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CONTENTS

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TOWARDS A META THEORY OF ACCOUNTING FOR KNOWLEDGE MANAGEMENT: REVIEW THE REALITIES TO STAGE THE CRITICAL THINKING OF KNOWLEDGE BUSINESS MODEL

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Abstract: Knowledge management has always seen as an engine to convert tacit knowledge into explicit. Knowledge assets are facilitators to make such conversion. Knowledge management paradigm is a turning point in the management theories of business. When such paradigm has business dominance, it is time to question how to account for it ? Accounting for "how" and "why" has been largely neglected by the professional bodies and scholars of accounting. Accounting for knowledge management paradigm can be very critical in terms of questioning some of the fundamental assumptions of financial statements. The focus has been very narrow and anachronistic. Accounting for knowledge management is a problematic issue warrant further investigations. Its involves far more than the need to address the paradoxes and lacks of accounting model and practices. The extension of institutional accounting theories highlights how accounting against knowledge management is totally different from accounting for operations? Yet, the failure is shaped by the areas of asset recognition and the appropriateness of the going concern assumption. The virtue of conflict is grounded in nature of key assets, materiality, agility, visibility, periodicity, creativity, connectivity, interactivity, continuity, and survival. This paper argues that accounting for knowledge management must be based on understanding the dynamic nature of knowledge management. This paper contributes to accounting literature by being the first to identify how knowledge management reality has shaken the theoretical logic of accounting.

Key words: Accounting, knowledge management, intangibles, intellectual, knowledge assets, and value paradox.

I. INTRODUCTION

Knowledge is an engine of business success and a unique survive asset, and accounting is the only business reporting system. Knowledge is the fuel of business value which supports market capitalization. The knowledge driven literature have placed much attention on consequences of emergence of knowledge management. A new business management has shaken the assumptions and concepts of accounting. Accounting capital is no longer a driver of competitive advantages, rather knowledge capitals in terms of intellectual, technology, and customer capitals. The

engine of generating business revenues has been shifted from tangibles to intangibles assets. Accordingly, accounting has long been recognized as problematical for knowledge management and its model is no longer sufficient. The accounting model has been invented over hundreds of years to measure and report investment in tangible assets (Lev, 2001). The dilemma of accounting against knowledge management is about theory to practice. New knowledge practices are being innovated every day, but new accounting rules are not yet established and frame worked (Mohammad, 2013b). Unfortunately, accounting theorists and researchers have been very slow to recognize this fact. Accounting by its status qua is a fairly industrial intellectual discipline and has yet to demonstrate the maturity of knowledge management. The accounting literatures reviewed with reference to knowledge management clearly shown that accountant's community debate has focused on three issues: lacks and critics associated with the accounting model; nature of accounting practices required to deal with knowledge initiatives; and the rigid reporting format of the financial statements. Accounting reporting power against knowledge management is full of controversy associated with necessities of knowledge initiatives. The arguments have centered on the reliability of accounting information, gap of market value with book value, knowledge income, future cash flows, and logic of accounting equation (Lev and Zarowin, 1999). These arguments are further supported by the call to reform accounting rules because of intangible assets. As such assets are now the revenue engine of knowledge management. The absence of those assets from the financial statements leaves investors with irrelevant information to make critical business decisions. Lev, 2016 further claims that lack of intangibles has probably led to the systematic undervaluation of business assets. As a result, insufficient investment in the core business assets has been made. The lack of accounting information for completeness and timeliness on Knowledge assets contributes to what can be titled "accounting asymmetry". The basic and most accepted truth is that the structural components of accounting with its recording philosophy and reporting mechanism have been established to match the requirements of the industrial management. The reality is that such model has been invented to calculate the cost of materials and wages. Thus, one of key critics against accounting model is a cost based and its calculations cope with the industrial management not the knowledge one. This reason in particular explains why the current format of financial statements does not disclose relevant and reliable information about knowledge initiatives. The nature of accounting theory especially logic in terms of assumptions, principles, and rules are primarily responsible for the ultimate absent of knowledge information. The problem of accounting against knowledge management is the huge uncertainty which produce volatility associated with risks and due to such fact; investments in intangibles are treated as expenses. In contrast, innovations in knowledge management are created primarily by investment in intangibles, when such investments are commercially successed; they are transformed into tangible assets creating more corporate value and growth (Lev, 2001). All these lacks incorporated in the practical body of accounting model cited accounting as inadequate for knowledge management. Further, globalization, fast-changing technologies, intensive investments in human resources, high accelerated research and development have doubled the crises of accounting with knowledge management and increased unreliability of accounting information (Goldfinger, 1997). This paper therefore goes beyond the extant literature

in the field of accounting against knowledge management. It's describing the status quo of accounting model and arguing how far is accounting from knowledge. The key purpose of this paper is to introduce set of the urgent research questions related to accounting against knowledge management. The research question remains: is current accounting model mature enough to account for knowledge? An open question is: do we have a theory of accounting against knowledge? If so, how much perfect this model? Could the lacks of knowledge necessities be explained by inadequacy of accounting practices, or unique characteristics of knowledge practices? What is required to overcoming the paradoxes associated with accounting against knowledge management? These questions cannot be answered by the current ignorance and weak understanding of knowledge management. This paper adopts the structural components analysis methodology to attempt answering those questions and to draw a proposed accounting ontology against knowledge. These structural components are acting as important measures to gauge the availability of existed accounting model to measure and report knowledge business initiatives. This paper contributes to the existing accounting research in several ways: First, it contributes to improve understanding of the current situation of accounting against knowledge management assumptions. Second, paradoxes and lacks identified in this study provide insights into the recognition and reporting problems of accounting model. These identified problems could be considered by various stakeholders, regulators, and standards-setting bodies as they may seek to improve accounting against knowledge. Third, the lacks and critics identified illustrate what required to re-structuring a new accounting rules and practices to match knowledge necessities. Finally, this longitudinal analysis may contribute to framework a new conceptual theory of accounting for knowledge management. To put this research paper into context, first both the nexuses of knowledge management theory and the realities of accounting model have been discussed. Further, in-depth overviews of the paradoxes and lacks of accounting model have been summarized. Finally, the proposed structure of meta-theory of accounting against knowledge management has been presented.

II. REVIEW OF LITERATURES

2.1 Understanding knowledge management nexuses

Knowledge-based economy is a reality. Its unique dynamics, relationships, and assumptions have set the basics of a new growth theory (OECD, 1996). The new economic game incorporates the role of both knowledge and technology in driving productivity and economic growth (Corrado et. al, 2006). The emergence of knowledge-based economy has laid the foundation stone of an effective management of knowledge. Knowledge is not just another resource like labor and capital, but is the only important resource. Knowledge management is a new technology rather than any specific new science or invention (Drucker 1985). Knowledge management is one of three practices that have brought the most unexperienced turns to business (Prusak, 2001). The essence of knowledge management is to connect technology, process, and people to leverage value creation (Omotayo, 2015). Knowledge management is a value based rather than value chain; customer success based nor customer satisfaction; collaborative based not competitive (Amidon, 2003). As consequence, new ways of doing business associated with new business rules have been invented. However, development of knowledge-based performance has established new rules for gauging business

success. These new rules have entailed businesses to fundamentally rethink their past assumptions about management. Stewart 2007 argues that to understand the unique rules of knowledge economy especially how to create value, it is essential to identify the role of three assumptions. The first is knowledge and its management as the most important engine of production. The second is knowledge capital as a key pillar of the organizational capitals. The third is how to adopt new knowledge technologies, business practices, management techniques and strategies. Gorey *et al*., 1996 proclaimed that there are four organizational enablers facilitate the management of the organizational knowledge. These enablers are leadership, culture, technology, and measurement (See Figure-1). The accounting measurement is the process that includes not only how the organization quantifies its knowledge capital, but also how resources are allocated to fuel its growth. Further, it's the connection process where accounting match knowledge management. This unique relationship has been depicted in Figure-1 below. Knowledge management has improved profitability by raising productivity and streamlining, downsizing, outsourcing, and out-

Figure-1: Knowledge Management Arena (Royalty Image)

competing the competition (Kurzynski, 2009). Changing profit patterns and mechanisms has been considered one of the most fundamental changes due to the new practices of knowledge management. These practices are the engine to translating creative thinking, new ideas, and innovation into valuable products and services to guarantee business survive. Value is the product of knowledge and companies cannot generate profits without these ideas, skills, and talent of people. The literatures especially knowledge oriented contextualize much of those knowledge strategies, models, and knowledge-profit relationship (Nonaka and Takeuchi, 1995; Kaplan and Norton, 1996; Edvinsson and Malone, 1997; Anderson, 2000; Prusak, 2001; Stewart, 2001; Amidon, 2003; Omotayo, 2015). However, beside it is concentrated on intangibles; the knowledge management is just as much about people, organizational processes, and information technology. It's more concerned with the flows of knowledge that take place as part of organizational processes rather than the stocks of knowledge presented in financial reports (Edwards *et al*., 2004). For example, Nonaka and Takeuchi (1995), link knowledge management to the organizational success, and then making profit. They claim that knowledge companies are profitable because of their skills and expertise about how to translate the organizational knowledge into products and services. This dynamic represents the virtuous cycle of competition, invention, innovation, productivity, and growth. Further, such dynamic cycle combines three streams: value stream, revenue stream and the logistical stream. These streams entail that the knowledge business model has to address: investment and how it is funded, the ongoing costs, and the revenue and how it generated (Mohammad, 2013a). This conceals the fact that the organizational processes of knowledge management which center the knowledge business model have two and only two goals: to innovate and to market. All of their other processes are cost. Thus, any knowledge company to properly function in the knowledge era, it needs knowledge management

integrated with an accounting practices embodies these three components to cope with the implications of knowledge necessities (Huang, *et al*., 2012). Expected trends in the business practices and the necessary changes of accounting model are reviewed in the light of recent literature of knowledge management. These trends suggest that compliance between two areas of knowledge shall extend to include knowledge management processes and the identification of the accounting metrics that support such processes. The problem of accounting against the value perspective is that accounting values are meaningful only if they represent a true picture of economic and legalistic reality. According to the information perspective, accounting is an organizational engine to provide information. Accounting is not primarily a tool for measuring or estimating value, but is a source of potential information. The information content school views the financial measures as measures of information events, not of value (Christensen and Demski, 2003). Researchers and practitioners have proposed a wide variety of models to support accounting for knowledge initiatives. Understanding the contribution of these various models may help integrate accounting in this area of business. The literatures reviewed indicate that there were three research questions to discover the required compliance: what nature of knowledge management processes that are currently used? How much reliable the accounting practices related to measurement and reporting of knowledge assets? What measures were currently used and those are required to account against knowledge management practices? Understanding the contribution of various knowledge management practices to solving business problems may help integrate accounting practices in this area. The key elements of accounting against knowledge management have to address the flows of the organizational process nexus. These processes are three inter-related building blocks, broadly aligned with the different stages of the knowledge management: the development of new ideas (or invention of new business practices); the implementation and commercialization phase (or innovation and marketing of those practices); and reaping the benefits of new business practices through changes in market share and profitability (OECD, 2013). Understanding the above unique organizational process provides milestones for accounting against knowledge management.

2.2 Accounting for knowledge management

Accounting has long been described as "the language of business", but unfortunately knowledge is the business of today and accounting cannot communicate such business. The interdisciplinary nature of knowledge management has turned the accounting model to be inadequate. Nowadays, questioning the validity of accounting rules, regulations, and practices in terms of nature as well as engines has grown considerably due to the emergence of knowledge management. The shift has altered the requirements of business and then declared the demise of accounting. Knowledge management research has been plagued by a variety of the accounting problems that can lead one to question the extent of validity of accounting model (Mohammad *et al*., 2010).

2.2.1 *The early era of accounting studies (1950s-1970s)*

The seeds of accounting for knowledge have been planted in the fifties. This a new area begun to take roots by the recognition of accounting lacks. The initial awareness of role of technology in business has drawn a question mark about its existence in the balance sheet. The early literatures have

discussed many challenges that accounting regulatory questioned to prepare causal financial statements. According to the general understanding of this era, the problem of accounting is already attributed to its theoretical architecture and ontology. The theoretical lacks of accounting have perceived significant attention in the business literatures in terms of how to report business initiatives properly. The central premise of this era has addressed accounting as information management model with quite narrow recognition rules and reporting instruments. The old industrial logic of accounting has been recognized as problematic and need to be replaced under the pressure of business change. The core objective of these literatures was how to capture the differences of book value and make it measurable to the users in the financial statements. For the accounting literature, it was important to look for the new emergent gap between accounting and market values. Taken this fundamentally reporting issue, much of the discussion dealt with the empirical evidence of problematic measurement of business practices. In the early period of the sixties, the accountant's community has focused a great deal of interest to concept of accounting transaction. The new organizational models due to automation have created clear challenges to accounting definition of business transaction. Firmin and Linn (1968) have investigated how these models have expanded the accounting transaction concept. These new models are, introduction of information systems, changes in the organizational structure, and repaid growth in data processing technologies. Anton (1966) had explained another lack of accounting model in regard to missing integration with the planning and control systems. American Accounting Association (1966) has recognized the economic events which are not measured by accounting model such as price-level changes, employee skills and intra-entity changes in assets values. The subsequent accounting literatures have paid visible attention on reliability of accounting information in terms of usefulness, accuracy, quality of format and reasonableness. All these research directions have initiated information technology based communication approach to enhance reliability of accounting information. In the early of the seventies, the discussions in the accounting literatures have been allocated to how to shift accounting interest from measuring transactions' data to report business value (Previts and Merino, 1999). Later, the awareness has been increased to start recognizing that the shift toward knowledge economy has altered the requirements of management, which in consequence rooted the wave of accounting lacks. The topic of accounting relevance has been of interest to both accounting and business specialists. Accounting research has been plagued by a variety of the evaluation problems that can lead one to question the extent of reliability of accounting numbers. Relevance of accounting information as a new area of critic has attracted the attention of business literature and thinkers (Burns and Stalker, 1961). The serious problem of financial statements is laid in its theoretical logic and structure. This matter has received much attention in the early literature, often in the form of discussions around validity of the accounting measurement rules. Accounting rules are key cause beyond accounting numbers' failure. As set of these rules were set up to evaluate static business transactions. These rules take out change from being recognized in the financial statements. These practices and treatments detract from the quality of financial information provided in the balance sheet. This theoretical logic of the accounting has been established five hundred years ago. This logic has been set up to match the requirements of industrial business transaction managed by machine technology (Lev, 2001).

The transactional approach of accounting measurement is based on highly restricted physical terms to accept and record economic events. The recording rules of business transactions have been defined and practiced according to the theory of visible logic. It has become apparent that accounting measurement is based on very flawed instruments in the context of evaluation. Its historical, periodical, cost and statements based measurement model (Curtiss, 1999). These features interpret why information provided by such model irrelevant to match business necessities. A critical distinction requires a greater awareness of value in contrast to cost management. Value management model is comprehensive, forward-looking, real-time, value-based, and actionable. The logical architecture of accounting with its current theoretical ontology has been established to report cost of business (Lev, 2001). The basic critical point against accounting logic is backward, transaction based, tangible assets centered and articulated to measure performance of high intensive machines technology. These assets such as physical capital, fixed assets, and inventory (the assets of the industrial revolution) have been considered driving engine of the industrial revenues. In the dynamic theory of balance sheet, these assets always appear at cost, which is the production side rather than customer side. As a result of such problems, the reported profit of accounting has become less or more than the generated or real profit. Further, the market value of business organizations has become more or doubles the accounting value (Kortelainen *et al*., 2011).This situation raised critical questions about the nature and lacks that are specific to knowledge nature. Do accountability as a key nature of accounting under industrial era is no longer valid? Does accounting information still relevant under situation of knowledge management? The significant interdependence between accounting measurement and recognition has duplicated its effect. These problems have created the paradox of accounting capital in front of business capital. For example, how business capital evaluated in reality is always more than the accounting capital in the companies' ledgers. In fact, the accounting transactional rules recognize only vouchered change in value. Tangible, visible, and documented change in value will be recognized. Accordingly, accounting has been defined as a transaction-based evaluation model. These recognition rules have always made accounting transactions of assets, liabilities, and equities to be reported in the balance sheet at cost; which is the production side rather than customer side. This situation has led a number of business practitioners to inquire into the accounting lacks that are specific to business change. Two general explanations have been formulated to summarize this era. The first is that accounting and its recognition rules has become inadequate when valuing unique business assets. The second is that financial statements are minimizing business value because it has been designed to report static assets on hold.

2.2.2 *The second era of accounting studies (1980s-1990s):*

The decade of ninnies has been described as "age of innovation". Knowledge management as an academic discipline clearly began after unprecented development of information technology and information systems for business purposes. With the explosive growth of business assets and organizations, knowledge assets have become somewhat synonymous to intangible assets in accounting. Knowledge as a new economic phenomenon has attracted the attention of business literature and thinkers (Wiig, 1997; Haanes and Lowendhal, 1997; Sveiby, 1997; Roos *et al*.,

1997; Nonaka and Takeuchi, 1995; Davenport and Prusak, 1998). According to Wiig (1997), the company's viability depends highly on "the competitive quality of its knowledge based intellectual capital and assets and the successful applications of these assets in its operational activities to realize their value to fulfil the company's objectives". Through this era, the concept of intellectual capital has been used for the first time instead of the accounting term intangible assets (Edvinsson and Malone, 1997). The problem which has been highly recognized is how to report intellectual assets in systematic way in the absence of accepted accounting measurement methods and guidance of regulatory setters (Brennan, 2001). Knowledge research has been plagued by a variety of the accounting problems that can lead one to question the extent of validity of accounting model. In fact, this model looks backwards and focuses on tangible assets. Tangible (or hard) assets have considered driving engine of the industrial revenues such as physical capital, fixed assets and inventory (the assets of the industrial revolution). It is a transaction-based evaluation model. This has led a number of practitioners to inquire into the lacks that are specific to knowledge nature. In addition, in view of the growing emphasis on knowledge management and the related accounting problems, the urgent differentiation between accounting capital and flow of intellectual capital has been addressed (Corrado *et al*., 2006). This a new theoretical perspective was necessary for analyzing revenue power of knowledge companies, because most of the accountant's community thinks that sale of inventory is more important than development of products. Accordingly, the interdisciplinary literatures analysis has indicated that knowledge-intensive companies have three major accounting-related problems: partial excludability; inherent risk; non-tradability (Lambe, 2002). According to the knowledge literatures, the problem of accounting against knowledge has two dimensions: the first is the asset (whether financial, technological, or intellectual) cannot be well determined . Further, the measurement of the critical success factors of knowledge business model cannot be defined in qualitative and quantitative terms (Hall and Mairesse, 2006). The accounting literatures have classified the knowledge critics against accounting into structural and contextual. The structural critics are related to the rigid reporting format of financial statements. In contrast, the contextual critics have discussed the practical aspects of accounting in terms of rules, regulations, and assumptions. The literatures reviewed indicate that the reporting power of financial statements is full of controversy associated with outdated reporting style of financial statements (Canibano *et al*., 2000). The critics against reporting power have been allocated to accounting equation that has undermined the comprehensive reporting power of accounting. The underlying debate has created huge controversy on how to reconcile the reporting power to match the priorities of the knowledge management (Canibano *et al*., 2000). The monetary-based nature has to be overcome because very little of knowledge has to do with money. The distinctive debate about knowledge problems of accounting has concluded that the priorities of knowledge management still cannot be disclosed in general-purpose financial statements (Hall and Mairesse, 2006). The reality is the serious problem of accounting is laid in its theoretical rules and reporting formats. This matter has received much attention in the literature, often in the form of discussions around validity of accounting model. Accounting rules are key cause beyond accounting model's failure. As set of these rules were set up to evaluate hard or (tangible) assets. The accounting standards either IFRS or GAAP recognize and report

only the contractual intangible that match the accounting terms of definition. That's mean each set of standards doesn't recognize and report business intangibles such as knowledge assets. According to such fact, these standards rules out knowledge assets from being recognized in the balance sheet. These standards and the underlying treatments detract from the quality of information provided in the financial statements. This because the theoretical logic of the accounting has been established in isolation of technology. However, this logic match more the requirements of machine technology rather than knowledge (Lev, 2001). Table-I presents comprehensive comparative for accounting of operations in contrast to accounting against knowledge. The differences are significant and relates to dynamic nature, recognition rules, reporting power, and theoretical objectives. Knowledge management represents an opportunity to derive accounting model to be intangible assets based with future orientation. The current accounting model is deficient and full of shortcomings in relate to knowledge. The key assumption of knowledge management is the migration of competitive advantages from tangibles to intangible assets. The physical assets are not providing a source of significant differentiation. The company's viability depends directly on the competitive quality of its knowledge assets, and the successful application of these assets in all its business activities (Holsapple, 2003). The competitive advantage of knowledge assets flows from the nature, creation, ownership, protection, and use of difficult ideas to imitate these assets. To be competitive, proactive, and dynamic, business companies must manage knowledge assets systematically. Two key characterizes has outlined the development of accounting against knowledge throughout this era. The first is that "accounting and its models has boiled to its bones and the theoretical bases of accounting are outmoded" (Stewart, 2001). The second is that "Accounting model has become something of an anachronism in knowledge management era. It is a legacy of the industrial age, and as a result, if the current situation of accounting is going to be continuing, prestige of accounting will be lost" (Drucker, 1999).

2.2.3 The third era of accounting studies (2000s-Present)

This era can be described as the move to find the hidden gold. It is vital to understand that throughout this era, the terms of intangibles, knowledge, and intellectual capital are usually used interchangeably in spite of the difference in the contextual content of these concepts. The terms of intangibles has been used in the accounting literature to define "an identifiable, non-monetary asset without physical substance" such as patents, trademarks, fishing licensees, and computer software. The term of identifiable means the contractual according to the accounting definition. The problem is not all the intangibles are identifiable such as internally generated good will. The term of knowledge assets has been addressed by economists to define the accumulated process resources as drivers of business success on a specific area of practice. Knowledge assets are less tangible and more depend on human cognitive and awareness (Nonaka, 1991). The term "knowledge assets" was first introduced in the Baldrige Glossary in 2003.The popular examples of knowledge assets includes process documents, guidelines, and templates. Finally, the intellectual capital has been used in the management and legal literature to refer essentially to the same thing: a non-physical claim of future benefits. The examples of intellectual assets include human resources and new organizational structures (OECD, 2008). The nature of knowledge assets is especially sensitive for number of reasons: first it's does

not have a physical or financial embodiment; second it's internally generated, developed, and practiced; and finally its non-tradable which means cannot be readily bought or sold (Austin, 2007). The virtual nature of knowledge assets was further complicated their management and accounting. Unlike the physical assets, the knowledge assets are unique assets expected to have value (because of its uniqueness) which play important role in increasing return on scale. A real understanding for the nature of these concepts has been developed (See Table-I). The virtual nature of knowledge assets further complicates their accounting. Accordingly, knowledge assets are reflected by investment in research and development. The imperatives of knowledge management entail a new accounting paradigms for measuring and reporting research and development. The reporting power has so beautifully disclosed the operational transactions for a half-millennium. The balance sheet is now failing to keep up with the wave of knowledge management. The accounting's failure to disclose knowledge capital is not just a theoretical problem. It costs all the stakeholder's money and time.. Accounting does not recognize the internally generated intangibles such as research and development, brands, and employee talent. These assets are the engine of knowledge management (Lev, and Gu, 2016). This accounting treatments underestimate financial performance of successful knowledge management. Today, accounting face a situation in which it says that knowledge assets are valuable and tend to be the future of business organizations, but cannot say how (Blagu and Lekhi, 2009). The problem of accounting against knowledge lays in the ways of measuring and reporting knowledge assets. The financial statements have been the white and black screen to show the operational assets images for a half-millennium. Unfortunately, these statements are now failed to show knowledge assets colored images. The accounting model is acting as convertor to turn these images. The accounting's failure to generally measure and disclose knowledge assets is a theoretical problem with dramatic side effects. Uncertainty is one of recognition problem and because of that, accounting recognizes poorly (or partially) knowledge assets such as research and development, brands, and employ talent. In contrast, these assets are considered the value engine of knowledge business model (Lev and GU, 2016). The problem of accounting is that does not recognize internal knowledge management initiatives such as technology under development, knowledge of the employees, manufacturing arrangements, and marketing and distribution systems (Canibano *et al*., 2000). Accounting only recognizes knowledge assets purchased from others in spite of the internal investments is a key source of future profit. This evaluation rule underestimates figures of successful knowledge initiatives and business performance. The inconsistencies of accounting rules that related to knowledge assets under both GAAP and IFRS diminish the usefulness of the financial statements. These deficiencies have been empirically explored in several research projects that suggest loss of relevance, comparability, consistency, and neutrality (Smalt and McComb, 2016). The accounting model by its status qua is insufficient to match knowledge rituality. This view is circulated in most of the business and accounting literatures due to sum of the shortcomings and lacks. However, the discussions centered on the fact that the traditional accounting theory is not providing a source of significant differentiation (See Table-I). The company's viability depends directly on the competitive advantages of its knowledge assets (Holsapple, 2003). Extant researches that have discovered nature of knowledge assets served as the data source for conceptualizing the new

proposed framework. The value is generated by innovation (discovery) and enhanced by the unique organizational designs or human resources practices. Prusak 2001 identified three major nexuses of knowledge assets: discovery, organizational practices, and human resources. These assets are performing in an integrated triangle for the value creation, updating, and commercialization. The unique discovery is acting as an engine of innovation process and updated by investment in research and development (Amidon, 2003). Moreover, brands as a major form of knowledge assets are often created by a unique combination of the innovation and organizational structure. Finally, human resources practices are generally identified as a communicator to guarantee continuity of value creation and survive of knowledge assets (Holsapple, 2003). Considerable research projects have been managed (individually and by bodies) to develop alternative accounting models that overcome the lacks of accounting against knowledge management. The key feature of those models is that none of these developed models in the accounting literature has

Table I: Accounting against knowledge vs. Accounting for operations

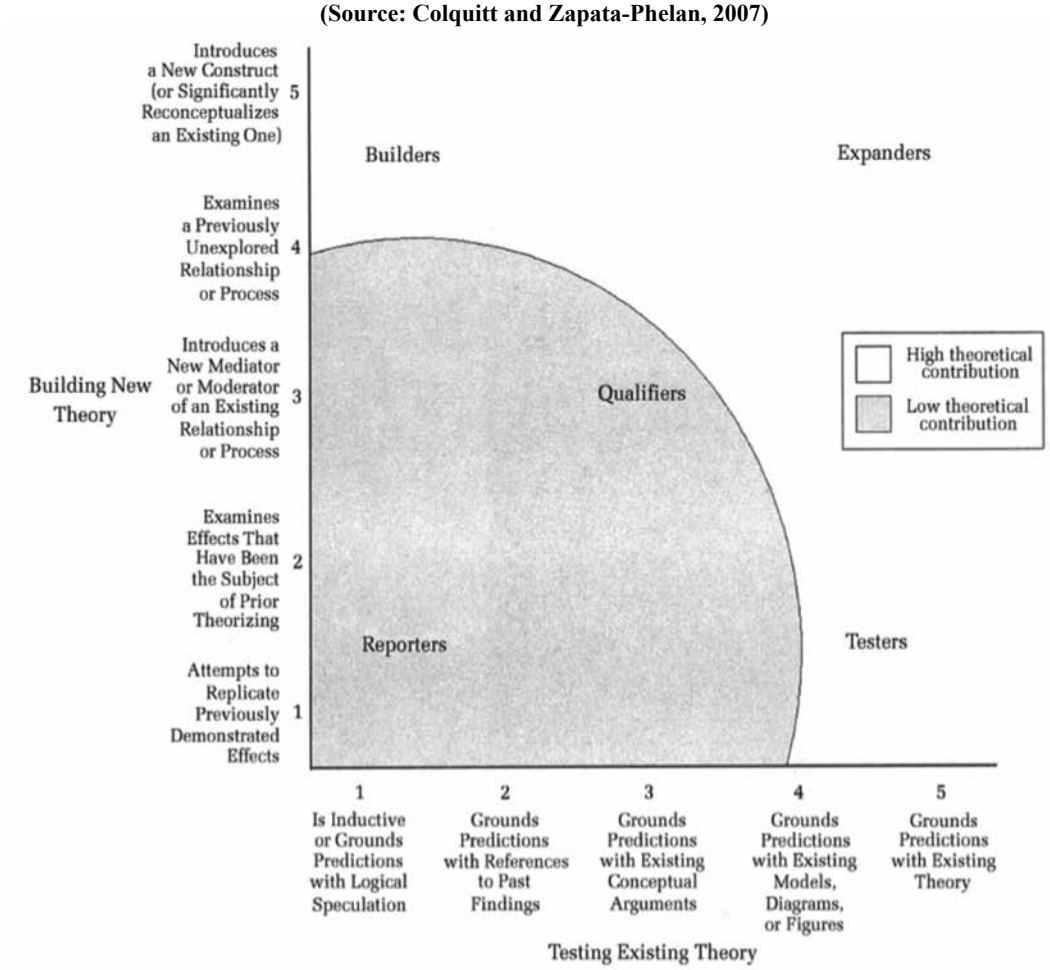
	Accounting Against Knowledge	Accounting for Operations
Dynamic Nature	✓ Knowledge System. ✓ Horizontal. ✓ Financial and non-financial. ✓ Relationships ✓ Inter. ✓ Integrated, cross-disciplinary, ad hoc, fluid, and collaborative. ✓ Success in expanding relationships.	✓Information System ✓Vertical ✓Financial ✓Visible and physical activities. ✓Intra. ✓None integrated, closed, restricted, and has boundaries of single businesses. ✓ Success in control.
Recognition Rules	✓ Invisible flow of knowledge. ✓ Value Creation. ✓ Flexible, collaborative, and dynamic. ✓ Strategic. ✓ Comprehensive. ✓ Technical. ✓ Centered on knowledge.	✓ Physical flow of resources ✓ Value Realization. ✓ Rigid, isolated, and static. ✓ Operational. ✓ Financial. ✓ Procedural. ✓ Centered on data
Reporting Power	✓ Focused on technology process. ✓ Supporting collaboration with business partners. ✓ Networking. ✓ Extracted from e-business model. ✓ Reporting value.	✓ Focused on accounting process. ✓ Supporting performance of recording and reporting process. ✓ Blocking ✓ Extracted from t-business model. ✓ Reporting cost.
Theoretical Objectives	✓ Creating and sharing knowledge ✓ Value proposition matrix: balancing performance, behavior, and technology. ✓ Reporting Dynamic: Instant and online.	✓ Measuring profitability. ✓ Value proposition matrix: cost, time, and quality. ✓ Reporting Dynamic: Periodical.

approved generally. In addition, these models provide only improvements by integrating more rules but are not replacing the existed accounting model. Further, these alternative models are based on new techniques (such as discounted present value) that match the managerial reporting more than the financial. However, these models are not that much relevant because it cannot provide comparable information about knowledge activities across industries and companies. Finally, no one of the proposed models adequately match the reporting requirements of the existed accounting model practices especially in the areas of uncertainty and risk quantification (Blaug and Lekhi, 2009). The imperatives of the knowledge management entail new paradigms for managing, measuring, and accounting of knowledge assets. A new accounting theory is really needed to support the development of knowledge management. The development of such theory will provide an opportunity to derive accounting to be knowledge assets based with future orientation.

III. THE RESEARCH METHODOLOGY: RADICAL, INTEGRATED AND VALUE PERSPECTIVE BASED

The accountant's community has debated for a long time the validity of accounting model against knowledge. The debate has been started by intangibles whether to be reported as expense or capitalized as asset (Gherai and Balaciu, 2011). This debate has triggered the necessity to update the accounting rules to communicate reliable business information. Information vs. value is the new argument in accounting (Hakansson *et al*., 2010). According to the information perspective, accounting is an organizational engine to provide information. Accounting is not primarily a tool for measuring or estimating value, but is a source of potential information. The information content school views the financial measures as measures of information events, not of value (Christensen and Demski, 2003). In business and knowledge management literatures, several research projects and reports have identified the serious criticisms against the accounting model. The main historical cause of the challenges and problems has been the logical architecture of the working mechanism (Anton, 1966; Drucker, 1999; Brennan, 2001; Blagu and Lekhi, 2009; Smalt and McComb, 2016). Thus, the current study is a qualitative explanatory research adopts value perspective to structure a theory of accounting against knowledge management. This paper introduces well defined paradigm to analyze the structural components of accounting in very critical sense to knowledge. The proposed research methodology combines the definitional expositions of Bukh, 2003; Marr and Spender, 2004; MERITUM Project, 2002; Mouritsen, 2003; Prism, 2003; and Howell, 2008. It's a radical and calling to shift the orientation of accounting from reporting value realization to value creation. Further, the conceptualization of theory building proposed by Colquitt and Zapata-Phelan (2007), has been followed when determining how a new theory has to be structured. Accordingly, re-engineering the structural components of accounting is a must to match the necessities of knowledge management. The implementation of the radical research methodology has taken five steps (See Figure-2 below). The first step was based on reviewing literatures to identify the problems in terms of paradoxes and lacks. The current body of literatures dealing with these problems is still fragmented. The reviewed literatures of business and knowledge management have identified the transactional rules and reporting format as two key obstacles of accounting for knowledge (Holsapple, 2003; Stewart, 2001). The theorists

Figure-2: A Taxonomy of the Theoretical Conceptualization
(Source: Colquitt and Zapata-Phelan, 2007)



of accounting also identified that the routine regulating mechanism of accounting needs radical restructuring-more than updating the measurement techniques (Howell, 2008). The dysfunctionality of these components was the key problem against accounting for knowledge initiatives. Thereafter, these transactional components have been analyzed and matched with necessities of knowledge management to examine the theoretical and practical validity of these components. The second step has investigated the whole side effects of all the above problems especially the gap between accounting and market capitalization. Thereafter, the radical research methodology of this paper has been designed as more widely accepted approach to structure a new accounting theory against knowledge management. The typology of the research methods has been designed carefully to integrate all the literature trends whether in accounting, business or knowledge management. The practical solutions developed identify the criteria for solving these lacks and paradoxes that need to be reported. The knowledge management's literatures determines the format of the information required, its nature, its scope, and the accounting rules that need to be applied. The proposed format of financial statements may help to draw a milestone in the way of

constructing a new accounting theory against knowledge management. All these processes are clearly reflected in Figure-2 below. Finally, structuring a theory for accounting against knowledge management faces a unique challenges and critics. The first of all these challenges and critics, it may go contrary to the popular beliefs of the accountant's community. The second is that construction of an accounting theory needs more clarification in view of both GAAP and IFRS. Finally, this study is small and humble contribution in the way of constructing a new accounting theory against knowledge management.

IV. META-THEORY: GUIDELINES FOR PROSPECTIVE SETTING AND PRAGMATIC GROUNDING

4.1 *Re-inventing rules of accounting recognition*

As mentioned previously, the current paper is an exploratory research undertaken to explore the necessities of accounting against knowledge management. The adopted methodology has been based on analyzing the structural body of accounting in very critical way to knowledge nexuses. Large bodies of literature are surveyed to exploring lacks and shortcomings of the accounting model. However, analyzing theses lacks is urgent and desirable to gauge the extent of validity. Accounting model has been under huge critics because of what can be called "preventing the wheel". The effective research clearly shows a perceived technical gap when investigating knowledge management literature. It is also evident from the literature that the problem of accounting is neither rules nor reporting format. Further, the conflict between accounting and knowledge is particularly high in recognition of intangible assets. A review of research into accounting dilemmas indicates that almost all the previous researches have focused on problems of accounting rules that relate to recognition of knowledge assets. A second preliminary paradox that must be disposed is the invisibility of knowledge assets and revenues. Unlike the industrial, the knowledge business model does not care about owing assets. It's promotes the idea the fewer assets the better and as a consequence strip off balance sheet of non-current assets (Holsapple, 2003). A traditional business model is a collection of hard (or physical) assets that bought and owned as a measure of the capital health. Accounting against operations is pushing to enhance the size of the balance sheet. In contract, knowledge management is based on totally different ideas, mechanism, and does not care about owing assets. Its strips balance sheet of non-current assets. This phenomenon has been called the victories of information over inventory. At bottom, accounting terms to define and recognize asset still same as were set up throughout the industrial era. The accounting rules of recognition ignore the investment in discovery and learning as a driver for creating knowledge assets. This problem in consequence reduces the reliability of accounting to provide relevant and timely information about knowledge initiatives (Haskel, 2007). The operational accounting ignores the implementation phase of value chain where value usually created or destructed (Lindsey, 2001). The successful development for the new generated ideas is creating considerable value, but actual transactions may take years to materialize. As a result, disconnection between market and book values is happened (Pandian, 2011). The generally recognized problem is knowledge assets in terms of how to be recognized, measured, reported, and interpreted. Unfortunately, only few researches have addressed the accounting theoretical settings. The failure of accounting model to address knowledge management initiatives can

be divided into: 1. the failure to master the specialized vocabulary of knowledge management; and 2. the failure to reflect the systematic process of knowledge management. Understanding the logic which underlies the knowledge management should not be a professional judgement based, but broader in scope and more specialized in nature. According to the methodology of this paper, it could be said that the advent of knowledge management has shaken the recognition rules and in consequence the relevance and reliability of accounting information. The accounting rules by its state qua have become outdated, and no longer valid to absorb assets of knowledge management. The treatments of knowledge initiatives by the existed recognition rules and practices have become inadequate. However, ignoring knowledge assets as result to rules of accounting (in particular, discovery and learning of the value chain) contributes to phenomena of information asymmetry of accounting. The current situation of accounting model facilitates the release of biased and even fraudulent financial information. The tangible recognition rules have been considered the driving engine of the operational revenues. Thus, emergence of knowledge business model entails a new accounting recognition rules that perfectly match necessities of knowledge management. It could be said that "reinventing the wheel" is urgent to cope with knowledge assumptions. Accounting theory needs to measure what is matter instead of how does measurement matter is? Investigation of accounting logic is needed, including the effectiveness of measurement techniques, timing of the measurement, and use of changing reporting formats. The role of accounting is imperative in articulating any shift for business change. Accounting change and reform need to address the conflicting issues with the transformational style of knowledge management. The preference for "replacing" over "improving" in accounting for knowledge management means that the accountant's community has to deal with assumptions of knowledge management seriously to develop a new accounting model. This paper contends that the extensive exploration of the various dimensions of lacks and shortcomings is an appropriate approach for judging validity of accounting model. The narrowness of accounting scope and recognition rules has restricted the accounting change. Accordingly, accounting has become outdated and no longer valid to absorb recognition of the knowledge management. This situation has driven the financial reporting to be away from business value. As consequences, gap of market value has been increased and accounting lost its direct influence on management decisions. This gap has created what can be called value paradox. It's a concept of knowledge management which compares knowledge extraction to knowledge embodies (Boisot, 1998). It has emerged since the last two decades because of the differences between accounting and knowledge management in terms of interests, measurement techniques, and knowledge assets evaluation. This value paradox is denying the role of accounting as a communicator of business information. In accounting, value paradox concept has taken different context and applications. Initially, knowledge management is eighty percent about customers and culture changes (Leibowitz, 1998). The practices of knowledge are directly linked with organizational performance and measured based on customer loyalty, product differentiation, and operations excellence (Zack *et al*., 2009). Generating new knowledge is a key source of competitive advantages and profit, while lack of knowledge may lead to the failure (Mietlewski and Walkowiak, 2007). The dynamic of knowledge process was always the center of the theoretical arguments. Knowledge management is a value

and future based model. In contrast, the accounting researches have addressed the issue of intellectual as a key reason beyond the value paradox. Accounting model is a static and cost-based evaluation model designed to reflect results of the operational process. Thus, accounting assets always appear in the balance sheet at cost, which is the production side rather than customer side (Amidon, 2003). This key difference must be taken when reviewing the validity of accounting model for knowledge management (See Table-II). The old logic looks backwards and focuses on tangible assets. This may match the generation of the industrial revenues. Accounting for knowledge management entails new accounting theory as the theoretical bases of industrial accounting have been outmoded. The problem of the value paradox lays in how to translate the future into an asset, not a liability (Amidon, 2003). This reflects the conflict between accounting values and knowledge values. The industrial accounting values were reasonable, quick, and easy ratio to guide investment decisions. The reliability of these values always restricted to very rigorous economic rules. The infusion of knowledge management has broken down the accounting values. The nature of knowledge values are largely hidden with less market capitalization recognized in the financial statements (Holsapple, 2003). The huge investment in knowledge assets coupled with the partial accounting recognition rules have much declined the accounting values and then usefulness of accounting information (Austin, 2007). The recognition rules sharply distinguish between accounting and knowledge assets (Stone and Warsono, 2003). This distinction is done to meet the requirements of asset definition, and as a result for such accounting treatment, ignorance of knowledge assets is created. The absence of knowledge assets is contributed to the huge gap between market capitalization and book value of equities. The demise of accounting has come as a result for ending the marriage between the historical cost of accounting assets and market value of knowledge assets. Boulton *et al*., (2000) have set stages for the paradigm shifts in the accounting model. They have compared accounting and knowledge values for more than three thousands five hundreds of US companies over a period of two decades. The decade of fifties has entitled as the era of perfectibility because the accounting model used to provide more than ninety five percent of the market value of the industrial companies. That was valid when accounting values were a reliable measure of the industrial assets and accounting rules are performance metrics of the industrial businesses. Later, every value has gone astray to its own way. The accounting values now provide only thirty percent of the market value of knowledge companies (Lev, 2001). The accounting values are not matching knowledge values precisely, because financial statements tell what has happened not what expected. The increasing irrelevance of accounting information is indicated by the paradox of accounting model cost vs. value. However, ignoring knowledge assets as result to rules of recognition contributes to phenomena of information asymmetry of accounting. That is, since the ignorance is at the heart of accounting model, restructuring accounting rules is a must to overcome the problems of the partial recognition. Finally, integration of the recognition rules with the practices of knowledge management is urgent for structuring a meta-accounting theory for knowledge management. For example, capitalizing research and development and internally generated goodwill. This rule can lead to subsequent changes in earnings and then improving relevant of accounting information (Hall and Mairesse, 2006).

4.2 Re-designing revenue power on technology bases

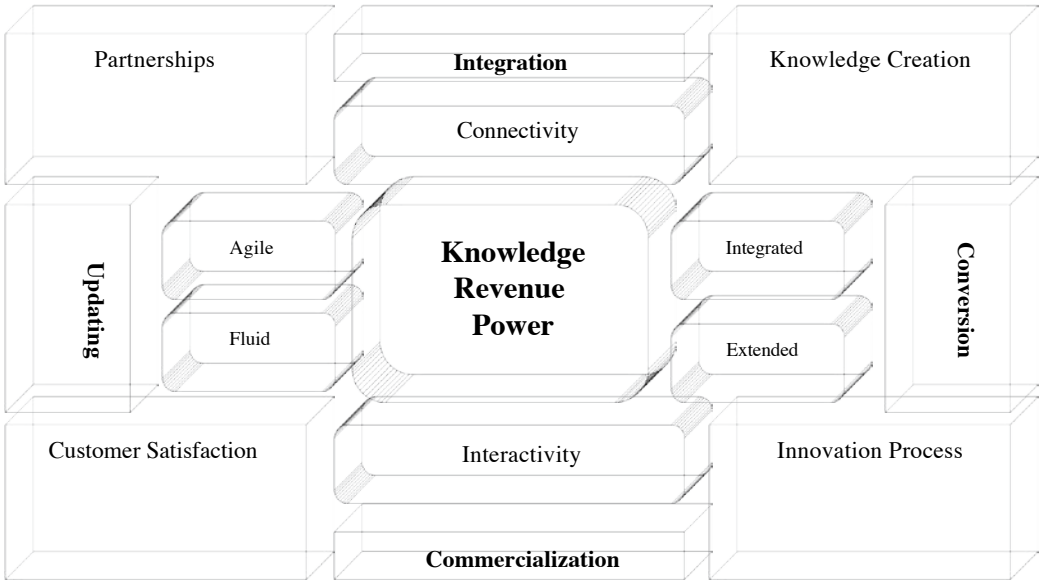
It is generally admitted that the emergence of knowledge business model has transformed the old realities of accounting. Knowledge management are technology intensive, inter-organizational, visionary, value added, and customer-based. The high obsolescence of knowledge had made it increasingly difficult for any company to survive. As technology transforms the economics of doing business, a knowledge business model is driven by disintermediation and connectivity. The transaction values have been replaced by interaction values (Amidon, 2003). Thus, business revenue power has become a function of interactivity and connectivity (Barnes and Hunt, 2000). As for interactivity, intensive use of information technology has established real-time and more interactive relationship between companies and customers. This creative interactive is enhancing customer satisfaction and creating new paradigms of product design and customer service (See Figure-3). The fast pacing of technology and high obsolescence of knowledge had created another paradox for the accounting model. The going concern assumption of accounting has come under a stream of discussion (Keen and Balance, 1997; Prusak, 1997; Barnes and Hunt, 2000; Janszen, 2000). In recognition of such reality, the dynamic nature of information technology has transformed both the economics and ways of doing business. Growing around this issue, the accelerated changes have resulted in the globalization of markets and emergence of new organizational forms. As a result, the organizational boundaries have been shifted and the organizational revenue power has been transformed (McKeown and Philip, 2003). However, the dramatic shifts happened in the drivers of business revenues towards greater flexibility and responsiveness (See Figure-3). The growing popularity of e-commerce and e-business technologies has transformed the drivers of knowledge business model especially in terms of disintermediation and connectivity. Further, reengineering business infrastructure has largely increased traceability in consequence of interactivity and connectivity applications (Barnes and Hunt, 2000). However, application of lean/JIT technologies has significantly led to high level of standardization, formalization, and integration within and outside business organizations (Rondeau *et al*., 2000). Thus, improve customer architecture has successfully incorporated customer's community into the companies through sophisticated real-time and more interactive applications. This creative paradigm has enhanced customer partnerships, engagement, satisfaction, and loyalty especially in product design and customer service (Despres and Chauvel, 2000). The new transactions based relationships have been very energizing to increase business opportunities and revenues (Cohan, 2000). The success of integration process reduced lead time and increased relationships of supply chains practices. The ubiquity of the internet technology and new forms of businesses has fostered the creation of shared global market space (Evans, 2003). These integration based practices have improved the operational efficiency and facilitated markets integration which in result enabled the horizontal growth (Hakansson *et al*., 2010). In attempting to investigate the impacts of these technologies on accounting model, the extant literatures indicate that these challenges are not easy questions to be answered. The business trend detailed above is figuring out a key fact that a real shift happened in the mechanism of revenue power in terms of style and nature of transactions. Together all these technology innovations have shifted the drivers of revenue power from the financial assets to knowledge

assets. A new challenge is how to manage, measure, report, and maximize the new revenue assets such as customer's loyalty. As has been mentioned previously, the problem of the accounting model is a tangible one in terms of it account to the cost of raw material and labor. These realities are the production side (cost realities) rather than the customer side (value realities). There is, however, another dimension of the problem is that how to account for the time lag between invention and innovation which can be lengthy. The knowledge management literatures posit a logical assumption that is successful knowledge investments should improve financial performance by increasing sales and decreasing expenses or both (Stone and Warsono, 2003). Unfortunately, this time lag produces large and immediate expenses which lower earnings of companies investing in knowledge assets. Perhaps this practice reduces the accounting reliability as a business communicator of financial information. Paradoxically, the accounting model used to report the traditional profit rather than the electronic profit. The nature of both is totally different in terms of drivers, transactions, and mechanism of recognition (Cohan, 2000). Furthermore, the same level of change happened to cost of goods sold as a key component of calculating the accounting profit. The cost of goods sold of the traditional profit has been designed to accommodate both the cost of the raw materials and direct labor. The two cost elements are a mile stone of the cost of the industrial products. Further, the size of those two cost elements reaches approximately seventy percent of the traditional revenue. The logic of this operations oriented formula is no longer valid under the assumptions of the knowledge management. The priorities of knowledge companies produce different arguments for the logical adequacy of the cost of goods sold. The research and development associated with customer loyalty is the key engine to create the knowledge profit. Accordingly, the costs of raw material and direct labor are no longer vital to reflect the realities of old-line business model. The same fact is also valid to the working capital as one of the old realities which drive earnings of the traditional profit (Mohammad, 2013). In contrast, the expenses of research and development associated with knowledge creation have become significant and urgent for the existence of any knowledge company. The notion to be highlighted here is that the accounting model has been built on drivers of the traditional profit rather than the electronic. However, a different perspective of cost of revenues or cost of managing knowledge's base needs to be replaced instead of cost of goods sold. Another dimension of the problem is that successful knowledge management should improve financial performance by increasing sales and decreasing expenses or both. In view of the new situation, accounting revenue power has to be redesigned to combine technology, market, customer's base, and business practices to create the desirable value and growth. These applications take the form of new products and services, the development of new markets, and the introduction of new organizational form (Amidon, 2003). This systematic cycle increases net value for customers. Increasing customer loyalty can be a source to create extra cash flows and then increase shareholder value. Thus, the structure of statement of cash flows has become useless for knowledge management initiatives. The cash flows of knowledge companies are triggered by introducing new technology which acts as a driver for new applications in the form of new products and services. The effective marketing of these products and service develops new markets and in consequence increasing the market shares locally and globally. Such dynamic process always contributes to growth and survives of which

entails the introduction of new organizational forms (Janszen, 2000). The success of this innovation processing cycle always increases net value for customer's community and eventually their loyalty. The interesting advantage to note is that the result of the above process can be a source to create extra cash flows and then increasing shareholder value (Holsapple, 2003). Not surprisingly, the major final impact will extend to affect both dividends and share prices through shareholders value. Creating value is a must to create knowledge cash and increasing shareholder value. The comprehensive innovation process above entails a new accounting logic match nature, dynamicity, and final overall objectives. Paradoxically, the logic of knowledge management is based on generating cash through value creation process. These cash flows have unique drivers in term of technology, product quality, and customer's loyalty. Traditionally, business activities have been considered as drivers and key sources of accounting cash. The drivers of accounting cash are growth of sales, exploitation of profit margin, and tax percentage. However, the other group of drivers is related to investment in working capital and fixed capital. In consequence of such fact, the reporting format and structure of statement of cash flows has become meaningless for managing knowledge cash (See Table-II). The knowledge cash flows have different generation drivers which require re-consideration for sources to provide more reliable and relevant information. The logic of innovation process clearly highlights a gap exists between accounting capital and knowledge capital (Atkeson and Kehoe, 2005). The logic of knowledge as a source of cash is resulted from the nature of knowledge as an engine of value for customer base which creates loyalty. As already noted knowledge cash is a result of the successful value creation process and survive of knowledge companies. Unlike the traditional change in cash, calculating free cash flows is more matching the dynamic of knowledge process. The philosophy of free cash flows highlights the fact that innovation is the only business for knowledge companies to survive. Therefore, free cash flows match knowledge cash earned with knowledge cash invested. Accounting for knowledge cash is less about individual or collective sales and costs and more about investment and returns. Knowledge investments are mainly intended to acquire future earning power through innovation. Thus, knowledge assets are defined as expenditures made with the intention of earning future revenue power through enhanced technology and knowledge process (Austin, 2007). Under the knowledge situation, the logic is totally different with varied business rules in terms of engines and ways to create the knowledge profit. In the technical sense, the intensive use of information technology has increased the agility and reduced the accounting assets through the integration with suppliers. Cash and sources to produce this important asset, is one of these issues that used to shape the accounting against knowledge. This paradox has been generated from the difference between accounting cash and knowledge cash. Knowledge is a critical enabler of cash through technology as key enablers of innovation. This reciprocal cycle has significantly affected the items of working capital to leverage value creation and streamline cash flows. Then, increase the probabilities of continuity and survival of knowledge businesses (Holsapple, 2003). The unique mechanism of knowledge business model has replaced physical capital by the high level of visibility and transmission of information (See Table-II). Accordingly, the overhead has been reduced by shifting the responsibility for managing and replenishing inventory to vendors. Further, the intensive use of e-commerce technologies has agile accounts

receivables by accelerating the collection process (Reynolds, 2001). In consequence of a new technology applications, working capital has been shifted. The replacement philosophy reflects huge investment in discovery and learning as a driver for creating virtual assets. These and other applications have initiated a new approach of the technological analysis of financial statements and decision making (Atkeson and Kehoe, 2005). As has been mentioned previously, this approach does not care about owing assets because knowledge management strip off balance sheet of non-current assets (Holsapple, 2003). The business literature addresses this approach under the technology management of business. Reducing the size of accounting assets and transforming the balance sheet to be a business liability are two assumptions of a new approach (Keen and Balance, 1997). The most important contribution among the several is reporting business value creation to provide relevant and timely information about knowledge initiatives (Haskel, 2007). In spite of transactions of value creation may take years to be materialized (Lindsey, 2001). The virtual process of knowledge management enabled the value creation through collaboration among all the stakeholders community. This in turn has affected the mechanism of how value creation transactions are happened and managed. The accounting model does not have an agile dynamic to follow these transactions and as a result, virtual assets are ruled out from being recognized as assets (Pandian, 2011). The virtual paradox also detracts from the quality of financial information provided in the balance sheet. Ignorance of virtual assets provides an example of the virtual paradox of accounting model. The literatures of knowledge management have called to redesign the accounting revenue power as a cornerstone to deal with the impacts of such paradox. For example, capitalizing research and development, in-house built software is associated with subsequent changes in earnings and then improving relevant of financial information (Hall and Mairesse, 2006). The replacement of accounting assets by virtual assets has put an end to the role of the accounting model in managing business assets. In the move towards accounting for knowledge management, the accountant's community must also consider the virtual assets to sustain the new architecture of revenue power. In front of such situation, business managers need to know how much cash will be produced over what needed to manage the knowledge process. The accounting cash-flows calculated in Table-II will not be enough to match needs of knowledge management. The real concern of knowledge companies are producing cash and creating value. These jobs are function of continuity of knowledge companies. To match these goals, knowledge management needs to know free cash flows which need different assumptions. Accounting for knowledge revenues or accounting for relationships is less about individual or collective sales and costs within each relationship. It's more about investment and returns. The problem is no straightforward relationship links between investment in knowledge initiatives and business performance. Instead there is a complex relationship (Carlucci and Schiuma, 2006). This has been considered a turning point towards initiating knowledge and technological approach in building financial statements (Keen and Balance, 1997; Shaw, 2003). The essence of such approach is based on re-innovating recognition rules and redesigning financial statements to match knowledge assumptions. Figure-3 in below shows the new architecture of knowledge revenue power.

Figure-3: Architecture of Knowledge Revenue Power



4.3 Re-structuring knowledge financial statements

In order to present a birds'-eye view of the problems of accounting against knowledge management, the reporting formats of the financial statements shall be considered. The rigid reporting formats have fueled serious critics against accounting for knowledge management. The reporting formula of the financial statements does not match the basic assumptions of knowledge management. This formula was valid under the assumptions of the industrial management. The reality is that financial statements don't explicitly show any technological content weather in the theoretical philosophy or conceptual building block. As a result, the reporting format of financial statements is a data, backward, historical, physical, monetary, actual, and operations oriented. A major critic against accounting in terms of technology is that the procedural rules and standards have been theorized in isolation of the technology. Fundamentally, these realities reflect a deeper problem in the theoretical assumptions and reporting structure of accounting. The critical theorists think that because of this logical lack, the accounting model was always static, complex, unrealistic, inefficient, and full of shortcomings. These logical weaknesses have generated undesirable consequences especially that related to financial statements and the information produced. In contrary, the emergence of knowledge business model has dramatically changed the way of doing business. This is very reflected in knowledge management as one of the key driving engines of this model. Thus, this paradox has emerged from the great gap in technology setting between accounting for operations and accounting against knowledge management. The meta-analysis of the technological context of accounting has identified a non-relationship between the technology and the theoretical philosophy of accounting (Hakansson *et al*., 2010). At this point, accounting theory of operations is a

technology isolated discipline. It's a transactional engine of highly restricted non-technology terms, certain standards, and routine rules. As outlined earlier, knowledge management is a technology intensive, inter-organizational, visionary, value added, and customer-based (Carlucci and Schiuma, 2006). Value is created by innovative use of technology and fostered by interconnections. Also, technology enables value process to be more fluid, flexible, and global scale. The important idea is that the intensive use of knowledge technologies reflects the reality of value creation since it has replaced the transaction values by interaction values (Amidon, 2003). The failure of technology to create value means it will be cost intensive, useless, and counterproductive (Omotayo, 2015). The integrated set of interrelated factors such as technology, market, and organizational change has identified much of the controversial issues in financial statements (Janszen, 2000). This innovation arena has shifted the rules of the game. The logical shift draws a roadmap that goes far beyond operations and investment activities. In addition, risk and uncertainty are the core characteristic of knowledge cash, and without the adequate care, the crises may happened. These two key characteristics impede the accounting for knowledge cash. Similarly, the innovative management of working capital provides a source of knowledge cash (Keen and Balance, 1997; Shaw, 2003). The practices of knowledge approach have been designed to absorb the advantages of knowledge technologies to improve items and contents of financial statements (See Table II). This approach has been started since the mid of nineties to overcome lacks and shortcomings of operational accounting. In the 1995s, the questions have been voiced to show how the accountant's community should steer the available technologies to re-theorize accounting theory. The practices of this approach begin to be matured through re-structuring knowledge balance sheet in consequence of the above calls for changes. As a reaction to these practices, the accounting practitioners, consultants, and researchers have proposed new models for measuring and reporting intangibles: The invisible balance sheet (Sveiby, 1997a), balanced scorecard (Kaplan and Norton, 1996) and IC (Stewart, 1997; Edvinsson and Malone, 1997) just to mention a few. Also, there are other practices have managed in Europe and U.S.A. to develop models for measuring, managing and reporting intangibles (see Johanson *et al*., 2001, Larsen *et al*., 1999). As a result, assets of knowledge financial statements have been reduced and less working capital managed. A new set of knowledge financial statements is formulated through combination of knowledge technologies and accounting theory. The features of this new matrix are evident in transformation of the traditional items of these statements. The financial assets have been shifted to business liability. In addition, managing zero or even negative working capital is a new reality of knowledge accounting (Keen and Balance, 1997). The development of sales technologies has reduced accounts receivables through rapid collection process. The result of such application is a balance sheet that reflects accounts receivables with period of many days and accounts payable with time period of months (Barnes and Hunt 2000). Inflation of current assets directly indicates that investments in knowledge technologies is inadequate. These technologies are the electronic payment, electronic data interchange, networking, and just in time. For example, doubling the accounts receivable indicates the inadequacy of the collection process because poor use of technology. However, the very law rate of inventory disposition is evidence of poor customer-supplier electronic links, and ignoring tools of just-in-time production and distribution (Young

Table II: Financial Statement vs Knowledge Financial Statements (Source: Stewart, 2001)

Income Statement vs. Knowledge Statement	
Revenues Cost of goods sold Gross Margin EBIT Interest and Taxes Net Income	Revenues Innovation Cost Customer Cost Products/Services Cost Administrative Costs EBIT Taxes +/- None-cash adjustments Cash earnings
Balance Sheet Equation vs. Knowledge Equation	
Assets = Liabilities + Equities	Investments = Financing
Statement of Cash Flows vs. Knowledge Cash Flows	
+/- Operating cash flows +/- Investing cash flows +/- Financing cash flows Change in cash	Cash earnings Investing cash flows Free cash flows

and Tsai, 2012). It is widely accepted that, the efficient and intensive use of knowledge technologies to track manufacturing process, inventory, and sales opportunities has replaced physical assets by the organizational assets. As a consequence, knowledge companies have been reduced in terms of size and staff (Boulton, 2000). The above realities reflect the imperatives of the technology approach to construct knowledge accounting. These imperatives entail new paradigms for managing and measuring the financial statements. This new approach is not surprising since the technology has disrupted the traditional philosophy of accounting. To strengthen and being highly influential in knowledge discipline of business, the technology approach has extended to construct knowledge income statement (Blaug and Lekhi, 2009). The technology income assumes that the different stages of technical readiness shape the uncertainty and future profit of knowledge companies. The growing challenges of knowledge technologies provide real drivers for the improvement and growth of each item of income statement (Martin and Leurent, 2017). This is valid for sales revenue, cost of goods sold, and all sorts of expenses such as research and development, selling, and administrative expenses. The above differences in accounting setting and the paradox related has to be considered because its create conflict that affect accounting information in terms of reducing reliability, relevance, and understandability. To bridge the theory of accounting to practices of knowledge management, it is urgent to mention that accounting information by its traditional formats is no longer useful and relevant for managing knowledge cash flows (Austin, 2007). The absence of knowledge assets provides reasons for not using financial statements by knowledge investors. The technological management of balance sheet is related to working capital and non-current assets. The dramatic growth in knowledge business has re-organized the priorities of companies. The accounting assets are no longer

the profit engine nor reporting priorities of knowledge business model. Further, the equity is no longer matching the requirements of the accounting definition in terms of ownership and effectiveness. Knowledge equity is not only owned to shareholders, but to stakeholders and based on customer's and employee's equities. These seismic logical changes have raised the critical questions about the validity of accounting equation and the reporting formats of financial statements. The critical theory of accounting clearly declared those two out of three components of the accounting equation is no longer valid and effective to reflect knowledge initiatives result. The critical theorists of accounting argue that the terms of assets definition have become inadequate and no longer valid to match the realities of knowledge management. It is inconceivable to address knowledge performance by the equation and financial statements of the industrial management. According to those theorists, the philosophical theory of accounting does not drive the practices of knowledge companies. The advocates of accounting essentialism have judged by consequences the validity of accounting against knowledge management. Consequently, they assessed the feasibility of creating knowledge financial statements to replace the industrial set (Amidon, 2003). The great emphasis of the new set has been centered on knowledge assets and value reporting to match assumptions and necessities of knowledge management. Applying the new models of business technologies has been started since the mid of nineties. As a result, assets of knowledge financial statements come down and less working capital is presented. A new set of knowledge financial statements is mingling knowledge, technology, and intellectual capital as a matrix of business success. A key feature of these statements is transformation of working capital from being financial asset to business liability. In knowledge financial statements, business goal is zero or even negative working capital (Keen and Balance, 1997). For example, in knowledge financial statements, sales policies of companies aimed at rapid collection of accounts receivables. The result of such action is a balance sheet that shows accounts receivables with period of many days and accounts payable with time period of months. The cash surplus means that companies are probably not using adequate business technologies of investment and commerce. The large accounts receivable is an indication of the inadequacy of electronic payment, electronic data interchange, networking, and other concerned systems. However, large inventories, material and manufacturing goods are evidences of poor customer-supplier electronic links, and ignorance of just-in-time tools. Using information technology was not confined to substitute information with inventory or zero working capital. But using high speed data communication networks to track production, stock, and orders has replaced physical assets by virtual assets. As a result for such replacement, knowledge companies have been reduced in terms of size. The problem of the accounting model, is that accounting balance sheet or tangible assets sheet has taken its present format in 1868. Its format portraits the old realities of accounting for industrial management. The fundamental implication of the balance sheet equation is that total assets of business have to be equal to both liabilities and equities. The architecture of this equation has been tailored to match the management of accounting assets. More specifically, in terms of working capital (receivables and inventory), and non-current assets (machines and stores). Use of knowledge assets has changed the rules of the game and priorities of companies. As hard assets is no longer considered profit engine of knowledge business model. Further,

the equity of such model is no longer owned to shareholders. It's mostly founded in customer's and employee's equities. These solid reasons of change have provided the call for redesigning the architecture of balance equation to be: investments equal financings (See Table II). The money invested in knowledge businesses has to equal the money raised for it. In consequence, the terms of assets definition have become inadequate and no longer valid to match the realities of accounting against knowledge. All the previous reasons has acted as a driving force to assess the feasibility of creating 'knowledge financial statements' to replace the accounting set. Table-II below shows the accounting financial statements in comparison with proposed knowledge financial statements.

V. CONCLUSION

Knowledge management with its unique and dynamic assumptions has become a reality. It's a multidisciplinary paradigm in terms of technologies, practices, culture, and driving forces. Unfortunately, the floods of white water of knowledge management have sunk the accounting ship. A review of the extant literature highlighted the problem of the intangible assets as the only obstacle of accounting for knowledge initiatives. This paper contributes to the accounting literature by identifying how accounting against knowledge management is totally different from accounting for operations. Exploring the serious notable lacks and shortcomings creates space for understanding the sources of the differences whether in the theoretical logic or business practices. Portraying the realities and paradoxes is critical in the way of constructing a new theory for accounting against knowledge. It is argued that the philosophical theory, conceptual framework, and structural formats are no longer adequate to match logic of accounting for knowledge management. In particular, recognition of assets, revenue power, and technology setting need to be re-considered to update accounting theory in knowledge era. The implications of the conflicting paradoxes are detailed in very comparative way to depict the current situation of accounting theory and practices. A creative destruction process is needed to reframe a cognitive theory for the knowledge accounting. Finally, it's appropriate to conclude that accounting has to move from being data discipline to be information arena to better matching knowledge necessities. Future research might examine how a new accounting theory for knowledge management should be structured in terms of the logical philosophy, conceptual building block, and reporting practices.

REFERENCES

American Accounting Association (1966), "Statement of Basic Accounting Theory", pp: 1-8.

Amidon, D.M. (2003), "The Innovation Superhighway Harnessing Intellectual Capital for Sustainable Collaborative Advantage", *Butterworth Heinemann*, Oxford, UK, 2003.

Anton, H.R. (1966), "The effect of computers on the reliability of accounting measurement", in R.K. Jaedicke *et al*., op. cit., pp: 127–128.

Atkeson, A., and Kehoe, P. (2005), "Modeling and Measuring Organization Capital," *Journal of Political Economy*, 113(5), pp: 1026-1053.

Austin, L. (2007), "Accounting for intangible assets", *The University of Auckland Business Review*, Vol 9. No.1, pp: 1-11.

Barnes, S. and Hunt, B. (2000), "E–Commerce and V-Business", *Butterworth Heinemann*, Oxford, UK, pp:25-73.

Blaug, R. and Lekhi, R. (2009), "Accounting for Intangibles: Financial Reporting and Value Creation in the Knowledge Economy*", Research Report for The Work Foundation's Knowledge Economy Program*, The Work Foundation, London: U.K., pp: 11-42.

Boisot, M. (1998), "Knowledge assets", *Oxford University Press*, pp: 1-16.

Boulton, R.E.S., Libert, B.D. and Andersen, S. (2000), "Cracking the Value Code: How Successful Business are Creating Wealth in the New Economy", *Harper Business*, New York, U.S.A., pp: 23-65.

Brennan, N. (2001), "Reporting intellectual capital in annual reports: evidence from Ireland", Accounting, *Auditing and Accountability Journal*; Vol. 14, No. 4, 2001, pp: 423-436.

Bukh, P.N. (2003), "The relevance of intellectual capital disclosure: a paradox?", *Accounting, Auditing, and Accountability Journal*, Vol. 16, No. 1, pp:49-56.

Canibano, L. M. Garcia-Ayuso, and M. P. Sanchez, (2000, "Accounting for Intangibles: A Literature Review", *Journal of Accounting Literature*, Vol. 19, pp: 102-130.

Carlucci, D and Schiuma, G (2006), "Knowledge Value Spiral: Linking Knowledge Assets to Company Performance", *Knowledge and Process Management*, Vol. 13, No 1, pp: 35-46.

Cohan, S.P. (2000), "E-Profit: High Payoff Strategies for Capturing the E-Commerce Edge", *American Management Association (AMACOM)*, New York, USA, pp: 63-187.

Colquitt, J. A. and Zapata-Phelan, C. P. (2007), "Trends in Theory building and Theory Testing: A Five-Decade Study of The Academy of Management Journal", *Academy of Management Journal,* Vol.50, No.6, pp: 1281-1303.

Corrado, C., Hulten, C. and Sichel, D. (2006), "Intangible Capital and Economic Growth", *NBER Working Paper*, No.11948, pp:1-51.

Curtiss, O. (1999), "Accounting for a New Economy", *Outlook*, Vol. 67, No.1, pp: 28-32.

Davenport, T. H. and Prusak, L. (1998), " Working Knowledge: How Organizations Manage what they Know", *Boston, Harvard Business School Press*, pp:1-57.

Despres, C. and Chauvel, D. (2000), "Knowledge Horizons", *Butterworth and Heinemann*, UK., pp: 131-147.

Edvinsson, L. and Malone, M.S. (1997), "Intellectual Capital: Realizing Your Company's True Value by Finding its Hidden Brainpower", *Harper Collins Publishers*, New York, pp: 75-101.

Edwards, J. S., Collier, P. M., and Shaw, D. (2005), "Knowledge Management and Its Impact on the Management Accountant Research Report", *The Chartered Institute of Management Accountants*, London: Great Britain, pp: 1-36.

Firmin, P.A. and Linn, J.J. (1968), "Information Systems and Managerial Accounting", *Accounting Review*, Vol. 43, No. 1, January, pp:75-82.

Gherai, D.S. and Balaciu, D.E. (2011), "From Creative Accounting Practices and Enron Phenomenon to the Current Financial Crisis", *Annales Universitatis Apulensis Series, Oeconomica*, Vol. 13, No. 1, pp: 34-41.

Goldfinger, C. (1997) "Understanding and Measuring the Intangible Economy: Current Status and Future Research", *CIRET seminar, Helsinki*, pp:6-27.

Hakansson, H., Kraus, K. and Lind, J. (2010) Accounting in Network, Routledge, New York, USA, pp: 3-59.

Hall B. H., and Mairesse, J. (2006), "Empirical Studies of Innovation in the Knowledge Driven Economy", National Bureau OF Economic Research., Vol. 15, No. 4/5, June/July, pp: 289-299.

Haanes, K. and Lowendhal, B. (1997), "The Unit of Activity: Towards an Alternative to the Theories of the Firm" *Strategy, culture and style*, John Wiley and Sons, London, pp:47-93.

Haskel, J. (2007) "Measuring Innovation and Productivity in a Knowledge-Based Service Economy", *Economic and Labour Market Review*, Vol. 1, No. 7, pp: 27-31.

Holsapple, C.W. (Ed.) (2003), Handbook on Knowledge Management, Vol. 1: *Knowledge Matters*, Springer Verlag, Berlin Heidelberg, pp: 73-87.

Howell, R.A. (2002), "Fixing Financial Reporting: Financial Statements Overhaul", *Financial Executive*, March/April.

Janszen, F.(2000), "The age of innovation", *Pearson Education Limited*, London, GB., pp:3-32.

Kaplan, R.S. and Norton, D.P. (1996), "Using the Balance Scorecard as a Management Information System", *Harvard Business Review*, January–February, Vol. 74, No. 1, pp.75-85.

Keen, P.G. and Balance, C. (1997), "On-Line Profit", *Harvard Business School*, Boston, USA, pp: 3-58.

Lambe, P. (2002), "Accounting for Knowledge Management", *Green chameleon Blog*. Accessed October, 12, pp: 2012.

Lev, B. and Zarowin, P. (1999), "The Boundaries of Financial Accounting and How to Extend Them", *Journal of Accounting Research*, Vol. 37, pp: 353-386.

Lev, B. (2001), *Intangible, Breakings Institution*, Washington DC,20036, USA, pp: 21-51.

Lev, B. and Gu, F. (2016), "The End of Accounting and the Path Forward for Investors and Managers", *John Wiley and Sons. Inc*., New York, pp: 81-93.

Marr, B. and Spender, J.C. (2004), "Measuring Knowledge Assets-Implications of the Knowledge Economy for Performance Measurement", *Measuring Business Excellence*, Vol. 8, No. 1, pp:18-27.

Martin, C. and Leurent, H. (2017), "Technology and Innovation for the Future of Production: Accelerating Value Creation", *World Economic Forum*, pp: 1-38.

Mckeown, I. and Philip, G. (2003), "Business Transformation, Information Technology and Competitive Strategies: Learning to Fly", *International Journal of Information Management,* Vol.23 (2003), pp: 3-24.

MERITUM Project (2002), "Guidelines for Managing and Reporting on Intangibles (Intellectual Capital Report)", pp.1–31, TSER Programme, European Union, JEL Codes: M12, Fundacion Aitel Movil, Madrid, Spain.

Mohammad, A.A., Mansour, E. and Missi, F. (2010), "Validity of Accounting Model in the Knowledge Era", *International Journal Value Chain Management*, Vol. 4, Nos. 1/2, pp.142–152.

Mohammad, A.A. (2013a), "Potholes of Knowledge Accounting Model", *International Journal Learning and Intellectual Capital*, Vol. 10, Nos. 3/4, pp: 314–325.

Mohammad, A.A. (2013b), "Architecting Knowledge Financial Statements', *International Journal Critical Accounting*, Vol. 5, No. 6, pp: 609–622.

Mouritsen, J. (2003), "Intellectual Capital and the Capital Market", *Accounting, Auditing, and Accountability Journal*, Vol. 16, No. 1, pp:18-30.

Nonaka, I (1991), "The Knowledge Creating Company", *Harvard Business Review,* Nov/Dec, pp: 96-104.

OECD (1996) "Knowledge-Based Economy", General Distribution, OCDE/GD (96) 102, Paris 1996, pp: 1-46.

OECD (2008), "Intellectual Assets and Value Creation", *Synthesis Report*, pp: 1-35.

Omotayo, F.O. (2015), "Knowledge Management as an Important Tool in Organisational Management: A Review of Literature", *Library Philosophy and Practice* (e-journal). 1238, pp: 1-24. http://digitalcommons.unl.edu/libphilprac/1238.

Rondeau, P., Vonderembse, M., and Ragu-Nathan, T. (2000) "Exploring Work System Practices for Time-Based Manufacturers: Their Impact on Competitive Capabilities", *Journal of Operations Management*, Vol. 18, No. 5, pp: 509–529.

Roos, J., Roos, G., Dragonetti, N.C. and Edvinsson, L. (1997), "Intellectual Capital: Navigating in the New Business Landscape", *Macmillan, London*, pp: 28-77.

Pandian, P.S. (2011), "Intellectual Capital: Today's Challenge! Tomorrow's Asset', *International Journal of Learning and Intellectual Capital*, Vol. 8, No. 3, pp: 285-289.

Prism (2003), The PRISM Report, Eustace, C. (Ed.), *European Commission, Information Society Technologies Program*, Report No.2. pp: 130-145.

Prusak, L. (1997), "Knowledge in Organizations", Butterworth-Heinemann, Oxford, UK, pp:1-37.

Prusak, L. (2001), "Where did Knowledge Management Come From?", *IBM Systems Journal*, Vol. 40, No.4, pp: 1002-1007.

Smalt, S. W. and McComb, J. M. (2016), "Accounting for Internally Generated Intangible Assets", *International Journal of Accounting and Taxation*, Vol.4, No.1, pp: 1-15, June.

Stewart, T.A. (2007), "The Wealth of Knowledge: Intellectual Capital and the Twenty-First Century Organization", *Crown Business: New York*, USA, pp:1-18.

Stone, D.N. and Warsono, S. (2003), "Does Accounting Account for Knowledge", *Oxford University Press*, Oxford, UK, pp: 253-268.

Sveiby, K.E. (1997), "The intangible Assets Monitor", *Journal of Human Resource, Costing, and Accounting*, Vol. 2 No.1, pp:73-97.

Young, C.S. and Tsai, L.C. (2012), "Information technology, organizational capital and firm performance", *International Journal of Learning and Intellectual Capital*, Vol. 9, Nos. 1/2, pp.151–169.

Wiig, K.M. (1997), "Integrating Intellectual Capital and Knowledge Management", *Long*

Range planning, pp:399-405, June.

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