Validity of accounting model in the knowledge era

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Abstract: Amid the tangible transformations within the knowledge era, seismic changes in the business model have taken place. These changes have led to the emergence of what is so called ‘knowledge business model’ (KBM). Utilisation of a new business model includes unique challenges and opportunities. Knowledge assets and information technology are embodied as the driving forces beyond application of KBM. On the other hand, the emergence of a new business models has raised serious questions about the validity of logical components of conventional accounting model (CAM). This study seeks to explore the validity of the CAM as result for adopting KBM. Analysing huge body of accounting literature, knowledge management and innovation has shown milestones of what can be called knowledge accounting model (KAM). Statistical analysis of practitioners and professionals responses has shown a satisfactory rate of validity of CAM with the emphasis on adaptation of logical components of it to cope with knowledge necessities.

Keywords: knowledge business model; KBM; conventional accounting model; CAM; knowledge accounting model; KAM; knowledge assets; KA.


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1 Introduction

The knowledge economy is a fact not a fad and knowledge has become the key source of productivity, competitiveness and profitability. Knowledge business model (KBM) is quite different from the industrial one. An important dynamic of KBM is the virtuous cycle of competition, innovation and productivity growth. Fierce competition spurs innovation, in both technology and business processes. These innovations spread quickly, improving productivity across the sector. As productivity rises, competition intensifies further, bringing a new wave of innovation (Amidon, 2003). KBM is a unique combination of three streams that are critical to the business. These include the value stream for the business partners and customers, the revenue stream and the logistical stream. In this way, the critical components of KBM are addressed: investment and how it is funded, the ongoing costs and the revenue and how it generated (Remenyi, and Brown, 2003). Thus, any business organisation to properly function in knowledge era, it needs an accounting model embodies these three components to cope with the implications of knowledge. Accordingly, this paper outlines the major logical deficients that are found in the conventional accounting model (CAM). The paper is structured in the following way: the first section of this paper briefly reviews the key features and mechanism of the knowledge economy. Section 2 introduces an overview of the knowledge accounting model (KAM). It provides an understanding for the gap between KAM and CAM. Section 3 presents a periodical analysis for the literatures related to theme of this paper. Section 4 is the core one and provides in depth analysis for the deficienits of the conventional accounting model. Section 5, is the core one and provides in depth analyses and discussions for the responses of professional and practitioners and finally, Section 6 concludes the paper.

2 Understanding KAM

In knowledge based economy, value is the product of knowledge and information. Business organisations can not generate profits without the ideas, skills and talent of people. The knowledge management and intellectual capital literature is replete with knowledge strategies, knowledge models and knowledge-profit relationship (Kaplan and Norton, 1996; Lev 1998; Lindsey, 2001; Stewart, 2001). These literature have highlighted three big ideas as an introduction to what well known ‘knowledge economy’. The first was total quality management pioneered by W. Edwards Deming and Joseph M. Juran in 1950s and 1960s. The second big idea was reengineering popularised by Davenport and Hammer. The third big idea is intellectual capital which bloomed by Karl E. Sveiby. As for pillars, KBM stands on three drivers. The first is knowledge as the most important factor of production. Creating value throughout knowledge economy is by process of creating value from information. The second pillar is knowledge assets and the
intellectual capital has become the most important one among them. Knowledge assets are embedded in talent, skills, know-how, know-what and relationships and machines that can be used to create value. The third pillar is adaptation to knowledge economy in terms of adopting new vocabularies, new management techniques, new technologies and new strategies (Stewart, 2001). The success in knowledge based economy depends on new skills and required new style of business, management and accounting models.

2.1 Knowledge assets

One of the axioms of knowledge economy is the migration of competitive advantages from tangibles to intangible assets. The most valuable truth of KBM is the competitive advantage of business organisation depends on their ability to build, utilise and protect difficult to imitate knowledge assets. It is vital to understand that the terms of knowledge, intangibles and intellectual capital are usually used interchangeably (Hope and Hope, 1997). The terms of intangibles in the accounting literature, knowledge assets by economists and intellectual capital in the management and legal literature are refer essentially to the same thing: a non-physical claim to future benefits. The nature of knowledge assets is non-tradable (which means can not be readily bought or sold) and should be developed and practiced internally. The virtual nature of knowledge assets further complicates their management (Prusak, 2001). Unlike the physical assets, the knowledge assets are characterised by increasing return on scale. Return is the outcome of value generated by innovation (discovery), unique organisational designs, or human resources practices. Discovery as an engine of innovation process is reflected by investment in R&D. Brands as a major form of intangible assets are often created by a combination of innovation and organisational structure. The third nexuses of knowledge assets, those related to human resources, are generally created by unique personnel and compensation policies.

The shift toward KBM has altered the requirements of management and then declared the demise of CAM. Knowledge research has been plagued by a variety of the accounting problems that can lead one to question the extent of validity of CAM (see Table 1). It is important to realise that, the theoretical logic of CAM has been established 500 years ago. In fact, CAM 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. Plus, it is a transaction-based evaluation model. Thus, assets always appear in the balance sheet at cost, which is the production side rather than customer side. As result, if the current situation of the conventional accounting is going to be continuing, prestige of accounting will be lost (Drucker, 1999). Another part of the CAM problems resulted from its monetary based model. However, very little of knowledge has to do with money. The problem of CAM has two dimensions: the first is the asset (whether financial, technological, or intellectual) can not be well determined. Second, the measurement of the critical success factors of knowledge business model can not be defined in qualitative and quantitative terms. In relation to this, a typical critic of CAM resulted from the fact that it’s performs poorly with internally generated intangibles such as R&D, brands and employee talent the very items considered the engine of knowledge business model. For instance, CAM does not recognise internal knowledge management initiatives and only recognise knowledge management assets purchased from others. Such accounting treatments underestimate financial performance of successful knowledge management (Lev, 2001).
Accounting rules are key cause beyond accounting model’s failure in reporting knowledge assets. As set of these rules were set up to evaluate hard or (tangible) assets. The current GAAP rules out knowledge assets from being recognised as assets. Such practice and treatment detracts from the quality of financial information provided in the balance sheet. The biggest potential impact of knowledge business model on GAAPs lies in the areas of asset recognition and the appropriateness of the going concern assumption. In addition, CAM ignores the investment in discovery and learning as a driver for creating knowledge assets. Due to such nature, the industrial business model was pushing to enhance the size of the balance sheet. In contract, KBM is based on totally different ideas and mechanism (see Table 1).

Table 1  CAM vs. KAM

<table>
<thead>
<tr>
<th>CAM</th>
<th>KAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangible</td>
<td>Intangible</td>
</tr>
<tr>
<td>Financial focus</td>
<td>Non-financial focus</td>
</tr>
<tr>
<td>Transaction driven</td>
<td>Process driven</td>
</tr>
<tr>
<td>Value realised</td>
<td>Value created</td>
</tr>
<tr>
<td>Periodic reporting</td>
<td>Instant access</td>
</tr>
<tr>
<td>Past orientation</td>
<td>Future orientation</td>
</tr>
<tr>
<td>Value in things</td>
<td>Value in flows</td>
</tr>
<tr>
<td>Production statistics</td>
<td>Innovation statistics</td>
</tr>
<tr>
<td>Metrics for reporting</td>
<td>Metrics for managing</td>
</tr>
<tr>
<td>Standards and standard</td>
<td>Common yet customised</td>
</tr>
</tbody>
</table>

*Source: Despres and Chauvel (2000)*

2.2 Knowledge revenue

As technology transforms KBM, KAM is driven by disintermediation, connectivity and knowledge. Customer is the most important asset and 80% of innovations originated from customers. Thus, knowledge revenue is a function of interactivity and connectivity. As for interactivity, intensive use of information technology has established real-time and more interactive relationship between business organisations and customers. This creative interactive is enhancing customer satisfaction and creating new paradigms of product design and customer service (Janszen, 2000). Also, use of the internet technology has fostered the creation of shared global market space which has different communication and coordination mechanism, both across organisations and customers and within group of customers themselves. Figure 1 depicts new dimensions of revenue power of KAM.

This change has led to real shift in the measurement of revenue power of business organisation. In knowledge era, customer’s loyalty is an important business asset that accounting should manage, measure and maximise to maintain its competitive position. The CAM and statements are tangible one in terms of it account the cost of raw material and labour. In fact, it focuses on production side of business organisation rather than the value created which is the customer side. Another dimension of the problem is that successful knowledge management should improve financial performance by increasing
sales and decreasing expenses or both. But, the time lag between invention (knowledge management investment) and innovation (marketing this knowledge commercially) can be lengthy. Consequently, this period produces large and immediate expenses which lower earnings of business organisations investing in knowledge assets. In contrast, initial investment in physical assets increase assets and produce small depreciation expense which maximise earning of business organisations investing in physical assets (Holsapple, 2003).

Figure 1 The new dimensions of revenue power of KAM (see online version for colours)

Source: Barnes and Hunt (2002)

3 Review of literature

Reviewing the literature dealing with the lacks of the CAM shows a substantial interest among the scholars about the phenomena, key drivers and results. During the 60s, the accountant’s community focused a great deal of interest on the new organisational models and transactions generated due to automating business environment. Firmin and Linn (1968) have shown the impact of development of information systems on concept of accounting transaction. According to them, the changes in organisational structure, viewing business organisation as an interrelated set of subsystems, restructuring management information systems and repaid growth in data processing capabilities have fostered an expanded concept of accounting transaction. Anton (1966) had explained another lack of CAM in regard to missing integration with the planning and control systems. American Accounting Association (1966) has recognised the economic events which are not expressed by accounting model such as price-level changes, employee skills and intra-entity changes in assets values. Subsequent accounting literature in the 70s had paid visible attention on reliability of information of CAM. Trueblood report (AICPA, 1973), Corporate report (ASSC, 1975; Swanson, 1974; Zmud, 1978) had suggested a framework consisted of set of many dimensions to enhance user perception of accounting information. These dimensions are: usefulness, accuracy, quality of format and reasonableness. Chernoff (1973) has initiated IT based communication approach to enhance reliability of accounting information. In the 80s, the research of CAM lacks has addressed the issue of ‘intellectual’. Sveiby (1999) has laid the foundation stone for taxonomy of intellectual capital: competencies of human resources; internal structure (patents, models, computers and administrative systems); external structure (brands,
reputations, relationships with customers and suppliers). Sackmann et al. (1989) has asserted that human resource accounting has long been recognised as problematic for the existing CAM. The accounting literature throughout 90s has searched in detail the nature and mechanism of CAM. According to Wilson (1993), CAM has been established 500 years ago to match the requirements of the industrial era. Furthermore, Stewart explained that such model has been set up to calculate the cost of materials and wages. Stewart (1997) has asserted that CAM is a tangible assets model. Its framework fits the industrial business organisations, not the intelligent one. Because of this nature, Lev and Zarowin (1999) has pointed out that the traditional accounting system does not convey relevant and timely information about the KBM. However, Prusak (2001) have noted that the empirical evidence indicates that CAM is deficient and full of shortcomings in relate to accounting of knowledge. Edvinsson and Malone (1997) argued that CAM which so beautifully described the operations companies for a half millennium, is now failing to keep up with the revolution taking place in business. Skandia AFS (1998) has shown that the exclusion of non-monetary information from financial statements is an important limitation on CAM. Hansen et al. (1999) has explained that the definition of asset is among the most critical and controversial issue for CAM. Blair and Wallman (2001), argued that the approach of expensing the knowledge management initiatives is a key problem of CAM which undervaluing companies with large investments in intangibles. Kaplan and Norton (1992, 1996, 2000) have proposed the balanced scorecard as a method for better capturing the value creating activities. Nash (2000) used the discounted cash flow approach advocated by the total value creation to propose a replacement for existing financial reporting model.

4 Methodology

The current study is an exploratory study undertaken to explore how the CAM is appropriate to match the requirements of knowledge era. The adopted methodology has been based on analysing the ingredients and logic of accounting practices related to CAM and KAM in very critical aspects to knowledge phenomena. Emergence of KBM demands a new pattern of accounting to match requirements of knowledge era. Reinventing the accounting model is urgent to cope with knowledge business requirements. Accordingly, the key aim of the current study is only to raise question mark about the validity of the logical ingredients of CAM?

The problem we are facing in this study, is summarised as; the fact that advent of knowledge economy has shaken the logical basis of accounting. CAM by its state qua has become outdated and no longer valid to absorb business needs and purposes of the knowledge business organisations. The treatments of knowledge assets by the CAM are inadequate for the purposes of knowledge economy. However, ignoring knowledge assets as result to rules of accounting contributes to phenomena of ‘information asymmetry’. Such phenomena usually associated with very undesirable consequences and biases.

Accordingly, the purpose of the current study has twofold. First, expose some features of what has become known ‘KAM’. Second, analyse the logical ingredients and treatments of CAM to examine the functional validity of these ingredients in knowledge era (see Figure 2).
The data for the study was collected by 28 item instrument structured according to interest of most of the accounting literature. These items have designed and grouped to cover lacks and challenges which undermined the acceptance and validity of CAM in knowledge era. First group has included eight items covered validity of GAAP in relates to accounting treatments of knowledge initiatives expenses. The second group is consisted of six items about terms to recognise asset and its impact on reliability of financial statements and profitability of knowledge business organisations. Third group contained six items about recognising revenue of knowledge initiatives and its impact on market value of business organisations. Fourth group has included eight items in relate to
measuring and disclosing performance of knowledge activities and reporting format of CAM. Validity of one item was measured on a seven-point scale ranging from high valid to high invalid. The score of validity was limited to 1 for (low valid), 2 for (moderate valid) and 3 for (to complete valid). Invalidity was classified under five categories: all cases were expectations were negatively invalid were coded as 1 or 2 (1 for wider negative invalidity (< mean negative invalidity) and 2 for smaller negative invalidity (> mean negative invalidity), where they were confirmed zero validity the code given 3, and cases where they were positively invalid were coded as 4 (< mean positive invalidity), or 5 (> mean positive invalidity). A total of 200 questionnaires were distributed to the professional accountants and auditors of Jordan. Those respondents have selected very carefully from the practitioners community based on the criteria of style of industry, academic background and level of practical experience. These industries were banking, communication, trading and manufacturing. The method of contact was personal. Plus in depth interviews have been done with some experts regarding details of study.

5 Analysis and discussions

To discover the extent of validity of CAM, the responses of the practitioners have been categorised according to measures shown in Table 2. To provide clearer picture about acceptance of CAM, the responses of the accountant’s community have been reclassified according to levels of validity shown in Table 3.

Table 2  Validity rates of CAM

<table>
<thead>
<tr>
<th>% Respondents at various rates of validity</th>
<th>High invalid</th>
</tr>
</thead>
<tbody>
<tr>
<td>High valid</td>
<td>56</td>
</tr>
<tr>
<td>Moderate</td>
<td>27</td>
</tr>
<tr>
<td>Low</td>
<td>10</td>
</tr>
<tr>
<td>High+ve</td>
<td>4</td>
</tr>
<tr>
<td>Low+ve</td>
<td>1.5</td>
</tr>
<tr>
<td>Zero</td>
<td>1.5</td>
</tr>
<tr>
<td>Low-ve</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Table 3  Validity of CAM among practitioners (reduced categories)

<table>
<thead>
<tr>
<th>Validity level</th>
<th>% Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>56</td>
</tr>
<tr>
<td>Moderate</td>
<td>27</td>
</tr>
<tr>
<td>Low</td>
<td>17</td>
</tr>
</tbody>
</table>

Table 4  Cross tabulation between validity and invalidity of CAM

<table>
<thead>
<tr>
<th>Discrepancy</th>
<th>% respondents reporting validity</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>High-ve</td>
<td>49</td>
<td>34</td>
</tr>
<tr>
<td>Low-ve</td>
<td>32</td>
<td>31</td>
</tr>
<tr>
<td>Zero</td>
<td>13</td>
<td>29</td>
</tr>
<tr>
<td>Low+ve</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>High+ve</td>
<td>6</td>
<td>13</td>
</tr>
</tbody>
</table>
Table 5  Validity scores on various discrepancy categories

<table>
<thead>
<tr>
<th>Mean validity score</th>
<th>Large-ve</th>
<th>Small-ve</th>
<th>Zero</th>
<th>Small+ve</th>
<th>Large+ve</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.26</td>
<td>2.2</td>
<td>2.51</td>
<td>2.67</td>
<td>2.77</td>
</tr>
</tbody>
</table>

Analysing and cross-tabulating invalidity cases of CAM against the KAM (Table 4) has shown that the number of respondents in the high validity category grew very sharply (from 17% to 81%) as discrepancy rose from negative to positive. The mean of validity in these categories also gained from 1.70 to 2.70 (Table 5).

The above tables and results clearly highlight the fact that the majority of accountant’s community still having a good faith and believe in CAM. However, further increases in the logical deficient cases of CAM (due to knowledge economics) did not appear to make any major change in validity of it. On the other hand, the comments of the respondents indicates that the practitioners with modify of CAM not replacement of it. According to respondent’s point of view, KAM provides a solution for part of CAM problems but can not be considered as a whole integrated model guiding the wide accounting applications. The need is urgent to inherent the knowledge critical success factors in the logical body of CAM. The respondents call for what can be called ‘automating GAAP and accounting sub models’ to make it more logical and agile. Making CAM as knowledge model through capturing more value and capitalising knowledge initiatives will help improving reliability and creditability of accounting treatments and then information provided by CAM.

6  Conclusions

Surveying the huge body of literature has shown that the development of the economics of knowledge has had serious impact on CAM. The subject of CAM lacks and deficient has been of deep interest to both academicians and practitioners for more than five decades. The gap between CAM and KAM has been determined in vital three areas: GAAP, asset recognition and revenue power. The findings from this study indicate that CAM still having the common belief of the practitioners despite the knowledge logical gaps which hurdle the smooth functioning of it. The study found that CAM needs to be revised not replaced (Stone and Warsono, 2003). The logical ingredients of CAM in relate to asset recognition and value creation need to be broadened and shifted from financial/quantitative to non-financial/qualitative. Future research could be directed to adapt GAAP to be knowledge one and more agile to match functioning of knowledge era. In addition, an alternative, but reliable format of financial statements may also be considered in future studies.

References
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