

THE FRAMEWORK FOR INTANGIBLE INFORMATION ASSETS EVALUATION FOR ADEQUATE MANAGERIAL CONTROL SYSTEMS

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ABSTRACT: This research focused on providing the means whereby organizations can evaluate their intangible aspect of information asset resources. In order to capture the current information asset evaluation practice in organizations, the Centre for Information and Communication Technology (CICT) of Universiti Teknologi Malaysia was used as a case study. Qualitative research methodology was adapted and data collection instruments such as questionnaire and interview used in obtaining the Center's current information asset evaluation practice. Based on literature reviewed and current practice of the case study organization, information asset evaluation model has been developed to give the Center and other interested profit and not-for-profit organizations a clue on how to group information assets into portfolio and segregate obsolete from the mainstream information assets. The overall result of the research gives impression that organizations can improve intangible information asset management systems efficiency, if such assets are properly classified into managed and unmanaged group. Information assets security effort would lack focus without such classification.

Keywords: Information Asset Evaluation, Information Asset Management, Information Asset Security, Intangible Aspect.

1. INTRODUCTION

In recent times, the need for adequate management of intangible asset and its disclosure in financial report has received much attention. Many stakeholders are no longer willing to bear with the present wide gap that exists between quoted and book value of firms. Conservative

and historical cost concepts are being questioned from many quarters [12]. The argument is that there are many useful assets which make up more than 70% of firms' income, which are not accounted for nor are they disclosed in Annual Financial Reports. However, these intangible assets are like catalysts, they facilitate organizational growth and development.

The market value of every business organization in most cases is viewed through its assets future yielding potentials. The net book value, on the other hand, represents the shareholders fund, which is the book value of the organization as a whole. There are two broad viewpoints of the net worth of a business: the users of capital and suppliers of capital viewpoints. While the users consider the net worth as real assets the suppliers take them as financial assets [11]. Real assets are acquired and used in production of goods and/or services in exchange for value in a market place. Therefore the service potential of a firm's assets has a significant influence on the amount of revenue generated by the organization.

These real assets are divided into tangible and intangible assets based on their visibility [15]. In accounting practice, while intangible assets are not recognized and recorded in book of accounts except where they were purchased as Goodwill, the tangible are classified and recorded on historical cost basis and the net book value (NBV) disclosed in financial statements. However, the neglected intangible assets, which exist in form of human capital, intellectual property, software, database, trademark, and patent rights as [12] argues, are the major determinants of the success of any business organization. The measurement of the intangibles, of course, is not an easy task because of the requirement of application of accounting concept of objectivity in such valuation. However, the need to identify these intangibles that facilitate the tangibles and also evaluate them seems indispensable. One of these influential intangibles is information asset and the related means of its processing.

In the present era where the importance of information as a key asset significantly grows, following its production, complexity, volume and demand [13], information assets need to be evaluated to determine the level of managerial control to be exerted on them individually or collectively. Some organizations keep database of mailing lists, customers data, credit information, financial studies or compilations, and scientific data besides application software that exist as the wheel on which the whole business activity roll on. However, these assets of great value are not classified and evaluated on basis of their various influence on corporate business activities [9].

Therefore, the need to carefully identify, classify and evaluate intangible information assets is evident if proper security measures and control is to be given to the information that deserves it. In this research, the researcher proposes an information assets evaluation model that would guide organizations in identification, classification, and evaluation of intangible information assets. There is hope that the results of this research would enhance intangible information asset management systems efficiency. It would also enable organizations with

large amount of information assets to select those soft assets that should necessarily be secured and/or given significant managerial attention.

The remaining paper is organized which seeks to establish the extent of the work done on this area of information science research, and the basis of information assets classification is carefully examined. Finally, the recommendations of intangible information assets evaluation framework is developed and presented.

2. ASSET MANAGEMENT

Asset evaluation and valuation are two common concepts one encounters when considering measuring both tangible and intangible assets. Of course, these terms are integral part of each other when used in measuring an object – real or abstract. Some authors have endeavoured to distinguish their conceptual meanings when applied to measuring the value of asset ([3]; [9]). According to these and many other authors, *intangible asset evaluation is an individual or group of person's judgments* on what the worth of the asset in question should be. [3] specifically points out that such judgment is based on the evaluator's mindset and it cannot be void of bias. The evaluation may or may not aim at putting such "worth" in monetary terms.

On the other hand, the term *valuation is frequently used when monetary value of an object needs to be established* ([5]; [10]; [6]). Although this concept still has some elements of subjectivity and human judgments, the key distinguishing factor between this and evaluation is that the monetary value of an object of valuation is its result and the target.

Indeed, as [1] rightly indicates, viable methods and measures should be applied to evaluate intangible asset before the monetary value of such intangibles could be determined. This single statement identifies and distinguishes the two concepts and calls for adequate evaluation of intangibles, which information assets are inclusive, if organizations intend to establish publishable value of such assets. Therefore, there must be evaluation to establish the relative worthiness of an information asset and how important it is before the valuation (the second aspect) which assigns the monetary value to such asset based on relative worthiness and importance.

While the discovery of relevant information provides significant timesaving to the corporate information users, [2] opines that management of the information remains a critical aspect of the total picture. According to [4] the appetite for information continue to grow as it is reflected in the new information technologies that we are using today. Of course, we need to have the latest information "yesterday" so we can make decisions capable of changing our lives and businesses today and in the future. [4] further argues that so much emphasis has been placed on gathering and delivering information with little or no attention given to preserving important information for the future. This shows a lopsided management of

intangible information assets. They are not evaluated to identify their core functions as they relate to business.

A prudent information management, as [13] point out, embodies policies, organizational provisions and a comprehensive set of activities associated with developing and managing the information resources. This begins with the outlining of the management agenda regarding the treatment of information as an asset. Therefore, information asset management (IAM) concept has to do with acquisition, protection and preservation, utilization, accessibility and dissemination of information, as well as the promotion and management of initiatives to derive maximum benefit from the resource.

[13] further point out that the cardinal objective of information management is to satisfy the demand for information by organizations. This demand is expressed in the information systems requirements process, and the information access and delivery services required by the users. This implies that value is delivered through:

- Enabling business to make right decisions;
- Improving the effectiveness of processes and their outcomes;
- Providing timely and focused performance information;
- The preservation of organizational memory; and
- Improving the productivity and effectiveness of managers and staff.

Therefore, the key rationale behind developing an information management strategy is the delivery of value to business [7]. This invariably indicates that organization formulates information management strategy with the aim of adding value to business by exploiting information as a core business resource. A systematic and planned approach to the management of electronic records within an organization, the moment they are created to their ultimate disposal, ensures that an organization can:

- Control both the quality and quantity of the information that it generates;
- Maintain that information in a manner that effectively serves its needs;
- Dispose off the information efficiently when it is no longer required [8].

In the words of [13], the starting point of implementing information asset management is identifying high level information portfolios for each business unit; aligning them to their respective application portfolios and their business needs. Thus, bringing intangible information asset into the managed environment according to needs and priorities, and the risk associated with not managing such asset. This could be achieved by:

- Focusing on strategic intangible information assets that must be managed;
- Evaluating the key operational information in the current portfolio and determining how best to exploit its potential, at acceptable cost and risk;

- Maintaining a watchful eye on high potential information assets that may evolve into strategic, but where structures and relationships are yet hazy;
- Perhaps choosing to ignore low-potential, support information that does not warrant a high priority for being managed.

The literature examined has indicated the need to evaluate information asset with a viable evaluation model. Some authors have identified the need to manage information assets. [14] in particular has shed some light on the necessity of classifying information assets to avoid incommensurable security expenses on undeserved information assets. However, no study clearly presents how to fix information asset into a deserving portfolio and give same the necessary security status and then determine whether organization should spend its scarce resources to exert managerial controls on such asset or not. Therefore, this research attempts to develop a framework, which ties together all the activities that are involved in evaluating intangible information assets in any organization. It shows how information assets evolve and devolve and how obsolete information assets are shifted out of the active ones. This research perhaps would help organizations in grouping their information assets for adequate management purpose.

2.1 Bases of Intangible Asset Classification

There are certain bases, which the researcher considers necessary when information assets are classified. First basis of classification is the type of relationship that information asset has with core business or organizations. The focus may be on critical success factors in strategic business units (SBU). In other words, organization may categorize into a specific group those information assets that facilitate core business processes, decision making, and knowledge work in SBU.

Some organization may focus on monitoring the evolution and devolution of intangible information assets, in which case they are classified into intangible information asset portfolio. Specifically, they are classified into strategic, high potential, key operational, and support information assets.

- i) Some organizations may consider certain information assets to be *strategic* depending on:
 - How they enable the achievement of the overall objective of the organization and
 - If it gives the organization a competitive advantage.
- ii) Another information asset could be considered *high potential* depending on:
 - How it would impact on the current business plans and/or objectives;

- Expected returns of investment in such information assets;
- Tendency to evolve into a strategic intellectual asset; and
- The ability to enable innovation and creation of new business.

iii) In case of key operational information asset, the focus may be on:

- Level of dependency of current business on the intangible information asset (IIA);
- Impact of its absence, e.g. if the ATM of a bank is down for some times what impact would that create on the business of the bank?

iv) Support information assets could be:

- Necessary but not indispensable to business processes;
- Tendency to devolve or loose value and become obsolete.

It needs be said that, some organizations may embark on information assets classification with aim of segregating obsolete from active information assets in order to place security measures on those that deserve it. This objective in most cases is common in large organizations that have various types of information assets scattered all over many divisions and departments of the organization. Information asset would be classified as obsolete if:

- Its cost of maintenance increases with incommensurable returns;
- It is irrelevant to current business usage; and
- Future relevancy of such information asset are not foreseeable

Apart from the aforementioned bases of classification some organizations desire to know the information assets that need to be given high level of security in terms of encryption and access control. Key factors to be considered are:

- Confidentiality of the information assets;
- Integrity of the asset, where lose of the integrity of the information could bring immediate or remote loss to the organization; and
- Criticality to corporate core business.

Whatever is the primary motive of classification, the uniform objective seems to be the need for adequate managerial control of information assets. Inasmuch as most organizations desire to avoid allowing their strategic business information to leak into the possession of their business opponents, proper management appears to be necessary. Besides, the concern of some organizations over the security of their information assets makes it mandatory to put information assets into portfolio and clearly identify those that worth spending dollars in securing them and those that need no strict security.

3. INFORMATION ASSET EVALUATION FRAMEWORK

The effort made toward prudent management of intangible information assets (IIA), perhaps, would be futile without a guiding information asset evaluation framework. From the response to the questionnaires we served our case study organization, Center for Information and Communication Technology (CICT) in UTM and the initial interview and final interview conducted, there is an indication that intangible information assets have not been clearly identified and classified in CICT. This gives impression that stale and obsolete information assets still cumbered the system. It further shows that there is no viable electronic intangible information asset inventory keeping in CICT. Hence, intangible information asset valuation becomes naturally difficult, if not impossible, given that proper valuation is often preceded by proper evaluation as discussed in the literature.

In an attempt to ease this problem, we propose information assets evaluation model, which we hope would assist organizations, to some significant level, in evaluation of their intangible information assets. This is a way forward to intangible information assets valuation in monetary terms, at least, to give input for managerial decision. We therefore dedicate this section to intangible information asset evaluation framework discussion.

Table 1: Information Assets Analysis

Source	Value of information assets to business	IIA Portfolio	Comment
[13]	Critical to business and of great potential value	Strategic	Manage
	Essential for core processes and value enhanced by horizontal integration	Key operational	Manage
	Potential value to business may be high, but not confirmed	High potential	Unmanage, but keep in view
	Needed for supporting business, but of little strategic value	Support	Unmanage
[14]	Information asset with high level of confidentiality and integrity, making high contributions to critical success factors (CSFs)		Exert managerial control

Table 1: Information Assets Analysis (cont.)

Source	Value of information assets to business	IIA Portfolio	Comment
PRO: The National Archives, UK	Electronic records with high operational requirements for business processes		Need Adequate Management
	Electronic Records that serves as critical input for interpretation of other records		Need Adequate Management

The main theories behind information assets **identification** and classification have been discussed in the previous section. The summary of **literature** that buttresses the IIA evaluation model and framework is therefore presented in **Table 1**.

The information assets evaluation model built in this project gathered its input from both the organization used as case study and the data on **Table 1**. Based on these sources the researcher developed intangible information asset **identification** and classification model as shown in Figure 1 below. This model identifies and classifies both records and business operation applications while they retained their inherited concepts.

The simple procedures suggested in this **research** seem necessary when considering evaluating information assets. These procedures are as follows:

- 1) Identify the core business functions,
- 2) Identify information assets that service these business functions, both business operation applications and records,
- 3) Assign identification serial code number to the **information** assets,
- 4) Asses business dependency on IIA that service it,
- 5) Assess the business yield and relate it to IIA,
- 6) Assess the criticality of IIA to this business by estimated the possible set-back this business will suffer in the absence of this IIA,
- 7) Equate your business performance with that of your competitors that do not have the information assets in your possession,
- 8) Classify the information assets into manageable groups based on (4) to (7),
- 9) Scale these classes of information assets to determine their level of importance to business value,
- 10) From (9) determine the strategic nature of these information assets in relationship to their contributions to achievement of corporate objectives,
- 11) Map them into information assets portfolio, and

- 12) Based on (4) to (7) assign the security tenets of confidentiality, integrity, and availability to information assets (records) in each portfolio.

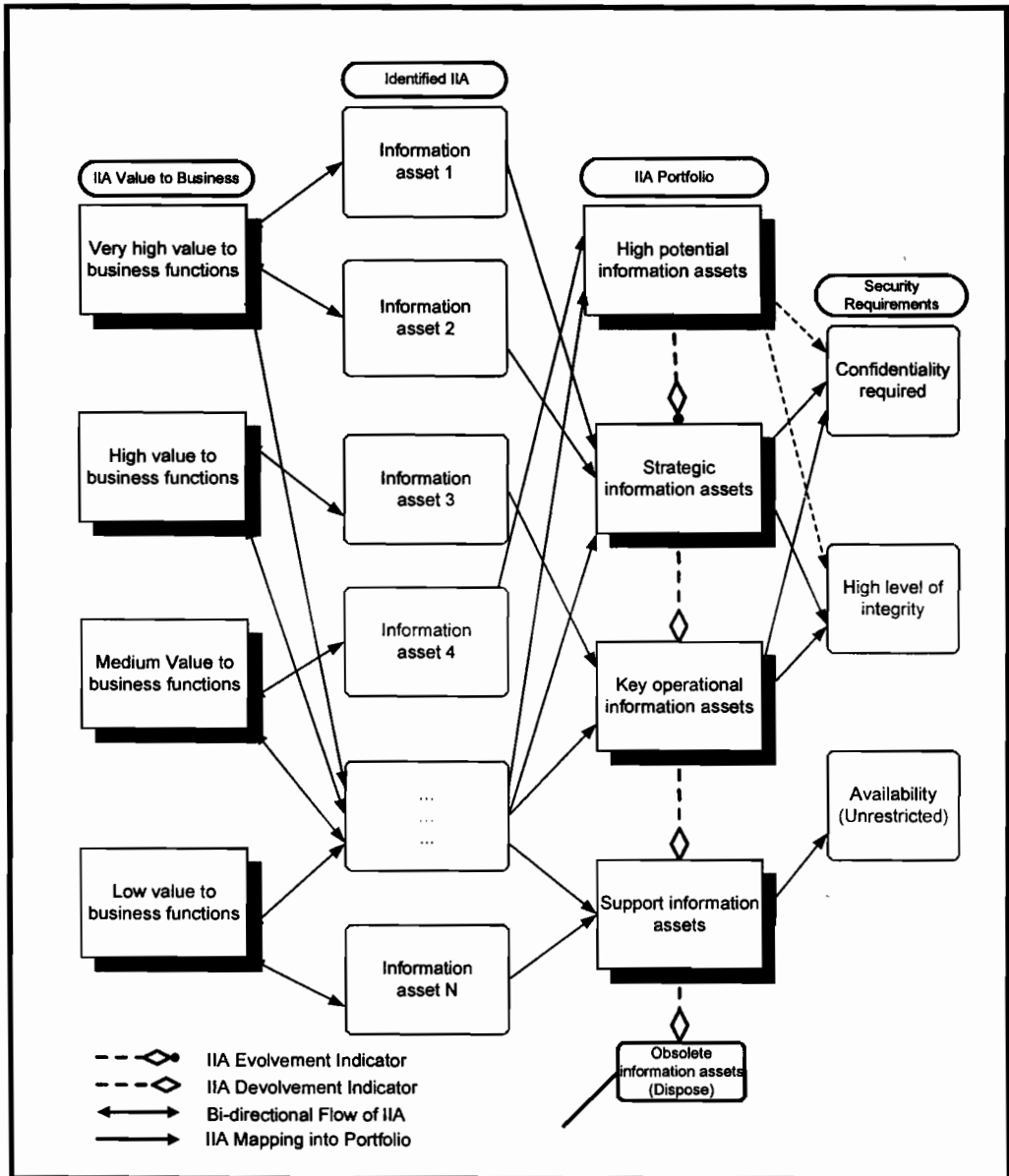


Figure 1: Intangible Information Assets (IIA) Identification and Classification

This skeletal picture of information assets evaluation is illustrated more in the Figure 1. The first step in the model is identifying of the IIAs and assigning of the identification code number to information assets. In our model, we labeled assets from 1 to N, the possible limit

depends on individual organization. In this case, the two major bases used in classification of information assets are value to business and security tenets of confidentiality, integrity, and availability of information. The latter is prudently determined based on the value of information assets to business. The values IIAs add to business are scaled into very high, high, medium, and low. Again, information asset that yields a very high value to business is strategic to that business organization. It is most likely that the organization would have some competitive advantage through such information asset.

The double headed arrow that links scaled business function and the identified information asset shows that business activity generates information asset and subsequently utilizes the asset in latter business process. The two-ways flow shows that information assets are built-up by activities in business units and activities in business units are enabled by information assets. Single headed arrow shows mapping of information assets into IIA portfolio and associated security tenet.

The model further indicates that all IIAs that contribute a very high value to business fall into strategic portfolio and need high level of confidentiality and the custodians and users should be men and women of high integrity. In our scaling system, IIA that makes high contribution to business value falls into key operational portfolio of information assets and need high level of confidentiality and integrity because it is the backbone of the business. Of course, the access to such IIA should be restricted. Again, IIA that adds medium value to business and are not fully exploited yet fall into high potential IIA portfolio while those with low value fall into support.

Moreover, IIAs evolve and devolve as time goes on. The dash diamond headed line with dotted tip shows that high potential information asset can evolve into strategic portfolio if properly developed. This means that IIA which is personal to a strategic business unit (SBU) can be developed into organization-wide strategic IIA. The dash line with blank Diamond Head shows possibility of devolvement of IIA. We assume that where a strategic IIA degenerate into key operation its competitive edge is lost. In the same manner, key operational IIA can degenerate into support while support degenerate into obsolescence.

Indeed, this is the crux of the whole matter, given that IIA which loses its functionality, is no more an asset and should therefore be written off from the records. Therefore this model enables organizations to sift their information assets, thus determining relevant monetary value of performing assets while those that are technologically, economically, and functionally obsolete are written off the records. In the model exit box with extended pipe shows that such IIA should flow out of the IIA inventory of active IIA.

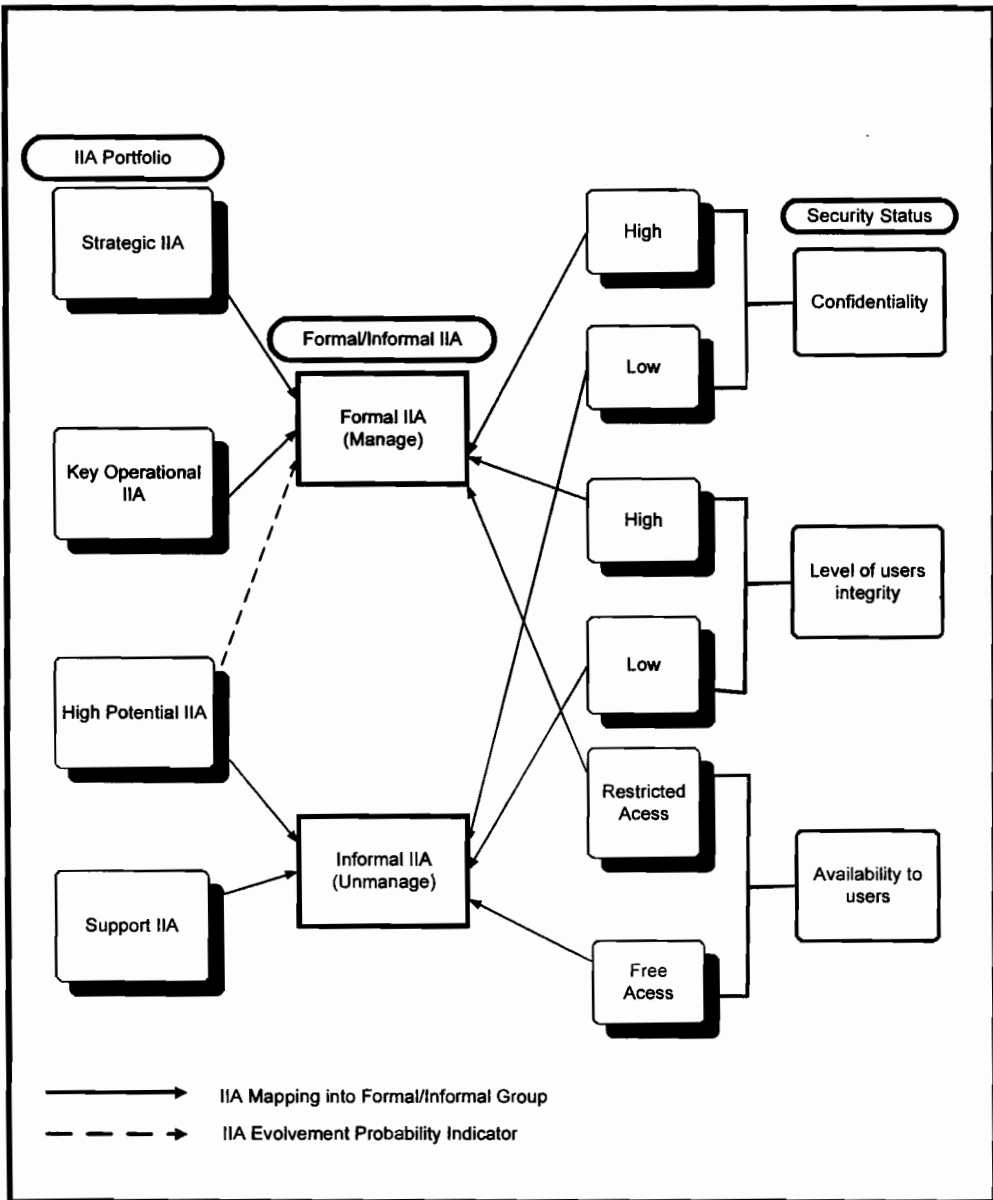


Figure 2: Information Assets Mapping into Formal and Informal Group

Figure 2 presents the final part of the asset evaluation model. At this point IIAs are mapped into informal and informal groups to enable management formulate managerial policies and control required to manage the intangible information assets. As [14] states, the cost of protecting information assets should not be higher than the value of information asset itself. The diagram indicates that strategic and key operational IIAs should be mapped into

managed class and such IIAs require high level of integrity, confidentiality, and adequate access control. This is consistent with the information asset management theory [13].

In sum the model discussed, gives impression that organization need to identify and classify their information assets based on value added of the IIAs and their security tenets of confidentiality, integrity, and availability. Besides, it helps in sifting out obsolete IIAs to enable determination of true and fair value of information assets. Finally, it serves as means of electronic inventory classification for efficient management of information assets.

4. CONCLUSION

This research focused on developing a framework through which organizations can evaluate their intangible information assets (IIA). The Center for Information and Communication Technology (CICT) chosen as case study has provided the necessary input required for the research. The questionnaires have been designed and administered in the Center, the interview has been done and other necessary system requirements consulted for and collected from time to time during the period of the research. The intangible asset evaluation framework has been carefully modeled and explained.

Based on the literature reviewed and the evaluation framework developed the need for organizations to evaluate their intangibles cannot be over emphasized. The recommendations made by the researcher are not limited to the case study organization; it could be helpful to other organizations as well. However, it needs be said that the recommendation should not be taken at face value; rather, considerable judgments should be made over them before actual adoption. This is necessary given the peculiarities of some organizations.

In the light of the value added of the intangibles in business organizations, it is recommended that the organizations should properly identify and document their intangible assets. Identification in the first instance creates a managerial attention. It enables one to focus on the asset with expected results. Of course, "nothing goes for nothing", if an investment has been made to developed the information assets, even if it lacks physical existence its output should be assessed to be sure that the investment is not unproductive. This seems impossible without identifying the soft asset and pinning it down to business activity in order to monitor its performance.

Moreover, it is recommended that the organization should classify their intangible assets for easy management. As [13] rightly notes, it is not easy to efficiently management information assets that are unclassified into managed and unmanaged group. Classification as it would be accepted makes assets retrieval easy by saving the time one could wander about seeking where the asset is to be located in the organization.

Beyond classification, the researcher recommends that the information assets should be carefully evaluated in order to uncover their various strength and weaknesses in contributing to the success of the corporate business of the organization. By evaluating information asset the organization would realize its soft assets that could cause the organization to lose customers if it not in place for a day or two. It also enables organizations to avoid spending resources in securing information assets that do not deserve the financial expenses incurred to secure them. The concept of *value for money* could be applied if the organizations properly evaluate their intangibles to know whether the expected value is derived from what is spent as a whole on the soft asset.

At this point, it is necessary to highlight that although the Intangible Asset Information model itself does not have a direct competitive advantage, yet, one cannot deny the fact that it is easy for information asset to lose its competitive edge if not well managed. Therefore, for organizations to maintain the competitive advantage the use of evaluation model is recommended as this would enable the proper classification of IIAs which in turn enables installation of adequate managerial control mechanisms over deserving IIA. This invariably would protect the information content from leaking into the hand of the competitors.

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