suggests a method and an instrument for examining information marketplaces. The testing of these and subsequent results validate the TICM's potential for assessing the efficiency of information stocks and for identifying weaknesses in marketplace dissemination and exchange processes. Importantly, the research proposes a construct for mapping the activities and exchanges which occur within information marketplaces. Some of the identifiable benefits of the TICM approach include:

- Its contribution to meeting gaps in the field in terms of providing a method which holistically examines and dissects the behaviour of information marketplaces;
- Its cognisance of some of the unique characteristics of information as a commodity; and
- Its ability to model the dissemination and exchange processes for an unpriced commodity as TICM processes are independent of price.

Testing of the Australian TICM has necessitated that the entire stock of tourism information resources be identified and catalogued. This was the first comprehensive attempt to list and catalogue the entire range of secondary tourism resources for Australia. The catalogue provides an important baseline for measuring the ability of firms and other tourism organisations to draw on the secondary information research research-based content as inputs to knowledge processes.

Cataloguing the stock revealed that its constitution is much broader than past commentary indicates, especially in terms of suppliers as a large number of relatively small suppliers were identified. The notion of global relevance adds an important perspective on the issue

of the constitution of information stocks, regardless of the industry. Global relevance challenges informatics practitioners to adopt lateral views on the choice sets of resources for industries and their sectors. It also identifies the need for tourism firms and organisations to be assisted in their capacity to interpolate analysis from globally relevant resources for tourism.

Cataloguing the stock in the research has also provided a system of metadata which can be utilised and adapted by tourism and other information experts. Effective cataloguing of information stocks is a necessary pre-cursor for assessments about their effectiveness and appropriateness at a given point in time. The techniques employed here, including the system of metadata which was constructed for the research, are readily adaptable to other sectors. Tourism information suppliers can assist in streamlining marketplace interactions by providing the metadata elements used for cataloguing the stock with the resources they disseminate. This would be an excellent first-step towards resolving key barriers to efficiency in the TICM.

The TICM model itself has relevance to any information arena where barriers and inefficiencies in the transfer of information from suppliers to consumers exist. Here, the model can be seen as a vehicle for identifying and gauging the relative extent of marketplace problems, rather than as a panacea for the problems themselves. Ultimately, the TICM is a descriptive tool which has mapped the landscape of secondary tourism informatics at a point in time, albeit the first of these. It is a mechanism for understanding the landscape and identifying areas for improvement.

7.4 Policy Implications

As well as addressing research gaps and augmenting existing work in the field, the TICM approach presents policy makers with some important considerations as they seek to prudently invest resources for knowledge-based innovation in tourism. The current public policy climate emphasises the Government's commitment to the creation and application of information to stimulate the growth of the Industry through developing new and niche markets (Howard, 2003). The biggest suppliers of tourism research and information in Australia, the Australian Bureau of Statistics and Tourism Research Australia, are public organisations who invest millions of dollars each year to provide research output. The Tourism White Paper (Department of Industry Science and Resources, 2003) outlines the

extent of the investment and commitment on behalf of the government. While the Paper commits funding to research and information generation, it says little about existing problems in the dissemination and uptake of such resources. The TICM model brings forward practical issues for consideration.

The results of testing here indicate that most of the potential leakages in the Australian TICM originate from a combination of supply-side issues, the characteristics of resources themselves, and from a lack of ability on the demand-side to work through processes in the TICM. On the supply-side, public sector organisations, as leaders in the field, can address these findings by encouraging a common discourse, providing appropriate metadata and offering sample views to reduce the seeking burden on consumers. They can work to improve access points and mechanisms and should develop interpretive materials on the valid application of resources. At a superficial level, at least, the White Paper seems to indicate Government recognition of the symptoms but also an inability to pinpoint the causes. The research here proposes that the causes are at least in part related to inefficiencies in the Australian TICM.

There is also a role for policy makers to encourage consultative-based solutions which work at both ends of the problem to reduce potential leakages over time. Naturally, a long-term commitment is required, since capacity building the industry for recognising the importance of secondary information resources and then developing skills to apply these is an ongoing requirement.

7.5 Implications for Innovation in Tourism Systems

The potential for the tourism stock to input to innovation in tourism systems has been shown through the research to be restricted by weaknesses in the tourism information stock and the inability of its users to maximise its innovative potential. The supposition that knowledge and its effective management is, for modern economies, a key factor of production for establishing and maintaining sectoral competitiveness is now widespread (for example McAdam & Reid, 2001; Nelson, 2000; Shipario & Varian, 1999). Given this, sectors such as tourism are perhaps best served by information stocks which are continuously evolving, are adaptive to competitive pressures and are responsive to economic shocks. In Australia, however, there is no evidence which arises from the research here that suppliers or policy makers have embraced this concept or, indeed, have

even recognised a need to holistically assess the stock for its innovative potential at a point in time.

In Australia there are also no identifiable mechanisms or processes for responding to information needs arising from events which impact on the economic, social or environmental contributions of tourism. A number of recent geo-political shocks overseas have impacted on the tourism landscape in Australia. For example, post-September 11, the number of international visitors to Australia fell, while domestic tourism numbers to many destinations rose (Bureau of Tourism Research, 2003a; 2003b). While resources outlining possible impacts of this event were produced by overseas suppliers (for example, World Tourism Organisation, 2002), there was no identified contribution to the stock in Australia. In particular the possible medium to long-term impacts and implications for destinations, tourism firms and tourism product management were not conveyed. This is perhaps indicative of the inflexibility of the stock where suppliers seemingly contribute based on perceived needs of users at the time, or where mechanisms are not sufficiently developed to allocate responsibility for identified gaps in the stock.

At least part of this problem may lie in the fragmented structure of tourism management and planning in Australia (see, for example, Centre for Regional Tourism Research, 2003; Cooke & Morgan, 1998; Jenkins, 2000). Clear delineation in responsibilities for information outputs between agents in the system, such as STOs, Regional Tourism Organisations and Local Tourism Organisations, seemingly does not exist. Indeed, the cataloguing of the stock demonstrates a degree of overlap and duplicity in the content of resources in the stock, indicating that no over-arching vision for the composition of the stock exists. The ability of tourism systems to adapt and apply information resources to cumulatively develop knowledge or to generate new knowledge is therefore restricted by these constraints.

In Chapter Two the composition of tourism supply in Australia was identified as highly skewed towards provision of product by SMTEs. It was suggested by past commentary, and has been supported by the research, that these agents face barriers to efficiently obtaining and applying information resources for innovative processes. It is interesting, therefore, that the White Paper has focused heavily on adjusting the stock, possibly at the expense of capacity building SMTEs to maximise the innovative potential of the existing stock. The two major information stock-related outcomes announced in the White Paper

were to increase the scope and sample of the Survey of Tourist Accommodation and to re-structure the Federal tourism information suppliers (Department of Industry Science and Resources, 2003). The former does directly address issues of availability and reliability of data for small areas, albeit for accommodation sector only. There is little evidence to date, however, that the latter has resulted in any improvements or net contributions to the stock

While there is a perpetual focus on the stock, the need for addressing consumer issues such as the lack of perceived value of information, the lack of skills to transform information into knowledge and the lack of ability to obtain resources efficiently (see Sections 1.4 and 1.5), nevertheless remains. There is an expectation that improving the stock will, de-facto, lead to innovation in tourism product development and in capturing large shares of niche markets. This approach not only ignores the relative abilities of consumers to maximise the innovative potential of the stock, but also downplays other systemic requirements for innovation which have been detailed in the literature (see Section 1.4) especially those of economic competence, entrepreneurship and networks.

7.6 The Potential for ICT to Address Marketplace Inefficiencies

Given that the research approach has utilised Internet Mediated Research and has been linked to the development of the Decipher online system (see section 5.3), it is worthwhile to consider how the increasing use of Information Communications Technologies (ICT) in managing information marketplaces may affect the TICM. This adds to the work of Carson, Taylor and Richards (Carson et al., 2003) who have suggested that ICT systems can help to facilitate innovation through the presentation of information resources in tourism systems.

ICT systems have for some time now been acting as intermediaries in the tourism information marketplace. Their potential for improving efficiency in the dissemination and exchange processes is now being widely recognised (Sheldon, 1997). Indeed, in some sense, the widespread uptake of ICT systems for information dissemination can be seen as an innovation in its own right. A small suite of online tourism information systems have been developed around the world. Each offers the capacity for technology-based solutions to the challenge of placing appropriate business intelligence in the hands of tourism enterprises and organisations. As a group, these systems demonstrate the capacity for ICT

to address or minimise leakages in the TICM. The systems developed to date are described in the table below (Table 7.1) and the main features of each are briefly summarised.

| ICT System | Features and strengths |
|---|---|
| Decipher (Australia) (http://www.decipher.biz) | <ul style="list-style-type: none"> ▪ Information from over 200 suppliers. ▪ Delivered in context through intelligent user pathways. ▪ Dynamic report-building and resource tracking functionality. |
| Tourism Studies Austria: (http://www.studien.at) | <ul style="list-style-type: none"> ▪ Database containing studies, research reports and conference reports. ▪ Searchable in multiple languages on title, keywords, summary, date of completion, etc. |
| Canadian Tourism Exchange: (http://www.canadatourism.com/en/ctc/ctx/ctx-ind_watch/tourism_stats/index.cfm) | <ul style="list-style-type: none"> ▪ Business-to-business network for the Canadian tourism industry. ▪ Access to a series of applications offering significant added value to its members. ▪ Access to a series of html reports, statistical tables, publications, online professional development courses and events calendars. |
| Tourism Research Liaison Group of the United Kingdom – StarUK: (http://www.staruk.org.uk/) | <ul style="list-style-type: none"> ▪ Delivers research reports and statistics in PDF and html formats. |
| Tourism Studies Institute Spain: (www.iet.tourspain.es) | <ul style="list-style-type: none"> ▪ Users can search for tables and PDF reports. ▪ Sophisticated tools for manipulating tables. |
| Tourism Research Council New Zealand (http://www.trcnz.govt.nz/) | <ul style="list-style-type: none"> • Delivers publications and standard tables in html, PDF, and Citrix data base format. • Index of research and publications from other sources. • Resources organised according to topic areas. |

Table 7.1 – Summary of Existing Online Tourism Information Systems.

Table 7.2 summarises the potential contributions of these online systems to reducing marketplace inefficiencies the TICM.

Figure removed due to copyright restrictions

Table 7.2 Potential of ICT Systems to Resolve TICM Issues (Source: Taylor, 2005)

While ICT systems may address clear market needs and can reduce the burden of the presentation, specify, seek and validate processes, their actual success is dependent on the widespread diffusion of the technologies (Carson et al., 2003). Additionally, real benefits

for firms and other tourism organisations may only be realised once the technologies are incorporated into business processes and strategic management practices. A large range of research and literature suggests that the successful adoption of technologies in economies depends on a complex range of inter-dependent processes including the sourcing and engagement of 'early adopters' or 'champions'. These are firms, individuals and organisations which are willing to accept the risks associated with new technology adoption in order to further their diffusion (see, for example, Breschi & Malerba, 1997; Fonseca, 2002; Utterback, 1994). Therefore, the availability of technologically-based solutions to information production and exchange in tourism systems may not in itself address the demand and supply-side issues raised here in the research.

7.7 Further Research

The research and results here are an ideal springboard for further research which quantifies the extent of leakages in the Australian and other TICMs. Possible projects include a pilot survey of tourism firms and organisations with a view to identifying where in the TICM consumers withdraw from the marketplace and demonstrating the primary causes. Primary research could also be undertaken to document the actual experiences of agents (suppliers, intermediaries and consumers) in the TICM. This would enable detailed mapping of TICM processes as well as identifying the appropriateness of the model and its assumptions.

The research here has identified and crudely measured the extent of leakages or inefficiencies primarily relating to the supply side of the marketplace (Section 5.6). The potential for demand-related issues impacting on the TICM and innovation has been recognised but not researched in any great detail here. There is an ongoing need for research which assesses and measures the capacity of the demand side to routinely obtain and apply information to business processes and tasks. Additionally, research on how innovation in tourism comes about is warranted, particularly to identify or quantify the role of secondary information.

It would also be fruitful to replicate the research in Phase One in order to re-produce the catalogue of tourism information resources. Analysis could then be made on the impact of online systems, government policy and supplier efforts to streamline operations in the marketplace. In the context of the Australian marketplace, the impact of the Decipher

system will be of particular interest in years to come and could be monitored using some components of the research here.

7.8 Conclusion

The model of the TICM which has been proposed and the cataloguing of the presented Australian secondary tourism information resources has shown that at least some of the stock is able to address the information needs of consumers at a specific time. Given that the supply of commodities is broader than has previously been suggested, the research points to the need to address leakages through improved dissemination and exchange processes. Leakages from the Australian TICM have prevailed despite the documentation of a selection of these in research activities to date. It also appears that changes to dissemination methods, such as through the employment of ICT will not, in itself, resolve leakages because of the characteristics of the information resource themselves. These issues are likely to have inhibited the development of tourism systems as systems of innovation (SOI) which accumulate and apply innovative responses, in the form of product, structural or infrastructural innovations, for which the efficient production and distribution of knowledge has been proposed as a key systemic requirement.

Appendix 1 – NTIM Keywords Used to Identify Resources (source: Decipher, 2005)

| Keyword Name | Parent Keyword | Keyword Topic |
|---|------------------------------|----------------------------|
| Accommodation | | Product |
| Accreditation, standards and guidelines | | Enterprise |
| Activities | | Visitor Experience |
| Activities based | Market segments | Visitor Characteristics |
| Actual Forecasts | Forecasts | The Destination |
| Air Transport | Transport provider | Product |
| Attractions | | Product |
| Backpackers or visitor hostel | Accommodation | Product |
| Bed and breakfast or guesthouse | Accommodation | Product |
| Brochures | Consumer information sources | Marketing and Distribution |
| Bus | Transport provider | Product |
| Business and other events | | Product |
| Business travellers | Market segments | Visitor Characteristics |
| Caravan park or camping | Accommodation | Product |
| Characteristics | | Enterprise |
| Consumer information sources | | Marketing and Distribution |
| Corporate information | Government agencies | Tourism agents |
| Cruise | Transport provider | Product |
| Cultural | Attractions | Product |
| Cultural | Impacts of tourism | The Destination |
| Decipher Basic Business Plan™ | Enterprise Management | Enterprise |
| Demographics | Market segments | Visitor Characteristics |
| Destination Management | | The Destination |
| Drive | Transport provider | Product |
| Economic | Impacts of tourism | The Destination |
| Economic | Influences on travel | Visitor Characteristics |
| Education | | Tourism agents |
| Education agencies | Education | Tourism agents |
| Employment | | Enterprise |
| Enterprise Management | | Enterprise |
| Enterprise Planning | | Enterprise |
| Environmental | Impacts of tourism | The Destination |
| Environmental | Influences on travel | Visitor Characteristics |
| Events | Attractions | Product |
| Expectation | | Visitor Experience |

| Keyword Name | Parent Keyword | Keyword Topic |
|--|------------------------------|----------------------------|
| Expenditure | | Visitor Experience |
| Financial management | Enterprise Management | Enterprise |
| Food and wine | Attractions | Product |
| Forecasts | | The Destination |
| Future event(s) | Influences on travel | Visitor Characteristics |
| Future indicators | Forecasts | The Destination |
| Government agencies | | Tourism agents |
| Hospitality | | Product |
| Hotel, motel or resort | Accommodation | Product |
| Human resource management | Enterprise Management | Enterprise |
| Impacts of tourism | | The Destination |
| Industry associations | | Tourism agents |
| Industry News | | Tourism agents |
| Influences on travel | | Visitor Characteristics |
| Information management | Enterprise Management | Enterprise |
| Infrastructure | Impacts of tourism | The Destination |
| Internet | Consumer information sources | Marketing and Distribution |
| Investment schemes | | Tourism agents |
| Legislation and policy | Government agencies | Tourism agents |
| Length of stay | | The Trip |
| Local and regional tourism organisations | | Tourism agents |
| Local Data | | Tourism agents |
| Local government | | Tourism agents |
| Market segments | | Visitor Characteristics |
| Marketing campaigns | | Marketing and Distribution |
| Marketing management | Enterprise Management | Enterprise |
| Methodology | Forecasts | The Destination |
| Natural | Attractions | Product |
| Natural and cultural assets | | The Destination |
| Newspapers, magazines or books | Consumer information sources | Marketing and Distribution |
| Operations management | Enterprise Management | Enterprise |
| Other information sources | Consumer information sources | Marketing and Distribution |
| Other land transport | Transport provider | Product |
| Other sea transport | Transport provider | Product |
| Other types of accommodation | Accommodation | Product |
| Past experiences | | Visitor Characteristics |
| Performance indicators | Enterprise Management | Enterprise |
| Place of origin | | Visitor Characteristics |

| Keyword Name | Parent Keyword | Keyword Topic |
|-------------------------------|------------------------------|----------------------------|
| Places visited | | The Destination |
| Political | Influences on travel | Visitor Characteristics |
| Population profile | | The Destination |
| Pricing | | Product |
| Product based | Market segments | Visitor Characteristics |
| Product distribution | | Marketing and Distribution |
| Product mix | | The Destination |
| Propensity to travel | | Visitor Characteristics |
| Purpose of Visit | | Visitor Experience |
| Rail | Transport provider | Product |
| Religious | Influences on travel | Visitor Characteristics |
| Research agencies | | Tourism agents |
| Satisfaction | | Visitor Experience |
| Seasonality | | The Trip |
| Self-catering accommodation | Accommodation | Product |
| Shopping | | Product |
| Social | Impacts of tourism | The Destination |
| Social | Influences on travel | Visitor Characteristics |
| Socio-economic | Market segments | Visitor Characteristics |
| Special interest | Market segments | Visitor Characteristics |
| Sporting and gaming | Attractions | Product |
| Stopovers | | The Trip |
| Television or radio | Consumer information sources | Marketing and Distribution |
| The economy | | The Destination |
| Theme parks | Attractions | Product |
| Tour operators | | Product |
| Tourism education | Education | Tourism agents |
| Tourism intermediaries | Consumer information sources | Marketing and Distribution |
| Tourism Plans | | Tourism agents |
| Tourism research | | Tourism agents |
| Transport | | The Trip |
| Transport provider | | Product |
| Travel Agency | | Product |
| Type of tour party | | Visitor Experience |
| Visiting friends or relatives | Market segments | Visitor Characteristics |
| Visitor information centres | | Marketing and Distribution |
| Word of mouth | Consumer information sources | Marketing and Distribution |
| Yield | | Enterprise |

Appendix 2 – Ranking of Collections According to Scoring System

| Rank | COLLECTID | COLLNAME | SUPPLIER | Score |
|------|-----------|---|--|-------|
| 1 | 71 | Survey of Tourist Accommodation | Australian Bureau of Statistics | 27 |
| 2 | 358 | Building Approvals | Australian Bureau of Statistics | 25 |
| 3 | 69 | Census of Population and Housing | Australian Bureau of Statistics | 24 |
| 4 | 326 | Retail Trade | Australian Bureau of Statistics | 23 |
| 5 | 288 | Regional Statistics | Australian Bureau of Statistics | 23 |
| 6 | 145 | Regional Population Growth | Australian Bureau of Statistics | 23 |
| 7 | 298 | Labour Price Index | Australian Bureau of Statistics | 23 |
| 8 | 4 | Consumer Price Index | Australian Bureau of Statistics | 23 |
| 9 | 324 | Australian Economic Indicators | Australian Bureau of Statistics | 23 |
| 10 | 31 | Australian Demographic Statistics | Australian Bureau of Statistics | 23 |
| 11 | 80 | Labour Force Survey | Australian Bureau of Statistics | 22 |
| 12 | 110 | Sales of Australian Wine and Brandy by Winemakers | Australian Bureau of Statistics | 21 |
| 13 | 232 | International Trade | Australian Bureau of Statistics | 21 |
| 14 | 62 | Australian Business Expectations | Australian Bureau of Statistics | 21 |
| 15 | 214 | Voluntary Work | Australian Bureau of Statistics | 20 |
| 16 | 287 | Overseas Arrivals and Departures | Australian Bureau of Statistics | 20 |
| 17 | 70 | Labour Costs | Australian Bureau of Statistics | 20 |
| 18 | 267 | Business Indicators | Australian Bureau of Statistics | 20 |
| 19 | 272 | Balance of Payments and International Investment Position | Australian Bureau of Statistics | 20 |
| 20 | 364 | Australian Social Trends | Australian Bureau of Statistics | 20 |
| 21 | 253 | Regional Summaries | Tourism Queensland | 20 |
| 22 | 337 | General Social Survey | Australian Bureau of Statistics | 19 |
| 23 | 2 | Clubs, Pubs, Taverns and Bars | Australian Bureau of Statistics | 19 |
| 24 | 357 | Australia Wine and Grape Industry | Australian Bureau of Statistics | 19 |
| 25 | 25 | AVSTATS | Bureau of Transport and Regional Economics | 19 |
| 26 | 84 | Regional Updates | Tourism Queensland | 19 |
| 27 | 177 | Latest International Findings | Tourism Western Australia | 19 |
| 28 | 266 | Latest Domestic Findings | Tourism Western Australia | 19 |
| 29 | 271 | Small Business in Australia | Australian Bureau of Statistics | 18 |
| 30 | 284 | National Regional Profiles | Australian Bureau of Statistics | 18 |
| 31 | 285 | Business Use of Information Technology | Australian Bureau of Statistics | 18 |

| Rank | COLL-ECTID | COLLNAME | SUPPLIER | Score |
|-------------|-------------------|--|-------------------------------------|--------------|
| 32 | 320 | Accommodation Industry, Australia | Australian Bureau of Statistics | 18 |
| 33 | 223 | Australian Market Insights | Westpac Banking Corporation | 18 |
| 34 | 329 | Travel Agency Services Industry | Australian Bureau of Statistics | 17 |
| 35 | 176 | Business Operations and Industry Performance | Australian Bureau of Statistics | 17 |
| 36 | 236 | Tourism Indicators | Australian Bureau of Statistics | 16 |
| 37 | 82 | Green Globe 21 Newsletter | Green Globe 21 | 16 |
| 38 | 268 | Bookshop - Economic Models | Sustainable Tourism CRC (STCRC) | 16 |
| 39 | 289 | Bookshop - Corporate Titles | Sustainable Tourism CRC (STCRC) | 16 |
| 40 | 296 | National Visitor Survey | Tourism Research Australia | 16 |
| 41 | 303 | International Visitor Survey | Tourism Research Australia | 16 |
| 42 | 304 | Tasmanian Visitor Survey | Tourism Tasmania | 16 |
| 43 | 306 | Regional Tourism Development Plans | Tourism Victoria | 16 |
| 44 | 308 | Research | Tourism Victoria | 16 |
| 45 | 316 | Holiday Tracking Survey (HTS) | Roy Morgan Research | 15 |
| 46 | 108 | Tourism Index | South Australian Tourism Commission | 15 |
| 47 | 206 | International Profiles | South Australian Tourism Commission | 15 |
| 48 | 295 | Bookshop - Protected Area Management | Sustainable Tourism CRC (STCRC) | 15 |
| 49 | 341 | Bookshop - Partner Titles | Sustainable Tourism CRC (STCRC) | 15 |
| 50 | 238 | Bookshop - Papers | Sustainable Tourism CRC (STCRC) | 15 |
| 51 | 292 | Bookshop - Other | Sustainable Tourism CRC (STCRC) | 15 |
| 52 | 293 | Bookshop - Kits | Sustainable Tourism CRC (STCRC) | 15 |
| 53 | 312 | Bookshop - Information Technology | Sustainable Tourism CRC (STCRC) | 15 |
| 54 | 41 | Bookshop - Feature Titles | Sustainable Tourism CRC (STCRC) | 15 |
| 55 | 65 | Bookshop - Event Management | Sustainable Tourism CRC (STCRC) | 15 |
| 56 | 270 | Bookshop - Environmental Systems | Sustainable Tourism CRC | 15 |

| Rank | COLLECTID | COLLNAME | SUPPLIER | Score |
|------|-----------|--|--|-------|
| | | | (STCRC) | |
| 57 | 332 | Bookshop - Destination Management | Sustainable Tourism CRC (STCRC) | 15 |
| 58 | 333 | Regional Tourism Profiles | Tourism NSW | 15 |
| 59 | 334 | Tourism and the Economy | Tourism Queensland | 15 |
| 60 | 335 | 2020 Vision | World Tourism Organisation | 15 |
| 61 | 336 | Decipher in Action Case Studies | Decipher Technologies | 14 |
| 62 | 301 | Fact Sheets | Northern Territory Tourist Commission | 14 |
| 63 | 235 | Regional Profiles | South Australian Tourism Commission | 14 |
| 64 | 252 | Bookshop - Wildlife Tourism | Sustainable Tourism CRC (STCRC) | 14 |
| 65 | 269 | International Market Profiles | Tourism Australia | 14 |
| 66 | 297 | Regional Tourism Activity Monitor Resources | Tourism Queensland | 14 |
| 67 | 309 | International Tourism Resources | Tourism Queensland | 14 |
| 68 | 313 | TRA Online Publications | Tourism Research Australia | 14 |
| 69 | 338 | Forecasts | Tourism Research Australia | 14 |
| 70 | 105 | Tourism Accommodation Development Register (TADR) | Tourism Western Australia | 14 |
| 71 | 175 | Westpac Australian Weekly | Westpac Banking Corporation | 14 |
| 72 | 356 | Local Government Newsletter | Australian Bureau of Statistics | 13 |
| 73 | 204 | Local Government Web Sites | Australian Regional Tourism Network | 13 |
| 74 | 233 | Word around | South Australian Tourism Commission | 13 |
| 75 | 237 | Market Snapshots | Tourism Australia | 13 |
| 76 | 241 | Research Reports | Tourism NSW | 13 |
| 77 | 243 | Regional Tourism Plans | Tourism NSW | 13 |
| 78 | 244 | Tourism Expenditure by Domestic Visitors in Australia | Tourism Research Australia | 13 |
| 79 | 245 | Regional Statistics - Experience Perth | Tourism Western Australia | 13 |
| 80 | 246 | Regional Statistics - Australia's South West | Tourism Western Australia | 13 |
| 81 | 247 | Regional Statistics - Australia's North West | Tourism Western Australia | 13 |
| 82 | 248 | Regional Statistics - Australia's | Tourism Western Australia | 13 |

| Rank | COLLECTID | COLLNAME | SUPPLIER | Score |
|------|-----------|---|---|-------|
| | | Golden Outback | | |
| 83 | 249 | Regional Statistics - Australia's Coral Coast | Tourism Western Australia | 13 |
| 84 | 250 | IMPACT | Department of Industry, Tourism and Resources | 12 |
| 85 | 251 | Business News from the Business Entry Point | Business Entry Point | 12 |
| 86 | 291 | Northern Territory Travel Monitor | Northern Territory Tourist Commission | 12 |
| 87 | 305 | Tourism and Travel Market Insights | Roy Morgan Research | 12 |
| 88 | 362 | Strategic Edge | South Australian Tourism Commission | 12 |
| 89 | 133 | Industry Updates | Tourism Australia | 12 |
| 90 | 240 | Market Profiles | Tourism NSW | 12 |
| 91 | 242 | Visitor Surveys | Tourism Queensland | 12 |
| 92 | 310 | Tourism Queensland News | Tourism Queensland | 12 |
| 93 | 311 | Sustainable/Environmental Tourism Resources | Tourism Queensland | 12 |
| 94 | 315 | Special Interest Tourism Resources | Tourism Queensland | 12 |
| 95 | 317 | Destination Management Resources | Tourism Queensland | 12 |
| 96 | 322 | Aviation Resources | Tourism Queensland | 12 |
| 97 | 51 | Tourism talk | Tourism Tasmania | 12 |
| 98 | 29 | Travelbiz Breaking News | Travelbiz.com.au | 12 |
| 99 | 52 | Accommodation Data Base | AAA Tourism | 11 |
| 100 | 19 | Australian Tourism Satellite Account | Australian Bureau of Statistics | 11 |
| 101 | 30 | Passenger Terminal Data | Cairns Port Authority | 11 |
| 102 | 42 | NTTC news | Northern Territory Tourist Commission | 11 |
| 103 | 49 | Headline News | Skytrax | 11 |
| 104 | 354 | Marketing Opportunities and Guides | Tourism Australia | 11 |
| 105 | 79 | essentials | Tourism Australia | 11 |
| 106 | 20 | e-newsletter | Tourism NSW | 11 |
| 107 | 33 | Business Information Fact Sheets | Tourism NSW | 11 |
| 108 | 35 | Newsletter | Tourism Victoria | 11 |
| 109 | 302 | Market Profiles | Tourism Western Australia | 11 |
| 110 | 327 | Westpac Index of Consumer Sentiment | Westpac Banking Corporation | 11 |
| 111 | 328 | Australian Local Government News | Australian Local Government Association | 10 |

| Rank | COLLECTID | COLLNAME | SUPPLIER | Score |
|-------------|------------------|--|---|--------------|
| 112 | 24 | ATEC Media Centre | Australian Tourism Export Council | 10 |
| 113 | 26 | Yellow Pages« directories and related products | Sensis Pty Ltd. | 10 |
| 114 | 28 | info@crctourism | Sustainable Tourism CRC (STCRC) | 10 |
| 115 | 38 | Monthly Market Updates | Tourism Australia | 10 |
| 116 | 44 | Fact Sheets | Tourism Australia | 10 |
| 117 | 53 | Food and Wine Tourism | Tourism NSW | 10 |
| 118 | 300 | Specialised Statistics | Tourism Western Australia | 10 |
| 119 | 21 | WTO News | World Tourism Organisation | 10 |
| 120 | 37 | Tourism on the Move | Department of Industry, Tourism and Resources | 9 |
| 121 | 48 | Star News | AAA Tourism | 9 |
| 122 | 39 | Cafes and Restaurants Industry | Australian Bureau of Statistics | 9 |
| 123 | 22 | BTRE Domestic Airfare Survey | Bureau of Transport and Regional Economics | 9 |
| 124 | 23 | Fast Facts | South Australian Tourism Commission | 9 |
| 125 | 34 | Destination Development Strategies | Tourism Western Australia | 9 |
| 126 | 40 | Online Newsletter | Inbound Tourism Studies Centre | 8 |
| 127 | 45 | International News | Tourism NSW | 8 |
| 128 | 46 | Marketing Resources | Tourism Queensland | 8 |
| 129 | 47 | In touch | Tourism Western Australia | 7 |
| 130 | 32 | ATEC International Tourism Index | Australian Tourism Export Council | 6 |
| 131 | 27 | Datalink | Australian Tourism Research Institute | 6 |
| 132 | 50 | Fact Sheets | Wet Tropics Management Authority | 6 |

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