
Attributes Driving Intangible Asset Valuation

Sani Inusa Milala, Khadijah Md Ariffin

Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia,
86400 Parit Raja, Batu Pahat, Johor, Malaysia

Corresponding author: hadija@uthm.edu.my

Abstract - The inherent complexity and subjectivity of assessing assets such as intangible asset, posing challenges for standardized methodologies and accurate financial reporting, this complexity is compounded by the consideration of various valuation criteria, some of which are ill-suited for appraising intangible assets, this study is dedicated to assessing the key attributes that drive the valuation of intangible assets, aiming to construct a comprehensive framework for their valuation. Employing a mixed-methods approach, both quantitative and qualitative research designs were employed, utilizing survey questionnaires, semi-structured interviews, and focus group discussions. Purposive sampling was employed to select participants, and the data analysis involved descriptive and thematic content analysis. The study's findings underscored the paramount economic attributes of intangible assets, highlighting the significance of economic life span and company's value driver. Conversely, attributes categorized as company's value distracters were identified as less important, with novelty exhibiting the highest mean value of 4.6. Additional attributes such as originality, legal protection, royalty of the asset and life span right of protection also contributed significantly to the valuation process. Qualitative findings revealed that the market and income methods of valuation are predominant in intangible asset valuation practices. The study demonstrated that the choice of valuation method hinges on information availability, with attributes like economic life span and historic income influencing the value derivation process using income and market approaches. The study concludes by illustrating its findings through the development of a tangible intangible asset's valuation framework, providing a structured guide for assessing and determining the worth of intangible assets in a more systematic and informed manner.

Keywords - intangible asset, valuation, framework, intellectual property

Received: 3 Aug 2023

Accepted: 16 November 2023

DOI: <https://doi.org/10.29141/jibe.v9i1.895>

I. Introduction

Intangible assets are non-physical assets that lack a physical presence but hold substantial value for businesses include items like intellectual property, patents, trademarks, copyrights, and proprietary technology (Bavdaž, *et al.*, 2023). According to both the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB), intangible assets are identifiable, non-monetary assets without physical substance that a company controls and can generate future economic benefits from. These assets contribute significantly to a company's competitive advantage and financial performance (Van-Criekingen *et al.* 2022). Unlike tangible assets, such as machinery, intangible assets do not have a physical form, making their valuation and accounting more intricate (Nichita, 2019). Proper management and valuation of intangible assets are essential for a company's long-term success (FASB, "Statement of Financial Accounting Standards No. 141(R)," 2007; IASB, "International Accounting Standard 38," 2004).

An intangible subject is also known as intellectual property where it means an asset that does not have physical substance, but grants rights of ownership and economic benefits to owner (Kashanipour, *et al.*, 2023). An

intangible asset is a non-monetary asset that manifests itself by its economic properties (Buonomo et al., 2020). They are more specific than other assets and incorporate higher information asymmetries, linked to higher risk profiles and lower collateral value (Bryan, Rafferty & Wigan, 2017; Allerslev *et. al.*, 2017; Rita 2017). The information that an organization has in its stock and flow is known as intellectual capital. It is viewed that intangible assets, along with tangible assets, contribute to a company's market value.

An intangible asset is an asset that lacks physical substance, examples of intangible assets include patents, copyrights, and trademarks (Stehel et al., 2019). Because intangible assets lack physical substance, it can be difficult to determine their value (Banker et al., 2019). This is a problem because intangible assets make up a large portion of a company's value (Banker et al., 2019). The lack of a valuation framework for intangible assets can lead to problems such as overvaluing or undervaluing a company (Kashanipour, *et al.*, 2023). This can have serious consequences for investors, lenders, and another stakeholder (Visconti, 2020). One reason the lack of a valuation framework for intangible assets is a problem is that there is no agreed-upon definition of what constitutes an intangible asset (Ray, 2018). This makes it difficult to determine the value of an intangible asset (Visconti, 2020). In addition, the value of an intangible asset can change over time (Visconti, 2020). This means that it is difficult to calculate the value of an intangible asset using traditional methods such as market analysis. With this this research emerged significance

The valuation of intangible assets entails consideration of distinctive criteria given their unique characteristics. Noteworthy factors include legal protection, originality, economic life span, and the asset's role as a value driver for the company (Visconti, 2020). Legal protection, comprising elements such as patents and copyrights, establishes the asset's exclusivity and potential revenue streams (FASB, "Statement of Financial Accounting Standards No. 141(R)," 2007). The attribute of originality signifies the asset's distinctiveness in the market, contributing significantly to its competitive advantage. Economic life span is a critical criterion, indicating the duration over which the asset is expected to generate value. Additional attributes like royalty and life span right of protection further influence the asset's overall valuation (IASB, "International Accounting Standard 38," 2004). This complex array of criteria underscores the multifaceted nature of intangible asset valuation, necessitating a comprehensive approach that integrates both quantitative and qualitative considerations.

Visconti, (2020) further ascertained that the handling of intangible assets in terms of recognition and accounting has a direct impact on any valuation based on ratios. When valuing a company with intangible assets, there is an added element of risk in determining fair value. Some industries are now putting a greater emphasis on the capital treatment of development costs, as well as other related accounting activities (Goedhart, Koller and Wessels, 2015; Ong, 2019).

According to Sagawa (2018), Ray (2018) and Van der Walt (2007), there are many valuation criteria, some of which are fundamentally improper for valuing intangible assets. According to Orhangazi (2019) and Guenther & Guenther (2019), a company's worth is determined by its ability to create cash flows, functional intangible assets, and the uncertainty associated with these cash flows. Companies with more profitable running intangible assets have historically been valued higher than those with less profitable intangible assets. Intangible assets, on the other hand, are frequently connected with negative profitability, which analysts use as grounds for discarding existing valuation models in favor of devising new methodologies for evaluating such commodities. All too often, these novel techniques aren't made public or put to the test, resulting in exaggerated valuations.

The consequences of not having a valuation framework for intangible assets are widespread. Investors and lenders can incorrectly determine the value of a company's intangible assets. This can lead to inaccurate decisions about which companies to invest in and which loans to approve. In addition, stakeholders such as employees and customers may be over or underpaid based on the value of an intangible asset. The lack of a valuation framework for intangible assets also has negative impacts on innovation. For example, companies that are overvalued may become less willing to invest in new technology or research because they believe that their investments are not worth it. The lack of a valuation framework for intangible assets also has negative impacts on the economy as a whole. For example, companies that are overvalued may be less willing to invest in new products or services, which can lead to a decrease in economic growth.

The lack of a exploring the attribute of intangible asset, valuation framework for intangible assets proved to be a problem as it leads to inaccurate decisions about investments and innovation. It also has negative consequences for investors, lenders, and other stakeholders as noted in the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) have both emphasized the importance of clear frameworks and guidelines for the valuation of intangible assets. For example, FASB's "Statement of Financial Accounting Standards No. 141(R)" and IASB's "International Accounting Standard 38" provide standards for recognizing and measuring intangible assets. These frameworks aim to enhance the transparency and reliability of financial reporting. Moreover, studies such as "Intangible Asset Valuation: A Multifaceted Approach" by Kevin Amess and Mike Wright (2007) emphasize the challenges associated with intangible asset valuation and the need for comprehensive frameworks. The lack of a structured approach to valuing intangible assets can indeed lead to inaccurate investment decisions, affecting both innovation and the interests of investors, lenders, and other

stakeholders. The solution to the problem of the lack of a valuation framework for intangible assets is to develop a standard definition of what constitutes an intangible asset and to use market analysis to calculate the value of an intangible asset. In addition, it is important to create a system in which stakeholders can report information about the value of an intangible asset. This will help ensure that the valuation framework for intangible assets is accurate and consistent across different industries.

Koppius (2018) and Gregory (2018) states that the first and possibly most crucial feature of intangible assets is the challenge of calculating their worth, as correctly stated. One of the challenges affecting this value determination. According to Koppius (2018), it is the eccentric nature of intangible assets, such as a patent, which makes it difficult to determine the value based on the value of similar assets.

Cancino (2020), Cuzco & Redrovan (2012), Chaves (2004) and Jaramillo (2010) reaffirm that various methodologies have been developed for the valuation of tangible assets, but some still have criticism in the judgment of another scholar. However, there are constraints to developing intangible asset techniques, such as the inability of pricing aspects that are not apparent and are subject to environmental variables. Several quantitative and qualitative approaches have been applied in the appraisal of intangible assets.

According to Gupta and Nath (2018), Hanson *et. al.*, (2020) and Kislingerova (2020), many other similar research, has an out-of-date publication. The development of models for an intangible asset valuation was the major focus of the research, and some are focused on model value for discounted cash flow, which provides the most practical application. Separate attention to the authors' difficulties to evaluate the financial condition. There is also the issue of developing new models and frameworks for determining the value of intangible assets. According to Gupta and Nath (2018), various methodologies and strategies are available to address valuation issues, but attempts to improve the measurement and reporting of intangibles should continue. The obstacle is a desire to scale up an acceptable universal regulatory framework for intangible asset valuation.

In many fields, there are many inquiries and debates, and consensus on the method of valuation among value appraisers, scholars, and researchers on which or what method of valuation should be used to ascertain the monetary worth of the asset at a specific time over a given economic situation. Going with the natures of the intangible asset, lack of asset information, and lack of assessing another intangible asset attribute, which will lead to uncertainty in valuation result. Thus, there is a need for an intangible asset valuation framework. Therefore, this study aimed at developing a framework for value determination of intangible asset valuation to provide reliable and dedicated strategies for the valuation of intangible assets because even though several studies have been conducted on the valuation of the intangible assets, no comprehensive research was carried out specifically on a framework for the value determinant of intangible asset valuation.

II. Intangible Assets

Research studies have shown that most of the current intangible asset concepts are residual from the concept of the general asset (Bjorkmo, & Eriksson, 2023). International Valuation Standards Council (IVSC) stated that an intangible asset is a non-monetary asset that manifests itself by its economic properties. It does not have physical substance but grants rights & economic benefits to its owner. International Accounting Standards Board (IASB) defines an intangible asset as an identifiable non-monetary asset without physical substance. Gumbau-Albert, & Maudos, (2022) defines, among general asset meanings, an asset as a "property owned by a company or individual that is considered to be worthwhile and available to meet liabilities, liabilities or obligations". This broad definition of the assets is similar to that of the Financial Accounting Standards Board (FASB), which describes the asset as a "probable future economic gain from past transactions or events, which is acquired or regulated by a specific individual".

Classification Intangible Assets

International Valuation Standard (IVS), Board of Valuers, Appraisers, Estate Agents and Property Managers Malaysia (BOVAEP), Malaysian Valuation Standard MVS (2018), International Accounting Standard (IAS 3) Scheme 2007, Intellectual Property Corporation of Malaysia (MyIPO), and Gupta, & Nath, (2018) put forward the classification of an intangible asset as:

i. Marketing-Related Intangible Assets

These include trademarks and noncompetition agreements, representing identifiable marketing assets acquired in a business combination (Seo, & Kim, 2020; Osman, & Ngah, 2016; Ahmad, et al 2020).

ii. Customer-related intangible assets

Encompassing customer contracts and relationships, this category recognizes the value associated with existing customer bases acquired in a business combination (Barker, et al., 2022).

iii. Artistic intangible assets/copyright right

Artistic Intangible Assets/Copyright this category comprises artistic works and copyrights, representing unique creative assets with economic value (Nichita, 2019).

iv. Contract-based intangible assets

Contract-Based Intangible Assets Acknowledged in the study of Tefera, & Hunsaker, (2020) that this category includes intangible assets arising from contractual agreements, such as licensing agreements and supply contracts

v. Technology-based intangible assets

Technology-Based Intangible Assets: Patents, trade secrets, and other technology-related assets fall under this category, recognized as intangible assets with value derived from technological advancements (Lim, et al., 2020).

vi. Goodwill

Goodwill: Seo, & Kim, (2020) defines goodwill as the excess of the purchase price over the fair value of identifiable net assets acquired, representing the intangible value associated with factors like reputation, brand, and workforce synergy.

III. Methodology

The primary objective of this study is to develop a comprehensive framework for the valuation of intangible assets. The research design adopts a dual approach, employing both qualitative and quantitative methods to gather insights into the attributes influencing intangible asset valuation. The quantitative aspect involves the design and implementation of a survey questionnaire, strategically employing purposive sampling techniques to select participants with specific expertise relevant to the study. This survey aims to collect quantitative data on the significance of various intangible asset attributes, utilizing structured questions and appropriate scales for responses. Subsequently, the data obtained from the survey will undergo rigorous quantitative analysis, employing statistical techniques such as regression analysis and correlation to discern relationships between different intangible asset attributes and their impact on valuation. The interpretation of these findings will serve to highlight significant trends and patterns, providing valuable insights into the quantitative aspects of intangible asset valuation.

Complementing the quantitative approach, the study incorporates a qualitative dimension through two consecutive focus group sessions with professional intellectual property (IP) valuers. The selection of focus group participants is guided by purposive sampling, drawing from a list of registered IP valuers provided by the MyIPO included the active member and excluding the not active member due the need for updated data on valuation. These sessions are designed to validate and enrich the quantitative findings by capturing the practical experiences and insights of experts in the field. Thematic content analysis will be applied to the qualitative data gathered from these sessions, identifying recurring themes and patterns that contribute to a more comprehensive understanding of intangible asset valuation practices. The integration of both quantitative and qualitative findings is crucial in developing a robust framework. The qualitative insights derived from the focus groups will not only validate the quantitative results but also contribute to the practical applicability of the final intangible asset valuation framework.

Table 1: Sources of research constructs

Construct	Source
Economic attribute	Visconti, (2020) MVS (2018), Intellectual Property Corporation of Malaysia (MyIPO), and Gupta, & Nath, (2018)
Legal attributes	Visconti, (2020)
Other attributes	MVS (2018,) IVS (2020)
Significance of Economic Attribute	IVS (2020), Visconti, (2020)
Significancy of Legal attributes	Visconti, (2020), Intellectual Property Corporation of Malaysia (MyIPO),
Significancy of Other attributes	Visconti, (2020)

IV. Result and Discussion

To have the comprehensive result and discussion session in this study, analysis of research objectives in relation to the questions in the questionnaire was carried out. Individual variables would be explicitly specified as the study's goal, and several questions addressing them would be presented, evaluated, and interpreted in various ways.

i. The constructs reliability

Cronbach's alpha, as recommended by Pallant, (2011) was used to assess the constructs' reliability. The questionnaire's overall Cronbach's alpha was 0.908. This indicates that the entire questionnaire is trustworthy and acceptable. The Cronbach's alphas obtained for each of the constructions are within the same range, according to the reliability test for the field data shown in Table 1.

Table 2: Construct reliability table

Constructs	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Economic attribute	.776	.749	13
Legal attributes	.880	.892	8
Other attributes	.858	.460	11
Significance of Economic Attribute	.819	.814	13
Significancy of Legal attributes	.828	.851	8
Significancy of Other attributes	.679	.690	11

Table 3: Economic attributes of intangible asset

Economic attributes	Mean	Std. Deviation	Ranking	Remark
Company's value drivers	4.6000	.54772	1 st	Very high
Firm-specificity	4.4000	.54772	2 nd	Very high
Historic income contribution of the asset	4.2000	.44721	3 rd	Very high
The existence of network effects	3.6000	.54772	4 th	High
The lack of complete appropriability of the benefits owner	3.4000	1.14018	5 th	Moderate
No rivalry between uses	3.4000	.89443	6 th	Moderate
Historic income	3.2000	1.30384	7 th	Moderate
High risk and uncertainty	3.2000	1.30384	8 th	Moderate
Cost of the asset	3.0000	.70711	9 th	Moderate
Human capital intensity	3.0000	1.22474	10 th	Moderate
Risk prone asset	2.8000	.83666	11 th	Moderate
The non-tradability of most intangible assets.	2.2000	1.30384	12 th	Low
Company's value distracters	2.0000	1.22474	13 th	Low

Source: Field survey (2022).

In summary, the analysis of Table 3 highlights various economic attributes of the intangible asset, with different mean values indicating their respective levels of impact on the asset's value. The findings emphasize the significance of attributes such as company's value drivers, firm-specificity, historic income contribution, network effects, and the appropriability of benefits. Understanding these attributes is crucial for assessing and maximizing the economic value of intangible assets.

Table 4: The legal attributes of intangible assets

Legal attributes	Mean	Std. Deviation	Ranking	Remark
Novelty	4.6000	.54772	1 st	Very high
Originality	4.4000	.54772	2 nd	Very high
Legal protection	4.4000	.54772	3 rd	Very high
Royalty of the asset	4.2000	.83666	4 th	High

Life span right of protection	4.2000	.83666	5 th	High
Standard	4.0000	.70711	6 th	High
Infringement right	4.0000	1.00000	7 th	High
Scope and no. of chain of element	3.6000	.54772	8 th	High

Source: Field survey (2022).

From Table 4 above, the legal attributes of the intangible asset the data displays below are the result of the result varies from ranged from a high mean value of 4.6000 to the low mean value of 3.6000. It can be perceived from the Table 4 that novelty has the highest mean value of 4.6000, followed by originality with a mean value of 4.400, legal protection, with a mean value of 4.4000, royalty of the asset with a mean value of 4.2000, life span right of protection of the asset with mean value of 4.2000, standard with the mean value of 4.000, infringement right with the mean value of 4.000 and scope and no. of chain of element with a mean value of 3.6000. The analysis from the Table shows the legal attributes of intangible asset.

Table 5: Other attributes of intangible asset

Other attributes	Mean	Std. Deviation	Ranking	Remark
Control	4.6000	.54772	1 st	Very high
Create ability	4.6000	.54772	2 nd	Very high
Identifiability	4.6000	.54772	3 rd	Very high
Life span	4.2000	.83666	4 th	High
Non-physical attribute	4.2000	.83666	5 th	High
Development cost	4.0000	1.00000	6 th	High
Intertwined value	4.0000	1.00000	7 th	High
Heterogeneous in nature	3.8000	.83666	8 th	High
Royalty cost	3.6000	.89443	9 th	High
Tax liable	3.0000	1.58114	10 th	Moderate
Destroyability	3.0000	1.22474	11 th	Moderate

Source: Field survey (2022).

From Table 5 above, the result of the other attributes of the intangible asset was shown where control appears with the highest mean value of 4.6000 followed by the createability and identifiability with the mean value of 4.6000 and 4.6000 respectively. Where royal cost tax liable and destroy ability are having the mean value of 3.6000, 3.0000 and 3.0000 respectively, are the attributes having the lowest mean value.

What are the significant of attributes intangible asset in valuation?

Table 6: Significant economic attributes of intangible

Significant economic attributes of intangible	Mean	Std. Deviation	Ranking	Remark
Economic life span	4.6000	.54772	1 st	Very high
Company's value drivers	4.6000	.54772	2 nd	Very high
Company's value distracters	4.2000	.44721	3 rd	Very high
Historic income contribution of the asset	3.8000	1.64317	4 th	High
The lack of complete appropriability of the benefits owner	3.6000	.89443	5 th	High
The existence of network effects	3.6000	.54772	6 th	High
High risk and uncertainty	3.6000	1.14018	7 th	High
Cost of the asset	3.2000	.83666	8 th	Moderate
No rivalry between uses	3.2000	.83666	9 th	Moderate
Human capital intensity	3.2000	.83666	10 th	Moderate
Risk prone asset	3.0000	1.00000	11 th	Moderate
The non-tradability of most intangible assets.	2.8000	1.09545	12 th	Moderate
Company's value distracters	2.2000	1.30384	13 th	Low

From Table 6 above, the result shows the significant economic attributes of intangible asset where economic life span, company's value driver and company's value driver are the highest and most significance economic attribute while company's value detractor are the least important

ii. Method of Intangible Asset Valuation

The interviewee discussed various valuation methods for intangible assets, including the income, market, and cost methods, as well as sub-methods such as the excess earning method (IVS, 2020; RICS, 2018; Hsu et al., 2022; MVS, 2019). the dominance of three methods: income, market, and cost approaches. These approaches align with those endorsed by MyIPO, MVS, and IVS.

Income Approach

The findings underscore the significance of employing the themed approach as a dominant method for determining the value of intangible assets. In line with theoretical underpinnings, R3 advocates for the income approach, emphasizing its suitability for economically valuing intangible assets. This aligns with established theories that posit the income approach as a recommended method for assessing the economic worth of intangibles. Conversely, the market approach, less prevalent due to the unique and individually negotiated nature of intangible assets, is discussed in the literature. Notably, R3 elucidates that when applying the income approach, the appraiser focuses on evaluating the future income generated by the asset, taking into account its economic lifespan—a concept supported by existing theoretical frameworks.

The literature accentuates the pervasive challenge of valuing intangible assets, despite the multitude of suggested approaches, as discussed by Pastor et al. (2017). Drawing from Russell's (2016) acknowledgment of the importance of excess multiple earning, income, and market approaches, the study aligns with theoretical foundations recognizing the diverse approaches integral to the valuation process. Moro-Visconti's (2022) exploration of intangible asset appraisal identifies several approaches, including market, income, cost, and option approaches. Specifically, the income approach emerges as a prominent method employed in valuing pharmaceutical intangible assets a finding consistent with established theories in the field.

R1 contributes valuable insights, emphasizing the common use of the income approach when intangible assets have income-generating potential, particularly for commercialized assets with fixed future income. Within the income approach, the study reveals more than three sub-methods, such as multiple excess earning, tailored for commercialized assets, especially in software companies. The theoretical alignment is evident as R1 explicates that in valuing contract-based intangible assets, multiple excess earning serves as an option for determining their actual value. R4's preference for the income approach, considering it the primary method with the market approach as a supplementary check, resonates with theoretical perspectives emphasizing the comprehensive analysis of future potential a characteristic intrinsic to the income approach. In summary, these findings provide theoretical support for the choice and application of specific valuation approaches, aligning with established frameworks and contributing nuanced insights to the field of intangible asset valuation.

What and how the significant identified attributes affect the intangible asset value derivation by using Income Approach

R3 emphasized the significance of the income approach in projecting future income attributed to intangible assets. When applying this method, factors such as the asset's lifespan, legal protection, and absence of rivalry between uses should be considered. Legal protection was particularly highlighted as a crucial aspect in determining the value of intellectual property (IP). This notion aligns with international valuation standards like IVS, Malaysian valuation standards (MVS), and the Royal Institute of Chartered Surveyors (RICS)

R1 highlighted the importance of legal and economic attributes in determining future income and valuing intangible assets. Intangible assets play a crucial role in a company's value within specific economic and legal conditions. R2 confirmed that legal attributes, such as protection, and economic attributes, like rivalry between uses, impact the valuation process using the income approach. This finding aligns with a previous study by Pastor et al. (2017). R3 emphasized that economic attributes, including cost, economic lifespan, high risk, and uncertainty, significantly affect the value derived through the income approach. The lifespan of an asset also plays a crucial role, as higher lifespan correlates with a higher chance of generating income. R2 noted that intangible assets are unique and often require coexistence with other company components to generate income. Factors like network effects, rivalry between uses, non-tradability, infringement rights, and standards influence the value derivation of intangible assets using the income approach. Legal attributes, such as infringement rights, restrict the future income projection due to usage limitations.

R3 emphasized the significance of considering the historical income of an asset when making projections and assessing achievability. This aligns with previous literature that suggests valuation decisions are based on available information, with historical data serving as the basis for projections. R4 added that attribute control also

affects how an asset generates income for a company. The controllability of the asset influences the stream of income, with the level of control having a substantial impact on the asset's value and usability. In addition to the income approach, R3 highlighted the importance of economic attributes such as the asset's lifespan and the absence of rivalry between uses. When legal attributes like strong legal protection are present, it increases income expectations. Conversely, assets without legal protection would have lower income expectations. R3 also mentioned the use of discounted rates in the application of the income approach. The determination of discounted rates is linked to the certainty or risk associated with achieving projected income. Higher discounted rates are employed when the risk or certainty of achieving projected income is high, while lower discounted rates are used when the risk and certainty are low.

R2 stated that in the income approach, economic attributes like firm specificity and company value drivers are crucial in determining the value of intangible assets. These attributes contribute to projecting future income. Additionally, attributes such as infringement rights, lifespan, protection, novelty, originality, and creatability also impact the value of intangible assets under the income approach, based on R2's experience. R3 emphasized the importance of considering value drivers, as well as risks and uncertainties related to cash flow, when making projections under the income approach.

Market Approach

What and how the significant identified attributes affect the intangible asset value derivation by using market approach

The market approach is a popular method for determining the value of an asset based on the selling price of comparable assets. However, when it comes to valuing intangible assets, the market approach is less commonly used due to their unique nature and the scarcity of similar transactions (R3). Nevertheless, there are cases where the market approach can be applied, such as when there is a sufficient availability of previous transactions that allow for reliable comparisons and adjustments (R3). An example of this is the trading of licenses for intangible assets like Medallia practice in the UK, where the market approach becomes applicable due to the abundance of available data from regular transactions (R3). The attributes that affect intangible asset value derivation using the market approach are highlighted. These include historic income, company value drivers and distractors, and human capital intensity (R1, R3). In terms of cost consideration, it depends on the valuation approach chosen within the income approach, such as the novelty in royalty relief method or the use of multiple excess earnings (R1). While the market approach may have data availability challenges and requires adjustments, appraisers can extract relevant data such as company performance information, earnings, revenue, and the overall enterprise value (R3). This data, including historic information, plays a significant role in using the market approach for valuation purposes (R1).

R4 explained that valuing the IP directly using the market approach can be challenging. However, they suggested that valuing the company using the market approach is relatively easier, although it may not provide an exact value for the IP,

Cost Approach

What and how the significant identified attributes affect the intangible asset value derivation by using cost Approach

R1 highlights the significance of development cost as an attribute when valuing an intellectual property (IP) asset that is still in the early stages of development and has not been commercialized. Development cost includes personal expenses, costs related to IP development, and other expenditures. In the case of a five-year lifespan for the IP, the computation of income generated over that period is a fundamental principle. When using the cost approach, legal attributes such as originality, novelty, and infringement rights are important considerations. Drawing on Resource-Based View (RBV) theory, R1 emphasizes the strategic significance of development cost as a critical attribute in the valuation of intellectual property (IP) assets, particularly in the early stages of development and prior to commercialization. The RBV framework asserts that unique and valuable resources contribute to a firm's sustained competitive advantage. In this context, development cost is viewed as a resource that influences the potential value of the IP asset. The consideration of personal expenses, IP development costs, and other expenditures aligns with RBV's focus on firm-specific resources. Additionally, when employing the cost approach, legal attributes such as originality, novelty, and infringement rights become pivotal, reflecting Transaction Cost Economics (TCE) principles, where the valuation method is influenced by transaction-specific factors, in this case, legal characteristics inherent in the intellectual property.

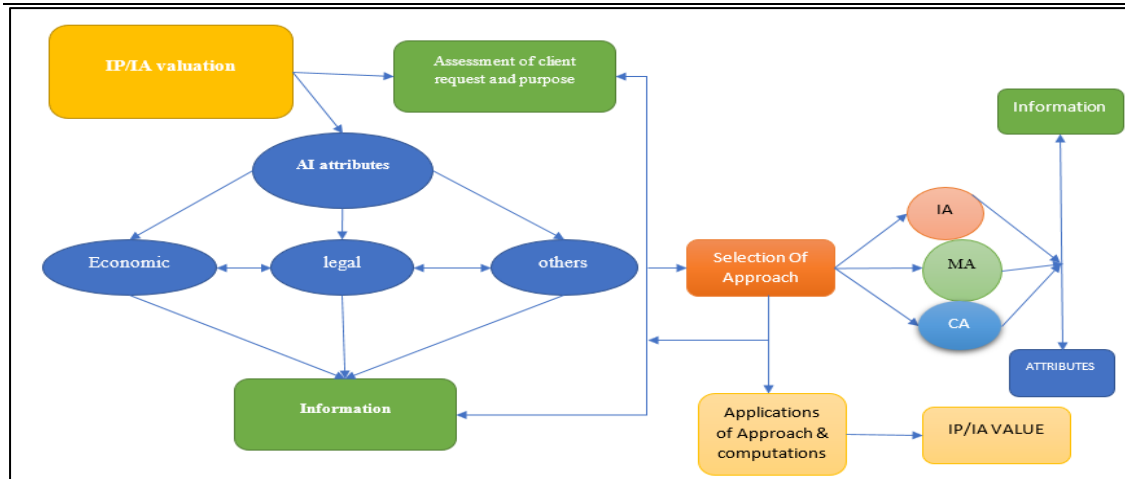


Fig 1.0 propose framework for the valuation of intangible assets

The integration of a survey questionnaire and focus group discussions, guided by relevant theories, has culminated in the development of a robust framework for intellectual property (IP) valuations. The findings elucidate that the choice of valuation approach in IP valuations is intricately linked to the specific purpose of the valuation and the accessibility of pertinent information about the asset. This aligns with the Resource-Based View (RBV) theory, which posits that the valuation approach should be tailored to the unique characteristics and strategic significance of the intellectual assets in question. The RBV framework emphasizes leveraging firm-specific resources for sustained competitive advantage, in this case, emphasizing the relevance of the IP's attributes to the valuation process. Importantly, while the inherent attributes of the intangible asset itself may not directly determine the valuation approach, they indirectly contribute to the decision-making process. This resonates with Transaction Cost Economics (TCE) theory, suggesting that the choice of valuation method is influenced not only by the characteristics of the asset but also by transaction-specific factors. In the context of IP valuation, legal and economic attributes emerge as pivotal considerations, aligning with TCE principles.

The emphasis on legal and economic attributes aligns with previous research, reinforcing the idea that specific attributes play a crucial role in guiding the valuation process. This perspective is consistent with the signaling theory, which asserts that certain attributes act as signals or indicators of an asset's value, influencing valuation decisions. In the case of IP valuation, legal and economic attributes can be viewed as signaling factors, providing critical information for determining the appropriate valuation approach. Furthermore, the acknowledgment of the heterogeneous nature of intangible assets and the necessity for technical expertise in valuation aligns with the Knowledge-Based View (KBV) theory. KBV emphasizes the importance of tacit knowledge and specialized skills in leveraging intellectual assets. In instances where local data for comparison is lacking, participants resort to international references, a practice supported by the Institutional Theory, which acknowledges the influence of external norms and standards on organizational practices. The findings substantiate theoretical perspectives such as RBV, TCE, signaling theory, and KBV, providing a nuanced understanding of the interplay between intangible asset attributes, valuation approaches, and decision-making processes within the realm of intellectual property valuation.

V. Conclusion

From this study which aim solely at development of the framework for the value determination of intangible asset valuation the proposed framework of the intangible asset/ intellectual property valuation it show that the selection of the valuation method heavenly depend on the availability of the information and the purposes of the valuation exercise, from this study there 3 basic method of the IP valuation where the market and the income approach are mostly used in the valuation of the intangible asset. Lastly due to the heterogeneous nature of the intangible asset the valuation of the intangible asset become a unique assignment.

Acknowledgment

This research is acknowledged to the Universiti Tun Hussein Onn Malaysia, for their support of providing conducive academic environment that aid in the success of this study

Declaration

The authors of this manuscript declare that there is no conflict of interest pertaining to the contents presented in this work.

Authors contribution

This study reflects a collaborative effort with distinct contributions from each author. Khadija binti Md Ariffin played a pivotal role in the conceptualization of the study, initiating the core ideas and assuming the supervisory role throughout the research process. Her involvement extended to active participation in data collection. On the other hand, Sani Inusa Milala took charge of the literature review and analysis, delving into the existing body of knowledge to provide a comprehensive foundation for the study. The results, stemming from both conceptualization and literature analysis, were jointly discussed, reflecting a synergistic approach to the research endeavor. This division of responsibilities showcases a well-coordinated effort, blending conceptualization, supervision, literature exploration, and collaborative analysis.

References

- Ahmad, N., Ghazali, N., Abdullah, M. F., Nordin, R., Nasir, I. N. M., & Farid, N. A. M. (2020). Green marketing and its effect on consumers' purchase behaviour: an empirical analysis. *Journal of International Business, Economics and Entrepreneurship*, 5(2), 46-55.
- Allerslev, D. A., Blakstad, S. A. L., & Torsvik, G. (2017). Intangible assets and firm performance: An empirical study of Norwegian firms. *Journal of Intellectual Capital*, 18(1), 183-201
- Banker, R. D., Huang, R., Natarajan, R., & Zhao, S. (2019). Market valuation of intangible asset: Evidence on SG&A expenditure. *The Accounting Review*, 94(6), 61-90.
- Barker, R., Lennard, A., Penman, S., & Teixeira, A. (2022). Accounting for intangible assets: suggested solutions. *Accounting and Business Research*, 52(6), 601-630.
- Bavdaž, M., Bounfour, A., Martin, J., Nonnis, A., Perani, G., & Redek, T. (2023). Measuring investment in intangible assets. *Advances in Business Statistics, Methods and Data Collection*, 79-103.
- Björkmo, S., & Eriksson, M. (2023). Intangible assets and earnings management: An analysis in an EU context.
- Bryan, D., Rafferty, M., & Wigan, D. (2017). Accounting for Intangible Assets: There's a Long Way to Go. *Journal of Intellectual Capital*, 18(1), 20-38
- Buonomo, I., Benevene, P., Barbieri, B., & Cortini, M. (2020). Intangible assets and performance in nonprofit organizations: A systematic literature review. *Frontiers in Psychology*, 11, 729.
- Cancino, C. (2020). Intellectual Capital Valuation: A Review of the Literature. In *Intellectual Capital Management in Mexican Organizations* (pp. 39-57). Springer
- Chaves, G. (2004). Valuation of intangible assets: an exploration of patent and trademark portfolios. *The Journal of Intellectual Property Law*, 11(1), 1-24
- Cuzco, E., & Redrovan, D. (2012). The contribution of intangible assets to business performance. *Journal of Intellectual Capital*, 13(2), 222-244
- Fleckenstein, M., Obaidi, A., & Tryfona, N. (2023). A review of data valuation approaches and building and scoring a data valuation model.
- Goedhart, M., Koller, T., & Wessels, D. (2015). *Valuation: Measuring and Managing the Value of Companies* (6th ed.). Wiley
- Gregory, K. (2018). *Intellectual property valuation: a primer for identifying and valuing intangibles*. Wiley
- Guenther, D. A., & Guenther, T. W. (2019). Intangible assets and the cost of equity capital. *Journal of Accounting Research*, 57(2), 367-399
- Gumbau-Albert, M., & Maudos, J. (2022). The importance of intangible assets in regional economic growth: a growth accounting approach. *The Annals of Regional Science*, 69(2), 361-390.
- Gupta, N., & Nath, N. (2018). Intellectual property valuation: a critical review. *Journal of Intellectual Property Rights*, 23(3), 192-200
- Gupta, N., & Nath, N. (2018). Intellectual property valuation: a critical review. *Journal of Intellectual Property Rights*, 23(3), 192-200
- Hanson, J., Hitt, M. A., Ireland, R. D., & Hoskisson, R. E. (2020). *Strategic Management: Concepts and Cases: Competitiveness and Globalization*. Cengage Learning
- Jaramillo, E. (2010). Intangible assets and the value of a firm: a literature review. *Academy of Accounting and Financial Studies Journal*, 14(2), 71

- Kashanipour, M., Abbaszadeh, M. R., & Anbarani, S. (2023). Development a model for valuing intangible assets in knowledge-based companies. *Journal of Management Accounting and Auditing Knowledge*, 12(48), 249-270.
- Koppius, O. (2018). The value of intangible assets: insights from academic research. *Journal of Intellectual Property Law & Practice*, 13(3), 189-198
- Lim, S. C., Macias, A. J., & Moeller, T. (2020). Intangible assets and capital structure. *Journal of Banking & Finance*, 118, 105873.
- Nichita, M. E. (2019). Intangible assets—insights from a literature review. *Journal of Accounting and Management Information Systems*, 18(2), 224-261.
- Nichita, M. E. (2019). Intangible assets—insights from a literature review. *Journal of Accounting and Management Information Systems*, 18(2), 224-261.
- Ong, J. E. (2019). The role of intangible assets in the survival of new technology-based firms. *Journal of Intellectual Capital*, 20(2), 141-156
- Orhangazi, O. (2019). Intangible Capital and the Profits of US Commercial Banks. *Review of Radical Political Economics*, 51(2), 226-253
- Osman, C. A., & Ngah, R. (2016). Assessing sustainable competitive advantage in relation with intellectual capital, knowledge management and innovativeness in women-owned SMEs in Malaysia. *Journal of International Business, Economics and Entrepreneurship*, 1(1), 46-51.
- Oxford Dictionaries. (n.d.). Definition of asset in English. Oxford Dictionaries. Retrieved from <https://en.oxforddictionaries.com/definition/asset>
- Pallant, J. (2011). *SPSS survival manual: A step by step guide to data analysis using SPSS*. McGraw Hill
- Ramli, N., Mohamed, R., Abdullahi, M., Jaafar, N. I., & Lazim, N. M. (2017). Customer perception of service quality in higher education: A comparison between public and private institutions. *Journal of Applied Environmental and Biological Sciences*, 7(11), 121-131
- Ray, A. (2018). *Intangible assets management in emerging economies: Techniques and practices*. IGI Globa
- Ray, A. (2018). *Intangible assets management in emerging economies: Techniques and practices*. IGI Globa
- Rita, R. (2017). Intellectual capital management: a review. *Journal of Intellectual Capital*, 18(2), 244-262
- Sagawa, K. (2018). *Intangible Asset Management: How to Unlock Value in the New Economy*. Harvard Business Press
- Seo, H. S., & Kim, Y. (2020). Intangible assets investment and firms' performance: Evidence from small and medium-sized enterprises in Korea. *Journal of Business Economics and Management*, 21(2), 421-445
- Stehel, V., Rowland, Z., & Mareček, J. (2019). VALUATION OF INTANGIBLE ASSETS DEPOSIT INTO CAPITAL COMPANY IN CASE OF SPECIFIC TRANSACTION. *Ad Alta: Journal of interdisciplinary research*, 9(1).
- Tefera, C. A., & Hunsaker, W. D. (2020). Intangible assets and organizational citizenship behavior: A conceptual model. *Heliyon*, 6(7).
- Van Criekingen, K., Bloch, C., & Eklund, C. (2022). Measuring intangible assets—A review of the state of the art. *Journal of Economic Surveys*, 36(5), 1539-1558.
- Van der Walt, N. (2007). Intellectual capital: a strategic alliance in corporate reporting. *Journal of Intellectual Capital*, 8(3), 445-455
- Visconti, F. (2020). Intangible Assets and the Risk of Value Adjustment in Corporate Valuation. *Accounting in Europe*, 17(1), 1-21