



Ahmadu Bello University, Zaria

FROM FINANCIAL REPORTING GOBBLEDYGOOK TO INEVITABILITY: Human Resource Assetization In The Fourth Industrial Revolution (4IR) Era And Beyond

AN INAUGURAL LECTURE

Series No. 05/26



Prof. Salisu Abubakar

B.Sc., M.Sc., Ph.D. (ABU), MBA (BUK), FCA, FNAA, FAAF, CMA, MNIM

Professor of Accounting and Finance (Financial Reporting)

Department of Accounting, Faculty of Management Sciences,
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12th August, 2026

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Dedication

This lecture is dedicated to Professor Kabiru Isa Dandago (Of Blessed Memory)

Acknowledgments

My gratitude to Almighty Allah for giving me life, health, and ability to take important and right decisions throughout my life. During the past 24 years of my academic career, I owe a lot of gratitude and appreciation to persons, institutions, and systems. First and foremost, I wish to sincerely appreciate the Vice-Chancellor, Management, staff, and students of my *alma mater* Ahmadu Bello University, Zaria. I am really honored to be part of the University and so much cherish this opportunity. I have worked with and under many Deans and Heads of Department who I enjoyed a smooth and cordial working relationships and I wish to thank them immensely.

I owe another bunch of appreciation to my mentors who extended guides and directions to me to ensure that I succeed in the academic environment. Professor M. A. Mainoma, Professor Aminu Salihu Mikailu, and Professor Kabiru Isa Dandago (of blessed memory) stand distinct in this respect. These personalities stood by me through sunshine and rain and always see the better side of my ideas, focus, and dreams. Others that need specific mention are Professor Bello Sabo and Professor Ahmed Bello. The two gentlemen have understood me well and offered me so much support in my academic career. I thank them immensely.

My immeasurable gratitude to all those that impart knowledge to me from elementary (primary) level to the University level. I want to specifically express my appreciation to my LEA Primary School teacher, Malam Hassan (of blessed memory). He set the tune for us to discover that there is nothing better than education at the time when most of our peers and parents did not attached importance to western education. He dedicated his time, energy, efforts, and sacrificed a lot to see us succeed. Now

I am here and surely accord him the credit. To all my teachers at secondary and tertiary levels, many are now late, I sincerely appreciate them for the discipline, knowledge, and moral upbringing.

To my research teams, research assistants, mentees, friends, and other colleagues, it was and still is, an opportunity for me to be in your midst. I appreciate the academic discuss, objective critiques, and support. Sometimes we agree to disagree, sometimes we argue to get along, sometimes we brainstorm to brighten our focus and dreams. I found so much encouragement and motivation from our interactions and it is my believe that I will continue to learn from them.

My deepest and sincere gratitude and appreciation to my parents; Alhaji Abubakar Umar (of blessed memory) and Hajiya Raliyatu Musa for their steadfastness and the interest they showed on me and my siblings to ensure that we are properly brought up and well educated. They sacrificed so much and most times at the expense of their comfort. They deserved the credit for whatever I achieved so far and what I will achieve later in life. My brother Barrister Aliyu Abubakar Zaria, who I regard as both brother and best friend, I appreciate his support and encouragement.

Finally, my unreserved recognition and appreciation to my wives and children for their understanding, support, and encouragements. They stood by me during good and hard times and always understands why many times I have to travel alone in pursuit of career and manage my absence sometimes. Many thanks to them for all the sacrifices they have made.

Protocols

- ✕ The Vice-Chancellor
- ✕ Deputy Vice-Chancellors (Administration, Academic, and Advancement, Research & Innovation),
- ✕ The Registrar,
- ✕ The University Librarian,
- ✕ Deans and Directors
- ✕ Heads of Department
- ✕ Members of the University Council,
- ✕ Members of the Senate,
- ✕ Eminent Professors and Senior Academics,
- ✕ Esteemed Teaching and Non-Teaching Staff of the University,
- ✕ Friends of the University and Invited Guests,
- ✕ Students,
- ✕ Ladies and Gentlemen of the Press,
- ✕ Distinguished Ladies and Gentlemen,
- ✕ ABUSITES,
- ✕ Good Afternoon!

Preamble

The coming into being of Humans is linked to the decision of Almighty Allah (God) when He announces His intention to place a “successor” or “vicegerent” (*Khalifa*) on Earth. The Angels showed their concern, after observing the potential for free will and asked Allah: “*Will You place therein one who will cause corruption therein and shed blood, while we declare Your praise and sanctify You?*” (Qur’an, Surah Al-Baqarah 2:30). Allah Almighty replied by saying “*Indeed, I know that which you do not know*”. Thus, the “superiority” of Adam (The Human) over other creations was proven through intellect. Allah taught Adam “the names of all things”, that is an ability for categorization, language, and abstract thought that even the Angels did not possess.

As the people of Faith, we believed in Holy Scriptures (Holy Quran and Holy Bible). It is not by our intuition that we believe in the superiority of Human Being over other Beings. Quoting from the Holy Qur’an in Surah Al-Isra, 17:70; Allah says: *Bismillahir Rahmanir Rahim*:

وَلَقَدْ كَرَّمْنَا بَنِي آدَمَ وَحَمَلْنَاهُمْ فِي الْبَرِّ وَالْبَحْرِ وَرَزَقْنَاهُمْ مِنَ
الطَّيِّبَاتِ وَفَضَّلْنَاهُمْ عَلَى كَثِيرٍ مِمَّنْ خَلَقْنَا تَفْضِيلًا ﴿٧٠﴾

“And We have certainly honored the children of Adam and carried them on the land and sea and provided for them of the good things and preferred them over much of what We have created, with [definite] preference”. This also proves the superiority of the Humans over other creations.

Additionally, in the Holy Bible in Genesis, Chapter 1, Verse 26; God gives Human the command to “have dominion over the fish of the sea and over the birds of the heavens and over every living thing that moves on the Earth”. Human being is undisputedly

regarded as the zenith of all creations. Whether talking in Biology, Philosophy, or Theology, the superiority of human being over other beings is unanimously in favor of the humans.

According to Warren Buffet, as cited by Town (2026), the best investment you can make is in people. Successful organizations have for centuries identified the people aspect of their operations (Human Resource) as the most sensitive possession, which requires frequent investment in improving their quality, ability, capability, capacity, and productivity. This approach to human resource made such organizations maintain a stable and consistent growth over centuries and many of them are the leaders and pace setters of their industries presently thereby commanding larger market share and unquestionable customer loyalty. At this juncture, there are no doubts as to the importance of humans (human resource) both spiritually and secularly, and their dominance role over other creations in the world.

Mr. Vice Chancellor, it is apposite to state that my career as an academic started in Ahmadu Bello University, Zaria on the 14th of June, 2002, when I was employed as a graduate Assistant. I graduated as the second-best student from the Department of Accounting of the University in year 2000. Though I had many lucrative choices and offers from elsewhere, I chose to stay within the University walls to gain and impart knowledge. My passion for teaching and research was so strong that I could not think about something else. Since then I continue to rise through the ranks without missing any promotion up till 2021 when I reached the pinnacle of my career.

Since I joined the University, I was enthusiastic about learning generally, especially listening and attending to academic discussions and defenses across faculties and centers within the University. I used to be thrilled by new ideas and novel

applications of existing theories thereby leading to research breakthroughs or prompting technical research questions begging for solutions. In my area, which is Accounting, I began to venture into deep studies aimed at making the profession of accounting better thereby withstanding disruptions especially those from the technology aspect. Technology and accounting are positively and directly related and hence whenever there is a new technology that affects the way businesses operate, accounting automatically has to find a way of aligning with that development. In my early research days as a young academic, I was mentored by some of the great accounting scholars in Nigeria, some of whom have already transitioned to the afterlife while others are either retired or approaching retirement.

Mr. Vice Chancellor, my interest in the area of Human Resource Accounting (HRA) stem from a discussion I had one time (more than two decades ago) with one of my mentors, who told me his experience with research in that area and how difficult it was for him to defend his Master of Science in Accounting and Finance Dissertation in the mid-1990s. Though I understood the predicament of conducting research in the area of HRA, it became a motivation for me rather than a deterrent. I devoted my time to developing both conceptual and empirical papers in the field of HRA, some of which I presented in international conferences outside the country. I was also privy to learn more on my chosen field of research through my contacts with international scholars across the continents of the world. In a humorous manner, I was further challenged and motivated by a colleague who looked at me in the face and told me that “you cannot conduct research in that area”. Though I considered that statement derogatory at first, I later used it as a motivator. I sincerely thanked him for that statement because it did work wonders on me and made me quadruple my efforts.

The nature of my research and its challenges made it interesting to notable accounting scholars in Nigeria and diaspora. Specifically, I received encouragement and support from Professor Kabiru Isa Dandago (of blessed memory), Professor Muhammad Akaro Mainoma, and Professor Aminu Salihu Mikailu. These gentlemen are great mentors of mine and assisted me in conducting research in the area of HRA. In the diaspora, I appreciate the contributions, comments, and suggestions of Professor Teerooven Soobaroyen of University of Essex, United Kingdom, Professor Stephen Nkundabanyanga of Makerere University Business School, Uganda, and Dr. Yinka Moses of Wellington School of Business and Government, New Zealand made during my research presentations at international accounting conferences in Ghana, Uganda, South Africa, Kenya, and Senegal.

My research on HRA secured grants and funding from institutions in Nigeria and other foundations. They include Petroleum Trust Fund Scholarship grant in 2004 and 2005, the Institute of Chartered Accountants of Nigerian (ICAN) in 2010, MacArthur Foundation in 2011, Federal University Gusau in 2017. I led a team of researchers for Kaduna State Government from 2019 to 2020 on the social impact of tax reforms in the State. I have supervised and graduated about 30 Ph.D. students and more than 50 M.Sc. students. I also examined more than 100 Ph.D. theses and M.Sc. dissertations at several Universities in Nigeria. Further, I assessed about 10 Readers and Professors as external assessor and serve as external examiner to about 5 Universities.

My research contributions are centered on all the key aspects of HRA namely: (1) Critiquing the concept of HRA thereby focusing on its neglect as asset and the inappropriateness of its current reporting procedure, (2) exploring the feasibility of

HRA in Nigeria, (3) determining the peculiarities of HRA and the necessity for human resource assetization, (4) finding the strengths and weaknesses of valuation models proposed for HRA, (5) developing a more scientific model of valuing human resource incorporating all its peculiarities, (6) innovating a human resource depreciation technique or procedure for inclusion in the financial reports, (7) suggesting how best to incorporate the HRA information in the financial statements of entities, and (8) establishing the value relevant of HRA information on the quality of financial reports of corporate entities in Nigeria. It is important to note that the model I developed for valuing human resource is a unique innovation of all my research endeavors in the area of HRA.

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Accounting and Assetization

In accounting, anything that is capable of generating revenue or cash flow to an organization beyond one accounting period is assetized. Such assetized items are either acquired, constructed or created. The expenditure incurred on these items are capitalized rather than expensed. This is due to the potential future economic benefits derivable from such expenditure. In financial reporting, all assets are regarded as what an organization owns, which must balance with what the organization owes as at any particular date. The Statement of Financial Position (erstwhile referred to as Balance Sheet).

Assetization of what an organization owns follows a definite process that is recognized as more of science rather than art. The process involves interconnection of steps or stages that are recognized as the core of the discipline and profession of accounting. From the definition perspective, especially the one given by American Accounting Association (1966), accounting is “the process of identifying, measuring, and communicating economic information to permit informed judgment and decision by users of the information”. Hence, three stages of accounting visible in the definition namely; identification, measurement and communication (disclosure). These stages of assetization are the same for all categories of assets; being they non-current (fixed) or current in nature.

Additionally, whether an organization engages in production of goods, rendering of services, or merchandising operations, such organization relies on the four factors of production; namely: Land, Labor, Capital, and Entrepreneurship. Whereas land, capital and entrepreneurship are recognized as beneficial to the organization for more than one accounting period and disclosed in the accounting process thereby showing their position as at any particular date (usually the accounting period) in the

Statement of Financial Position, labor is treated as an expense and usually terminates in the Income Statement. This recognition and disclosure of labor is not entirely true and not rightly done.

Financial Reporting and the Rationale for Human Resource Assetization

In general, financial reporting is seen as the means by which businesses inform the public and external society about their operational performance in terms of profitability, efficiency, and accountability. A company's operational well-being is expressed in its corporate financial reports, which serve as its bill of health. A company's annual financial reports and accounts provide the information that various stakeholders use to make choices about it.

Human Resource Accounting (HRA) is essential because of the notable rise in the number of service businesses worldwide where employees' knowledge, skills, experience, and expertise are critical to their success. Businesses report on capital and other assets in their financial position statement, but they only include a charge for human resources (labor) in their income statements rather than assetizing it. Instead of being capitalized, funds used for recruiting, hiring, training, and developing human resources are expensed. These days, firms spend enormous sums of money on human resources, which necessitates improved reporting. The incapacity to account for and report human resources is one of the several reasons why the financial data included in an organization's financial statements is deemed insufficient.

The significant expansion in the number of service companies around the world where staff knowledge, skills, expertise, and experience are critical to their success necessitates the use of

HRA. Organizations report on capital and other assets in their financial reports, but not on human resources, except as a charge in their income statements. Money spent on hiring, recruiting, training, and developing human resources is deducted rather than capitalized. Nowadays, firms invest much on human resources, necessitating a more efficient reporting system. The financial information contained in organizations' financial statements is deemed inadequate for a variety of reasons, one of which being the failure to account for and report human resources.

The workforce's intellectual prowess and human capital are the service companies' greatest assets. The caliber of these firms' human resources is a major factor in their success. The caliber of employees that successful firms are able to attract and retain sets them apart from their less successful peers in practically every field. To ensure that their workers' skill levels remain up to date, these prosperous companies do make significant investments in staff training (Robbins, 2001). Therefore, one of the best investments corporate executives can make is to spend money on employee development (Owen, 1825 as cited by Robbins, 2001).

Employee skills and expertise are examples of intangible assets that the existing accounting method is unable to evaluate. Almost every item associated with the advancement and intellectual growth of an organization's human resources is considered an expense in traditional accounting. This recognition mechanism implies that such expenses are not significant after the current time frame. This is entirely incorrect because it cannot be stated that the employee's knowledge and development are inconsequential to the future of the firm. Because of this, it is inevitable that human resources will be

acknowledged as assets as long as the organization's genuine nature is to be disclosed.

The rapid expansion of service organizations in the United States, the United Kingdom, other developed nations, and even Nigeria in recent years (such as in the communication sector and other service-oriented businesses) has caused management to refocus on employee skill empowerment. This is because, in these firms, employees are far more valuable than other assets. It is widely accepted that a company's devoted and well-organized workforce may be a far more valuable asset than its inventory.

The system of HRA has few examples of its use, despite the fact that service businesses are rapidly expanding globally in the 21st Century, when intellectual capital is the most valuable asset. This demonstrates unequivocally that issues persist. The value of the generated data to the users of businesses' financial statements is highlighted, and measures models, and approaches are proposed for valuing human resources; yet, there are still few applications. This is because HRA was regarded as gobbledygook, which is unintelligible or meaningless language particularly pompous, overly technical, or bureaucratic jargon that is difficult for people to understand and fails to communicate clearly.

Although the notion of recognizing human resource contributions began quite some time ago, the idea still does not have widespread acceptance. This is due to the limited evidence of its global implementation. Numerous authors and researchers have explored how individuals within an organization can be recognized and represented in the financial statements of that organization. Important recommendations were offered but remain subject to criticism. These contributions enhance the

applications of the concept, although mostly on a voluntary basis. A requirement for organizations to account for and report on human resources was established recently in Denmark starting in 2005. Certain companies that implemented HRA in various ways consist of R. G. Barry Corporation, BHEL, Infosys, and Reliance Industries in India, along with other firms in the United States, Canada, and Australia.

Likert (1967) emphasized that immediate company profits are frequently achieved through automatic "system I" approaches, leading to the wastage of human resources due to a lack of training and development, turnover, diminished cooperation, and so on. He contended that traditional accounting practices overlook human assets, even though their decline almost certainly results in long-term profit reductions. He urged the accountants to create methods for assessing human capital so that modifications could be noted on the scorecard that matters, the profit and loss statement. The adjustments that can be noted signify depreciation or amortization.

In reaction to Likert's challenges, numerous accountants researched the optimal ways to quantify human resources financially. Notable among these are Flamholtz (1974; 1985), Lev and Schwartz (1974), Sadan and Auerbach (1974), and Schmidt et al. (1982). Their input resulted in the proposal of several approaches to assess human resources, including the replacement cost model, stochastic rewards valuation model, historical cost model, competitive bidding approach, and capitalization of future benefits. Strauss (1976) warned that various conceptual and practical issues need to be addressed before HRA gains wide acceptance. He believes these issues are especially linked to the approach taken in calculating human resource values and the application of the resulting data,

particularly regarding its influence on managerial or investor actions.

Lau and Lau (1978) recognized two significant outstanding issues in accounting for human resources. They consist of: (1) Determine if, and in what manner, human resource assets ought to be documented in the accounting system, and (2) After they are documented, the manner in which they ought to be eliminated. They grounded their study on the second issue, thereby focusing on the methods for expensing capitalized human resource assets. In other words, how should the capitalized human resource assets be depreciated, given that the correct capitalization amounts have been established and documented initially? The researchers made an impressive effort in creating human resource amortization methods that are both economically and statistically valid. They also reaffirm the implication observed by Jaggi and Lau (J – L) (1974) that the statistical significance of human resource capitalization exists only when employees are part of large homogeneous groups. This implies that viewing human resources as assets will be meaningful only when they can be aggregated into substantial groups and acknowledged accordingly.

Dawson (1992; 1994) carried out a similar study on the more scientific approach to assessing human resources. He applied the simulation approach to investigate HRA. His research primarily focused on examining the connection between employee value metrics derived from the implementation of the replacement cost model and the stochastic rewards valuation model. The scope of Dawson's research did not focus on the two models only but also on the reasoning used by managers in determining or arriving at these data.

A year following Dawson's study, Mainoma (1995) carried out research to determine if organizations' reporting of human resources significantly influences investors' decisions. This study was aimed at addressing the second issue of broad acceptance of HRA as noted by Strauss (1976). The researcher presumed that human resources are properly quantified and therefore focused on its report and its influence on investors' decision-making. The research concluded that accurate human resource reporting by organizations could greatly influence investors' decision-making. His findings and conclusion enhance the conclusion reached by Craft and Birnberg (in Strauss, 1976) that HRA might ultimately be beneficial internally as a way to assess the effectiveness of personnel and managerial programs; they are more pessimistic about its usefulness for external reporting to shareholders and the public.

Jasrotia (2004) emphasized the importance of HRA, focusing specifically on India. The investigator focused on the significant transition from production to service provision in the Indian economy, where the success of companies relies on the knowledge and intellectual skills of their employees. The research suggested that the Indian government should require all organizations to account for and report on human resources, similar to the practice established in Denmark since 2005.

Worldwide communities are now starting a 10 to 50-year shift towards a knowledge-driven economy (von Krogh, et al., 1998), which will evolve into an era of information. Organizations are now recognizing ideas like knowledge, intellectual capital, and knowledge management, or 'brain power,' as vital success elements in the context of the knowledge economy (Stewart, 1991). The more significant consequence of these developing ideas is that the existing patterns and theoretical frameworks,

particularly in the corporate sector, become outdated and fail to accurately depict the current situation.

Human beings represent a significant asset to any organization, whether focused on manufacturing or providing services. They are as essential as the machines, materials, and money, without which other resources cannot be combined and organized to attain profitability. Factors like experience, skill, knowledge, age, and others influence human productivity. Distributing this type of information through a standard, straightforward, and more practical metric can enhance the informational value of financial reports for organizations and thereby help users in making informed choices. Moreover, specialists such as Jasrotia (2004) highlighted that the data produced by HRA systems can be utilized for several managerial decisions, including recruitment strategies, turnover assessments, employee development evaluations, and capital budgeting, which can aid organizations in avoiding significant challenges later on.

The gradual shift from information-based economies to knowledge-based ones necessitates the modification of specific processes and procedures, particularly concerning management, accounting, and finance. In a knowledge economy/society, human resources serve as the central element around which all economic activities revolve. A knowledge economy is one where the creation and utilization of knowledge are the main factors in wealth generation (United Kingdom Department of Trade and Industry, 1998). In these economies, the key asset consists of knowledge workers who handle symbols instead of machines (Sharma et al., 2026). In this context, presenting the financial performance and status of knowledge-driven companies will inevitably be lacking without including the worth of human resource/asset/capital.

Human resources are considered the driving force behind the shift of global economies from information-oriented to knowledge-oriented. In economies driven by information and knowledge, the human brain along with intellectual skills and talents are the essential components. Nonetheless, the accounting facet of human capital has not yet been completely embraced and utilized in the financial reports of corporate organizations. This brought up numerous questions regarding the quality and sufficiency of the information contained in the reports. Among these inquiries are: Do the financial reports of corporate entities in the 21st century reflect an accurate and honest depiction of their financial results and standings? In what ways can human resources be recognized and documented as an asset? What could be the effect of presenting human resources as assets in corporate financial statements on the quality of their informational content?

Human resources possess unique characteristics concerning the criteria for their assessment. These characteristics involve the unpredictability of the service duration and contribution level of new hires, as well as the external factors affecting the future compensation of employees. These present numerous difficulties in selecting the foundation to utilize for evaluating human resources. Therefore, the application of historical cost basis or current cost basis would be more appropriately utilized when those specific factors are properly accounted for. Nevertheless, a more appropriate method of valuation is the one that consistently captures the uncertainties and uniqueness of human resources.

Human Resource Accounting

Human resource refers to the people who make up the workforce of an organization, although the term is also utilized in labor economics to describe, for instance, business industries or entire

countries. Human resource also refers to the function within an organization responsible for overseeing the execution of strategies and policies concerning the management of individuals (i.e. the human resource). This function title is frequently shortened to the initials 'HR'.

Human resource is a comparatively recent management term, first used in the 1960s—when society experienced a shift as human rights became more prominent during the Vietnam War era (Nadler, 1984). The function's origins stemmed from organizations that implemented 'welfare management' practices as well as those that embraced the principles of 'scientific management'. From these terms arose a primarily administrative management role, coordinating various worker-related processes and eventually becoming recognized as the 'personnel function'. Human resources gradually emerged as the predominant term for this function, initially in the United States and in multinational or international companies, indicating the embrace of a more quantitative and strategic method to workforce management, required by corporate leadership to achieve a competitive edge, leveraging scarce skilled and highly skilled personnel.

Accounting is considered a product of production. Production may involve the generation of physical products or the delivery of services to meet human needs. The primary factors of production include land, labor, capital, and entrepreneurship. Although each organization reports and incorporates land, capital, and entrepreneurship in its financial statements, labor receives limited focus, and thus its expenses merely represent a deduction from the profits generated by the organization. The workforce consists of the human assets or resources that organizations possess.

HRA views human resources as comparable to other assets within the organization. They need ongoing investment to become productive. This investment pertains to expenses for hiring, training, and developing staff that are capitalized and amortized over an estimated productive lifespan for the workforce, considering attrition and potential decline (Myers, 1976). The idea of HRA has been described in numerous ways, yet the fundamental aspect of the system stays consistent across all definitions.

The American Accounting Association (1973) defined HRA as the process of recognizing, quantifying, and conveying information regarding human resources to support efficient management in an organization. This definition views HRA as the method of identifying and measuring human resources to support the efficient management of an organization. The definition is somewhat vague as it lacks specificity about what comprises human resource expenditures and how they should be acknowledged.

A more precise definition of HRA is provided by Flamholtz (1974), describing HRA as the process of measuring the expenses incurred by businesses and other organizations to recruit, select, hire, train, and develop human resources. This provides insight into what spending on human resources should be acknowledged for valuation and reporting objectives. This definition views HRA as encapsulating the assessment of individuals' economic worth to organizations.

While the previous definition of HRA focused on the expenses related to enhancing and developing human resources, an alternative definition emphasizes the contribution aspect of human resources. Friedman and Lev (1974) and Lau and Lau (1978) view HRA as a systematic approach to assess the asset

value of labor as well as the asset generation linked to employee efforts. This definition includes the economic advantage linked to human resources while also acknowledging their cost impact.

HRA is viewed as a crucial component of the management information system. From this perspective, Gupta (1991) describes the concept fundamentally as an information system that informs management about changes happening over time to the organization's human resources. It encompasses considering investment in individuals and their replacement expenses, as well as the economic worth of individuals within an organization. This definition views HRA as an information system that helps management make effective decisions regarding the recruitment and retention of employees. Consequently, HRA offers an in-depth perspective on a way to utilize human resource cost and value data in making decisions.

As per Newman (1999), HRA denotes the assessment of the skills of all company employees, regardless of level – management, supervisory, or regular staff – in generating value from their knowledge and mental capabilities. This definition takes into account the ongoing expansion in the service sector, where the expertise and intellectual skills of workers are essential for success. Consequently, HRA is regarded as the asset of the employees' expertise and intellectual skills contributed to the organization, enabling it to generate profits and achieve success.

Jasrotia (2004) similarly perceives HRA as the assessment and disclosure of the expense and worth of individuals as organizational assets. The distinctiveness of this definition lies in the reporting element of the HRA. This definition is based on the idea that the knowledge and intellectual skills of employees are increasingly vital in corporate investment decisions. This is

because service industries are now surpassing manufacturing sectors, and in service delivery, the knowledge and intellectual skills of employees are more valuable than any other physical asset.

Examining the trend of definitions in HRA, as previously noted, we hence define the concept as the measurement method that identifies the cost and worth of employees in an organization's financial statements, recognizing them as an intangible asset, allowing for the actual value of the organization to be determined, thus aiding various users of the financial statements in their decision-making processes.

Historical Development of Human Resource Accounting

For over seventy years, accounting for human resources has persisted in the accounting literature. Since the concept or method was initially developed, it remains a topic of discussion among both accounting academics and professionals. The attention gained from scholars resulted in numerous studies being carried out, paving the way for the advancement of the concept. HRA undergoes several developmental phases before attaining its present condition; and this pattern is anticipated to persist until the approach or idea is globally recognized and utilized as broadly as feasible.

At first, acknowledging human resources as assets was seen as unfeasible. This occurs because human beings are primarily employed for production purposes and compensated accordingly, with little focus on the enhancement and growth of the workforce. The concept of recruiting, educating, and keeping staff was not preferred. Business owners and entrepreneurs can hire and terminate employees as they choose. For these reasons, persuading individuals that human resources or employees are valuable assets to organizations was

challenging, and thus ownership cannot be established. A thing can only be considered an asset if the organization owns it and the item holds value for that organization.

Recently, the idea of HRA underwent various developmental processes that helped evolve the concept into a more practical one. The developmental phases, as noted by Carper (2002), relied on the factors or occurrences that spurred the growth of HRA. The stages of development and their associated events are outlined and examined below in a more succinct manner:

- a) Stage I - Concept Formation: This is known as the initial phase of accounting for human resources. The idea of human resources accounting is based on the principles of human capital theory and organizational psychology. This phase encompasses the time before 1960 and extends into the early 1960s.
- b) Stage II - Development and Validation Phase: This phase is when researchers worked on developing and validating the idea of human resources accounting. The timeframe addressed spanned from the mid-1960s to the early 1970s. The studies carried out during this time focused on creating methods based on historical cost and replacement cost, along with monetary and non-monetary values.
- c) Stage III - Organization Application Period: This phase began in the early 1970s and continued until the mid-decade. This time was marked by extensive efforts to implement the established methods. The majority of organizations that tried to implement it were primarily focused on services and information technology.
- d) Stage IV - The Period of Empirical Research Investigation: This phase involved the empirical examination of the idea of human resources accounting. This arose from the difficulties linked to the methods of

measuring human resources in financial terms, resulting in limited organizations pursuing its implementation. This timeframe has continued to the present, with studies and inquiries being conducted to simplify the concept and enhance its feasibility.

- e) Stage V - The Expansion of Service Organizations: In recent times, service organizations and their functions are experiencing rapid growth. The expertise and abilities of employees are the defining characteristics of these organizations. "What matters most now isn't just the sheer size or the quantity of physical assets that these organizations possess, but rather their intellectual capital" (Harari, 1994).

Basis of Asset Valuation and the Peculiarities of Human Resource Valuation

Traditional assets are typically appraised based on their past cost. The historical cost of an asset is defined as the acquisition price of the asset along with additional expenses related to purchase, transport, and setup. Therefore, the asset value listed on a company's balance sheet encompasses all expenses associated with the initial purchase decision until the asset is completely and properly installed to generate additional wealth for the organization.

The asset, when valued correctly, is subsequently depreciated according to its useful life, economic lifespan, utilization, residual value, and the organization's policies. These parameters might occasionally be estimated with less precision or, at best, to acquire their probabilistic estimates.

It had been suggested that a specific method of asset valuation could replace the historical cost basis prior to the adoption of International Reporting Standards (IFRS). The foundation for

this asset valuation is the current cost or fair value approach. This valuation approach assesses traditional assets according to their present values or their existing significance to the organization. This method was proposed due to the unrealistic values associated with assets (particularly fixed assets) as reported by companies. The frequent changes, mainly increases, in the prices of goods and services are also attributed to the reasons for the current cost basis introduction.

Conversely, the methods, processes, and approaches to valuing human resources vary in certain aspects from those of traditional assets. Human resources, as noted by Abubakar (2006; 2007) and Jasrotia (2004), possess unique characteristics that render their assessment particularly distinct. These characteristics consist of the following:

- i) Ambiguity regarding the duration of service:
While the service duration of conventional assets such as fixed assets can be assessed with a certain level of confidence, the service duration of human assets is highly uncertain. This is due to the unrestricted movement of recruits/employees whenever they wish. An employee can switch jobs at any time without prior notice, as he understands that the norm is merely to repay a few months' basic salary to his employer.
- ii) Ambiguity Regarding the Contribution Level of Newcomers:
A machine set up by a firm can have a specific production capacity, making estimation and forecasting straightforward and dependable. Conversely, gauging and predicting an employee's level of contribution is challenging and often lacks reliability. Their productivity varies and is influenced by several other factors. This creates a high level of uncertainty in

assessing an employee's contribution to the organization.

- iii) External Influences on Employee Future Compensation: When assessing human resources, the remuneration in the form of salaries and/or wages is significant. An employee's worth regarding future salaries and wages set today would be influenced whenever government policies change that impact his compensation or when workers' unions take action concerning the reward system.

Based on the discussions above, it is quite evident that human resource assets possess unique characteristics regarding the standards for their assessment. These characteristics present numerous difficulties in selecting the foundation to use in their assessment. Therefore, applying historical cost basis or current cost basis would be more appropriate when those specific factors are properly considered. A more appropriate foundation for valuation is the one that will continuously capture the uncertainties and characteristics of human resources.

Nature of Human Resource Expenditure and Necessities for Capitalization

From the stage of promoting a specific position to the moment an employee departs from a company, organizations do invest certain financial resources into the employee. Numerous factors contributed to the expenditure trends of organizations regarding their human resources. Abubakar (2009) and Pathe (2022) identify several reasons why organizations invest significantly in their human capital.

- i) To obtain the finest human intellect:
Organizations invest significant funds in advertising, recruitment, and selection processes to secure the best candidates. Protocols are established, processes are

adhered to, and techniques are employed, aimed at assessing the cognitive abilities of a candidate and confirming their suitability for the available role. An employee's cognitive skills influence their future efficiency and the type and extent of training they need.

ii) To realize the established goals of the organization:

Organizations typically aim to reach specific productivity and profitability levels, thereby ensuring the maximization of shareholders' wealth. The integration of personnel, funds, equipment, and resources in the most optimal and productive manner helps in reaching the established goals. Consequently, companies invest substantial funds in recruiting top individuals to manage the efficiency and effectiveness of all operations within the organization.

iii) To Earn Esteem from Stakeholders:

An organization with top-quality personnel often accomplishes much, leading to a high potential for success and long-term viability. These elements would earn the organization an impressive reputation and draw investments and backing from diverse stakeholders. Due to these factors, organizations invest significant finances to guarantee that they possess competent and skilled personnel managing the diverse operations both internally and externally.

iv) To obtain a Competitive Edge:

Organizations achieve greater success through distinctiveness instead of sameness. Uniqueness involves performing tasks in a manner that is entirely distinct from the standard practices embraced by rivals and other entities. For organizations to achieve uniqueness in methods, procedures, processes, and systems, it is essential to have personnel with the appropriate skills to implement these changes, foster

them, and adapt to them in order to secure a competitive edge and benefit over competitors. To accomplish this, organizations need to invest significantly in human resources to attain distinctiveness in operations, whether in service provision or in the production of physical products. To Establish

v) Leadership and Set the Industry Standard:

The majority of companies considered as trendsetters or industry leaders in their respective markets accomplish this via their workforce. Companies such as Microsoft, NIIT, Samsung, LG, and Coca-Cola attain strong brand recognition and increased market share due to the skills of their workforce. These companies invest significant funds to recruit individuals skilled in analyzing and forecasting the market, and making sound choices regarding product development and distinctiveness.

Nonetheless, Lau and Lau (1978), Steffy and Maurer (1988), Roslender and Fincham (2001), Leffingwell (2002), and Abubakar (2008) identified domains in which organizations allocate funds concerning their human resources. The areas that have been identified are as follows:

- i) Promotion: While the expenses linked to promotion concerning human resources may not be excessively high, our interviews revealed that companies still need to invest some funds in informing the public about their needs and to increase their opportunities for attracting top talent, particularly in external hiring. In this regard, the expense of advertising for human resources is recognized as one aspect of financial investment in human resource assets.
- ii) Hiring and Selection: The expenses associated with hiring and selection can be quite substantial. The task might be monotonous and lengthy, requiring the

dedication of human, material, and financial resources. It is the procedure of choosing the most suitable candidate or candidates for the advertised positions.

- iii) Orientation and Training: Another aspect for which organizations allocate funds for their human resources is orientation and training. This includes familiarizing the recruits with the organization's methods via an internal or structured training program. The primary goal is to familiarize the recruits with the organization's traditions, fundamental values, mission, and vision.
- iv) Training and Development: To keep pace with the ongoing trends in technology, organizations hold seminars, workshops, and conferences aimed at enhancing and refreshing their employees' skills and competencies. This will significantly contribute to enhancing the staff and increasing their productivity levels.
- v) Healthcare and Entertainment: Organizations consistently implement appropriate medical measures to ensure the well-being of their staff. A healthy worker is likely to become a highly productive worker. Conversely, companies allocate certain funds to provide entertainment for their employees. An employee who is well-entertained may be quite motivated and subsequently a highly productive worker. In both healthcare and entertainment, organizations invest funds to guarantee smooth operations within their entities.

Considering the previous discussions regarding the extent of human resource expenditures, it is crucial for them to be capitalized instead of being expensed in the year they take place. This is because of their extended anticipated effect on the employees' quality and productivity.

Models and Methods for Valuing Human Resource

Numerous strategies have been proposed for recognizing human resources in the financial reports/statements of organizations. These actions were established due to meticulous and prudent research carried out by both earlier and contemporary proponents of HRA.

Human resource accountants contend, similar to economists, that the extent of asset generation linked to personnel investment should ideally be evaluated based on ex ante concepts. HRA, though acknowledging that prior valuation may not be practical, proposes that retrospective concepts could serve as alternative measures (Steffy & Maurer, 1988). The approaches/models proposed for assessing human resources encompass:

i) **Balanced Scorecard (BSC) Approach:**

This approach is recommended by Kaplan and Norton (1992). The approach relies on key indicators like turnover and employee productivity that influence the overall effectiveness of workers in a company. Becker et al. (2001) contend that human resource/capital serves as the cornerstone of value generation in new economy enterprises, as up to 85% of a company's worth relies on intangible assets. They suggest implementing the Balanced Score Card Method focused on human resources/capital, referred to as the “Human Resource Score Card.”

ii) **Brown's Index (BI):**

Brown (1999) carried out another study focused on discovering a more effective method for quantifying human resources in financial terms. His study indicated that a straightforward human capital index consisting of four sub-metrics is superior to basic measures such as

turnover, education level, training received, and developmental plan objectives that many companies rely on. Brown's index incorporated the four sub-metrics: company level, performance evaluation, job positions, and years in the field/business.

The Brown's Index functions by assigning weights to the four sub-metrics. Consequently, the metrics are adjusted to ensure the index generates a score out of 100. The weighting will be determined by the company's particular circumstances and the significance of skills/competencies in relation to experience/performance. The advantage of this approach is its simplicity (Brown, 1999). The limitation noted in using Brown's Index is that it is not a comprehensive metric and overlooks other potential factors that could be significant for specific companies or sectors. This study is praised for promoting the idea that human resources ought to be acknowledged as a separate entry in financial statements.

iii) Competitive Bidding Technique (CBT):

This approach to assessing human resources uses the concept of opportunity cost to evaluate human capital. It involves the significance of an employee in their different potential roles as a foundation for assessing their worth to a company. CBM relies on the premise that human assets/resources are limited, meaning their use in one department prevents their utilization in another department. The department with the highest offer secures the specific human resource and will factor its cost into its investment base.

Supporters of this approach argue that it facilitates the best distribution of staff within a company and serves as a foundation for quantitative human resource planning and development. Its primary flaw is that it did not take into account similarly qualified employees who can be easily recruited from external sources.

iv) Discounted Future Earnings (DFE):

This approach utilizes the current value of forthcoming wages or earning patterns of a uniform group of workers. DFS was developed by Hermanson (1964) and Flamholtz (1974). Hermanson (1964) proposed utilizing compensation/salary as a proxy to measure the worth of human resources as the aggregate present value of future salaries/benefits that can be earned by them. He also mentioned that the total future wages owed constitutes a liability, whereas human resources are recorded as an asset on the balance sheet.

Flamholtz (1974) examined the assessment of human resources based on the earnings profile of employees by aggregating and averaging the earnings profile of a homogeneous group of employees throughout their effective service period. It is believed that employee productivity declines as they grow older. This results from poor health, lack of physical fitness, brain drain, and outdated technology. The value can be assessed using the formula below:

$$V_r = \sum_{t=1}^t \frac{I(t)}{(1+r)^{t-1}}$$

Where : V_r = The human asset value of a person 'r' years old

$I(t)$ = The person's annual earnings up to retirement.

r = A discount rate specific to a person.

t = Retirement age.

The primary advantage of this measure is that it enables the application of new financial ratios, like the ratio of human to non-human capital values, to show the level of labor intensiveness. It can also offer insights into shifts in the composition of the workforce. The main disadvantage of this approach is finding the precise discount rate tailored to an individual. While the organization's cost of capital utilized in capital budgeting decisions is recommended as the discount rate, modifying this rate to fit individual circumstances is challenging, if not unattainable. Another issue with DFS is the impact on the revenue flow caused by labor unions and non-governmental organizations (e.g. strikes or industrial action), the choices of the worker or employee (e.g. quitting a job) and various natural events (e.g. employee death, illness, etc.).

v) Economic Value Approach (EVA):

Flamholtz (1971) also developed and suggested a normative model for valuing human resources, which would follow the progression of an employee through the organizational role or “service state” where he/she is anticipated to provide a defined amount of service to the organization within a designated time frame. The likelihood of the person holding these service statuses is essential for determining the expected services from that individual. Consequently, EVM measures the current value of the collection of future services an employee is anticipated to deliver during the duration he is expected to stay with the company.

The EVM employs this formula:

$$EVA = \sum_{i=1}^n Si P(Si)$$

Where: Si = Services expected from the individual on each service state.

$P(Si)$ = The probability that the individual will occupy a particular service state.

The value of the individual is determined by the economic services that they provide. The service is measured in financial terms by multiplying the service's price by the anticipated services to be provided. The advantages of this approach lie in its emphasis on an individual's value or contribution to an organization. EVM is undermined by numerous assumptions that are theoretical and complicate its application, and it also emphasizes individuals instead of groups.

vi) Historical Cost Approach (HCA):

This approach is initiated by Brummet et al. (1968). It includes the capitalization of the organization's costs related to employee selection, recruitment, orientation, training, and development. The capitalized amount is to be displayed on the balance sheet under the title 'Human Assets,' differentiating it from other physical or tangible assets. The capitalized amount can subsequently be amortized and deducted in the profit and loss appropriation account throughout the anticipated service duration of the employees. This approach is contested based on the argument that it fails to provide clarity on how to identify the precise service duration of an employee for amortization reasons. It also neglects to take into account the impact of inflation on the costs that are capitalized. Ultimately, it remains uncertain whether

employees should be combined or presented individually on the balance sheet.

vii) Knowledge-Value-Indicator Matrix (KVIM):

This method assesses human resources by the knowledge-value of each employee, using an indicator aligned with the organization's mission and strategic goals. As stated by George (2005), the worth of human resources is determined by the total of an individual's current salary or salaries, multiplied by the years remaining until retirement age (y), times the present value factor (pv), in addition to the overall value indicator relevant to the particular individual being assessed. The model is displayed below:

$$V = \Sigma(sy) (pv) + \Sigma i$$

Where: V = Value of human resources; and
 Σi = The value of indicator percentage

Common value indicators can be related to:

- i) Formal education above minimum education requirement for the job.
- ii) Continuing education course that relates to the job.
- iii) Industry experience above minimum experience requirement for the job.
- iv) Position advancement above normal time frames for the job.
- v) Scope of organizational authority and responsibility above minimum requirement for the job.
- vi) Life time achievement of an individual other than work related.

viii) Replacement Cost Approach (RCA):

This model was introduced by Flamholtz (1985). It encompasses the accumulation of expenses related to

recruiting and educating personnel during a specific timeframe. It is the assessment method that proposes human resources are appreciated at the cost of replacement, meaning the financial consequences of substituting current staff. Flamholtz (1985) indicated that replacement or substitution expenses could be positional (replacing staff for specific roles) or personal (replacing unique skills or abilities of certain individuals).

The primary benefit of this model is that human value can be modified according to changes in price levels (such as inflation) and can aid in manpower planning by offering estimates of the expenses related to acquiring labor for various roles. The approach might be unfeasible when there are no comparable substitutes for specific assets. Furthermore, the model is also compromised by the choice of using entry cost or exit cost as the replacement cost. Ultimately, the management may hesitate to substitute certain specific assets at the current expense.

ix) Method for Return on Effort Utilized (REEM):

This approach emphasizes the measurement effort utilized across different functions within an organization, including purchasing, production, and sales. Such information could result in a more effective distribution and utilization of human resources. Elements that differentiate the amount and quality of effort exerted can be utilized to assess the value of contributions by individuals, including the level or rank of work completed, the effectiveness of the individual's job performance, as well as their experience and efficiency in executing tasks.

Proponents of this approach suggested that the REEM could result in a more efficient distribution of human resources in an organization. They additionally mentioned that it is feasible, with REEM, to assess the profit-to-effort ratio in each of the three distinct functions, namely buying, manufacturing, and selling. Nevertheless, the approach is highlighted since it lacks details regarding how well an organization sustains the status of its human resources. A further drawback of REEM is that it may lead managers to squander important human resources, potentially creating significant issues for the organization over time.

(j) Value-Addition Technique (VAT):

The VAM approach for measuring and documenting human resources was presented by Monti-Belkaoui and Riahi-Belkaoui (1995). The researchers suggested that the valuation of human resources ought to focus on value-addition, as it serves as an indicator of wealth. Value-addition, as they described, signifies the enhancement of wealth created through the effective utilization of the company's resources prior to its distribution among shareholders, creditors (bondholders), employees, and the government. This form of valuing human resources gained prominence in the United Kingdom following the release of the "Corporate Report" in 1975. The "Corporate Report" is a discussion document released by the Accounting Standards Committee, which suggested, among other actions, that an added value statement illustrating the distribution of the enterprise's benefits among employees, capital providers, the government, and reinvestment should be incorporated into external reports (Monti-Belkaoui & Riahi-Belkaoui, 1995).

The Value-Added statement of employees reported by organizations may serve as a valuable metric for assessing performance and activity. Linking essential metrics like capital used and labor expenses, value added can serve as an important measure of performance. A key factor to keep in mind when applying the Value-Added Statement is that the aim of the company isn't exclusively to optimize value added, noted Monti-Belkaoui and Riahi-Belkaoui (1995). For instance, management might incorrectly decide to invest in internal labor to create a product that could be produced more affordably through outsourcing. This would enhance the company's Value-Added but not its profits. Consequently, the Value-Added is regarded as a valuable information resource for reporting performance, yet not for assessing the efficiency of the Value-Added.

Ultimately, the trend analysis of the methods proposed for quantifying human resources in financial terms showed that the latest measures include more practical approaches and philosophies in the valuation processes and methodologies. Consequently, most of the theoretical assumptions linked to the previous measures were streamlined, resulting in the proposal of more empirically validated methods that represent reality instead of myth.

Developing a Human Resource Valuation Model

HRA according to Kodwani and Tiwari (2007), is “an attempt to identify, quantify and report investment made in human resources of an organization that are not presently accounted for under conventional accounting practice”. Businesses that require a considerable creativity or that are science-based show

a significant difference between market value and net book value (Glautier, 1974; Ramakanta & Khatik, 2003; Kodwani & Tiwari, 2007). Studies in the area of HRA have been limited, and researchers struggle to create a model that is devoid of significant limitations, some of which were mentioned previously.

Human resource accountants, like economists, contend that the degree of asset generation linked to a personnel investment should be ideally measured using ex ante concepts. Human Resource Accounting, acknowledging that prior valuation might not be possible, proposes that subsequent concepts could be used as proxy indicators (Steffy & Maurer, 1988).

Currently, a prevalent method for conducting monetary assessments of human resources involves utilizing a balanced performance measurement framework, like the Balanced Scorecard (Lynch & Cross, 1991; Maisel, 1992; Adams and Roberts, 1993; Kaplan and Norton, 1996; Tuomela, 2000; Neely et al., 2002). The balanced performance measurement frameworks seek to deliver an all-encompassing view of an organization's performance. The metrics are founded on a company's business goals, and the primary purpose of a measurement system is to support a company in reaching those goals.

The primary asset of service companies is the human resources and cognitive skills of their employees. The effectiveness of these organizations primarily relies on the caliber of their human resources. The trait that sets apart successful organizations from their less successful peers across nearly every sector is the caliber of the individuals they can attract and retain. These effective organizations invest significantly in employee training to ensure that their employees' skills remain up to date (Robbins,

2001). Therefore, funds allocated for enhancing employee skills represent one of the most effective investments that business leaders can pursue (Owen, 1825 as cited by Robbins, 2001).

The basis for many studies concerning the assessment of human resources has been the necessity to offer managers within organizations and external parties (including shareholders and creditors) more information beyond the conventional financial statements (Edvinsson & Malone, 1997; Lev, 2001). The financial statements for organizations focused on knowledge or services represent only a minor portion of the organization's overall assets. It has been noted that for numerous organizations, intangible assets like organizational structure and employee skills hold greater significance than tangible assets (Lönqvist & Mettänen, 2002). Consequently, they must be overseen and communicated to outside stakeholders. Numerous research efforts have focused on developing a human resource or intellectual capital statement or report (Brooking, 1996; Edvinsson & Malone, 1997; Roos et al., 1997).

The distinction between market value and book value was regarded as a consequence of the company's intangible assets or intellectual capital/human resource. (Sveiby, 1997; Edvinsson & Malone, 1997; Lev, 2001). The organization's tangible assets consist of fixed assets, including property, plant, and equipment, as well as current assets like inventories, cash, and receivables. A company's intangible assets consist of all essential success elements that guarantee ongoing survival and profit maximization. Key examples of significant intangible assets consist of human capital, goodwill, brand identity, technology, etc.

Organizations provide information on capital and other assets in their financial statements, but they report nothing about human

resources other than as an expense in their income statements. Funds allocated for hiring, recruiting, training, and developing personnel are recorded as expenses instead of being capitalized. Currently, the investment made by companies in human resources is substantial and necessitates an improved reporting method (Akinsoyinu, 1992; Guthrie, 2001; Hansson, 2004). The financial details found in the financial statements of organizations are deemed insufficient for several reasons, one of which is the inability to account for and report on human resources.

Accounting for human resources involves the capitalization of investments and other costs related to employees, excluding salaries and wages. Nonetheless, only investments that enhance employee quality and productivity ought to be capitalized (Lev, 2001; Jasrotia, 2004; Roslender, 2004). However, Gates (2002) and Jasrotia (2004) argued that the decision to capitalize investments in human resources should primarily rest with the reporting firms. Their reasoning indicated that capitalizing on human resource expenses is more advantageous when a voluntary operational setting is established.

The analysis of the suggested metrics/models for valuing human resources in financial terms uncovered the utilization of various human resource cost units. The previous approaches suggested by Harmanson (1964), Brummet et al (1968), Flamholtz (1971 & 1974), Lev and Schwartz (1974), Sadan and Auerbach (1974), Jaggi & Lau (1974), Strauss (1976), Lau and Lau (1978), and Schmidt et al (1982) incorporated salaries and wages, recruitment expenses, screening and selection expenses, and training expenses in the assessment of human resource value. The latest approaches, nonetheless, prioritize ex-gratia expenses, medical and safety expenses, pension and provident fund contributions, training and education expenses, welfare

expenses, and recruitment and selection expenses when determining the worth of human resources (refer to Monti-Belkaoui & Riahi-Belkaoui, 1995; Brown, 1999; Becker et al., 2001; George, 2005). They often overlook employee salaries and wages since they are recurring expenses instead of investments.

Measurement of Human Resource Value for Assetization

For the purpose of conforming to the standard procedure in scientific theorizing/modeling, the following steps were strictly adhered to so that the model developed would be as scientific as possible:

- (a) Definition of Terms/Concepts
- (b) The Fundamental Beliefs (Underlying Assumptions)
- (c) A Process of Logical Deduction
- (d) Predictions/Implications
- (e) A Process of empirical observation and testing
- (f) Contrast with observed evidence and established theories for potential contradictions and dominance.

a) Definition of Terms/Concepts:

The terms/concepts to be used in the process of developing an HRA model for application in Nigeria would be clearly defined. Thus, terms/concepts as recruitment, selection, training, development, retirement age, service level, probability of promotion, salary level, and labor turnover would be defined as they are used in the model.

b) The Fundamental Beliefs (Underlying Assumptions):

Every theory or model has its underlying assumptions. Model development works through clearly defined assumptions. In the case of modeling for the valuation of human resource, the fundamental beliefs are undertaken taking into consideration the assumptions earlier taken by other HRA theoreticians and the

peculiarities of the Nigerian economy and corporate environment.

c) A Process of Logical Deduction:

Here sensible rational thoughts and arguments relative to HRA modeling would be employed in developing our model. However, efforts would be made to shy away from ideas that are influenced by emotion or whim. Additionally, the connection between particular HRA events, scenarios, or items, and the unavoidable outcomes of their interaction would be integrated into our model.

d) Predictions/Implications:

The future consequence of the HRA model developed would be looked into. The model would be applied to find a monetary value for human resource assets for inclusion into the balance sheet of Nigerian quoted service companies. The likely effect of such value on the general quality of corporate financial reporting would be adequately evaluated.

e) A Process of Empirical Observation and Testing:

Processes and procedures would be devised to empirically test the reliability and relevance of the model and its resulting value. For a model or theory to have general acceptability, it must be empirically tested and accepted.

f) Contrast with observed evidence and established theories for potential contradictions and dominance:

The model so developed will be compared to the existing models of valuing human resource so as to determine possible agreement, conflict or superiority.

The Inevitability of Human Resource Accounting in the Fourth Industrial Revolution (4IR) Era and Beyond

Human Resource Accounting (HRA) transitioned from a theoretical academic debate into an operational imperative. As the global economic landscape is being reshaped by the Fourth Industrial Revolution (4IR) and the emerging Fifth Industrial Revolution (5IR), the traditional accounting paradigm, which treats money committed to human resource as an expense rather than an asset, has become increasingly obsolete. Several reasons exist why HRA is no longer just an alternative accounting framework, but an absolute inevitability in the modern era and beyond. These reasons are explained hereunder:

a) The Shift from Tangible to Intangible Economy

In the traditional industrial era, an organization's value was largely tied to physical and financial assets: factories, machinery, land, and capital. Standard accounting frameworks (like IFRS and GAAP) were built to measure these tangible resources. However, the 4IR is defined by digitalization, artificial intelligence, biotechnology, and the internet of things (IoT). In this knowledge economy, the primary drivers of competitive advantage are intellectual property, proprietary algorithms, brand equity, and innovation capacity, which are all products of human intellect. Treating the salaries, training, and development of the scientists, engineers, and strategists who build these assets merely as current-period expenses distorts a firm's true financial health and earning potential. HRA, therefore, provides the mechanism to capitalize these investments, offering a more accurate depiction of a firm's balance sheet.

b) Advanced Analytics and Data Ubiquity

Historically, one of the strongest arguments against HRA was the difficulty of measurement. Critics argued that human

behavior, morale, and future economic contributions were too subjective to quantify accurately and hence regarded as gobbledygook as far as financial reporting is concerned. The technological ecosystem of 4IR obliterates this limitation. With the proliferation of People Analytics, Big Data, and AI-driven human resource information systems (HRIS), organizations can now track granular metrics that correlate directly with productivity and value creation including time-to-proficiency for new hires, the direct revenue impact of specific training programs, and predictive turnover rates and their associated replacement costs.

Because we can now measure these variables with a high degree of statistical precision, the accounting justification for omitting human assets from formal reporting has lost its technical footing thereby becoming an inevitability.

c) Human-Machine Collaboration (Cobotics) and 5IR

As we move into 4IR and even look toward to 5IR, the focus shifts from pure automation to harmonious human-machine collaboration (cobotics). While robots and AI handle repetitive, high-speed cognitive and physical tasks, humans are increasingly leveraged for their uniquely non-automatable skills such as critical thinking, complex problem-solving, creativity, emotional intelligence, and ethical judgment. If an enterprise invests huge amounts of money that run into millions in an AI infrastructure (capitalized as an asset) but the system is only effective when paired with a highly specialized human prompt engineer or supervisor, it is conceptually flawed to expense the human component. To understand the true Return On Investment (ROI) of a digital transformation project, the technology and the human talent must be viewed as joint, capitalized assets.

d) Investor Demand and Stakeholder Capitalism

Modern investors are acutely aware that traditional financial statements do not capture the full story of corporate value. There is a growing global movement toward Environmental, Social, and Governance (ESG) reporting and stakeholder capitalism. Investors routinely penalize companies with high talent attrition or toxic corporate cultures because they recognize the hidden financial liabilities involved. HRA formalizes this risk assessment. By quantifying human resource value, depreciation or diminution of value (due to skill obsolescence or burnout), and appreciation (due to upskilling), HRA satisfies the capital market's demand for transparency regarding an organization's most volatile yet valuable resource.

e) The Conceptual Framework: Cost vs. Value Paradigms

To integrate HRA into modern accounting theory, organizations typically lean on two primary measurement paradigms: the cost approach and the value approach. On one hand, the Cost Approach, human resources are viewed through the lens of historical outlay or replacement realities.

- (i) Historical Cost: Capitalizing all recruitment, selection, hiring, and training costs, and amortizing them over the expected useful life of the employee.
- (ii) Replacement Cost: Estimating the current cost to replace an existing human asset with someone of equal proficiency, reflecting the real-time market value of talent.

On the other hand, the Value Approach looks forward rather than backward and attempt to map the future economic benefits the human asset will bring to the enterprise. This often utilizes discounted present value models, such as the Lev and Schwartz model. While the value approach relies on assumptions regarding employee tenure and promotion trajectories, 4IR

machine learning models can continuously refine these probabilities, making the output highly reliable for internal decision-making and external reporting.

My Research Contributions

1. Model Development, Modeling Process, Model Production and Model Test

The primary aim of my research on HRA is to create a model that will be utilized in assessing human resources for incorporation into the financial statements of publicly listed service companies in Nigeria. Creating a model involves a step-by-step process. This segment thus consisted of thorough conversations regarding the model procedure and the empirical evaluation of the model that was created.

A. Fundamental Beliefs (Underlying Assumptions)

The construction of the human resource valuation model relies on these essential assumptions:

- i) The worth of human resources includes both the acquisition expenses and the ongoing costs associated with the resource throughout the service duration.
- ii) The personnel will remain with the organization for a minimum of five years.
- iii) An employee may only depart or resign from his position once the company obtains compensation from the potential employer.
- iv) An organization will keep investing in human resources.
- v) An employee's yearly compensation is considered an ongoing expense and thus is not capitalized nor factored into the overall valuation of an employee.

B. Variable Identification and Coding

This section identifies and codes the variables included in the model.

- a) Identification of Variables: The subsequent variables are assessed as the fundamental variables associated with human resource:
- i) Recruitment and selection expenses: These refer to the total costs borne by the company for advertising open roles, screening applications, and conducting aptitude tests and interviews. These expenses are capitalized and they increase the worth of the human resource.
- ii) Induction training expenses: These refer to the overall expenses associated with training the chosen candidates before they begin their job assignments and start working. These expenses are recorded as assets and included in the overall recruitment and selection expenses.
- iii) Settlement Allowance: This encompasses all expenses borne by the hiring firm for the chosen recruits during or following the induction training related to inconvenience, mobility, and clothing/wardrobe allowance. These expenses are likewise capitalized and included with the other costs.
- iv) Expenses related to education, training, and development: These are expenditures borne by the firm to enhance the skills of their workforce, aiming to increase both competitiveness and productivity. These expenses are recorded as assets whenever the organization incurs them and contribute to the overall worth of the human resource.
- v) Expenses related to health and safety: These are costs that the company occasionally incurs to ensure a secure workplace and maintain a healthy workforce. These expenses directly affect the productivity of the workforce and are consequently capitalized.
- vi) Contribution to pension and provident fund: Every employer contributes to their employees' retirement

fund. These expenses are capitalized and incorporated into the overall value of the human resource.

- vii) Age of retirement: Workers do not remain employed indefinitely. Consequently, the timeframe during which an employee is anticipated to render economic contributions to the company is a factor in assessing the employee's worth. For this model, sixty (60) years is used as the retirement age relevant in Nigeria.
 - viii) Average lifespan: The typical lifespan of individuals in a country will influence the anticipated service duration of that individual. In this model, this fact is thus being considered. The average life expectancy utilized is forty-seven (47) years, which was the average mortality age in Nigeria in 2009, and it is projected to rise to approximately 56 years by 2025.
 - ix) Employee turnover rate: This indicates the frequency at which staff enter and exit a business or sector, assessed against a benchmark or during a specific timeframe. This is regarded as a significant variable and is thus incorporated into the model.
 - x) Employee age: An employee's age influences the anticipated duration of their service, which directly affects the employee's worth to the organization.
 - xi) Discount rate: This is the rate at which the current worth of ongoing investment in human resources will be calculated. The rate might be the market return rate or the company's weighted average cost of capital.
- b) Variable Coding for Inclusion into the Model:
The variables mentioned earlier are represented using Greek, Coptic, and Cyrillic characters for seamless integration into the model. The symbols and their meanings are outlined below:

τ	=	Recruitment and selection costs
ι	=	Induction training costs
ς	=	Settlement Allowance
ε	=	Education, training and development costs
λ	=	Health and safety costs
δ	=	Pension and provident fund contribution
r	=	Retirement age
ω	=	The proportion of the difference between the employee retirement age and the country's mortality age to the expected number of active/economic years of service i.e. $\frac{(r-\mu)}{(r-e)}$. This represents the probability that an employee can die before the retirement age of 60 thereby causing loss of employee service period.
ℓ	=	Labor turnover rate
e	=	Employee age
i	=	Discounting factor or rate.
μ	=	Mortality age

C. Mathematical Deduction

- ❖ The worth of human resources is determined by the costs of acquisition (C) and ongoing investments in the resource (K). This can be depicted in geometric form as:

$$\begin{aligned} \text{HR}_{\text{value}} &= f(\text{Acquisition costs, Continuous/ongoing expenditure}) \\ \rightarrow \text{HR}_{\text{value}} &= C + K \quad (\text{in the case of an employee}) \text{-----} (1) \\ \text{Or } \text{HR}_{\text{value}} &= \sum_{j=1}^n C + K \quad (\text{for employee group}) \text{-----} (2) \end{aligned}$$

- ❖ The costs associated with human resources include recruitment and selection expenses (τ), induction training fees (ι), and settlement allowances (ς). This can be expressed in symbols as outlined below:

$$\begin{aligned} C &= \tau + \iota + \varsigma \quad (\text{for an employee}) \text{-----} (3) \\ \text{Or } C &= \sum_{j=1}^n \tau + \iota + \varsigma \quad (\text{for group of employees}) \text{-----} (4) \end{aligned}$$

- ❖ The ongoing spending on human resources is the sum of $\varepsilon, \lambda, \delta, r, \omega, \ell$, and e . This indicates that K is the total of $\varepsilon, \lambda, \delta, r, \omega, \ell$, and e . This can be expressed symbolically in the following manner:

$$\begin{array}{lll} K & = & \varepsilon + \lambda + \delta & \text{(in the case of an employee) -- (5)} \\ \text{Or } K & = & \sum_{j=1}^n \varepsilon + \lambda + \delta & \text{(for employee group) ----- (6)} \end{array}$$

- ❖ This model identifies the significance and influence of additional factors in calculating human resource value. The variables include retirement age, average life expectancy, workforce turnover rate, and employee age. The rationale for identifying and incorporating these variables into the model is the use of caution and conservatism in valuing human resources. The effects these factors will have on the valuation of human resources are detailed below:

- Retirement age: This refers to the age at which an employee is anticipated to cease their work under typical conditions following their active and productive service to the organization. This is utilized in assessing the anticipated number of years an employee is expected to provide active and economic contributions to the company.
- Age of employees: Individuals enter the workforce of a company at various ages. Consequently, an employee's age is crucial in assessing the anticipated duration of active and economic contributions they are likely to provide to the organization.
- Average life expectancy: Every nation has a varying age at which its population tends to pass away. This is influenced by a combination of numerous factors including healthcare services and delivery, disaster predictions, quality of life, and more, to name a few. This variable

incorporates the unavoidable component of death into the model. The average death age decreases the anticipated duration of years an employee is expected to provide active and productive service to the organization. This is a straightforward demonstration of the accounting principle of caution in calculating the worth of human resources. This model uses the average life expectancy in Nigeria, which is 47 years.

- Employee turnover rate: Workers enter and exit an organization. The turnover rate is the speed at which workers exit a company or sector. Although employees may resign at any moment, the current trend is for them to sign a contract or agreement committing to stay with the company for a specific number of years.

- ❖ The four variables explained above can be symbolically represented as follows:

$$(1 - \ell) (r - e) (1 - \omega) \text{ ----- (7)}$$

- ❖ As the overall expenses of obtaining a human resource (C) are incurred before the employee begins providing services to the company, equation (7) will not influence C. Nevertheless, K will be impacted by equation (7) because the costs will be incurred after the employee has commenced working with the company. Consequently, integrate equation (7) into equation (5) for an individual employee and also integrate equation (7) into equation (6) for a group of employees. This can be expressed symbolically in the following manner:

$$K = \varepsilon + \lambda + \delta (1 - \ell) (r - e) (1 - \omega) \text{ (for an employee) ----- (8)}$$

$$K = \sum_{j=1}^n \varepsilon + \lambda + \delta (1 - \ell) (r - e) (1 - \omega) \text{ (for group of employees) ----- (9)}$$

- ❖ Additionally, because the structure of K relates to future spending on human resources, it is essential to determine their present value at the time they will be incorporated into the financial statements. Thus, determine the current value of equation (9). This can be expressed in the following manner:

$$K_{pv} = \sum_{j=1}^n C + \frac{\sum_{j=1}^n \varepsilon + \lambda + \delta(1 - \ell)(r - E)(1 - \omega)}{(1 + i)^{(r - E)}} \text{----- (10)}$$

- ❖ Add equation (10) to the total acquisition costs (C). This will give us:

$$HR_{value} = \sum_{j=1}^n C + \frac{\sum_{j=1}^n \varepsilon + \lambda + \delta(1 - \ell)(r - E)(1 - \omega)}{(1 + i)^{(r - E)}} \text{--- (11)}$$

$$\text{Since } K_{pv} = \frac{\sum_{j=1}^n \varepsilon + \lambda + \delta(1 - \ell)(r - E)(1 - \omega)}{(1 + i)^{(r - E)}},$$

the value of human resource is finally stated symbolically as:

$$HR_{value} = \sum_{j=1}^n (\tau + \iota + \varsigma) + \frac{\sum_{j=1}^n \varepsilon + \lambda + \delta(1 - \ell)(r - E)(1 - \omega)}{(1 + i)^{(r - E)}} \text{---- (12)}$$

$$\text{Or } HR_{value} = \sum_{j=1}^n C + \sum_{j=1}^n K_{pv} \text{----- (13)}$$

- ❖ The model is to be called and referred to as “***Salisu HRV Model***”.

A Hypothetical illustration of *Salisu HRV Model*

In order to clearly show the application of Salisu HRV Model and the accounting treatment of the value computed, let us use an assumed practical illustration.

SmylisuTel Nigeria Plc is a computer software company quoted on the Nigerian Stock Exchange. The company was incorporated in 2020 and advertised for the vacant positions that exist in the company. The company incurred ₦120,000 on advertisement. For the recruitment screening and selection, ₦250,000 was incurred. After the screening exercise, the company spent ₦200,000 on induction training for the selected recruits. During the exercise, ₦1,000,000

was given to the selected recruits as settlement allowance. These costs are incurred equally on employees.

The estimated annual expenditure on the human resource, excluding salaries, is to be incurred equally on employees and is provided below:

Expenditure Type	Symbol	Amount ₦
Education, Training & Development	E	100,000
Health & Safety	Λ	50,000
Pension & Provident Fund	B	80,000

The average mortality age in Nigeria (μ) is 47 years and the labor turnover rate in the telecommunication industry (ℓ) is measured as 25%. The retirement age applicable to Nigeria (r) is 60 years. The company's WACC (i) is computed as 22%.

The age details of the recruits are given below:

Employee Codename	Employee age (e)
A	30
B	36
C	28
D	24
E	21

Required: Compute the human resource value of SmylisuTel Nigeria Plc using “*Salisu HRV Model*” and show the accounting records.

Solution

The “*Salisu HRV Model*” is given as: $HR_{value} = \sum_{j=1}^n C + \sum_{j=1}^n Kpv$, where C is the total cost of acquisition and is given as: $C = \sum_{j=1}^n \tau + \iota + \varsigma$, and Kpv represents the continuous expenditure on human resource, which is given as:

$$Kpv = \frac{\sum_{j=1}^n \varepsilon + \lambda + \delta(1 - \ell)(r - e)(1 - \omega)}{(1 + i)^{(r - e)}}$$

$$\text{Therefore, } HR_{value} = \sum_{j=1}^n (\tau + \iota + \varsigma) + \frac{\sum_{j=1}^n \varepsilon + \lambda + \delta(1 - \ell)(r - e)(1 - \omega)}{(1 + i)^{(r - e)}}$$

Substituting the values in the above equation we have:

For Employee A

$$\begin{aligned} HR_{value} &= \sum_{j=1}^n (74,000 + 40,000 + 200,000) + \\ &\quad \frac{\sum_{j=1}^n 20,000 + 10,000 + 16,000(1 - 0.25)(60 - 30) \left(1 - \frac{(60 - 47)}{(60 - 30)}\right)}{(1 + 0.22)^{(60 - 30)}} \\ &= 314,000 + \frac{46,000 (0.75) (30) (0.57)}{(1.22)^{30}} \end{aligned}$$

$$= \text{N}315,514$$

For Employee B

$$\begin{aligned} HR_{value} &= \sum_{j=1}^n (74,000 + 40,000 + 200,000) + \\ &\quad \frac{\sum_{j=1}^n 20,000 + 10,000 + 16,000(1 - 0.25)(60 - 36) \left(1 - \frac{(60 - 47)}{(60 - 36)}\right)}{(1 + 0.22)^{(60 - 36)}} \\ &= 314,000 + \frac{46,000 (0.75) (24) (0.46)}{(1.22)^{24}} \end{aligned}$$

$$= \text{N}317,222$$

For Employee C

$$\begin{aligned} HR_{value} &= \sum_{j=1}^n (74,000 + 40,000 + 200,000) + \\ &\quad \frac{\sum_{j=1}^n 20,000 + 10,000 + 16,000(1 - 0.25)(60 - 28) \left(1 - \frac{(60 - 47)}{(60 - 28)}\right)}{(1 + 0.22)^{(60 - 28)}} \\ &= 314,000 + \frac{46,000 (0.75) (32) (0.59)}{(1.22)^{32}} \end{aligned}$$

$$= \text{N}315,123$$

For Employee D

$$\begin{aligned} HR_{value} &= \sum_{j=1}^n (74,000 + 40,000 + 200,000) + \\ &\quad \frac{\sum_{j=1}^n 20,000 + 10,000 + 16,000(1 - 0.25)(60 - 24) \left(1 - \frac{(60 - 47)}{(60 - 24)}\right)}{(1 + 0.22)^{(60 - 24)}} \end{aligned}$$

$$= 314,000 + \frac{46,000 (0.75) (36) (0.64)}{(1.22)^{36}}$$

$$= \text{N}314,619$$

For Employee E

$$\text{HR}_{\text{value}} = \frac{\sum_{j=1}^n (74,000 + 40,00 + 200,000) + \sum_{j=1}^n 20,000 + 10,000 + 16000(1 - 0.25)(60 - 21) \left(1 - \frac{(60 - 47)}{(60 - 21)}\right)}{(1 + 0.22)^{(60 - 21)}}$$

$$= 314,000 + \frac{46,000 (0.75) (39) (0.67)}{(1.22)^{39}}$$

$$= \text{N}314,386$$

So, the total of human resource value for SmylisuTel Nigeria Plc will be:

$$\begin{aligned} \text{HR}_{\text{value}} &= \text{N}315,514 + \text{N}317,222 + \text{N}315,123 \\ &+ \text{N}314,619 + \text{N}314,386 = \text{N}1,576,864 \end{aligned}$$

After the computation of the human resource value using “*Salisu HRV Model*”, the value is posted to the balance sheet together with other entries required, as explained below.

SmylisuTel Nigeria Plc Statement of Financial Position (Balance Sheet) Extract

Represented by:	N
Non-Current (Fixed) Assets:	
Human Resource Value	<u>1,576,864</u>
Financed by:	
Capital Reserve:	
Human Resource Investment Reserve	6,864
Short-term liability:	
Bank overdraft	<u>1,570,000</u>
	<u>1,576,864</u>

The costs of acquisition were already incurred and they must have been paid for already. Since we do not have the details of either cash or bank account, the best way to record them is to credit the bank account. This will lead to an overdraft situation and that is why we recorded it under the short-term liability. The continuous expenditures on the human resource are not incurred yet, so we recorded them as a special kind of capital reserve.

2. Approaches for Writing off Capitalized Human Resource Assets

This part focuses on the problem of spreading the cost of capitalized human resource assets over their useful and economic lifespan. In other words, I examined the methods suggested for how capitalized human resource assets may be depreciated or amortized. The capitalized cost is written off following the assessment and documentation of the human resource value. The formulas and methods were created in alignment with the conservatism principle for asset valuation in financial accounting. It is noteworthy that while asset depreciation in financial accounting considers useful life in years, HRA approaches seek to align depreciation figures with anticipated contributions from human resources. The subsequent methods/approaches were recommended for writing off capitalized human resource assets.

i. Straight-Line Amortization Method

This was the initial technique implemented for amortizing human resources. The technique was utilized by R. G. Barry Corporation and has been documented in the Company's Annual Reports since 1969. As noted by Woodruff and Whitman (1970), R. G. Barry Corporation allocated its human resource expenses for each manager using a straight-line method over the anticipated career

duration of that manager. This approach could be expressed in this way:

$$\text{HRAV} = \frac{\text{CHROC}}{\text{EWLM}}$$

Where: HRAV = Human Resource Amortization Value
CHROC = Capitalized Human Resource Outlay Costs
EWLM = Expected Working Life of a Manager

This amortization method relies on assumptions, which can be inferred as follows:

- i) Human resources data for valuation are handled individually.
- ii) The working life of a specific manager can be assessed with a certain level of precision.
- iii) All elements and circumstances that may influence the performance and length of time of a single manager are kept unchanged.

In real-world situations, these assumptions may not be valid at all. The individual manager may move on to another position elsewhere without having to invest significant time with the current organization. Additionally, he could be hurt or unable to function. This method of amortization is fundamentally inconsistent, leading to recurrent adjustments and write-offs (Jaggi & Lau, 1974). When frequent adjustments of significant size are necessary, it can become challenging for the accounting system to be accepted by management and decision-makers. Moreover, handling human resource data on a personal level can lead to troubling human issues (Lau & Lau, 1978). Take into account the assertion by Woodruff, et al. (1970) that “if you regard a man as a human resource and reduce his value on a straight-line method, do you change to an accelerated method if he suffers a heart attack?”

The application of the straight-line method for amortizing human resource assets could be unsuitable. Although Thomas (1969) and Hendriksen (1970) proposed that a valid allocation method should rely on a notion of a distribution of benefits anticipated from the asset over time, examine the scenario of HRA.

In numerous professional-managerial staff hiring initiatives, significant costs arise during the selection-recruitment phase and the following training programs. According to Lau and Lau (1978):

“Generally, it is difficult to justify these large expenses by the type of work these recruits do in the first one or two years, therefore, one may reasonably assume that the employers are at least as interested in the recruits’ future contribution potentials as in their immediate contribution capabilities, and that the large initial expenses are incurred with the hope that some of these recruits will turn out to be top executive material five, ten, or even twenty years later.”

Consequently, these and other scenarios render the straight-line method of HRA amortization unsuitable and unrealistic.

ii. Amortization Process Utilizing Jaggi and Lau (1974) Human Resource Assessment Model:

Given the complex nature and inconsistencies in aligning human resource contributions with their costs on a linear basis, a more scientific and pragmatic method for depreciating capitalized human resource assets was suggested. The method is grounded in the well-known Markovian Model and was suggested by Jaggi and Lau in 1974. The suggested method met the three fundamental criteria outlined by Lau and Lau in 1978. Lau and Lau (1978) state that a financially sensible and managerially

relevant depreciation method for human resource assets must meet these criteria:

1. It must consider that, for a professional or managerial worker, the worth of their later career services may significantly exceed the worth of their earlier career services.
2. Simultaneously, it must also consider that the likelihood of receiving the employees' earlier-years services is generally significantly greater than the likelihood of obtaining their later-years services.
3. It must be trustworthy and significant, thus should rely on an objective process that does not need frequent and substantial modifications.

Consequently, by integrating the Jaggi and Lau (1974) Markovian human resource valuation model with the suggested depreciation or amortization method "founded on a constant cost to net revenue contribution ratio (Hendriksen, 1970)," the aforementioned requirements will be fulfilled.

How does the proposed procedure work?

Step 1 – Compute the value of 'm' for the asset in question:

The value of 'm' is given as the ratio of:

$$m = \frac{\text{Historical Outlay Cost}}{\text{Total Expected Economic (or Revenue) Contribution}}$$

Step 2 – Calculate the depreciation for each year:

This is calculated as follows:

Expected Economic (Revenue) Contribution for that year X the ratio of m

The depreciation that can be calculated here reflects the distribution of the initial cost to every year, ensuring it aligns with that year's related net revenue contribution based on a steady ratio.

It is important to note that two key features of this procedure can be identified. They consist of:

- a) The method employs the human resource valuation model by Jaggi and Lau (1974) to establish anticipated contribution values. It also specifically seeks to align contribution with expense. These two elements play a role in the procedure's economic viability (Lau & Lau, 1974).
- b) Rather than focusing on individuals, the method analyses human resources as uniform groups. By organizing human resources into groups, the troubling human issues referenced under the straight-line method of depreciation can be mostly prevented. These two key features render the suggested method better than the previous one and statistically more dependable.

iii. Procedure for Probabilistic and Conservative Human Resource Depreciation:

This depreciation approach tackles the problem of uncertainty related to the useful life of an asset. It is true that even traditional assets that are legally owned, like vehicles, machinery, etc., possess certain uncertainties regarding their lifespan. When considering the idea of HRA, the uncertainties generally exceed those associated with the traditional assets that an organization legally possesses. Employee or staff mobility and the lack of assurance that staff or new hires will stay in the organization for the anticipated duration are significantly high within human resources. As stated by Jaggi and Lau (1974), the uncertainties concerning human resource assets consist of two dimensions: the length of employment (i.e., the duration of service) and the skill levels attained throughout different phases of its service life. Thus, any process or method of amortization or

depreciation for expensing the capitalized human resource assets must include and consider the notion of uncertainty regarding the service life of employees within a company. The depreciation or amortization process outlined below will clearly tackle the issue of uncertainty related to human resource assets.

3. Conservative Approach to Human Resource Depreciation with Probabilistic Total Future Contributions

While the probabilistic method for depreciating conventional assets focuses on the stochastic service life of those assets, the probabilistic method for the depreciation of human resource assets highlights the stochastic nature of the overall contribution from human assets. Consequently, the overall input of an individual or group of similar employees' changes based on factors such as time, skill level, and advancement achieved. For instance, three employees X, Y, and Z, hired simultaneously and at the same level (skill or service status), their real measured contribution earnings after several years might be:

Employee X – He enhanced his abilities and was quickly promoted during the early years, but departed from the company after a fairly brief tenure.

Employee Y – He remained with the organization for an extended period, but his skills and contributions did not significantly enhance over the years.

Employee Z – Although he did not experience initial growth as quickly as employee X, he remained for a much longer period and ultimately reached a significantly high level of contribution.

Lau and Lau (1978) suggest that a probabilistic depreciation method applicable to the employees described should include the capitalized costs of hiring and training, the average of the estimated normally distributed random contributions, the

standard deviation of the projected future contributions, and the actual contributions received from the employees throughout the relevant timeframe. In geometric terms, these can be expressed as:

$$\text{Depreciation} = \text{CC} \left(\frac{\text{AC}}{\text{AC} + \text{xFC}} \right)$$

Where:

CC	=	Capitalized Cost/Value
AC	=	Actual Contribution of employee
xFC	=	Mean of estimated future contribution

If, for example, the AC of a given employee in year 1 is 200 units, the xFC is 1800 units, and standard deviation is 100 units, then the depreciation for year 1 would be:

$$\begin{aligned} \text{Year 1 Depreciation} &= \text{CC} \left[\frac{200}{200 + 1800} \right] \\ &= 0.1\text{CC i.e. } 10\% \text{ of CC} \end{aligned}$$

Also, if the CC is given as ₦100,000, the total depreciation for year 1 would be: $0.1 \times \text{₦}100,000 = \text{₦}10,000$.

Assuming for year 2, AC of an employee is given at 240 units, xFC is 1500 units and standard deviation of estimated future contribution is 90 units, then the depreciation at year 2 would be:

$$\begin{aligned} \text{Year 2 Depreciation} &= \text{CC} \left[\frac{\text{AC1} + \text{AC2}}{\text{AC1} + \text{AC2} + \text{xFC}} \right] \\ &= \text{CC} \left[\frac{200 + 240}{200 + 240 + 1500} \right] \\ &= \text{CC} \left[\frac{440}{1940} \right] \\ &= 0.2268041\text{CC or } 22.68\% \text{ of CC} \end{aligned}$$

$$\begin{aligned}\text{Therefore, Year 2 Depreciation} &= 0.2268041CC - 0.1CC \\ &= 0.1268041CC \text{ Or } 12.68\% \text{ of } CC\end{aligned}$$

So, using the value of CC as above, the depreciation for Year 2 would be:

$$0.1268 \quad \times \quad \text{N}100,000 \quad = \quad \text{N}12,680$$

It should be noted that CC could be changed as at year 2 if other costs incurred on the employee are capitalized.

To protect against the under-depreciation of human resources for a specific year, the standard deviation is utilized at a defined confidence level to assess whether the under depreciation of the human asset is considerable or negligible. To implement this concept regarding our previously discussed question, we should keep in mind that we can be 99% confident about the true future contribution stream of the employee. The employee's depreciation for the first year would be:

$$CC \left[\frac{200}{200 + (1800 - 2.33 \times 100)} \right]$$

Where 2.33 is the value at 99% confidence level.

$$\begin{aligned}&= CC \left[\frac{200}{200 + 1567} \right] \\ &= CC \left[\frac{200}{1567} \right] \\ &= 0.1131862CC\end{aligned}$$

The probability that the human asset is under depreciated in year 1 would be

$$0.1131862 \quad - \quad 0.1 \quad = \quad 0.0131862$$

According to the figure above, the likelihood that the human asset is undervalued is merely around 0.01, which is negligible and can be overlooked.

While this method of writing off capitalized human resource assets appears more advantageous than the other two discussed earlier, it does have its drawbacks. Certain weaknesses encompass:

- i) The unpredictability of assessing the precise future contribution stream of an employee or a group of similar employees is still not completely eliminated.
- ii) There is a risk of undervaluing a human asset.
- iii) Its application is extremely complicated.
- iv) It necessitates a significant quantity of personnel data needed for the calculations.

It becomes more effective and statistically valid only when employees are categorized into large, uniform groups.

4. Human Resource Disclosure in the Corporate Financial Reports

Reporting an asset by a specific organization means adding the worth of that asset into the organization's financial reports or financial statements. It is recognized that assets (particularly fixed assets) are presented by organizations in the balance sheet and in the notes to the accounts referred to as the fixed assets schedule. For an organization to report fixed assets, specific disclosure requirements must be met. The disclosure obligations outlined in Schedule 2 (Part II) of the Companies and Allied Matters Act (CAMA) of 1990 as amended, the previous Nigerian GAAP (Statements of Accounting Standard, No. 2: Information to be Disclosed in Financial Statements), and the

International Accounting Standard No. 1 (Presentation of Financial Statements) are summarized as follows:

- i) A non-current (fixed) asset will be recorded at its acquisition cost or production expense, accounting for any allowances for depreciation or decline in value.
- ii) If a non-current (fixed) asset has a finite useful economic life, it can be recorded at its acquisition cost or production expense minus any anticipated residual value.
- iii) The fixed asset reported shall be diminished by depreciation provisions designed to systematically reduce the asset's value over its useful economic life.
- iv) A note will be included on the non-current (fixed) assets detailing the opening balances, additions made during the year, any disposals, and closing balances after accounting for depreciation.
- v) Intangible non-current (fixed) assets, excluding goodwill, can be recorded at their present value.
- vi) Tangible non-current (fixed) assets can be recorded at a market value established on the date of the most recent valuation or at their current expense.

Following the aforementioned disclosure requirements for non-current (fixed) assets, the value of human resources may be reported in the corporate financial statements as outlined below:

- a) The disclosure obligations for human assets may align with the disclosure for traditional fixed assets. This means the sole addition required in the fixed assets series is human assets, whose depreciation must align with the current policy for fixed assets established by the organization.
- b) The human resource assets must be distinct from the organization's fixed assets and managed independently. The title might be Special Asset, Human Capital, Intellectual Capital, or Intellectual Assets. Furthermore,

they mentioned that human resources could be categorized into groups like managers, supervisors, etc., and depreciated suitably following the best policy.

- c) Treating human assets as if they were conventional assets may not be adequate. The value should be reported in the balance sheet and a statement should also be created that would be a crucial component of the entire financial reports/statements. Thus, such additional financial statement might be termed 'Human Assets Value-Added Statement', or 'Changes in Human Assets Value', which ought to include the added value on the worth of human resources or the net worth of the organization's human asset, thereby calculating the true value generated from the human resources within a specific accounting year.

Research Grants Attracted

Year	Award Institution	Amount
2004	Petroleum Trust Fund Scholarship	\$1,000
2005	Petroleum Trust Fund Scholarship	\$1,000
2010	The Institute of Chartered Accountants of Nigeria (ICAN)	₦500,000
2011	MacArthur Foundation	₦235,000
2017	Federal University Gusau, Zzamfara State, Nigeria	₦650,000
2019	Kaduna State Government (World Bank Project)	₦50,000,000

Conclusion and Recommendations

Conclusion

The global transformation of industries from manufacturing-oriented to service-oriented called for a more technical and tactical approach to the issue of financial reporting. Since it is the aim of financial reporting to report information that is relevant, reliable, faithful, and adequate financial information, the financial reporting environment needs to be revisited.

Evidences have shown that the world had transformed from an information era to a knowledge-based era, which led to the 4IR. This transformation is fast evolving to another era: The Fifth Industrial Revolution (5IR) era. More companies of service nature are now geometrically increasing compared with arithmetically increasing manufacturing businesses. This reason forwarded great challenges to accountants in responding adequately to the new transformation. In responding to the challenges, accountants were able to expand the area of coverage of the discipline and became more innovative and inventive. The issue of human resource accounting is one of the innovations in the accounting discipline.

The formal adoption of Human Resource Accounting in financial reporting is no longer a question of *if*, but *when* and *how*. As the boundary between technology and human capability blurs thereby making the difference between two less clear and indistinctive, traditional accounting metrics will continue to lose relevance if they remain anchored solely to the material world. For academic researchers, professional accounting bodies, and corporate leaders, the challenge ahead lies in standardizing HRA metrics. Embracing this evolution ensures that accounting maintains its fundamental objective in the 21st century thereby providing a true, fair, and comprehensive view of organizational value.

Recommendations

To successfully transition Human Resource Accounting (HRA) from a theoretical concept into a core operational reality during the Fourth Industrial Revolution (4IR) and beyond, action must be taken across multiple levels, which require joint actions of standard-setting bodies, corporate leadership, and academic institutions. Precisely, the following strategic recommendations are proffered for the widespread and effective adoption of HRA:

a) Regulatory and Standard-Setting Level

The primary barrier to universal HRA adoption is the lack of a standardized, legally recognized framework. Without uniformity, financial statements remain incomparable. To achieve this:

- i) Establish a Global HRA Standard: International bodies such as the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) should collaborate to develop a dedicated International Financial Reporting Standard (IFRS) for human capital capitalization. This should define strict criteria for when human resource expenditures can be capitalized versus when they must be expensed.
- ii) Update IAS 38 (Intangible Assets): Current frameworks like IAS 38 explicitly prohibit the recognition of human resource as an asset because an enterprise does not have absolute control over its employees. Regulatory bodies must re-evaluate the definition of “control” in the modern economy, acknowledging that long-term employment contracts, non-compete clauses, and significant upskilling investments create a justifiable economic interest that satisfies the spirit of an asset definition.
- iii) Integrate HRA into Sustainability Reporting: Leverage the momentum of ESG (Environmental, Social, and Governance) and sustainability reporting frameworks (such as the International Sustainability Standards Board). Making human resource valuation a mandatory component of the “Social” or “Governance” disclosures will serve as a natural bridge toward full balance-sheet integration.

b) Organizational and Management Level

For individual enterprises, HRA should not be treated merely as a compliance exercise, but as a strategic tool for internal decision-making. This could be attained through:

- i) **Implementing Integrated HRIS and Accounting Software:** Organizations should invest in advanced Human Resource Information Systems (HRIS) that feature built-in People Analytics. By utilizing AI and machine learning, these platforms can track real-time variables (such as training ROI, skill acquisition rates, and predictive attrition) and feed this data directly into enterprise resource planning (ERP) systems like SAP or Oracle to generate real-time human asset valuations.
- ii) **Adopting a Dual-Reporting Model Initially:** To mitigate the volatility or skepticism surrounding human resource valuation, firms should initially adopt a dual-reporting approach. This involves presenting traditional financial statements alongside a parallel set of shadow accounts or supplementary schedules that reflect capitalized human assets, historical cost amortizations, and Lev & Schwartz-style value projections.
- iii) **Fostering Cross-Functional Collaboration:** Erase the traditional silos separating the Finance/Accounting department from Human Resources. A joint task force comprising Chief Financial Officers (CFOs) and Chief Human Resource Officers (CHROs) is vital to accurately map human capability to financial output and design relevant performance metrics.

c) Methodological and Measurement Level

To build trust among external stakeholders and auditors, the valuation models used must be robust, objective, and transparent. This could be fulfilled by:

- i) **Standardize Hybrid Valuation Models:** Instead of relying solely on the Cost Approach (historical/replacement costs) or the Value Approach (discounted future earnings), organizations should develop a hybrid matrix. For instance, routine administrative roles can be measured using a refined

replacement-cost model, while highly specialized tech architecture or R&D roles can be evaluated using present-value models that adjust for performance and flight risk.

- ii) Incorporate Risk-Adjusted Metrics: Valuation models must incorporate predictive analytics to discount human asset values based on risk factors such as industry-specific turnover rates, economic disruptions, and skill obsolescence. If a software engineer's primary coding language becomes obsolete due to generative AI advancements, the system should trigger a form of "intellectual impairment charge" on that asset.

d) Academic and Professional Development Level

The professionals of tomorrow must be equipped with the multidisciplinary tools required to audit and manage human asset data. This could be accomplished via:

- i) Curriculum Modernization: Universities and business schools must update accounting and taxation curricula. Advanced financial accounting courses should actively transition from teaching traditional manufacturing-era asset paradigms to focusing on the epistemology and measurement of intangible knowledge assets, data analytics, and behavioral accounting. HRA case studies and analytical modeling should also be introduced into the curricula.
- ii) Professional Certification Updates: Professional accounting bodies (such as ICAN, ANAN, ACCA, or AICPA) should incorporate mandatory modules on People Analytics, HRA measurement models, and the valuation of intellectual capital into their professional examination syllabi and Continuing Professional Development (CPD) programs.

References

- Abubakar, S. (2004). *The feasibility of human resource accounting in Nigeria*. Departmental Seminar Paper Presentation, September 2-3.
- Abubakar, S. (2006). *An assessment of human resource accounting measures and application possibilities in Nigeria*. M.Sc. Accounting and Finance Thesis Submitted to the Postgraduate School, Ahmadu Bello University, Zaria, Nigeria.
- Abubakar, S. (2007). Human resource investment and the value of selected companies quoted on the Nigerian Stock Exchange. *Nigerian Journal of Accounting Research*, 4 (1), December, 39 – 48.
- Abubakar, S. (2008). Human resource accounting: An assessment of the valuation models and methods. *Nigerian Journal of Accounting Research*, 4 (2), June, 80 – 102.
- Abubakar, S. (2009). A critique of the concept of human resource accounting. *Nigerian Journal of Accounting & Finance*, 1 (1), 93 – 105, June.
- Abubakar, S. (2009). *An investigation into the necessity for capitalizing human resource investments of quoted Nigerian service companies*. A Seminar Paper Presented at the Conference Room, Department of Accounting, Ahmadu Bello University, Zaria, April 02.
- Abubakar, S. (2011). Value relevance of accounting information of listed new economy firms in Nigeria: An empirical investigation using Ohlson Model. *Electronic Conference Proceedings on International Conference on Accounting and Finance in Africa*, Organized by the Departments of Accounting and Finance, University of Ghana in Collaboration with the Department of Accounting and Finance, University of Birmingham, UK.

- Abubakar, S. (2011). A proposed model for human resource valuation and reporting in the financial statements of quoted service companies in Nigeria. *Accounting Frontier*, 13(1), 1 – 31, June. An Official Journal of Nigerian Accounting Association (NAA) supported by Tetfund.
- Abubakar, S. (2012). Human resource accounting: Philosophical or paradoxical? (Chapter Three). *Governance, Leadership and the Nigerian Economy (First Edition)*. Edited by A.S. Kantudu, A.M. Tsauni and B.A. Kofar Mata, 28 – 42. Faculty of Social and Management Studies, Bayero University Kano: Dorayi Babba Commercial Press, May.
- Abubakar, S. (2012). *Human resource accounting and the quality of financial reporting of quoted service companies in Nigeria*. Ph.D. Accounting and Finance Thesis Submitted to the School of Postgraduate Studies, Ahmadu Bello University, Zaria, Nigeria.
- Abubakar, S. (2013). *Accounting Research in Nigeria: The need for a paradigm shift from empiricism to conceptualisation*. A Paper Presented at the Nigerian Accounting Association (NAA) Conference held in Nnamdi Azikiwe University (UniZik), Awka, Anambra State from 16th – 18th April.
- Abubakar, S. (2013). *A proposed model for human resource valuation and reporting in the financial statements of quoted service companies in Nigeria*. A Research Paper Presented at the 3rd Africa Accounting and Finance Association (AAFA) Conference Held at Makerere University Business School, Kampala, Uganda from 4th – 6th September.
- Abubakar, S. & Abubakar, M. (2013). *Intangible assets and value relevance of accounting information of listed high-tech firms in Nigeria*. A Research Paper Presented at the 3rd Africa Accounting and Finance Association (AAFA) Conference Held at Makerere University Business School, Kampala, Uganda from 4th – 6th September.

- Abubakar, S. and Abubakar, M. (2013). Intangible assets and value relevance of accounting information of listed high-tech firms in Nigeria. *Accounting Frontier*, 15(2), 52 – 90, December. An Official Journal of Nigerian Accounting Association (NAA) supported by Tetfund.
- Abubakar, S. & Okika, N. P. (2018). *Financial reporting incentive and goodwill impairment decision of listed banking and insurance firms in Nigeria: Is there Case of Opportunistic Behaviors?* International Conference on Contemporary Issues in Business and Economics (ICCIBE) organized by the Tasliciftlik Campus of Gaziosmanpasa University, Tokat, Turkey from July 13 to 16, 2018.
- Adams, C., & Roberts, B. (1993). You are what you measure. *Manufacturing Europe*. Sterling Publications Ltd, 504 – 507.
- Akinsoyinu, A. B. (1992). Human Resources accounting: The myth and reality. *The Nigeria Accountant*, April/June, 18 – 20.
- American Accounting Association (1966). *The definition of accounting*. The American Accounting Association. <https://www.publications.aaahq.org/>
- American Accounting Association (1973). Report of the committee on accounting for human resources. *The Accounting Review*, 48, 6 – 11.
- Becker, B. E., Huselid, M. A., & Ulrich, D. (2001). *The HR Scorecard: Linking people, strategy and performance*. Harvard Business Press.
- Brooking, A. (1996). *Intellectual Capital*. International Thomson Business Press.
- Brown, M. G. (1999). Human capital's measure for measure. *Journal of Quality and Participation*, 22 (Issue 5), September/October, 28 – 31.

- Brummet R. C., Vroom, V., & MacCrimmon, K. (1968). Human resources management: A challenge for accountants. *The Accounting Review*, 38, June, 27 – 38.
- Carper, W. B. (2002). *The early development of human resource accounting and the impact of evolving asset valuation theory*. University Cairo Press.
- Dawson, C. (1992). *The evaluation of two models of human resource accounting using a simulation methodology*. The City University Press.
- Dawson, C. (1994). Human resource accounting: From prescription to description. *Management Decision*, 32 (6), 35 – 40.
- Dawson, C. (1994). The role of simulation methodology to explore human resource accounting. *Management Decision*, 32 (7), 46 – 52.
- Edvinsson, L., & Malone, (1997). Realizing your company's true value by finding its hidden brainpower. *Intellectual Capital*. Harper Collins.
- Federal Republic of Nigeria (1990). *Companies and Allied Matters Act*, No. 1, LFN.
- Flamholtz, E. G. (1971). A model for human resource valuation: A stochastic process with service rewards. *The Accounting Review*, 46, April, 14 – 23.
- Flamholtz, E. G. (1974). *Human resources accounting*. Dickenson Publishing Company.
- Flamholtz, E. G. (1985). *Human resource accounting (3rd ed.)*. Jossey-Bass.
- Flamholtz, E. G. (1999). *Human resource accounting: Advances in concepts (3rd ed.)*. Jossey-Bass.

- Friedman, A., & Lev, B. (1974). A surrogate measure of the firm's investment in human resources. *Journal of Accounting Research*, 12, 235 – 250.
- Gates, S. (2002). Value at work: The risks and opportunities of human measurement and reporting. *The Conference Board*, USA.
- George, H. D. (2005). *Measuring the Dollar value of your human assets*.
<http://www.galaxymal.com/services/humanassets/valueofhumanasset/html>
- Glautier, M. W E. (1974). *Human resource accounting: A critique of research objectives for the development of human resource accounting models*. A Paper Presented at a Seminar on Human Resource Accounting held at the European Institute for Advanced Studies in Management, Brussels, November 28 – 29.
- Gupta, D. K. (1991). Human resource accounting in India: A perspective. *Administrative Staff College of India Journal of Management*, 20 (1), 9 – 10.
- Guthrie, J. (2001). The management, measurement and the reporting of intellectual capital. *Journal of Intellectual Capital*, 2 (1), 27 – 41.
- Hansson, B. (2004). Accounting for human capital investments. *Working Paper IPF*. Uppsala University.
- Harari, O. (1994). The brain-based organization. *Management Review*, 83, June, 657 – 659.
- Hendriksen, E. S. (1970). *Accounting theory*. Richard D. Irwin.
- Hermanson, R. H. (1964). Accounting for human assets. *Research Monograph*, 99. Georgia State University.
- https://journalofbusiness.org/index.php/GJMBR/article/view/985/1-Human-Resource-Accounting_JATS_NLM_xml

- Jaggi, B., & Lau, H. S. (1974). Toward a model for human resource valuation. *The Accounting Review*, 49, April, 1 – 14.
- Jasrotia, P. (2004). *The need for human resource accounting*. <https://www.itpeopleindia.com/20021216/cover.shtml>
- Kaplan, R. S., & Norton, D. P. (1992). The Balanced Scorecard – Measures that drive performance. *Harvard Business Review*, 70 (1), January – February, 71 – 79.
- Kaplan, R. S., & Norton, D. P. (1996). *The Balanced Scorecard: Translating strategy into action*. Harvard Business School Press.
- Kodwani, A. D., & Tiwari, R. (2007). *Human resource accounting - A new dimension*. A Paper Presented at the Canadian Accounting Association (CAAA) Annual Conference, January.
- Lau, A. H., & Lau, H. S. (1978). Some proposed approaches for writing off capitalized human resource assets. *Journal of Accounting Research*, 16, 80 – 102.
- Leffingwell, R. J. (2002). *Human relations accounting moves closer to daily use*. EBSCO Publishing.
- Lev, B. (2001). *Intangibles: Management, measurement, and reporting*. Brookings Institution Press.
- Lev, B., & Schwartz, A. (1974). The use of economic concept of human capital in financial statements. *The Accounting Review*, 71, 103 – 112.
- Likert, R. (1967). *The human organization*. McGraw - Hill.
- Lönnqvist, A., & Mettänen, P. (2002). *Criteria of sound intellectual capital measures*. Proceedings of the 2nd International Workshop on Performance Measurement, Hanover, Germany, June 6 – 7, 147 – 157.

- Lynch, R. L., & Cross, K. F. (1991). *Measure up! The essential guide to measuring business performance*. Mandarin.
- Mainoma, M. A. (1995). *The effect of human resource reporting on investors decisions*. M.Sc. Accounting & Finance Thesis, Ahmadu Bello University, Zaria, Nigeria.
- Mainoma, M. A. (2004). Application of human resources accounting in Nigeria. *Nigerian Journal of Accounting Research (NJAR)*, 1 (1), 9 – 17.
- Maisel, L. S. (1992). Performance measurement: The Balanced Scorecard approach. *Journal of Cost Management*, 2, 47 – 52.
- Monti-Belkaoui, J., & Riahi-Belkaoui, A. (1995). *Human resource valuation: A guide to strategies and techniques*. EBSCO Publishing.
- Nadler, L. Ed. (1984). *The handbook of human resources development*. John Wiley and Sons.
- Neely, A.; Adams, C., & Kennerley, M. (2002), *The performance prism. The Scorecard for measuring and managing business success*. Prentice Hall.
- Newman, B. H. (1999). *Accounting recognition of human capital assets*. Pace University Press.
- Owen, R. (1825). Organization of human element. In Robbins, S.P. (2001). *Organizational behavior (9th ed.)*. Pearson Education Ltd.
- Pathe, T. (2022). Toxic workplace cultures in the finance industry and their impact on talent, investors and customers. *The FinTech Times*. <https://thefintechtimes.com/toxic-workplace-cultures-in-the-finance-industry-and-their-impact-on-talent-investors-and-customers/>
- Ramakanta, P., & Khatik, S. K. (2003). Human resource accounting policies and practices: A case study of Bharat Heavy

- Electricals Limited, Bhopal, India. *International Journal of Human Resource Development and Management*, 3 (4), 285 – 296.
- Robbins, S. P. (2001). *Organizational behavior (9th edition)*. Pearson Education Ltd.
- Roos, J., Roos, G., Dragonetti, N., & Edvinsson, L. (1997). *Intellectual capital: Navigating the new business landscape*. Macmillan Press Ltd.
- Roslender, R. (2004). Accounting for intellectual capital: Rethinking its theoretical underpinnings. *Measuring Business Excellence*, 8 (1), 38 – 45.
- Roslender, R., & Fincham, R. (2001). Thinking critically about intellectual capital accounting. *Accounting, Auditing & Accountability Journal*, 14(4), 383 – 399.
- Sadan, S., & Auerbach, L.B. (1974). A stochastic model for human resource valuation. *California Management Review*, 25 (4), 24 – 31.
- Schmidt, F. L., Hunter, J. E., & Pearlman, K. (1982). Assessing the economic impact of personnel programs on workforce productivity. *Personnel Psychology*, 35, 333 – 346.
- Sharma, A. K., Ragesh, T. S., Lakshmi, C. B., Sunkara, N., & Rao, G. S. (2026). The role of HR analytics in predicting employee turnover: A machine learning approach for Indian organizations. *Artificial Intelligence and Data-Driven Strategies in Marketing, Economics, and Business Analytics*, 22(5), 305-314. DOI: <https://doi.org/10.69889/g4tbsh09>
- Steffy, B. D., & Maurer, S. D. (1988). Conceptualizing and measuring the economic effectiveness of human resource activities. *Academy of Management Review*, 13, 271 – 288.

- Strauss, G. (1976). Human resource accounting: Introduction. *Journal of Industrial Relations*, 15, 55 – 69.
- Sveiby, K. E. (1997). *The new organizational wealth: Managing and measuring knowledge-based assets*. Berrett - Koehler Publishers Inc.
- Sveiby, K. E. (2001). *Methods for measuring intangible assets*. <http://www.sveiby.com.au/IntangibleMethods.htm>
- The Holy Bible (1998). Genesis, Chapter 1, Verse 26. *The Bible: Authorized King James version*. Oxford UP.
- The Holy Qur'an. (Abdullah Yusuf Ali, Trans.). (1934). *Surah Al-Baqarah*, 2:30. Lahore, British India.
- The Holy Qur'an. (Abdullah Yusuf Ali, Trans.). (1934). *Surah Al-Isra*, 17:70. Lahore, British India.
- Thomas, A. L. (1969). The allocation problem in financial accounting theory. *Studies in Accounting Research*, 3, Sarasota.
- Town, P. (2026). 112 Warren Buffett quotes on investing, success, and life. <https://www.ruleoneinvesting.com/blog/how-to-invest/warren-buffett-quotes-on-investing-success/>
- Tuomela, T. S. (2000). Customer focus and strategic control: A constructive case study of developing a strategic performance measurement system at FinABB. *Turun Kauppakorkeakoulun Julkaisuja*, Sarja D-2:2000.
- United Kingdom Department of Trade and Industry (1998). Knowledge economy and creation of wealth. <https://www.gov.uk/dti/>
- Von Krogh, G., Roos, J., & Kleine, D. (1998). *Knowing in firms*. Sage.

Williams, A. (2025). Top limitations of human resource accounting. *The Knowledge Academy*.
<https://www.theknowledgeacademy.com/blog/limitations-of-human-resource-accounting/>

Woodruff, R. L., & Whitman, R. A. (1970). The behavioral aspects of accounting data for performance evaluation at the R.G. Barry Corporation. *The Behavioral Aspects of Accounting Data for Performance Evaluation*, Edited by Burns, T.J. Ohio State University.

Woodruff, R. L., Whitman, R. G., & Brummet, R. L. (1970). Discussion: R.G. Barry human resource accounting. *The Behavioral Aspects of Accounting Data for Performance Evaluation*, Edited by Burns, T.J. Ohio State University.



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