

# Appropriateness of financial analysis framework in performance evaluation: A literature based review on IT industry

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**Abstract** - In the twenty first century digital disruption commodities the business model. Companies in digital era less rely on physical assets and increasingly adopting intangible assets – such as brand, customer relationship, intellectual property and human capital, become value drivers in business. Evaluating the business performance of such companies using traditional accounting measures become irrelevant. Hence, it shows that there is a requirement of industry driven measures to assess the performance of digital business. Existing literature argues that accounting-based financial analysis assess the economic reality of firms while knowledge-based analysis focus value relevance in performance measurement framework. This paper review the extent literature on performance evolution of firms to connect theory into practice by sourcing the published evidence with special reference to firms in IT Industry. Findings of this review and propositions suggested by the author provides future direction for researchers to find appropriate financial analysis framework for firms operate in IT industry.

**Key Words** - Case Synopsis, Digital Business, Financial Analysis, Intangibles, Performance Evaluation, Performance Management System, Value Relevance.

## 1 INTRODUCTION

### 1.1 Background of the study

MEASURING the performance of business has been central interest of academics and practitioners alike [1], [2], [3], [4], [5], [6], [7], [8]. It has found that there are many empirical investigation on accounting based performance evaluation in the literature. However, it has been argued that traditional accounting based measures are less relevance as it has inherent limitation [9], [1], [10], [11], [12] of evaluating firm performance. The primary purpose of financial statements is to provide information for decision making and fulfill the stewardship [13], [14]. Traditionally, evaluation of business performance is based on the financial statements which are prepared on set rules and conventions by the standing setters [13], [11].

With the digital disruption companies are increasingly moving for OPEX model from the CAPEX model [15]. Transformation of CAPEX model into OPEX model, companies are less rely on physical assets and increasingly adopting intangibles [1], [16]. Evaluating the business performance of such firms using traditional accounting measures become irrelevant [6]. Garengo et al., [17] highlighted the importance of balance model in analyzing firm's performance. Hence, it is worthy to study how traditional accounting based performance evaluation model transform to integrated performance evaluation model with reference to the theories and concepts found in

performance evaluation as the main stream.

### 1.2 Purpose of the study

Existing literature argues that accounting-based financial analysis assess the economic reality [18], [19], [8] of firms while knowledge-based analysis focus value relevance [16] in evaluating business performance. The objective of this paper is to review and discuss the extent literature on performance measurement frameworks identified as an integral part of performance evaluation with special reference to firms in IT Industry as a case based review.

Followed by the given background, author has organized the paper content with objectives, methodology along with theoretical review of the performance frameworks to provide clear understanding of the literature and finally provide the conclusion and propositions for researchers to find appropriate framework to measure the performance of firms operate in IT industry.

## 2 METHODOLOGY

Out of different philosophical approach in carrying out research, author uses deductive approach to investigate the concepts, theories and practices followed by two frameworks of performance measurement system. The paper has developed by reviewing cases and synopsis format of literature in order to identify the theoretical content along with the case related highlights. Author uses secondary sources as the method in selected research approach and proposed proposition for highlighting the essence of the paper to be used as learning and teaching note followed by a conclusion remark.

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### 3 THEORETICAL REVIEW OF FINANCIAL ANALYSIS FRAMEWORK OF DIFFERENCE INDUSTRIES

The main objective of the financial reporting is to provide the information for users to understand the performance of the reporting firm and take future decisions based on such understanding. Traditionally, users perform their evaluation to understand the performance on accounting-based or market based performance measures [19], [20]. Primarily, it is important to measure the performance irrespective of the ownership structure [18] of the firm. According to Deming PDCA cycle, business performance should analyse and measure to identify the level of improvements need to implement. Whether the firm is owner-managed or agent-managed, outcome of the performance measurements provide the insight about the organization. This insight helps to identify the problems associated with the operations and implement the corrective action.

#### 3.1 Hopwood Framework of performance evaluation

Financial analysis as an outcome based evolution [21], [14] employ different approaches for performance evaluation. Hopwood [14] focus to evaluate the performance on three styles - Budget Constrain Style, Profit Conscious Style and Non-accounting Style.

Budget Constrain Style - performance is primarily evaluated based upon the ability to continually meet the budget on a short-term basis.

Profit Conscious Style - performance is evaluated based on the ability to increase general effectiveness concerning with minimizing long-run cost.

Non-accounting Style - accounting data play a relatively unimportant role in evaluating the cost center performance.

“While the accounting data clearly indicate whether a person has been successful in meeting the budget, they do not necessarily indicate whether he is behaving so as to minimize long-run costs, let alone influence other determinants of effectiveness. In order to assess this ability, the data may have to be used with discretion and, where

necessary, supplemented with information from other sources” [14].

Hopwood framework [14] solely depend on the cost center approach in evaluating the performance. Even though, Hopwood framework [14] depend on accounting-data to analyse firm's performance he acknowledged that the information from other sources to be taken into consideration in determining the effectiveness of the operation of firm.

In the financial analysis framework various form of measures have been developed in evaluating performance of firms. Miller and Modigliani (1961) developed a consistent determination of valuation model followed by Gordon's (1962) growth and cost of capital integration to the valuation models [22]. In order to determine the cost of capital, Sharpe (1964), Lintner (1965), Mossin (1966) and Black (1972) developed the capital asset pricing model (CAPM) [22]. Solomons (1965) introduced residual income (RI) in evaluating divisional performance while Stern (1974) came-up with free cash flow (FCF) technique [22]. Rappaport (1986) and Stewart (1991) developed economic profit (EP) and Economic Value Added (EVA) based on shareholder value (SHV) approach [22].

#### 3.2 Measure the Economic Reality of firm

Even though the purpose of financial analysis is to assess the extent of economic reality [18], [19], [8] of the firm Hawawini et al., [23] argue that accounting-based measures could not provide either past economic profitability or future profitability. Hence, most appropriate method is the value based performance evaluation [22] instead accounting ratio based analysis.

Preparation of financial statements are subjected to several intervention by different parties. Primarily, prepares of financial statements should follow the local GAAP or the accounting standards adopted by the professional body of the country in which the firm is operating. Moreover, the existence of different accounting policies and conventions, influence of management to select accounting policies [23] opportunities for manipulation of accounts [24], [25] reliance on estimate, backward looking [26], [5] affect the economic reality of the accounting based evaluation.

#### 3.3 Value based approach in performance evaluation

Growing body of literature focus the balance approach in evaluating the performance of firm. As a solution for traditional accounting based approach literature proposed to adopt the value based analysis in evaluating performance of firm [22]. According to Maditinos et al., [22] with the popularity of value based management approach in 1980s, shareholder value added (SVA), economic value added (EVA), economic profit (EP), and cash flow return on investment (CFROI) gain popularity. However, Ebaid [26] argues that standard-setting bodies not recognize the value relevance of the outcome of financial reports rather they recognize the relevance and reliability of financial information in setting the standards. Hence, financial statements are prepared based on the relevance and reliability concept may not ensure the value relevance of information provided in financial statements. And, users of these financial statements are more focus on the reliability of information in evaluating the performance of firm.

#### 4 APPLICABILITY OF TRADITIONAL ACCOUNTING BASED MEASURES IN EVALUATING PERFORMANCE OF IT FIRM

Financial statements are prepared to fulfill several requirements. It support to fulfill the stewardship and compliances introduce by the regulators [23], [4]. Management use the financial statement to analyse the performance in order to take decisions. Traditionally, accounting based evaluation develop upon tangible resource utilization for achieving organizational goals. With the digital disruption companies less rely on physical assets and increasingly adopting intangible assets - such as brand, customer relationship, intellectual property and human capital, become value drivers in business [27].

“Creating long-term value while simultaneously meeting current operational objectives requires more advanced performance management than can be achieved using financial measures alone. Business leaders need new measures and analysis to manage performance in the digital age. To manage their intangible assets, it is important that businesses measure them, or at least describe them in non-financial terms” [27].

Non-financial factors such as market penetration, customer experience, web traffic [28], [29] intangibles [30], [31], [32] customer satisfaction [33], [34], [35], [36], [37], [38], [39] become the value drivers in modern business. There is a growing concern among practitioners and academics to examine the non-financial measure on evaluating performance of firms [26]. Hence, assess the performance of firms in IT industry using accounting based measures become less relevance as the accounting measures do not alone explain the right direction of a firm [26]. This is the reason where, Hopwood framework suggested to use the information other than accounting information to determine the effectiveness of firm’s operation.

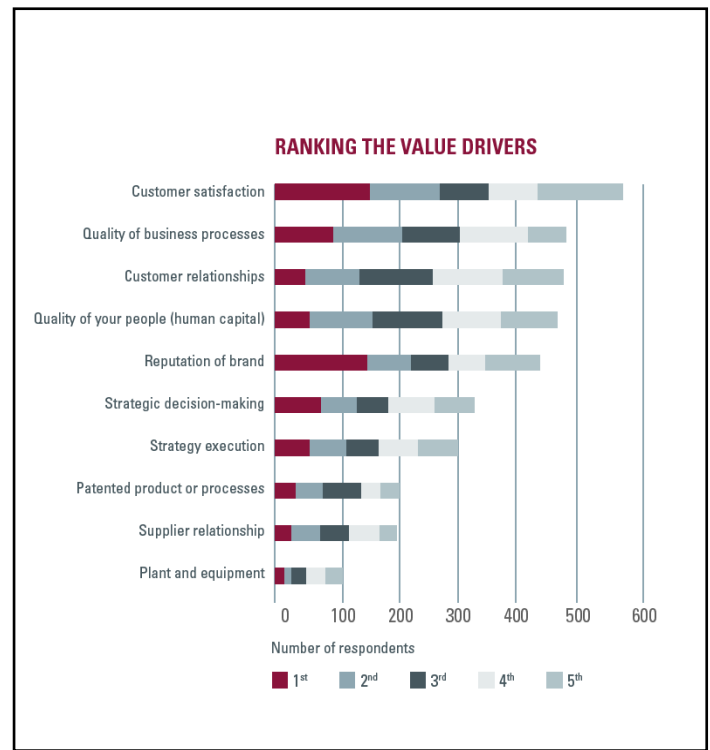


Fig. 1: Ranking the value drivers of modern business [27].

According to the survey research conducted by the [27] practitioners around the world recognize that intangible assets become the prominent value driver of modern business. As per Figure 1, customer satisfaction (76%), quality of business process (64%), customer relationship (63%), quality of people (61%) and brand reputation (58%) are considered as most important value drivers in today’s business organizations. Hence, it gives the indication about the importance of measuring qualitative factors to assess the performance of firms in digital edge.

Therefore, practitioners and standard setters have to focus for accounting intangibles and develop appropriate measurements to assess the performance of digital business.

#### 5 MODERN APPROACH IN EVALUATION OF PERFORMANCE

Most of companies today improve their technical and technological capabilities to meet market demand [40], [1], [41], [16]. As a result, IT industry become prominent in every aspect. With the digital disruption companies are focusing to improve competitive advantage through technology adoption. Hence, there is an increasing demand for Software development, cloud computing, artificial intelligence, product innovation, data analytics, and mobile computing [9], [16], [12], [8].

##### 5.1 Balance view of performance evaluation in modern organization

Financial measures use over the periods to evaluate the performance of organizations is no longer appropriate to use as a sole criterion [9], [6]. The main reasons for financial

measures to carry high weightage in evaluating the performance is the uniformity of metrics & comparability [12] of results across division and companies. However, Robert Eccles [12] argues that in practice financial measures are not comparable because companies use different accounting conventions. Hence, there is modern trend to measure market share, quality, innovation, human resources, and customer satisfaction. However, selecting an appropriate performance measurement is a subjective process as top management often involve in selecting applicable measures [2] for their organization. This violate the uniformity and comparability of the outcome across divisions and companies in the industry.

As suggested in the literature intangibles have significant relationship with business performance. Bontis et al., [42] has identified three main intangibles which has the significant relationship with organizational performance.

Human capital - represent knowledge and skills of employees. The important components are managerial skills, leadership style.

Structural capital - knowledge generated from processes, organization values, renewal and development for future. Relevant components are infrastructure, intellectual property, information technology, trademarks and patents.

Customer capital - Customer capital consisted with knowledge embedded in the marketing channels and customer relationship. Which includes customer satisfaction, customer loyalty, and market intelligence.

Hawawini [23] try to find out whether firm's performance is driven primarily by industry or firm factors. According to his empirical research, the industrial organizational views determine industry factors are the primary determinants of firm performance, while the resource-based view recognize the firm's internal environment drivers are prominent in assessing the firm's performance. Even though the performance evaluation models (Balance Scorecards by Kaplan & Norton in 1996 and Performance Pyramid System by Lynch and Cross in 1991) developed mid 1980s support for translating strategy into action decrease the strategic alignment [17]. Garengo et al., [17] shows the important of balance model in analyzing the firm performance. This resulted to develop integrated performance management system to measure the efficiency of firm.

## 5.2 Integrated Framework in evaluating Performance of firms in digital edge

Considering the limitation of existing frameworks, Ferreira & Otley [43] has proposed extended framework - Performance Management System (PMS) integrating various dimension of managerial activities and controls to assess firm's performance. In the PMS framework shown in Figure 2, Ferreira & Otley [43] integrate various areas of business into twelve questions. These questions can be organized into five main areas [44].

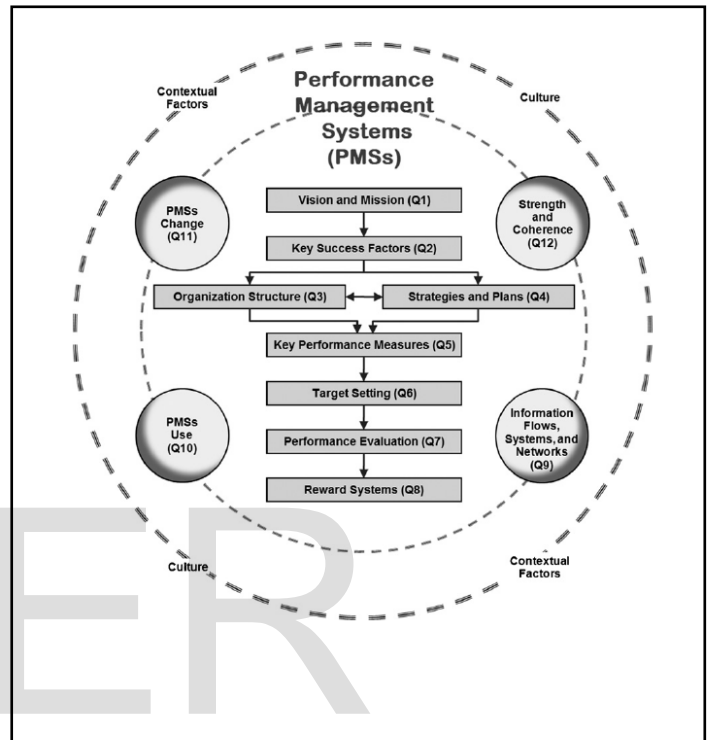


Fig 2: Integrated Performance Management System Framework (PMS) [43]

- appraisal.
- 3. Performance targets.
- 4. Incentive arrangements and
- 5. Information and knowledge management.

The evaluation framework proposed by Ferreira & Otley [43] is fulfill the characteristics of performance measurement system identified by Garengo et al., [17]. According to Garengo et al., [17] performance management system should developed based on four levels - Corporate, Business Units, Business Processes and Activities and each of these level should have five key factors - Stakeholders, Control Criteria, External Measures, Improvement Objectives and Internal Measures.

However, the important factor is how these framework use in practice by firms to evaluate their performance. The empirical literature to date suggests that there is no single (financial or non-financial) performance measure which firm can rely to evaluate their performance [23]. In practice,



author observed that firm to firm in IT industry use different measures to evaluate their performance in conjunction with so-called traditional accounting based measure. Notable reason for the deviation from theory is to lack of uniformity and comparability of the non-financial measures available across the sector.

## 6 CONCLUSION

Although the performance analysis have extensively examined in the literature it recognized that the performance measurement has an important role to play in measuring efficient and effectiveness of the business. Hence, performance measurement remains much debated issue in the field [6]. Performance measurement literature focus from economic reality to strategic alignment of the organizational processes. Integrated framework of performance evaluation consider various aspect of management and controls of the organization. In evaluating performance it is essential to be incorporated industrial view and resource-based view to get the right insight about the organization. Since there is no single framework [23] in evaluating organizational performance it is more appropriate to employ balance approach incorporate finance and non-finance measure to evaluate the performance of firm. Almost all framework attempted to evaluate either performance of organizational development or executive pay decision may not necessarily reflect the balance view of business performance. Hence, good performance framework should provide to measures operational performance and provide the mechanism to determine shareholder value. However, it is yet to examine the appropriate framework to evaluate the performance of the firms in digital world.

## 7 IMPLICATION OF INDUSTRY PRACTICES AND FUTURE RESEARCH DIRECTIONS

Performance evaluation is central to any firm irrespective of the size and industry they operate. IT firms are unique in their nature. There are two types of firms in IT industry – product orient companies and service orient companies. Evaluation of performance of service orient companies are much rely on outcome based integrated model while product orient companies are heavily rely on their own evaluation framework. Hence, there is no consensus among product orient companies in evaluating their performance. This leads to a challenge in introducing best practices based on benchmarking each other in the industry. Accordingly, author provides following direction for future researches in the area of performance evaluation of IT firms.

**P1.** Model to measure how intangibles enhance the business performance [1] of IT firm. This can be extended to identify the criteria for valuation of intangibles in monetary term and identify standardize method to account for it in order to maintain comparability and uniformity in

measures. This measure should reflect the value of intangibles in the financial statements through their contribution to revenue generation, profitability and future earnings potential [1].

**P2.** The appropriateness of existing performance evaluation models use by IT firms and its generalizability to industry. Product orient companies are currently using different models to evaluate their performance not necessarily comparable at the industry level. There is a requirement for practitioners to have generally accepted method to evaluate the performance of firms across the industry.

**P3.** It is worthy to study the interrelationship between the value of intangibles and fundamental financial performance [16]. Researches can study how value of intangibles incorporate with fundamental financial indicators to create confidence among investors. According to Tayle et al., [16] and Medition et al., [22] researchers can combine financial and non-financial methods to demonstrate value relevance of performance measurement framework

## ACKNOWLEDGMENT

The author wish to thank Dr. Ravi Dissanayake, Senior Lecturer – University of Kelaniya for providing valuable guidance and feedback for the improvements of this article and two anonymous reviewers.

## REFERENCES

- [1] Sriram, S.R., "Relevance of intangible assets to evaluate financial health" *Journal of Intellectual Capital*, vol. 9, no. 3, pp. 351-366, 2008.
- [2] Folan, P., & Browne, M., "A review of performance measurement: Towards performance management", *Computers in Industry*, vol. 56, pp. 663-680, 2005.
- [3] Tangen, S., "Performance measurement: from philosophy to practice", *International Journal of Productivity and Performance Management*, vol. 53, no. 8, pp. 726 - 737, 2004.
- [4] Marr, B., Gray, D., and Neely, A., "Why do firms measure their intellectual capital?" *Journal of Intellectual Capital*, vol. 4, no. 4, pp. 441-464, 2003.
- [5] Bourne, M., Neely, A., Mills, J. and Platts, K., "Implementing performance measurement systems: a literature review", *International Journal Business Performance Management*, vol. 5, no. 1, pp. 1-24, 2003.
- [6] Kennerly, M., & Nelly, A., "A framework of the factors affecting the evolution of performance measurement system", *International Journal of Operations and Production Management*, vol. 22, no. 11, pp. 1222-1245, 2002.
- [7] Otley, D., "Performance management: a framework for management control systems research". *Management Accounting Research*, vol. 10, pp. 363-382, 1999.
- [8] Venkatraman, N., Ramanujam, V., "Measurement of Business Performance in Strategy Research: A Comparison of Approaches". *Academy of Management Review*, vol. 11, no. 4, pp. 801-814, 1986.
- [9] Tseng, F., Chiu, Y., & Chen, J., "Measuring business performance in the high-tech manufacturing industry: A case study of Taiwan's large-sized TFT-LCD panel companies", *International Journal of Management Science*, vol. 37, pp. 686-697, 2009.
- [10] Bititci, U.S., Carrie, A.S., & McDevitt, L., "Integrated performance measurement systems: a development guide", *International Journal of Operations & Production Management*, vol. 17, no. 5, pp. 522 - 534, 1997.

- [11] Chandler, G.N., & Hanks, S.H., "Measuring the Performance of Emerging Business: A Validation Study", *Journal of Business Venturing*, vol. 8, pp. 391-408, 1993.
- [12] Eccles, R.G., "The Performance Measurement Manifesto", *Harvard Business Review*, January-February, pp. 131-137, 1991.
- [13] Voulgaris, G., Stathopoulos, K., & Walker, M., "IFRS and the Use of Accounting-Based Performance Measures in Executive Pay". *The International Journal of Accounting*, 2014.
- [14] Hopwood, A.G., "An Empirical Study of the Role of Accounting Data in Performance Evaluation", *Journal of Accounting Research*, vol. 10, pp. 156-182, 1972.
- [15] NASSCOM, "Indian Knowledge Services Outsourcing Industry - Executive Summary", 2011, available at [http://www.nasscom.in/upload/Publications/Research/29082011/Indian\\_Knowledge\\_Services\\_Outourcing\\_Executive\\_Summary.pdf](http://www.nasscom.in/upload/Publications/Research/29082011/Indian_Knowledge_Services_Outourcing_Executive_Summary.pdf)
- [16] Tayles, M., Pike, R.H., Sofian, S., "Intellectual capital, management accounting practices and corporate performance: Perceptions of managers", *Accounting, Auditing & Accountability Journal*, vol. 20, no. 4, pp. 522-548, 2007.
- [17] Garengo, P., Biazzo, S. & Bititci, U.S., "Performance measurement systems in SMEs: A review for a research agenda", *International Journal of Management Reviews*, vol. 7, no. 1, pp. 25-47, 2005.
- [18] Choi, F.D.S, Meek, G.K., *International Accounting*. 7th ed. Prentice Hall, New Jersey, 2011.
- [19] Castro, N.R., & Chousa, J.P., "An Integrated Framework for the Financial Analysis of Sustainability", *Business Strategy and the Environment*, vol. 15, pp. 322-333, 2006.
- [20] Sloan, R.G., "Financial accounting and corporate governance: a discussion", *Journal of Accounting and Economics*, vo. 32, pp. 335-347, 2001.
- [21] Govindarajan, V., "Appropriateness of Accounting Data in Performance Evaluation: An Empirical Examination of Environmental Uncertainty as an Intervening Variable", *Accounting, Organizations and Society*, vol. 9, no. 2, pp. 125-135, 1984.
- [22] Maditinos, D.I, Sevic', Z., & Theriou, N.G., "Modelling traditional accounting and modern value-based performance measures to explain stock market returns in the Athens Stock Exchange (ASE)", *Journal of Modelling in Management*, vol. 4, no. 3, pp. 182-201, 2009.
- [23] Hawawini, G., Subramanian, V., & Verdin, P., "Is Performance Driven by Industry or Firm Specific Factors? A New Look at the Evidence", *Strategic Management Journal*, vol. 24, pp. 1-16, 2003.
- [24] Hung, M., "Accounting standards and value relevance of financial statements: An International analysis", *Journal of Accounting and Economic*, vol. 30, pp. 401-420, 2001.
- [25] Agarwal, V., & Taffler, R., "Comparing the performance of market-based and accounting-based bankruptcy prediction models". *Journal of Banking & Finance*, vol. 32, pp. 1541-1551.
- [26] Ebaid, I.E., "The value relevance of accounting-based performance measures in emerging economies: The case of Egypt", *Management Research Review*, vol. 35, no. 1, pp. 69-88, 2012.
- [27] CIMA, *The Digital Finance Imperative: Measures and Manage What Matters Next*, 2015.
- [28] Demers, E. & Lev, B., "A rude awakening: internet value drivers in 2000", *Review of Accounting Studies*, vol. 6, no. 2/3, pp. 331-59, 2001.
- [29] Trueman, B., Wong, M.H. & Zhang, X.J., "The eyeballs have it: searching for the value in internet stocks", *Journal of Accounting Research*, vol. 38, pp. 137-62, 2000.
- [30] Daniel, K. & Titman, S., "Market reactions to tangible and intangible information", *The Journal of Finance*, vol. 61, no. 4, pp. 1605-43, 2006.
- [31] Aboody, D. & Lev, B., "The value relevance of intangibles: the case of software Capitalization", *Journal of Accounting Research*, vol. 36, pp. 161-91, 1998.
- [32] Lev, B. and Sougiannis, T., "The capitalization, amortization, and value-relevance of R&D", *Journal of Accounting and Economics*, vol. 21, no. 1, pp. 107-38, 1996.
- [33] Ittner, C.D and Larker, D.F., "Coming up short on nonfinancial performance", *Harvard Business Review*. November 2003.
- [34] Johnston, D.M., Sefcik, S.E. & Soderstrom, N.S., "The value relevance of greenhouse gas emissions allowances: an explanatory study in the related United States SO2 market". *European Accounting Review*, vol. 17, no. 4, pp. 747-67, 2008.
- [35] Hassel, L., Nilsson, H. & Nyquist, S., "The value relevance of environmental Performance", *European Accounting Review*, vol. 14, no. 1, pp. 41-61, 2005.
- [36] Konar, S. & Cohen, M.A., "Does the market value environmental performance?", *The Review of Economics and Statistics*, vol. 83, no. 2, pp. 281-9, 2001.
- [37] Hughes, K.E., "The value relevance of nonfinancial measures of air pollution in the electric utility industry", *The Accounting Review*, vol. 75, no. 2, pp. 209-28, 2000.
- [38] Blacconiere, W.G. & Northcut, D.W., "Environmental information and market reactions to legislation", *Journal of Accounting, Auditing and Finance*, vol. 12, no. 2, pp. 149-78, 1997.
- [39] Barth, M.E. & McNichols, M.F., "Estimation and market valuation of environmental liabilities relating to superfund sites", *Journal of Accounting Research*, vol. 32, pp. 177-209, 1994.
- [40] Uotila, J., Maula, M., Keil, T., & Zahra, S.A., "Exploration, Exploitation, and Financial Performance: Analysis of S&P 500 Corporations", *Strategic Management Journal*, vol. 30, pp. 221-231, 2009.
- [41] Tsai, K., Wang, J., "External technology acquisition and firm performance: A longitudinal study", *Journal of Business Venturing*, vol. 23, pp. 91-112, 2008.
- [42] Bontis, N., Keow, W.C.C., & Richardson, S., "Intellectual capital and business performance in Malaysian Industries", *Journal of Intellectual Capital*, vol. 1, no. 1, pp. 85-100, 2000.
- [43] Ferreira, A., Otley, D., "The design and use of performance management systems: An extended framework for analysis", *Management Accounting Research*, vol. 20, pp. 263-282, 2009.
- [44] Rouse, P. and Putterill, M., "An integral framework for performance measurement", *Management Decision*, vol. 41, no. 8, pp. 791 - 805, 2003.