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## **A Framework to Audit Intellectual Capital**

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## A Framework to Audit Intellectual Capital

### Abstract

Until recently few firms have attempted to measure and assess Knowledge, the new intangible. Previous research shows that key components of intellectual capital are poorly understood, inadequately identified, inefficiently managed and inconsistently reported. Two types of audit are available: auditing by competence, and auditing individual or a spectrum of items. There are several methods for auditing these types, and selection depends both on the type of audit, and whether the aim is to quantify monetarily, to make comparisons, or to set benchmarks. A better way to approach the audit is to combine more than one method and audit object, so that any limitations imposed by one are compensated for by the other.

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**ABSTRACT:**

Until recently few firms have attempted to measure and assess Knowledge, the new intangible. Previous research shows that key components of intellectual capital are poorly understood, inadequately identified, inefficiently managed and inconsistently reported. Two types of audit are available: auditing by competence, and auditing individual or a spectrum of items. There are several methods for auditing these types, and selection depends both on the type of audit, and whether the aim is to quantify monetarily, to make comparisons, or to set benchmarks. A better way to approach the audit is to combine more than one method and audit object, so that any limitations imposed by one are compensated for by the other.

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**1. Introduction**

Until recently few firms have attempted to measure and assess the new intangible, knowledge (Guthrie and Petty, 2000 (a)). A study in Australia found that key components of intellectual capital are poorly understood, inadequately identified, inefficiently managed and inconsistently reported. The firms did not have a consistent framework to report on intellectual capital (Guthrie, 1999; Guthrie, Petty, Ferrier, and Wells, 1999; Guthrie and Petty, 2000 (b)). As a response, the frameworks to audit intellectual capital have emerged from a recent branch of research in intellectual capital. The argument is based on that both financial and non-financial data on intellectual capital should be consistently gathered using a cohesive framework.

Intellectual capital audit is used in a wider context than a financial audit. Firstly, its purpose is to monitor and oversee the intellectual capital of a firm (Brooking, 1996, pp86) and secondly, an intellectual capital audit requires a team comprising different experts, corporate strategists, finance experts, human resource experts, knowledge analysts, intellectual property experts and marketing experts (Brooking, 1996, pp93-95; Brooking and Motta, 1996). It is important to carry out an audit of intellectual capital items for the following reasons (Brooking, 1996, pp83-85). Firstly, it is a rich source of data that helps to fill the gaps in the strategy to make it successful. Secondly, it helps to evaluate and design R&D programs. Thirdly, it provides knowledge in re-engineering a firm to retain valuable capability and know-how. Fourthly, it helps plan education and training programs mutually beneficial to the employees and organization. Fifthly, it provides information on assets not recorded in traditional accounting to ascertain the value of the enterprise (Daveport and Prusak, 1998, pp85). Sixthly, it enables to ascertain organizational memory and expand it so that organization does not have to reinvent the wheel.

There are several steps to follow when undertaking an intellectual audit. Firstly, the firm should determine the purpose of the audit whether to quantify results monetarily, to set comparatives, or benchmarks. Secondly, identify the problem space so that audit provide focus and is manageable. Thirdly, determine the aspect of the asset to be investigated (for example on customer base; it could be size, repeat business, customer profile or brand loyalty). Fourthly, assign high values as a benchmark to the asset aspect been investigated (ex. Repeat business, the high value is 100%), and fifthly, choose the audit method. An audit can be carried out on individual intellectual items or on all intellectual items using a framework. Ferrier (1999) points to appraising the firm on the perceived awareness and importance of intellectual capital, through 'an information and self-evaluation kit' before carrying out an intellectual audit. The 'kit' asks questions in broader areas such as; what is intellectual capital? ; Why is it important? ; Perceived status of intellectual capital in the firm in relation to other firms; measuring of intellectual capital, and matter relating to reporting of intellectual capital. This is because anecdotal evidence suggests that measuring, reporting and managing of intellectual capital happens in an individualistic and ad-hoc manner. The 'information and self-evaluation kit' is still at an early development stage and can be viewed as a precursor to an internal intellectual capital audit.

## **2. Types of Audits**

There are two major types of audits. One is to audit by core competencies, and the other is to audit either individual or a spectrum of audit items.

### **2.1 Auditing core competencies**

Auditing by core competencies is one way to audit intangible assets (Andriessen, Frijlink, van Gisbergen, and Blom, 1999). First intangible assets are defined in relation to core competencies of the firm. Each core competence is a combination of intangible assets such as knowledge and skills, standards and values, explicit know-how and technology, management processes and assets, and endowments such as image, relationships, and networks. Knowledge creation is the core competence of any firm (Malhotra, 2000). Secondly, the strength of each core competence is estimated with the aid of a checklist using five criteria. These criteria are, customer benefit, better than competition, future potential, difficult to imitate, and solidly embedded. The checklist provides a score from 0-5. Thirdly, the value of each core competence is determined in relation to five value drivers, namely, added value, competitive advantage, potential, sustainability and robustness. Fourthly is to monitor them. Once the value of intangible assets is determined for a number of years they can be converted to an index and changes can be explained in qualitative terms. This method of auditing core competencies has certain limitations. The management time and commitment is a pre-condition. The firm should have a clear strategy to increase the value of intangibles. The thinking in terms of core competencies is easier for some organisations only (Andriessen, Frijlink, van Gisbergen, and Blom, 1999).

### **2.1 Auditing individual or a spectrum of items**

The second way involves auditing individual or a spectrum of items. Some authors have attempted to assign a monetary value to individual intellectual capital items. Measuring the monetary value of customers (Bursk, 1966) and contract rights (Reilly

and Dandekar, 1997) are examples. The monetary measurement methods are suggested on several intellectual capital items. The measurement method can be market approach, replacement cost approach, or income approach (based on income producing capability of the asset) (Brooking, 1996, pp181-182) depends on quantity and quality of data available, purpose and objective of the exercise, and experience and judgement of the accountant (Reilly and Dandekar, 1997). In this respect, auditing patents seems to be an established area (Petrash, 1996; Rivette and Kline, 2000). It could be because patents are the most tangible intellectual property that has the strongest legal protection and has the greatest effect on commercial success for certain organizations. They help protect core technologies and business methods, boost R&D, increase branding effectiveness, improve financial performance and enhance competitiveness (Rivette and Kline, 2000).

To assess the financial value, many companies assign a portion of market capitalization as a proxy of their intellectual property as an alternative to individual patent measurement. Another method is to use knowledge scorecard. Knowledge scorecard is the capitalized difference (net present value) between annual normalized earnings and earnings from financial and physical assets (Rivette and Kline, 2000). A primary consideration in the valuation is the strength of protection (Brooking, 1996, pp183). The business and commercial value of patents is ascertained by mapping patents as growth rate in the vertical axis and their current and future use in the horizontal axis (Rivette and Kline, 2000). Another way is visualise the firm's patents along with any or all competitor patents and evaluate such things as dominance, breadth of coverage, blocking and opportunity openings (Petrash, 1996). Intellectual Asset Managers through their Intellectual Asset Management Teams are responsible to develop and maintain an intellectual asset plan to align with the business strategy, and review intellectual asset portfolio at least once a year. They are also responsible to identify key intellectual assets, classify them by utilisation, manage portfolio costs, where appropriate do a competitive technology and portfolio assessment, and create and staff intellectual assets team and facilitate meetings. Further, they provide leadership and support to the intellectual asset management vision and process implementation, and recommend for licensing, abandonment, donation and utilization of intellectual assets (Petrash, 1996). Some companies tend to adopt measuring individual intellectual capital items as a basis to develop a comprehensive capital measurement system. For example, Dow Chemicals was developing its 'patent tree' into 'knowledge tree' to carry out an intellectual asset audit that includes their biggest intellectual asset, know how (Petrash, 1996).

Brooking (1996) proposed a framework with intellectual capital items (Brooking, 1996, pp12-81, pp129; Brooking and Motta, 1996) to be used as a basis to audit a spectrum of intellectual capital items. The framework was expanded by later by other authors (Australian Society of CPAs and The Society of Management Accountants of Canada, 1999, pp14; International Federation of Accountants, 1998, pp7; Dzinkowski, 1999 (b); Dzinkowski, 2000). Guthrie et.al (1999) further modified that framework to ascertain the status of intellectual capital reporting in Australia. The framework was expanded further for a more detailed analysis of human assets (Abeysekera, 2001) (refer to Appendix 1).

### **3. Research Methods**

There are several methods to carry out an internal intellectual capital audit. Different research methods may be more suitable for different intellectual capital items.

Market assets are evaluated using market research, customer interviews, survey, competitive analysis, return on investment, sales and payment analysis. Intellectual property assets are audited using surveys on market pull and know-how, analysis of payments and competitors, return on investments, and auditing agreements. Infrastructure assets are audited using, interviews, return on investments, and assessing standards. Human centred assets are audited using interviews, tests and assessments, reviews, knowledge elicitation and review of records (Brooking, 1996, pp97-129; Brooking and Motta, 1996).

An external intellectual capital audit can be carried out using interview, surveys, content analysis, focus groups and case studies are the most popular method (Petty and Guthrie, 2000 (b)). This can be because case studies help managers to generate actionable knowledge and they are very strong lessons for the company (Eccles, Nohria and Berkley, 1992, pp180). Description of knowledge is similar to description of story suggesting there is a meaningful link between the two. By encoding knowledge in stories, little of the leveraged value of knowledge is lost in communication (Davenport and Prusak, 1998, pp81). Interviews and questionnaires are used to supplement each other and used usually for larger sample sizes (Petty and Guthrie, 2000 (b)).

Most of the examples cited in the knowledge management and intellectual capital literature are based on case studies. Although case studies are one of the best ways to understand and disseminate knowledge because narratives and story telling is a very effective way to convey knowledge (Davenport and Prusak, 1998, pp81). However, case studies are one of the weakest empirical research methods in terms of validity and reliability (CASL, [http://iisd.ca/casl/CASL\\_Guide/ParticipantObserver.htm](http://iisd.ca/casl/CASL_Guide/ParticipantObserver.htm), 1998).

Since knowledge management and intellectual capital are about intellectual assets and liabilities, accurately measuring them in verifiable manner has not been perfected yet. It is also difficult to carry out quantitative research such as laboratory-based experiments to establish relationships of individual intellectual capital variables to results since there are other intervening and moderating variables that confound the results. The relationship of those other variables is also not established. One way to restore the empirical validity and reliability is to carry out carefully planned qualitative research. There are several established instruments such as content analysis, field studies, focus groups and case study interviews. It is necessary to reinforce these single methods with one or more other methods to enhance validity and reliability. Such empirical research approach is necessary to restore credibility and verifiability of results in the minds of the educated reader.

#### **4. Audit Objects**

The object to be audited can be broadly classified into an examination of documentary evidence in both written and other forms, the processes and values of the firm, and aspects of employees and their relations with others (both people and institutions). The object used to audit intellectual capital determines the research methods to be

employed (refer to Figure 1) and some research methods are more suitable to examine a given audit object than others.

The documentary evidence of intellectual property is legally binding, and minutes of management and board meetings reveal the status and strategic direction the firm. Company annual reports are also useful audit objects as they enable organisations to construct relationships with others to create and maintain conditions for their continued profitability and growth (Niemark, 1995, pp100). It is not the only weapon available to do that. Advertising, sales promotion, public relations campaigns, political lobbying, charitable contributions and support for scientific research and so forth are more important weapons. However, annual report represents the corporate concern in a comprehensive and compact manner. Further they are regularly produced and offer a summary of management's thoughts in each period (Niemark, 1995, pp100-101). The purpose of annual reports can be defined as 'demonstrating present and future performance'. Annual reports is a special communication opportunity to go beyond reporting simply financials and is a chance to show leadership and vision to reflect organisation's value and its position (Clackworthy, 2000). Annual reports are a good proxy to audit comparative position and trends of intellectual capital between firms, industry and countries. Several published research have used annual reports as audit objects to ascertain the status of intellectual capital of firms in Australia (Guthrie, 1999; Guthrie, Petty, Ferrier, and Wells, 1999) and Ireland (Brennan, 1999), and between countries (Subbarao and Zeghal, 1997).

## **5. Conclusion**

The type of audit to be carried out is governed by factors such as time and commitment of the management to the audit. Although there are several research methods available to audit intellectual capital items, some methods are better than others for auditing a given intellectual capital item. It also depends on the level of validity of the findings required and the purpose of the audit. If the purpose is to quantify them, then a high internal validity method may be more suitable, and if the purpose is to set benchmarks then a high external validity method may be more suitable. The type of audit object to be examined is determined by the access to information, time available for the audit, and the level of validity required from the audit. A better way to approach the audit is to combine two or more methods of auditing and audit objects so that any limitation imposed by one method and object are compensated by the other. However, any audit on intellectual capital of a firm is better than no audit since it is one of the most important assets that needs to be managed consistently and efficiently to harness its value to increase the bottom line.

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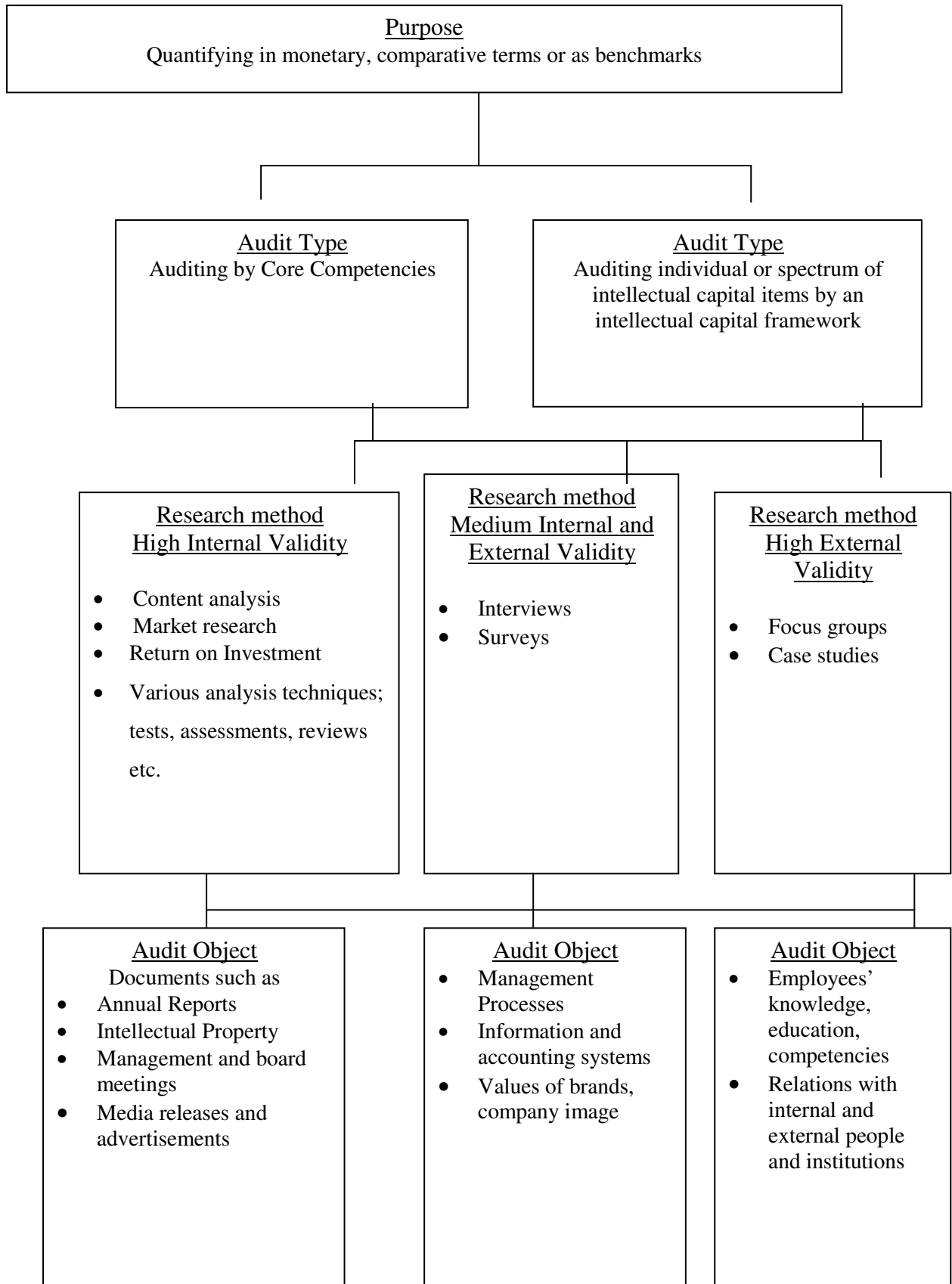
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Figure 1  
Framework to audit intellectual capital



Appendix 1  
Intellectual Capital Framework (Source: Abeysekera, 2001)

INTERNAL CAPITAL	EXTERNAL CAPITAL	HUMAN CAPITAL
<b>Intellectual Property</b>	11. brands	21. know how
1 patents	12. market share	22. education
2. copyrights	13.customer satisfaction	23.vocational qualifications
3. trademarks	14. company names	24. employee involvement in the community
<b>Infrastructure Assets</b>	15. distribution channels	25. career development
4. management philosophy	16. business collaborations	26. entrepreneurial spirit, innovativeness, proactive and reactive
5. corporate culture	17. licensing agreements	27. training programs
6. management processes	18. favourable contracts	28. equity issues: race, gender, and religion
7. information systems	19. franchising agreements	29. equity issues: disable issues
8. networking systems	20. quality standards	30. employment safety
9. financial relations		31. union activity
10. technological processes		32.employee numbers
		33. employee thanked
		34. employee featured
		35. executive compensation plan
		36. employee compensation plan
		37. employee benefits
		38. employee share scheme
		39. employee share option scheme
		40. average professional experience
		41. average education level
		42. value added per expert
		43. value added per employee

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**About The Author:**

Indra Abeysekera received his B.Sc degree from University of Peradeniya, Sri Lanka, Master of Science degree from University of Wales, U.K., and Master of Commerce degree from Macquarie Univeristy, Sydney, Australia. Indra is a Chartered Mangement Accountant in the U.K. and a CPA in Australia. He also lectured at The University of Sydney. Presently, he is Director, Dynamic Accounting, a Sydney based accounting and business consulting firm in Australia. He can be reached at: 5/5 Doomben Avenue, Eastwood NSW 2122, Australia; Tel: +61 417 405 399; Email: iabeysek@hotmail.com