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Human Resource Accounting And Its Relation To Intellectual Capital: A Systematic Review

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Abstract
Human Resource Accounting (HRA) and Intellectual Capital (IC) are essential concepts that concentrate on the valuation and administration of intangible assets within organisations. This systematic review examines the interrelation between HRA and IC, as well as its evolution, methodologies, and applications. The review emphasises the potential benefits, implications, and challenges of integrating HRA and IC to improve organisational performance and strategic decision-making.

Keywords: *Human Resource Accounting, Intellectual Capital, HRA, IC, Human Capital Accounting, Intellectual Capital Accounting, Systematic Review*

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I. Inroduction

Human Resource Accounting is the process of identifying, measuring and valuing the data related to human resources of the organisation. The economic value of a company's human resources is identified, measured, and reported through the process of human resource accounting (HRA). HRA endeavours to offer a more comprehensive perspective on an organisation's value by incorporating the contribution of human capital, in contrast to conventional accounting, which predominantly concentrates on tangible assets (Kaur, Raman and Singhania, 2014). Intellectual Capital (IC) includes things like human capital, structural capital, and social capital that can't be seen or touched but add value to a business (Sveiby, 1997). As economies become more knowledge-based, IC has received a lot of attention in both the academic and real worlds. This paper surveys the historical development of HRA, analyses the various methods of human resource valuation, and discusses the relevance of HRA in the contemporary business environment as well as evolution of IC ideas, their measurement, and their application across various fields. The paper also discusses what IC means for organizational strategy and decision-making.

II. Objectives Of The Study

Objectives of this systematic review are:

1. To reconstruct the historical development of HRA and IC.
2. To evaluate the empirical and theoretical research on HRA and its correlation with IC
3. Investigate the practical implications of integrating HRA and IC in organisations.
4. To identify the obstacles and opportunities associated with HRA and IC practice implementation.
5. To recommend potential future research directions for HRA and IC integration.

III. Historical Background

In the 1960s, economists such as Rensis Likert and Eric Flamholtz conducted groundbreaking research that first introduced the concept of HRA (Flamholtz, 1971; Likert, 1967). The theoretical foundations of HRA were the primary focus of the early research, with Likert underscoring the significance of human assets in organisations and Flamholtz devising models for evaluating the value of human resources. Likert introduced the concept of HRA in the 1960s, proposing the idea of human assets and the importance of measuring them. In the 1970s, Eric Flamholtz developed Likert's concepts by proposing specific models for valuing human resources, including the Historical Cost Model and the Replacement Cost Model (Flamholtz, 1999). In the 1980s, the emphasis shifted to the practical implementation of HRA, as companies such as Infosys experimented with human resource valuation in their financial statements. In the 1990s, HRA gained a wider audience as organisations began to recognise the significance of human capital in attaining a competitive edge (Spiceland and Zaunbrecher, 1976).

Scholars introduced the concept of Intellectual Capital in the 1980s and 1990s, acknowledging the limitations of conventional financial metrics in capturing the complete value of organizations (Edvisson and Malone, 1997). Leif Edvinsson (1997) and Karl-Erik Sveiby (1997) were among the early pioneers who laid the groundwork for IC classification and comprehension. Edvinsson developed the "Skandia Navigator" model,

which became a foundational framework for IC measurement, while Sveiby introduced the concept of "intangible assets monitor." These early contributions initiated further exploration and refinement of IC theories and practices.

IV. Literature Review

Theortical Frameworks of HRA

Numerous theoretical models have quantified the value of human resources. The most renowned are:

- **Cost-Based Models:** These models quantify the expenses associated with employee recruitment, training, and development. The Replacement Cost Model and the Historical Cost Model are the most frequently employed methodologies.
- **Value-Based Models:** These models attempt to calculate the present value of future earnings or employee contributions. Flamholtz's Stochastic Rewards Valuation Model serves as an illustration (Flamholtz, 1971)
- **Economic Value Models:** These models concentrate on the economic value that employees contribute to the organisation, as well as factors such as productivity and profitability.

Theortical Frameworks of IC

The understanding that intangible assets, such as knowledge, innovation, and relationships, are essential components of organisational success forms the foundation of the theory of intellectual capital (Stewart, 2010). Typically, the three primary components of intellectual capital. are as follows:

- **Human Capital:** The knowledge, abilities, and expertise of employees.
- **Structural Capital:** the organizational culture, patents, databases, and processes that maintain human capital.
- **Relational capital:** The relationships with consumers, suppliers, and other stakeholders that contribute to the organization's value.

The interdependence of these components enriches the intellectual wealth of an organisation. The use of theoretical frameworks such as the Resource-Based View (Barney, 1991) and the Balanced Scorecard (Kaplan & Norton, 1992) has enabled the integration of IC into strategic management.

Methods of Valuing Human Resource A.Cost-Based Method.

Capitalisation of historical costs

Brummat, Flamholts, and Pale created this approach. In this method total cost incurred on recruiting, hiring, training, and development of employees are capitalised which is represented as Human Resources Value. The organisation's human resources are capitalised and amortised over the expected useful life of the human resources. If the employees are liquidated prematurely, the entire amount not written off is charged to the income for the year in which the liquidation occurs.

The historical cost of human resources is roughly equivalent to the book value of other physical assets. When a firm recruits an employee, it is expected that his salary will exceed the costs associated with selection, development, and training. This is similar to how adding to fixed assets increases their value, and this additional cost of training and development is also capitalized and amortized over the employee's remaining life. The unexpired value represents an investment in human resources.

Replacement Cost Method

This method was given by Rensis Likert and Eric G Flamhotz in 1985. As per this method, the value of Human Resources is calculated on the basis of the replacement cost incurred to hire a new employee with the same skill set as an existing employee. There are two ways to calculate such cost

✓ Individual Replacement Cost : Cost of replacing an individual by a substitute who can provide the same set of services

✓ Positional Replacement Cost : Cost of replacing set of services required of any incumbent in a defined position.

Standard Cost Method

David Watson developed this method. According to this method, the standard cost of recruiting, hiring, training, and developing per grade of employee is calculated year after year. The standard cost so arrived at for all human beings employed in the organisation is considered the Value of Human Resources. Determining the standard cost of each grade of employee is not easy.

Opportunity Cost Method

This method was developed by Hekimian and Jones. It is also known as Market Value Method or

Competitive bidding method. As per this method, value of Human Resource is calculated on the basis of his/her alternative use i.e opportunity cost In case an employee has no alternative use then NIL value will be assigned for his/her. Such opportunity is generally calculated by competitive bidding within the firm. Mangers do bidding of scares employee. In other words it can be said the an employee will have value only if it is a scarce resource, that is when its employment in one division denies to another division.

Economic Value Model

Present Value of Future Earnings Model/ Discounted Wages and Salaries Model/ Lev and Schwartz Model

This model is developed by Lev and Schwartz in 1971. As per this model, the Human Resources are valued on the basis of present value of estimated future earnings of employees (in the form of salary and wage etc). Such present value is calculated by discounting a particular rate of return i.e return on investment (cost of capital). The procedure of valuing human resources in this method is as follows :

(a) First all employees are classified in specific group according to their age and skill.
(b) Secondly, average annual earnings of are calculated for various ranges of age.
(c) Third, total earnings of each group up to the date of retirement age are calculated.
(d) Fourth, the total earnings calculated above are discounted at the rate of cost of capital. The value so arrived in step 4 will be considered as Human Resource Value/Asset.

The following formula has been suggested for calculating the value of an employee according to this model –

$$V\tau = \sum^{T} \frac{I(t)}{(1+r)^{t-\tau}}$$

Where,
$V\tau$ = the human capital value of a person τ years old.
I(t) = the person's annual earnings upto retirement.
r= a discount rate specific to the person. T = retirement age.
In practice this method is mostly followed for valuation of Human Resources.

Stochastic process with service rewards

This method was developed by Flamholtz in 1971. In this method, a person's value to a company is based on the services he is supposed to provide. Over time, a person transitions through a set of organisational jobs or service states that are not necessarily concurrent. We can use probability theory to estimate this kind of movement. The expected service to be derived from an individual is given by :

$$E(S) = \sum^{n} S_i P(S_i)$$

Where Si represents the expected number of services and P(Si) signifies the probability of their derivation.

However, economic assessment recommends describing people's services in terms of their monetary value. To obtain this monetary representation, we can take one of two steps:

(a) by calculating the total of their numbers and prices, and
(b) by calculating the expected revenue.

The present value of human capital may be derived by discounting at a specified interest rate of monetary equivalent of Expected Future Services.

Valuation on group basis

This method was developed by Jaggi and Lau and also known as Jaggi and Lau Model. As per this method, human resources are valued on group basis instead of individual. It simply means contribution of individuals are possible to measure only when they are working in a group. A group is a collection of similar employees, whether they work in the same area or division or not. Although it's hard to say how long a person will likely stay with a company, guessing what percentage of people in a group are likely to leave in the future is easier.

This model attempted to determine the present value of all employees in each rank who are already working. To calculate this type of present value, follow the steps below:

(i) Find out how many employees are in each rank.
(ii) Determine the probability that an employee will maintain their current position within the company, face termination, or receive a promotion in the future. We will estimate this chance over a specific time frame.

(iii) Calculate an employee's financial value at each time point for a given rank.
(iv) Multiplying the three factors above by the appropriate discount rate yields the present value of current employees in each rank.

Methods for Figuring out Intellectual Capital

Intellectual capital measurement is still a difficult and controversial subject in the academic world. Researchers have tried measuring IC in a variety of ways, from qualitative ratings to quantitative models. Here are some of the most important measurement methods:

- **Market Capitalisation Methods:** To figure out how much a company's intangible assets are worth, these methods compare its market value to its book value.
- **Return on Assets (ROA):** This method values IC by finding the difference between how profitable a company is and how much it owns.
- **Balance Scorecard** : The Balanced Scorecard and other scorecard methods use both financial and non-financial indicators to measure IC.
- **Direct Intellectual Capital Methods (DICM):** Polls, interviews, and other qualitative methods are used to directly measure the value of IC components, such as human capital.

While there are many ways to measure IC, there isn't a single method that everyone agrees on. Each method has its own pros and cons.

V. Empirical Studies & Applications

An empirical study on HRA and IC has shown that these practices improve organizational performance. Studies by Grojer & Johanson (1998) and Mouritsen et al. (2001) have found that businesses that report on their intellectual capital and human resources tend to do better than those that only report on standard financial metrics. For instance, companies that use HRA policies say they have better ways to manage their employees, more engaged workers, and better long-term financial performance. Similarly, studies have linked IC reporting to increased creativity, happier customers, and higher market values (Subramaniam and Yondt, 2005). Furthermore, studies have shown the difficulties in putting HRA and IC reporting into action. Some of these include a lack of standardised methods, opposition to traditional accounting practices, and problems with putting a number on intangible assets (Petty and Guthrie, 2000). Even with these problems, there is a lot of proof that combining HRA and IC into how organisations report and make decisions is a beneficial idea. Many different types of businesses have shown how to put HRA and IC ideas into practical application. Infosys, a global IT services company, uses HRA practices in its annual report to give important details about employee turnover, training, and growth (Ali and Barda, 2022). The company's image has been improved by being open and honest, and it has also become easier for the company to hire and keep great employees. For the same reason, Microsoft uses IC reporting to show how much it spends on R&D, new ideas, and building ties with customers (Arora and Panchal, 2021). Microsoft has kept its competitive edge in the tech industry by focussing on these intangible assets. This shows how practical IC reporting can be.

Empirical Studies & Applications of Intellectual Capital

Empirical research has demonstrated the effects of Intellectual Capital on organisational performance, innovation, and competitive advantage. For example, research has shown that companies with more human capital are more likely to be innovative (Subramaniam & Youndt, 2005). Strong relational capital, according to research, increases customer loyalty and market share.

However, empirical studies also highlight the challenges associated with tracking and managing intangible capital (IC), such as the difficulty in quantifying intangible assets and the lack of standard reporting methods (Bontis, 2001). Because of these problems, people have called for more reliable and regular methods to measure ICs. Many fields, including technology, pharmaceuticals, and finance, have successfully applied intellectual capital. Companies such as Google and Microsoft have used their personnel and structural capital to drive innovation and stay ahead of the competition in the tech industry (Andriessen, 2004). In the pharmaceutical business, relationship capital plays a crucial role in forming partnerships and collaborating, essential for the development of new drugs. The public sector is increasingly utilizing IC to enhance service delivery and boost organisational efficiency (Firer and Mitchell Williams, 2003). The use of IC in various fields demonstrates how flexible and important it is in contemporary business practices.

Empirical Studies & Applications of HRA

Numerous empirical studies have confirmed the relevance and application of HRA in various organisational environments. Studies of companies that disclose human resource values have found that they typically do better over time. Companies like Infosys and Bharat Heavy Electricals Limited (BHEL) in India have employed HRA techniques, providing valuable insights into the practical challenges and benefits of this

approach (Bhattacharjee, 2022). Infosys a prominent Indian IT company, was the first to implement HRA (Luo et al. 2022). In the 1990s, the corporation began tracking the worth of its human resources, beginning with a value-based approach (Charumathi and Ramesh, 2019). Other companies have taken inspiration from the success of integrating HRA into their financial reporting.

VI. Research Methodology

This systematic review adopts a qualitative research methodology, involving an extensive analysis of academic literature, case studies, and industry reports on HRA and IC. The review covers publications from 1960 to 2024, including peer-reviewed journals, books, and corporate disclosures. The selection criteria focused on relevance, contributions to theory and practice, and the integration of HRA and IC concepts. The data collection process involved a thorough search of academic databases such as JSTOR, Google Scholar, and ScienceDirect, as well as industry reports and case studies from companies that have implemented HRA and IC practices.

VII. Limitations

Empirical data on HRA and IC, particularly in emerging markets, presents a constraint to the investigation. The absence of standardised methodologies for HRA and IC valuation presents difficulties in comparing results across various studies. Furthermore, the review's scope is limited to English-language publications, which may result in the exclusion of pertinent research conducted in other languages. Additionally, the exclusion of certain recent advancements in the field may have been a consequence of the rapid evolution of technology and the business environment. The availability of empirical data on IC, particularly in emerging markets, restricts this study. The absence of standardised methodologies for IC measurement presents difficulties in comparing results across various studies. Despite its potential, HRA faces numerous challenges, including the difficulty of accurately quantifying the value of human resources, the lack of standardised methodologies, and resistance from traditional accounting practices.

The primary issue in HRR is not the classification of resources, but rather the recognition of the resources at the appropriate time. The firm lacks human resources, but it possesses a substantial amount of physical resources, making this timing issue especially crucial. However, the organization utilizes a multitude of services that are derived from physical resources it lacks. Consequently, the accounting treatment for these services should be identical to that employed for human resources. Traditional accounting treats human capital and non-human capital differently. Despite the fact that the recorded value of assets represents non-human capital, the only reference to human resources in the financial statement is the income statement entries for wages and salaries, directors' fees, and so forth. However, it is important to remember that the measurement and reporting of the value of human assets in financial statements would prevent management from liquidating human resources or overlooking profitable investments in human resources during a period of profit compression. Although human assets are highly valued, it is important to remember that human beings are extremely susceptible to external influences and that human skills within an organisation are not immutable. A continuous process may be required for skill formation, obsolescence, or utilisation. Furthermore, an employee's attitude, loyalty, commitment, and job satisfaction may also influence the use of human resource skills. Therefore, we should value human resources by considering their qualitative aspects. Any human resource valuation model that lacks behavioural features will be unable to accurately represent the value of human assets, as human beings are extremely susceptible to specific behavioural factors (unlike physical assets). However, in order to avoid excessive subjectiveness, it is critical to exercise caution when assigning appropriate weights to behavioral factors.

VIII. Managerial & Policy Implications

The integration of HRA and IC provides managers with a more comprehensive approach to measuring and managing intangible assets. Organisations can more effectively align their human capital strategies with their overarching business objectives by quantifying human resources and intellectual capital. Policymakers can employ these concepts to encourage businesses to adopt practices that acknowledge the full value of their intangible assets, thereby fostering greater transparency and accountability in corporate reporting.

The establishment of standardised guidelines for HRA and IC reporting is essential from a policy standpoint. In addition to improving the credibility and reliability of HRA and IC disclosures, standardisation would also enable the comparison of intangible asset valuations across organisations. Furthermore, in order to provide a more comprehensive assessment of organizational performance, regulators and standard- setting bodies should encourage the incorporation of HRA and IC information into corporate financial statements.

IX. Summary & Conclusion

HRA and IC are indispensable instruments for understanding and overseeing the intangible assets that underpin organizational prosperity. This systematic review emphasises the significance of integrating HRA and IC to offer a more comprehensive understanding of an organisation's value. Although there are still obstacles to standardising methodologies and obtaining acceptance, the potential advantages of HRA and IC are substantial. Future research should focus on developing more robust models and investigating the application of HRA and IC in a variety of organizational contexts.

Intellectual capital significantly influences organisational value and efficacy. This systematic review has offered a thorough examination of the development of IC theories, measurement techniques, and practical applications. The results highlight the importance of IC in pursuing competitive advantage, improving customer relationships, and promoting innovation. Nevertheless, the measurement and management of IC continue to present challenges, particularly in the absence of standardised methodologies. Future research should focus on the development of more robust IC measurement frameworks and the exploration of IC implementation in emerging industries.

Human Resource Accounting is a promising method for valuing an organization's most valuable asset—its employees. Although there are obstacles to its implementation, the advantages of implementing HRA are substantial. The adoption of HRA practices is expected to increase as businesses continue to acknowledge the significance of human capital, thereby offering a more comprehensive understanding of an organisation's overall value.

X. Future Scope

The development of standardised frameworks across industries and regions is crucial for the future of HRA and IC. Technological advancements such as artificial intelligence and big data analytics present opportunities to improve the measurement and reporting of intangible assets. In order to expand the scope of intangible asset management, future research should investigate the integration of HRA and IC with Environmental, Social, and Governance (ESG) reporting systems. The integration of HRA and IC will become increasingly significant as organisations continue to acknowledge the value of intangible assets. Organisations can achieve long- term success by more effectively measuring, managing, and reporting on their human resources and intellectual capital through the development of standardised methodologies and the utilisation of technological advancements. Future research has the potential to integrate IC with other intangible assets, such as environmental and social capital.

As organisations continue to acknowledge the significance of their human capital, we anticipate an increase in demand for comprehensive HRA practices. We expect this increase to lead to the widespread adoption and refinement of HRA methodologies in India.

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