CHAPTER 6: CONCLUSION

Chapter 6: Overview

In this chapter the researcher will briefly summarise the findings about information auditing. Selective characteristics of financial auditing will be highlighted to show how these can be used in support of information auditing. The researcher will come to a conclusion in response to the Statement of the problem (cf. Chapter 1). Finally, a few comments will be made about the future of information auditing.

1. Introduction

The purpose of this study was to investigate the possibility (and/or desirability) of developing a standardised methodology for information auditing – such as is used for financial auditing. This is based on the questions raised by Robertson (1994:36). He maintains that if a standardised information audit methodology and procedure is developed according to the example set by financial audits, the future might be different from what any information scientist could have expected. For example: Imagine a scenario where an information auditor evaluates (according to a set of standardised criteria) the effectiveness with which an organisation has managed/manages its information resources. On determining that no major problems exist the auditor issues a certificate to state that the organisation "manages its information resources correctly and efficiently and in accordance with established Standards, complying with best practice at that time". In order for the above scenario to become reality, it is imperative that properly qualified information auditors should be trained, preferably by means of acknowledged training programmes and professional examinations.

2. The information audit

2.1   The need for an information audit

Firstly, the researcher has determined that it is essential for organisations to perform information audits. This is because "[i]nformation permeates all organizations" (McPherson, 1994:203) or as stated by Orna (1990:46): "... information pervades the whole organization and is not the sole domain of the library or information scientist".

2.2   The main aims of an information audit

The main aims of an information audit were identified as follows (cf. Chapter 4):

- Identifying organisational information resources

Underwood (1994:61) defines an information resource as including published material, semi-published material as well as unpublished material. When identifying organisational information resources, personal information management systems should not be ignored. Examples of these include files, address books, lists of contacts, documents kept in staff's offices and also the personal knowledge of staff.[1] Information resources can also be stored in various formats, e.g. conventional mediums such as print and paper, and increasingly in electronic form (Underwood, 1994:61).

- Determining organisational information needs

It is necessary to determine what information the staff in an organisation need in order to perform their daily tasks optimally. So-called "information gaps" can be identified, i.e. where information resources needed for a specific task are not available in or through the organisation (Underwood, 1994:61).

Both these aims focus on the potential (value) of information to an organisation (Underwood, 1994:61).

---

[1] The latter touches upon aspects typically included in the knowledge audit.

The researcher wants to add a third aim of an information audit, i.e. to make recommendations for the effective management of organisational information resources.

The scope of an organisational information audit typically includes the following:

- Identifying all the organizational information resources
- Determining how information is used in the organisation
- Determining the costs and values of the information function (Orna, 1990:29).

2.3   Lack of standardisation

There seems to be agreement amongst authors who write about information auditing, that currently no standardised information audit methodology exists (cf. Swash, 1997:314; Robertson, 1994:35; Buchanan & Gibb, 1998:36). Haynes (1995:30) confirms this by stating that information auditing has been performed in various different ways in different environments over the years. This has also become clear through the research that was done for this dissertation. The differences in methodologies are clearly illustrated by the comparison of different methodologies at the end of Chapter 5. Robertson (1994: 34)states that "[a]t present, information audits are usually conducted as specific projects to address particular issues", e.g. mergers, introduction of new information technology into an organisation etc.

Despite the lack of a standardised methodology the information audit remains an important tool for information management (Dubois, 1995:20). Riley (1975:25) notes that structured information audits are rarely performed, but that information should be evaluated in this way in more environments more frequently – hereby once again stressing the importance of performing information audits.

2.4   A standardised information audit methodology

The problem that the researcher found with the majority of information audit methodologies that are discussed in the literature are verbalised by Buchanan & Gibb (1998:36): "…very few of the methods proposed or discussed go beyond basic frameworks which require further development." Furthermore "…many are characterised by a very definite purpose and scope which makes their universal adoption difficult."

Furthermore the researcher found that none of the information audit methodologies that were studied and discussed in Chapter 5 are sufficient on to its own. Buchanan & Gibb (1998:40) came to the same conclusion: "It is apparent from this review that no single information audit methodology can provide a complete information audit solution and that none can fully fulfil the strategic role of the information audit."

The only attempt that has been made at a "universal" information audit methodology, is the model that was developed by Buchanan & Gibb (1998). There are however still limitations to this model which makes its universal adoption problematic.

The researcher therefore comes to the conclusion that currently it does not seem possible, nor desirable to develop a standardised information audit methodology. The reasons for this include:

- The unique characteristics of information as a resource – this complicates the management of information resources.
- It seems to be desirable to allow for different approaches to information auditing (cf. Ellis et al) in different (unique) information environments. This is confirmed by Hall (1996:iv) who states that each organisation is unique, "which means the audit must be designed for the particular organisation".
- The fact that an attempt at developing a "universal" information audit methodology has not been 100% successful.
- When one looks at the example of a standardised audit methodology (e.g. financial auditing), it becomes clear that there is a long history of national and international

developments behind these. If any attempt were ever to be made to standardise information auditing methodology, this would have to be driven by a strong, international information-oriented body that would be able to influence strong, national bodies to monitor and encourage the implementation of auditing standards, training standards, etc. It should also be taken into account that international accounting and auditing standards are not enforceable. The same will most probably happen if international standards for information audits were to be developed. The standards would only be useful as guidelines.

- Furthermore, the reason for developing standardised information audit methodologies were the requirements for adherence to legislation. The current situation in the USA is that the financial statements of organisations that reflect the value of corporate information resources must be prepared according to financial standards and legislative requirements.

- According to Robertson's (1994:36) statement, the standardised methodology envisioned by him is not supposed to limit organisations in the execution of information audits, but rather to guide them in terms of elements to investigate and tasks to include in the performance of such an audit, i.e. a checklist of things to do – in other words, a methodology such as the one proposed by Buchanan & Gibb would be acceptable. The researcher, however, does not foresee the possibility of developing a standardised information audit methodology that would adhere to legal implications and requirements, such as is the case with the financial audit.

- The researcher has identified components of information auditing methodology that can be standardised. These include the costing and valuing of information resources. This will be discussed in more detail later on in this chapter.

3. Financial auditing versus information auditing

Despite the fact that information auditing methodology is not standardised and that there does not seem to be a possibility of doing this, the researcher has identified certain similarities with the procedures and activities of financial auditing, as well as areas where information professionals can learn from the example of financial auditing. In the literature the researcher also found evidence of a correlation between financial and information auditing, e.g. Stanat points to a loose correlation with the financial audit, i.e. the (information) audit being a recognised management tool. According to Dubois (1995:20) "[the] parallel with standard financial auditing is ... a loose one".

TABLE 6-1: Financial versus information auditing

FINANCIAL AUDITING	INFORMATION AUDITING
In financial auditing "formal standards lay down audit guidelines, checklists, techniques and operating standards which will apply to all types of organization and have evolved over many years" (Robertson, 1994:35).	As has been explained, this is not the case with information audit methodologies.
Activities common to all types of audit assignments: - Planning, control and supervision - Fact finding, analysis & documentation - Recommending - Reporting (Flesher, 1996:253).	All these activities apply to information audits. The majority of information audit methodologies that were studied during the course of this research include the first two sets of activities. Not all of these go as far as preparing final reports and making recommendations. The researcher identifies the latter two stages as very important phases that should be included in all information audit methodologies.

FINANCIAL AUDITING	INFORMATION AUDITING
Different approaches to the auditing process include: - Balance sheet approach - Systems-based approach - Transaction flow or cycle approach - Risk-based approach (The principles and practice of auditing, 1992:59-66).	Even though no standardised information audit methodology exists, there are "recognised approaches to the audit process" (Gibson, 1996:12). Different authors identify different approaches to information auditing (cf. The discussion on this aspect in Chapter 5).
Robertson (1994:36) identifies three general types of financial audits commonly used in the commercial environment. These are financial audits used for: - "The physical verification of assets and liabilities; - Control and compliance issues; and - Investigative matters".	According to Robertson (1994:36) the majority of information audits currently performed in organisations, can be classified as similar to the first type of financial audit listed in the column to the left, i.e. these information audits are used to compile inventories of organisational information resources. The researcher has identified very few information audit methodologies where compliance issues are addressed. Although compliance is included in the operational advisory audit approach as described by Ellis et al (1993:138), very few of the audits that were identified as operational advisory audits, actually addressed this component. An element of compliance forms part of Barker's methodology – phase 9, where adherence to standards and regulations are determined. A few of the information audits performed in organisations can be classified as similar to the third type of financial audit listed in the column to the left, i.e. investigative for reasons that differ from those for which an investigative financial audit is performed (e.g. in situations where an information source is not used; or where a system is not functioning properly; or where an information centre is to be closed down because it is undervalued).
An audit is performed as a preventative (pro-active) measure, i.e. it is performed in order to identify problems before they become major problems and one has to react to these (Downs, 1988:1).	The same applies to information auditing.
One type of audit that was identified in Chapter 2, is the internal audit. No two internal audit assignments are performed exactly the same way, i.e. no "routine" internal audit assignment exists. Every assignment and its objectives are unique.	The same applies to information audits.

FINANCIAL AUDITING	INFORMATION AUDITING
The typical responsibilities of an internal auditor, include: - To aid the organisation in the effective discharge of its objectives; - Information is collected for management; - The direction of the audit is looking forward.	Many of the information audits that were discussed in Chapter 5, had similar objectives, i.e.: - To determine whether the information resources contribute to organisational objectives; - Information is collected for management; - The direction of the audit is looking forward (by evaluating the current situation).
Another type of audit, the operational audit, is aimed at "... an organized search for efficiency- and effectiveness-related problems ... [within] an entity or one of its subdivisions" (Flesher, 1996:242).	In Chapter 5 it became clear that some of the information audits were performed in order to evaluate the efficiency and effectiveness of a specific information system (e.g. Barker), a specific entity such as the corporate library/information centre (e.g. Gibson), or with the purpose of establishing effective information management procedures (e.g. Boon & Lubbe).
The overall approach to operational auditing entails the following: 1. Seek out and identify the organisation's objectives. 2. Determine the pertinent facts and conditions by: conducting a physical tour; obtaining internal forms and documents; interviewing departmental employees; preparing financial analyses. 3. Define problem areas or opportunities for improvement. 4. Present findings to management.	The main activities common to the majority of information audits that were discussed in Chapter 5, included the following: 1. Defining the organisational environment. 2. Data collection (by conducting a physical tour and/or obtaining relevant documentation and/or interviews and analysis of the collected information). 3. The identification of strong and weak points. 4. The compilation of the final report and the presentation of the findings to management.
In terms of the classification of audits, the restricted (or partial) audit is not required by law, but is requested by a client (The principles and practice of auditing, 1992:53).	The majority of information audits could be classified as restricted or partial audits, in the sense that these are not required by law, but are usually requested by management.

FINANCIAL AUDITING	INFORMATION AUDITING
Three aspects that auditors have to consider, are: - the size of the company; - the statutory requirements (if any) that govern the audit; - the wishes of the client (The principles and practice of auditing, 1992:53-54).	The first and the last aspects (listed in the column to the left) must also be considered during the planning phase by the person who must perform an information audit. The second aspect might apply to information audits in specific situations.
The characteristics of advisory audits include the following: - it is diagnostic; - it is used to evaluate the appropriateness of existing information systems and services; - it informs users in the organisation of its findings (Ellis et al, 1993:134).	The majority of information audits are of an advisory nature and have the same characteristics as (financial) advisory audits.
Planning is the second activity of a typical audit: It is stated that an absence of planning or ineffective planning results in an ineffective audit (Human, 1996b:1). - During the Planning phase of an audit the auditor must obtain knowledge of the entity's business. - Formulate an audit approach. - The preparation of a written audit programme	The importance of proper planning is emphasized by a number of authors who discuss information auditing. The researcher has determined that proper planning is the key to success of any project. - This part of the planning phase is similar to the part of the information audit where the organisational environment is defined. - The audit approach also forms part of the information audit, i.e. where the auditor has to decide which approach to follow, e.g. a hybrid approach, a cost-benefit approach, a compliance-based approach, etc. - The written audit programme also forms part of the majority of information audit methodologies.

From the table above it becomes clear that information audit methodologies have many elements in common with standardized financial audits. The only difference is that information audit methodologies do not adhere to legal requirements.

TABLE 6-2: What information professionals can learn from financial audits

FINANCIAL AUDITING	INFORMATION AUDITING
The instructions that an auditor receives from the client, determines the scope of a specific audit. The instructions must be confirmed in writing.	This is an aspect that can be applied by those who perform information audits, i.e. that the audit assignment should be specified clearly, in writing.
Compliance audits are performed to determine whether an organisation is meeting certain specified requirements, e.g. internally or externally imposed laws, regulations, standards, policies, plans and procedures. A compliance audit can be requested by management or it can be performed to satisfy a legal requirement. Over the past few years, compliance audits have become increasingly important, as organisations are being held accountable at a higher level for their performance. Accountability is requested by boards of directors, top management, stock holders, taxpayers and governments (Flesher, 1996:251).	The researcher has determined that very few of the information audits that were discussed in Chapter 5, contained elements of compliance. In view of the increasing importance of compliance audits in terms of accountability, information professionals should look at setting organisational standards and implementing organisational policies for information management and the evaluation of these through the inclusion of compliance components in information audits.
The auditing process is made up of four main procedures and activities, i.e.: - pre-engagement activities; - planning; - compliance and substantive procedures; - evaluating, concluding and reporting. The Pre-engagement activities include amongst other things: - Determining the skills and competence requirements; - Establishing terms of agreement (The principles and practice of auditing, 1992:56).	Information professionals can learn from these two aspects of the Pre-engagement activities, i.e.: - determining that the auditing team is made up of people with the necessary skills and competencies; - establishing a formal agreement with management as to the scope and purpose of the information audit and to get a copy of the agreement, in writing.
Evaluating, concluding and reporting make up the final procedure of the auditing process.	Evaluating, concluding and reporting are not included in all the information audits that were discussed in Chapter 5. The researcher feels strongly that it should. Swash (1997:314) stresses the fact that the recommendations resulting from the information audit are of vital importance.

FINANCIAL AUDITING	INFORMATION AUDITING
The auditor's responsibilities include:	The information profession can learn from this and it should be expected of the information auditor:
- Reporting his/her opinion	- To report his/her opinion (i.e. Feedback);
- Conducting the audit with due professional care and competence	- Conduct the audit with professional care and competence (i.e. a qualified information professional should perform the information audit);
- Maintaining an independent mental attitude	- Maintain an independent mental attitude, especially if the auditor is a staff member;
- Reporting on material irregularities; and detecting and reporting illegal acts, other irregularities and errors.	- Report any problems that he/she came across.

Information professionals can also learn from the example of financial auditing by looking at the so-called working papers compiled by auditors. As have been mentioned already, the working papers contain important audit evidence and for this purpose all audit activities must be thoroughly documented. The documentation gathered and included as audit evidence in the working papers, can range from charts, schedules and interview notes to internal reports and memoranda (Flesher, 1996:255). An overview of the typical contents of the active working papers of an auditor, is included in Table 3-4 (below):

TABLE 6-3: An overview of the typical contents of the active working papers of an auditor

1. The audit work program.
2. Documents obtained during the acquisition of data stage.
3. Physical tour questionnaire.
4. Questionnaires from the interviews with management stage.
5. Memoranda prepared by the auditor during the financial analysis (analytical review) stage of the audit.
6. The survey memorandum.
7. Documentation (such as flowcharts, questionnaires and checklists) of internal control systems.
8. Questionnaires from the in-depth interview of departmental employees.
9. Memoranda prepared during the financial analysis stage of the in-depth audit.
10. Papers related to results of audit testing, such as compliance and substantive tests.
11. Memoranda related to audit comments made during the exit interview.

(Flesher, 1996:255-256)

The working papers must be indexed, preferably chronologically, i.e. first the documentation gathered during the preliminary survey, followed by documentation generated and collected during the in-depth audit. Standardised formatting of documentation included in the working papers is very important, e.g. a uniform style for headings, only writing on one side of a page and a standard page size for all documents (Flesher, 1996:256).

As have been mentioned before, the documentation contained in the working papers must support conclusions made in the audit report. This means that another auditor must be able to come to the same conclusions (as those contained in the audit report) when using the audit evidence in the working papers (Flesher, 1996:257).

4. Guidelines for information auditing

According to Gibson (1996:12) "there are some assumptions that can be made as to what [an information audit] should cover". One of the purposes of this study is to identify such general/basic elements of an information audit, if the findings of the study indicate that it is not feasible to develop a standardised information audit methodology. Since the researcher does not foresee the standardisation of information auditing methodology and based on the discussion above, the researcher concludes that an information audit should contain the following components – taking into account the time available to conduct the audit and the available resources. These main phases are based on what the researcher identified as common to the majority of information audits (and the different approaches):

- Planning
- Information needs assessment
- Information inventory
- Costing and valuing information resources
- Analysis
- Report (with recommendations)

For practical suggestions of what should/could be included under each phase, the reader can refer to the methodologies discussed in Chapter 5. "As is the case with the "universal model" that was developed by Buchanan & Gibb (1998:47) the phases that are listed here by the researcher are "intended to be wide-ranging and of general applicability but it is recognised that organisations may need to make compromises, or may wish to use a sub-set of steps, or may need to enhance or tailor it to their specific requirements".

Keep in mind that when designing an information audit methodology, the auditor should take into account the organisational environment (i.e. company politics and culture), the structure of the organisation, as well as its mission, goals and functions (Stanat, 1990:7). A prerequisite for the development of an information audit methodology is a clearly defined scope and purpose (Buchanan & Gibb, 1998:40).

Despite the fact that the results of information audits performed in different organisations will be unique, LaRosa (1991:8) identifies the following types of information that will typically be collected:

- The strategic objectives, goals and strategies of the different organisational units, as well as their respective roles and functions.
- Challenges that face the various units and the obstacles they have to overcome in order to reach their goals.
- The information needed in order to help the units overcome their obstacles.
- The way(s) in which the various units plan and the information they need, as well as information on where they find this information and how relevant it is to them.
- The products and services produced by the different units, as well as the resources they manage.
- Evaluative information on the usefulness of information for various purposes.

The prerequisites for conducting a successful information audit are:

- Support from top management
- Skilled staff to conduct the investigation and the audit
- Sufficient time to complete the research
- Free access to relevant information and the right people
- Standardized methods for managing the investigation and reporting the results thereof (Orna, 1990:31).

Looking at the main phases listed at the beginning of paragraph 4, a question can be raised as to whether it is necessary to include a step where the value of information is determined – should this be "compulsory" or not? The researcher feels strongly that such a phase should be included. There are however arguments to the contrary. In view of the difficulty in determining the value of information one could easily argue that such a phase should not be included in an information audit. Swash (1997:317) warns that "[t]he problems of quantifying the exact contribution of a specific term of information may ... prove insurmountable." Furthermore, some information audits do not include the determination of the cost and value of identified information sources. According to Swash (1997:315) this is unusual and undesirable as this makes up an essential component of the information auditing process. The exclusion of such a crucial component of the information audit, does however, support the presumption that information audit methodology can be adapted according to individual circumstances. As has been indicated by the researcher in Chapter 4, more research is needed about methods (standardised if possible) to determine the economic value of information entities. This is confirmed in an article by McPherson (1994:203-215). This author goes as far as pleading for the development of a form of "information accounting": "... a complete accounting framework is require that incorporates a treatment of intangible value that is so rigorous that it has to be accepted as an equal partner to monetary value" (McPherson, 1994:203).

The researcher therefore comes to the conclusion that even though the principles of the financial audit cannot be used to develop a standardised methodology for information auditing, information professionals can look towards the accounting profession to support them in developing a standardised, universally accepted method for accurately determining the value of information entities. This method will have to make provision for measuring the intangible values of such entities.

As far as the auditing of information technology is concerned (as part of an information audit), the following applies: The auditing of information technology is an accepted, standardised procedure performed by accountants. This type of audit "seeks to manage and control costs and information flows, as well as to improve enterprise wide efficient access to information" (Jurek, 1997:42). The researcher has come to the conclusion that one cannot really audit information resources properly without taking into account the enabling information technology.

5. The future of information auditing

It is a well-known fact that information is increasingly being recognised as a strategic corporate resource. Following on this organisations invest valuable resources, "often considerable resources", in information services departments. The information services manager has the responsibility of justifying this investment to management (St Clair, 1996:9). The traditional way in which this is done is by means of reports to management. The information services manager usually compiles these reports on a monthly, quarterly and/or annual basis. Typical information included in these reports are feedback from the users of the information services department, interpretations of statistical information, e.g. frequency of usage of specific information services and/or products, etc. These tools contain sufficient information on the functioning of the information services department. At times however, more information might be needed. In order to obtain an overview, a so-called "big picture", of the state of the information services department, an information audit can be conducted.

Examples of times when an information audit could ideally be conducted, include the following:

- when the purpose, services and/or products of the information services department must be evaluated,
- when a need for new information services and/or products are identified, or
- when management questions the existence and/or value of the information services department (St Clair, 1996:9).

According to Alderson (1993:4) performing information audits will become increasingly important. Performing information audits will most definitely form part of the job description of the so-called "new" information professional. Information professionals can contribute to increased information awareness in organisations by requesting/suggesting a corporate information management review. Furthermore they can contribute by compiling literature reviews of information auditing techniques (Booth & Haines, 1993:231).

Information scientists agree that the results of an information audit can be valuable to an organisation in the development of an organisational information management plan. The above discussion of the methodology for performing such an audit, raises a number of questions. It is probable that information scientists will first have to find answers to these questions if information auditing is to be recognised as an invaluable (information) management technique. Robertson (1994:35) asks whether the experience of financial auditors should be incorporated in order to develop a standardised information auditing methodology. Other problems identified by him, include the following:

1. Information audits represent the state of information in an organisation at one particular point in time. A way/method will have to be found to follow up such an investigation in order to keep information on organisational information resources up to date. Robertson (1994:35) suggests once again that information scientists look to financial auditors for advice on this issue, as financial audits are performed frequently in organisations for a variety of reasons.

2. A second problem that has already been discussed extensively in this dissertation is the difficulty of calculating the costs and determining the value of information resources.

Companies are beginning to realise that information is a very important organisational asset and they are investing large amounts of money in this asset. The irony of this is that these companies do not realise the full value of their investment. As a result, information scientists are faced with the challenge of determining the effectiveness of information flow within a company, as well as the effectiveness of existing information products and services (Stanat, 1990:1). Once again, an information audit can be used to provide the needed answers.

Information audits have been performed in companies for many years, but focused mainly on systems development. Now the strategic information audit can help companies to link information services and products with the strategic objectives and goals of that specific company (Stanat, 1990:1).

According to Booth & Haines (1993:231) many opportunities exist for information professionals to involve themselves in the information auditing process when performed in organizations.

Currently, in many information centres/corporate libraries there is a constant threat of cost-cutting. The ideal scenario is that the value of information be recognised and that information be used for decision making at all levels in an organisation. Few companies have the ability to identify and evaluate whether information is available internally and at what cost. Dubois (1995:20-21) regards information auditing as a potential solution to these and other information problems that occur in organisations. Jurek (1997:43) is another author who stresses the importance of building a phase into the information audit during which the cost of information sources/resources will be determined. The cost of information must be connected with the value of information in the organisation. Worlock (1987:52) discusses the information audit as a tool to help determine the value of information and to examine whether the use of information

technology could increase the value of information. Following the same line of discussion, Underwood (1994:60) points out that even though organisations view information as "important" to them, the value and existence of information remain largely unrecognised. According to him the main value of an information audit lies in the fact that it can help an organisation to survive various periods of crises, as far as information management is concerned.

From the discussion above it becomes clear that more research is needed on the topic of information auditing.