THE INVISIBLE CAPITAL

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ABSTRACT

THE INVISIBLE CAPITAL

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This thesis analyzes the human capital and aims develop techniques to recognize human capital under Statement of Financial Position. National Basketball Association (NBA) players were used as a sample group because professional athletics are human intensive and players are the most valuable assets for their teams. The study includes the NBA team rosters for seasons between 2005-06 and 2013-14. A final list of 2,059 contracts for 774 players were grouped under three headings as “Option”, “Minimum Salary” and “Cap Space” contracts in order to analyze the effect of field statistics on contract values. The results indicate that field statistics have an impact on contract values and the contract values determined by the market could be used to capitalize human capital.

Keywords: Human Capital, NBA Players, Contract Values, Field Statistics

ÖZ

GÖRÜNMEZ SERMAYE

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Bu tez, beşeri sermayeyi analiz eder ve beşeri sermayeyi bilançoda göstermeye yönelik teknikler geliştirmeyi amaçlar. Profesyonel atletizm beşeri sermayeye dayalı ve oyucular takımları için en değerli varlıklar olduğu için, çalışmada Ulusal Basketbol Birliği (NBA) oyuncuları örnek grup olarak kullanıldı. Çalışma, 2005-06 ve 2013-14 yılları arasındaki sezonlar için NBA takım kadrolarımı içermektedir. 774 oyuncu için toplam 2.059 sözleşme, saha içi istatistiklerinin sözleşme değerleri üzerindeki etkisini analiz etmek için "Opsiyon", "Minimum Maaş" ve "Kapasite" sözleşmeleri olarak üç başlık altında toplandı. Sonuçlar, saha içi istatistiklerinin sözleşme değerleri üzerinde etkili olduğunu ve piyasa tarafından belirlenen sözleşme değerlerinin beşeri sermayeyi aktifleştirmede kullanılabileceğini göstermektedir.

Anahtar Kelimeler: Beşeri Sermaye, NBA Oyuncuları, Kontrat Değerleri, Saha İçi İstatistikleri

To my beloved wife Ebru Yılmazer, thanks for your presence

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CHAPTER 1

INTRODUCTION

1.1. Overview

Accounting is based on the system of recording known as "double entry bookkeeping", and it is a necessity to indicate the break between traditional societies and modern societies brought especially by the Renaissance or the Enlightenment (Gaffikin, 2005). The accounting implications have been subjected to permanent transformations depending on the dominant economic environments, technological developments and especially the needs of accounting information users. Gaffikin (2005) also underlines that the accounting is mainly a social construction that has grown in response to a demand originating from the dominant economic and social forces.

Toffler (1980) classifies those economic and technological conditions as three stages, i.e., waves. He explains that, in the 1st Wave that was the settled agricultural society, cost of production was mostly determined by the human labor. Accounting aimed to calculate the human working hours in order to determine cost of production. Information was limited with the recognition of human capital and simple devices.

By the 2nd Wave, machines replaced the human capital. Accounting has recorded those "tangible assets" and developed amortization policies in harmony with the *Industrial Age*'s "standardization" principle. By the mid of *Industrial Age*, shareholders, who requested more detailed information about financial position of companies, have gained importance..

Toffler (1980) summarizes 3rd Wave into a single word: *Information*. Machines are still important, but the importance of intellectual capital especially human capital that controls those machines and computers has increased again. We now live in a knowledge society, in which the specialization and differentiation are extremely crucial. The consumers demand for the specialized

products satisfying their needs, and companies develop machine intensive production techniques to satisfy those needs and employ R&D workers to improve their processes and technologies. The specialized needs are not limited with only consumers of physical products: The users of accounting information, especially shareholders of companies, demand for more relevant information and techniques such as fair valuation, and the provisions and impairment tests were developed in order to satisfy those needs.

Accounting is the process of identifying, measuring and communicating the economic information for the information users, but accounting regulations still do not recognize the intellectual capital properly. For instance, US Generally Accepted Accounting Principles (U.S. GAAP) still mostly expense R&D costs, and International Accounting Standards Board (IASB) set strict rules for capitalizing R&D, although the R&D activities are defined under the accepted intellectual capital category, which is structural capital. Both regulations also do not even consider recognizing human capital. The ignorance of human capital leads to a decline in the relevance of financial statements.

1.2. Motivation for this study

As explained above, the traditional accounting ignores the human capital. Assets are defined as presumptive future economic benefits obtained or controlled by the entities as a result of past transactions or events. However, especially the lack of control over human capital makes it a subject of debate to recognize intellectual capital under assets. Although there is no consensus on the recognition of human capital, gradually increasing number of entities separately report their human capital in order to inform their shareholders about their innovative and productive capacity through intellectual capital statements. Financial analysts deploy more interest on the human capital of organizations in order to reflect the intellectual potential of companies. Those improvements show the increasing demand for human capital accounting. Brummet et al. (1968a) emphasize that, in annual reports, presidents define the human capital of their companies as their

most valuable assets, but the financial statements still fail in recognizing those "valuable assets".

In order to recognize an item/concept as an asset, it must be sufficiently evidenced that the item would bring future economic benefits and it would be possible to measure that item reliably in monetary terms. The knowledge era increases the importance of human capital and the impact of human capital on both existing and future organization performance and income. Financial statements without disclosure of human capital would be misleading for both of managerial decisions and investment decisions of shareholders. Likert (1967) claims that the accounting systems, which ignore human assets, make all levels of management handicapped by inadequate and inaccurate information available to them. Enyi and Akindehinde (2014) explicate that, if human capital is considered as a part of assets but it is not treated as such in financial statements, it simply means that the financial statements are not presenting a true picture of the organizations' state of affairs. For instance, they can be misleading. Stanko et al. (2014) define that the physical assets are less important than they have historically been, and that accounting has to cover human capital in order to reflect the true value of the organization.

Another reason that makes human capital usually ignored in the financial statements is the difficulty of reliably measuring the human capital of entities. Dean et al. (2012) and Islam et al. (2013) explain that human resources are usually ignored because it is difficult to measure human resources in use. Stanko et al. (2014) express that there are hundreds of factors comprising the value of an employee, but they also clarify that a valuation method can be developed. Islam et al. (2013), Bavali and Jokar (2014) and Okeke (2016) declare the barriers for human resource accounting as the lack of information about the benefits of developing human resource accounting system, high cost to perform human resource accounting and non-existence of accounting standards for human resource accounting. However, they defend that there is a chance to collect information related to human resource value. However, in recent years, both U.S. GAAP and IASB began requiring the companies to deal with more complex

techniques for measurement of assets, and there is a trend towards including more specialized information about the entities in order to increase the relevance of accounting information (Bullen and Eyler, 2010; Stanko et al., 2014). The firms are now more accustomed to those complex measurement techniques and they use more developed accounting databases and software packages, which help them coping with those calculations. Those developments eliminate the reason to ignore human capital in financial statements based on the difficulty of its measurement.

The people that support the ignorance of human capital in the financial statements, defend their opposition by the non-existence of active markets for human capital, and conclude that this would make the wages non-reliable to be used in the valuation of human capital employed in the entities. However, the professional athletics provide both active market conditions for human capital and different mobility conditions for human capital. The key resource in any professional sports team is the available stock of playing talent (Gerrard, 2001). It is assumed that active market conditions allow wages and transfer fees to be determined according to the players' talents. Moreover, the greater the mobility restrictions are, the greater the asset creation possibility becomes (Dittman et al., 1976). The professional basketball market is one of the best markets providing the largest dataset for potential analyses, and it is highly active in nature.

In basketball, especially in National Basketball Association (NBA), players' transfers are not subject to transfer fee between the clubs. The players under contract can be traded between clubs based on swaps or free-agent players may sign with clubs. Wages in the NBA are negotiated between the team and the player. The rules, under which the agreement is reached, are set by Collective Bargaining Agreement (CBA). Since the year of 1900, teams have five players on the court, so each player's contribution is important in the team success. Besides that, in the NBA, the teams are also subject to the Salary Cap rule, which restricts their ability to transfer players higher than their realistic values. If teams exceed the limit of total wages of players contracted under their teams, they have to pay a luxury tax. The features of NBA make the NBA players' wages more

performance-based and skills-oriented, which increases the reliability of wages to be used in analysis (Zak et al., 1979).

The future of human capital accounting depends upon the reliable and comprehensive measurement techniques (Bullen and Eyler, 2010), and NBA is a good candidate for academic research because of the fact that it allows analysis based on the wages set by active market conditions. Professional business provides active market conditions such that employees can switch their jobs without any limitation like the players in the NBA and the average wages are in the industry usually known by the firms, and the future researches might use the findings of this study in order to calculate value of employees by using Net Present Value (NPV) of future wages (cash outflows) for the employees whether they cannot set a fair value for their employees.

1.3. Research aims

There is an increasing debate whether the financial statements lacking in reporting the intellectual capital are misleading for investors. Advocates favor the capitalization of intellectual capital because, by the omission of IC, firms' assets are underreported. The common reason without a proper disclosure of intellectual capital is the difficulty for their measurement.

This study aims to develop techniques to recognize human capital, which is the most important intellectual capital category in the modern economy, under balance sheet. By this aim, the NBA players would be analyzed because professional athletics are human intensive and players are the most valuable assets for their teams.

1.4. Research questions

In order to achieve the aims of the study, the following research questions will be investigated:

a) Which factors affect the value of players?
b) Is there any difference between the valuations of players according to the contract types?
c) Does experience affect the valuation of players?
d) What is (are) the most appropriate model(s) for valuing the players?

1.5. Research methods

The study will use secondary data from the basketball-reference.com for players' field statistics, prosportstraction.com and storytellerscontracts.info for NBA team rosters and players' contract values and NBA official website and eskimo.com for general information about minimum salary figures and NBA rules. The study will employ different models in order to investigate the research questions aforementioned.

1.6. Organization of this study

The study is structured as follows:

Chapter 2 will briefly define the intellectual capital concept and its sub-categories, namely the human capital, structural capital and relational capital, and then represents a review of the literature on the existing disclosure policies for them. Then, the accounting treatment for human capital will be analyzed under the corresponding accounting framework and qualitative characteristics of financial statements. Finally, the importance of relevance-faithful representation balance (trade-off) about intellectual capital more specifically about human capital reporting will be discussed.

Chapter 3 will explain the potential reporting/recording techniques for human capital and analyze pros and cons of each technique. And then, the author will discuss the most appropriate technique for the human capital valuation.

Chapter 4 will illustrate the need for human resource accounting, provide a comparison of professional business and professional sports, National Basketball Association (NBA) theoretical background, and explicitly clarify team formation and game rules. In addition, the author will describe the reasons to study NBA, and then define Salary Cap rule and type of contracts that players sign with clubs in the NBA.

Chapter 5 will examine the sampling, data collection techniques used in modelling, summarize how the variables were collected, and then explain the model(s) used to test whether contract values of NBA players reflect their past field performance

Chapter 6 will discuss test results and interpretation of the results. **Chapter 7**, the final chapter, will conclude on the findings, emphasize areas for future research, and discuss future implications on human capital accounting.

CHAPTER 2

BACKGROUND FOR INTELLECTUAL CAPITAL

In today's economic environment the basic production such as mass production and mass customization are not enough to assure the loyalty of the consumers; the firms have to differentiate their products in order to increase their sales or, at least, maintain their competitive power in their industry. So, they have to conduct research and development (R&D) activities in order to create firm-specific technologies, and they also have to employ high-skilled workers to reach efficient, effective and value-adding production processes or services and gain patents, rights etc., which would enhance their sales by the help of competitive advantages gained by those legal documents.

Wyatt (2005) and St.-Pierre and Audet (2011) confirm that the R&D intensive firms dominate on production firms mostly by their intellectual capital. Cañibano et al. (2000), Snyder and Pierce (2002), Martinez-Torres (2006), Vergauwen et al. (2007), Skinner (2008), Mitchell (2010), Ismail (2011) and Jääskeläinen (2011) articulated that the wealth creation now relies on the knowledge (intellectual) capital more than it does on physical assets, and the intellectual capital has become the principal means of creation of wealth. Andriessen (2001) and Nielsen et al. (2006) reported that, in today's economy, it becomes more important to be unique and this is always a combination of intangible assets that make a company unique and successful.

Wyatt (2005) explains that firms, operations of which are exposed to higher strength technologies, have incentives to invest on valuable intangible assets in their processes. Rhode et al. (1976), Harvey and Lusch (1999), Meer-Koostria and Zijlstra (2001), Stolowy et al. (2001), Lev (2002), and Mouritsen et al. (2004) corroborate that the importance of knowledge work is increasing. Bryant-Kutcher et al. (2009) find that human capital has the capability of creating efficiencies and it is difficult for the competitors to imitate. Seetharaman et al. (2004) conclude

that, while physical assets experience diminishing returns on capital, knowledge assets can experience increasing returns.

As concluded by many authors above, the competitive economic environment forces the firms to invest higher amounts on knowledge-based activities. The following section would respectively examine and classify the intellectual capital (IC) or, in other words, knowledge-based activities, and then would briefly cover accounting rules and/or regulations regarding the intellectual capital.

2.1. Definitions of intellectual capital

Although the concept of intellectual capital (IC) has received much attention for more than a decade, there is a lack of consensus on its components and definitions (Wilkins et al., 1997; Huang et al., 2007). Moreover, there is a tendency in the literature to classify rather than to define IC. IC represents all expressions of firm's knowledge stocks (Castro and Sáez, 2008). The IC could be defined as the assets of a company other than the physical and monetary capital (Pike et al., 2005). Andriessen (2001) label the benefits acquired from IC as "weightless wealth". Non-accounting researchers define the "intellectual capital" as the difference between the firm's market value and book value of its entity (Choong, 2008)

The terms intangible assets, intangible capital, knowledge assets are interchangeably used to define IC. IC could be defined as the aggregate of knowledge available to an organization from its human, internal and external capital as applied by the management to activities in order to enhance the competitive advantage and to increase the wealth (Mitchell, 2010). Luthy (1998) reminds that important underlying concepts in all definitions above include the notion that intellectual capital is something that is based on the knowledge, captured in an identifiable form, and useful in organizations. In sum, the IC is the knowledge convertible to wealth creation.

Widely accepted three categories of IC are as follows: *Human Capital*, *Structural (Organizational) Capital* and *Relational (Customer) Capital*. There are

the variations because some authors also add innovation capital, process capital etc., and make some shifts within the sub-groups defined under those three main categories.

2.1.1. Definitions of human capital

Authors agree that human capital is the most important IC category in general. Brummet et al. (1968), Allee (2000), Thorbjørnsen and Mouritsen (2003), Bozbura (2004), Theeke (2005), Sonnier (2008), Mitchell (2010), Castro et al. (2011) and Rahaman et al. (2013) express that the human capital is the most important intellectual capital in an organization because of its creativity function. They explain that human capital consists of the total of employees' occupational accumulation, the leadership abilities, and risk-taking and problem-solving capabilities. Flamholtz (1974b) emphasizes that the human resource accounting is not only a system of accounting for the cost and value of people to organizations but it is also a way of thinking about the management of people in formal organizations.

Chen and Lin (2004) express that existing literature approaches the definition of human capital mainly in three ways: (1) *transaction cost economy theory*, (2) *human capital theory*, and (3) *resource-based view of the firm theory*. The *transaction cost theory* assumes that the companies can either employ new staff outside or train/promote the existing staff for a new position. Chen and Lin (2004) explain that companies choose the most efficient way or a combination of those, and state that the human capital within the context of this theory must possess both of asset specificity and asset uncertainty properties. The *human capital theory* is based on the motto that companies decide on the amount to be invested on the human capital by comparing the potential cost to the potential future benefits. Chen and Lin (2004) clarify that human capital in this context refers to the technical training and knowledge build-up for employees, and underline that the human capital must possess the dual properties of asset specialized skills and non-transferability. The *resource-based view of the firm theory* advocates that

core skills needed for company's competitive advantages must be acquired both from existing internal resources and external resources. Human capital is the main source of the abilities that make a company unique.

Rowbottom (1998), Luthy (1998), Meer-Koostria and Zijlstra (2001), Chen and Lin (2004), Vergauwen and Alem (2005), Martinez-Torres (2006), Mitchell (2010) and Okeke (2016) define human capital as the value of all the people within the organization and the benefits that can be obtained by utilizing their skills and knowledge. Seetharaman et al. (2004) define human capital as all of the employees, but distinguish knowledge workers from human capital. They conclude that workers in the assembly line are considered as human capital, but they are not knowledge workers: Knowledge workers are those spending their time in converting the knowledge to a value. St.-Pierre and Audet (2011) reported that human capital influences innovation capital and process capital, i.e., the firms' structural capital.

Cañibano et al. (2000), Bloom and Kamm /2014) and Okeke (2016) suggest that a firm with more capable employees is likely to earn higher profits than competitors, employees of which have lower capabilities for the development of tasks involved in the activity carried by the firm. Brüggen et al. (2009) and Arvidsson (2011) discover that disclosure on human capital shows an increasing trend. Andrikopoulos (2010), Bokhari et al. (2012) and Dean et al. (2012) advocate that increased attention to human capital has often been associated with the emergence of the knowledge worker in the context of the knowledge corporation of the new economy. Wilkins et al. (1997), Seetharaman et al. (2004), Pike et al. (2005), Vergauwen and Alem (2005), and Castro et al. (2011) identify human capital as the capital owned by the employees but controlled by the company.

2.1.2. Definitions of structural (organizational) capital

This category of IC is usually accepted as the internal capital of a company. Structural capital contains both organizational and technological elements that

pursue the integration and coordination within the firm (Castro and Sáez, 2008). Terms such as intellectual property, infrastructure assets, innovation capital or process capital are used to define this class of IC (Bozbura, 2004).

Structural capital is composed of resources, which a company develops such as brand[1], image, intellectual property (IP), research and development (R&D), know-how, culture, systems and strategy etc. (Luthy, 1998; Allee, 2000; Pike et al, 2005; Vandemaele et al., 2005). In other words, the structural capital components range from the completely intangible assets such as culture and spirit of the organizations to the assets that have more tangible features such as copyrights, trademarks, patents, internal databases etc. (Seetharaman et al., 2004). Pike et al. (2005) and Castro et al. (2011) describe structural capital as the capital owned and controlled by the company similar to physical and monetary capital. Luthy (1998) defines structural capital as everything in an organization that supports employees (human capital) in their work, and he clarified that structural capital is the supportive infrastructure that enables human capital to function.

2.1.3. Definitions of relational (customer) capital

Relational capital gathers the value of the relationships that the firm maintains with the external agents (Castro and Sáez, 2008). Although, in the literature, some authors describe this group as customer capital because of the fact that also firm's relations with suppliers and/or society have been classified under this category, it would be better to name this class as relational capital (Bozbura, 2004). Martinez-Torres (2006) defines relational capital as the relationships that an organization has with its clients/customers and environment. The relational capital is composed of external resources, which the company needs or which affect the company, such as the suppliers, customers, regulators and partners (Pike et al., 2005). Allee (2000) and Seetharaman et al. (2004) exemplify reputation, strategic alliances, customers, licensing agreements, distribution channel as

[1] There is no consensus on the inclusion of brand whether under structural or relational capital.

relational capital. Pike et al. (2005) identify relational capital as the capital neither owned nor controlled by the company; the intellectual capital is the capital owned and controlled by different parties. Relational capital remains unexplored, at least, relative to the way and depth of the other two types of IC (Castro et al., 2011).

2.2. Literature review about disclosure of intellectual capital

Beginning in the 1960's, it became apparent that the creation of wealth primarily through physical assets was shifting to include greater amounts of input in the form of knowledge and employee expertise (Snyder and Pierce, 2002). Because of that, the first question that has to be answered is how firms react to this change. Gelb (2002), Brüggen et al. (2009), Vergauwen et al. (2007), Sonnier (2008), St-Pierre and Audet (2011) and Arvidsson (2011) discover firms that appear to rely on more informal and flexible disclosures such as voluntary publications, tend to have higher levels of intangible assets. Vandemaele et al. (2005) reveal that there is an upward trend in the average amount of IC disclosure over the observation period. Sonnier et al. (2008) confirm that even managers in traditional sectors of US economy are coming to recognize the growing importance of intellectual capital. Also, Yi and Davey (2010) suggest that in China there is clear awareness of the significance of IC disclosure.

Although the above studies usually give supportive results, Nurunnabi et al. (2011) oppose those findings and suggest that firms in Bangladesh are reluctant to disclose IC, and they find no difference between high-tech firms and low-tech firms in terms of IC disclosures. However, they discover that Sri Lanka is more proactive than Bangladesh in terms of IC disclosure. Ismail (2011) also finds similar results for Egypt, but he concludes that this low level of disclosure mostly depends on the cost associated with the IC indicators. Also, he realizes that disclosures are qualitative rather than quantitative, which strengthens his first conclusion about the cost consideration.

Ritter and Wells (2006) provide empirical evidence that the voluntary disclosures about intellectual capital has a positive impact on stock prices for the

largest 150 firms listed in Australian Stock Exchange between 1979 and 1997. Also, their findings show that future period income is positively related with the identifiable intangible assets. Ittner and Larcker (1998) provide empirical evidence about the impact of relational capital on financial performance. The study is based on observations for a large telecommunications firm and the results validate that customer satisfaction as a relational capital is a leading indicator of future sales. Also, they find that customer satisfaction is partially reflected on current book value.

As explained before, IC is also defined by the difference between the market value and book value of the firms. Then, if the importance of IC is growing, the second question that has to be answered is how analysts are affected from this change. Garcia-Ayuso (2003) suggests that inefficient valuation of intangibles is an important reason for the biases in analysts' earnings forecasts. Gu and Wang (2005) predict that high information complexity of intangible assets increases the difficulty for analysts and has an impact on analysts' earnings forecasts. They discover a positive association between analysts' forecast error and the firms' intangible intensity. Whiting and Miller (2008) conduct a content analysis of 70 publicly listed New Zealand firms. The findings represent supportive results that revaluing firms shows a significant positive relationship between their levels of hidden value and voluntary disclosure levels. Also, Matolcsy and Wyatt (2006) examine the impact of capitalization of intangibles on analysts' forecasts for Australian firms. Australian Generally Accepted Accounting Principles has allowed capitalization since 1980. They observe capitalization of intangibles is associated with higher analyst following and find lower absolute earnings forecast errors. Gu and Wang (2005) suggest that the earnings' forecast errors are smaller for biotech/pharmaceutical and medical equipment firms which are subject to intangibles-related regulation. So, they conclude that regulators and standard-setters may need to consider differential information complexity with different types of intangible assets to improve disclosure practices. Abeysekera (2008) and Skinner (2008) suggest that IC disclosure has to be mandatory, or at least regulators should help firms by providing guidance in terms of IC reporting.

Wyatt (2005) examines the extent to which management makes accounting choices to record intangible assets based on their insights into the underlying economics of their firm under Australian setting. The results suggest that choice to record intangibles is associated with firm specific factors such as technology level, cycle times etc. The findings also indicate that voluntary disclosures are more for unregulated classes than regulated classes such as purchased goodwill and R&D. The findings are not against to the need for IC disclosures, but it would make it questionable whether the IC disclosure would be mandatory or not.

Rowbottom (1998) deals with relevancy of human capital in the United Kingdom (UK) football industry. He suggests that football player registrations meet the Accounting Standards Board (ASB) criteria for identification of intangible assets because the inclusion of human capital would improve the informativeness of financial statements.

Garcia-Meca (2005) investigates 257 reports of presentations held by Spanish companies and 217 analyst reports. The results show information related to intellectual capital is widely reported to financial analysts in order to improve the quality of their reports. Simpson (2010) focuses on firms in the wireless industry for the period 1997-2007. The results reveal that although non-financial measures such as customer acquisition cost, average revenue per user and number of subscribers have significant ability to predict future earnings, analysts underreact to the information provided. However, sensitivity analysis indicates that analysts' use of non-financial in their forecasts improves the informativeness of firm disclosures.

2.2.1. Literature review about disclosure of human capital

Human capital (HC) is an important component in the production process and development activities. Milost (2007) states:

"*There are four basic elements required for a business process:*
(1) Means of production

(2) Raw materials
(3) Services, and
(4) Employees
However, there is a significant difference between employees and other three relevant elements. As a rule, the human potential is not expressed in terms of monetary units, which means that its value is not disclosed on the side of assets in the classical balance sheet." (pg.124)

Patra et al. (2003) examine whether HC is effective on organizational objectives and output or not by using case study methodology in an Indian firm, and confirm that HC has a positive relationship with the organizational objectives and output. Brummet et al. (1968) and Seleim et al. (2004) emphasize that human capital indicators have a positive association with organizational performance. Besides its direct impacts, the HC indirectly affects the performance by its effect on other IC components. Castro and Sáez (2008) analyze sample of 49 firms in Spain in order to test the categorization of intellectual capital. Factor analysis conducted shows that HC is the most influential IC component. St-Pierre and Audet (2011) investigated the Canadian and French manufacturing small-and-medium sized enterprises (SMEs) with more than 850 variables for 267 firms. The results confirmed that the human capital affects innovation and process capital directly-sub-groups of structural capital- and also indirectly affects the relational capital through process capital. Bassey and Tapang (2012) examine the influence of human resources on the corporate productivity for 10 companies listed in Nigeria Stock Exchange. The results indicate that human resources significantly affect the corporate productivity.

The studies above suggest that HC disclosures should be expected to show an increasing trend in future. Abeysekera and Guthrie (2004) show that the human capital disclosure is at higher level in a developed society (Australia) when compared to a developing society (Sri Lanka). Guthrie and Murthy (2009) examine the research on HC accounting articles for multi-continental design. The findings show that human capital research shows an increasing trend for developed nations. Abeysekera (2008) and Brüggen et al. (2009) emphasize that both Sri Lanka and Bangladesh firms' disclosures on human capital show an increasing trend. Based on interviews previously conducted for different studies

and interviews with top-level managers of 3 firms from biotechnology industry, O'Donnell et al. (2009) examine if there is a difference between the industries in terms of human capital reporting. The results verify that biotechnology firms, which are knowledge-intensive, report more on human capital. Arvidsson (2011) applied a comprehensive questionnaire survey addressed to investor-relation managers at the largest companies listed in Stockholm Stock Exchange (27 of 30 response rate). The study proves that trend on disclosures of IC shifts from structural capital to the human capital and relational capital for companies in Sweden.

The generally accepted theory about IC states that the increasing importance of IC on companies' processes would cause an increase in the difference between market value and book value of the firms. Bozbura (2004) applied a survey to top level executives of 280 firms listed in Istanbul Stock Exchange (ISE). The study states that the human capital has a positive relationship with market/book value[2] of firms in Turkey. Moreover, the results also suggest that the structural capital has a strong positive correlation with human capital. Bryant-Kutcher et al. (2009) use survey data for 106 US firms (106 applicable over 118 responses) and archival data to measure four dimensions of strategic human capital: capabilities, firm-specificity, causal ambiguity and spread. They demonstrate that market values[3] strategic human capital that has capability to create efficiencies in the organization.

Because of the fact stated above, the analysts have to deal with more on human capital in order to decrease this information gap between managers (providers of information) and shareholders (users of information). Rhode et al. (1976) state HC reporting may improve the informativeness of firm disclosures. Rowbottom (1998), Garcia-Meca (2005) and Simpson (2010) studies confirm this and also show that especially analysts' use of human capital in their forecasts improves the informativeness of firm disclosures.

[2] Ratio calculated by market value divided by book value of the firm

[3] Measured in terms of share prices

2.2.2. Literature review about disclosure of structural capital

Literature on the structural capital is usually about the R&D expenditures. The studies of Madden et al. (1972), Newman (1974), and Bierman Jr. and Dukes (1975) are the first ones on the R&D disclosures. They support the capitalization of new product development activities, product improvement efforts, cost and capacity improvement actions and immediate expensing of the remaining costs. Also, Corbin (1975) opposes the direct expensing method of R&D. Lev and Sougiannis (1996), Green et al. (1996), Abrahams and Sidhu (1998), Maines et al. (2002), Wyatt (2002), and Han and Manry (2004) conclude that the concerns about potential abuses by allowing managerial discretion are overstated, and that the capitalization is more value-relevant than expensing.

Advocates of the capitalization of development projects' expenditures usually support their thoughts by possible future profitability that would be driven by those expenditures. Branch (1974) studies the causality R&D expenditures and earnings in US context. He hypothesizes that above-average R&D intensity and above-average profits tend to reinforce each other. The results strongly support that R&D has an impact on future profitability and it is affected by past profitability. In their study, Ahmed and Falk (2006) examine the value relevance of Australian firms' discretionary R&D accounting policy and analyze the relationship between the R&D expenditures and the future benefits. The evidence suggests that R&D capitalization is positively and significantly associated with future earnings. Horwitz and Kolodny (1981) test the hypothesis that implication of SFAS 2 in year 1974 has no effect on amount and variability of privately funded R&D expenditures. They apply a questionnaire to both pre-capitalizers and pre-expensers before SFAS 2 issuance. They report and analyze the responses of managers with 34 % response rate. They recommend that the immediate expensing rule has inspired small-sized high-tech firms to reduce their R&D expenditures.

Hirschey (1982) incorporates a market valuation model to investigate intangible capital aspects of advertising and R&D expenditures. The relationships

between profits and advertising and R&D expenditures are studied. The data is composed of 390 firms from 12 major product groups. The findings suggest that the advertising and R&D expenditures have positive and significant market value. As well as Hirschey (1982), Hirschey and Weygandt (1985) consider the advertising and R&D expenditures together. The study aims to determine if those expenditures have positive impacts on the market value of the firm. The data consisted of firms in 20 product groups taken from Fortune 500 list for the year 1977. The results recommend that advertising and R&D expenditures have a positive effect on market value of the firm and they conclude that those expenditures have to be capitalized rather immediately being expensed. R&D expenditures have found to have five-to-ten year life for the amortization policy. Chauvin and Hirschey (1993) examine the impacts of advertising and R&D expenditures on the market value of firms. The market value effects of advertising and R&D seem to be significant for both manufacturing and non-manufacturing firms. In sum, the studies specified above advocate that advertising and R&D expenditures have positive and significant market value, which means that they have intangible capital aspects.

In addition, Bublitz and Ettredge (1989) discussed the long term impact of advertising and R&D expenditures by using alternative market-based research method. The method is based on the Cumulative Abnormal Security Returns (CAR) and earnings. The US data, which includes 190 firms for the years of 1974-1983, was utilized. They found that the R&D expenditures have long term impact on the firms' future performance, but the advertising expenditures are discovered to have shorter impact. Seleim et al. (2004) conduct questionnaire based study towards the Egyptian software firms' CEOs. The study is one of the first papers about IC in Arab countries. Their objective is to contribute to the IC theory development. The results prove that structural capital indicators have a positive association with organizational performance.

Based on the above studies, it would be expected that the firms would report more on structural capital. Gelb (2002) looks through how intangible assets affect the disclosures of firms. The study uses analysts' ratings about firms' disclosure

practices from the annual Association for Investment Management and Research Corporate Information Committee Reports (AIMR Reports) for US firms. The findings represent that firms' R&D and advertising intensity[4] was found to increase firms' alternative disclosure channels. Abeysekera (2008) demonstrates that both Sri Lanka and Bangladesh firms' disclosures on structural (internal) capital show an increasing trend. Vergauwen et al. (2007) for Sweden, the UK and Denmark, Ali et al. (2008), Sonnier et al (2008) and Brüggen et al. (2009) respectively for Bangladesh, US and Australia display that the most disclosed category within three categories of IC is the structural capital.

Also, it would be expected for financial analysts to deal more with structural capital. Barth et al. (2001) investigate the relation between analyst coverage and firms' intangible assets. They realize that financial analysts expend greater effort to follow firms with more intangible assets such as R&D and advertising expenses, after controlling the other factors. Dhaliwal et al. (1999) examine the effects of investment opportunity set (IOS) on management's decision to capitalize or expense in tow different settings. The sample consisted of 219 firms, 109 of which used capitalization method and 110 used expensing method. A logit model was applied to test the hypotheses that high growth firms are more likely than low-growth firms to select capitalization method of accounting for R&D and oil-and-gas E&D (exploration and development) costs. The hypothesis was supported by the findings and they concluded that this is due to the fact that capitalization lowers the variance in reported earnings. As aforementioned, Gu and Wang (2005) also indicate that firms' R&D and advertising levels directly affect the analysts' forecast errors.

2.2.3. Literature review about disclosure of relational capital

Relational capital is slightly different from the other IC components; neither the ownership nor control is on the firm. So, it is harder to measure and/or record in the firms' reports. This may be the reason that there are fewer studies in the

[4] Intensity is found by dividing the variable with the net sales.

literature when compared to other components. Ittner and Larcker (1998) hypothesize that customer satisfaction, which is a relational capital, is a leading indicator of accounting performance and investigate whether the economic value of customer satisfaction is reflected in contemporaneous accounting book values and whether customer satisfaction provides new information to the stock market. The results show that the customer satisfaction is a leading indicator of financial performance. Moreover, they also found that the customer satisfaction is partially reflected on current book value. Seleim et al. (2004) conducted their study through questionnaire based design for Egyptian software firms in order to understand the impact of relational capital on firms' performance and support Ittner and Larcker (1998) report that the relational capital indicators have a positive association with organizational performance.

Like other intellectual components, an increasing trend is expected for the reporting on the relational capital. Abeysekera (2008) demonstrates that both Sri Lanka and Bangladesh firms' disclosures on relational (external) capital show an increasing trend. Shareef and Davey (2005) review research on the quality and extent to which 19 listed professional English football clubs are reporting intellectual capital in their annual reports for the 2002 period. The findings indicate the internal (structural) capital is the least reported IC category. The external (relational) capital is the highest scoring category followed by human capital. As aforementioned, Arvidsson (2011) proves that trend on disclosures of intellectual capital shifts from structural capital to human capital and relational capital (corporate social responsibility) for companies in Sweden. Bozbura (2004) analyzes the impact of relational capital on the market/book value ratio for the 280 firms listed in Istanbul Stock Exchange. Results confirm that relation capital has a positive relationship with market/book value[5] of firms in Turkey. Also, the results suggest that the structural capital is correlated with relational capital.

[5] Ratio calculated from market value divided by book value of the firm

2.2.4. Conclusion about disclosure of intellectual capital

There is an increasing trend towards reporting each of the IC components. Although the studies have conflicting results about the mostly reported component, the structural capital generally could be accepted as the mostly studied IC component. Perhaps that is because of the fact that there exist direct accounting rules for the structural capital, especially for R&D and goodwill.

Human capital is found to be more effective than other IC components on the company performance both directly and indirectly by being effective on the other components because most of the studies accept human capital as the core part of today's knowledge era. On the other hand, there is no accounting rules regarding the human capital, and these reasons make human capital a challenging and exciting field of study. By taking the remarkable reasons above into the consideration, this study would deal with the human capital concept. The following section would discuss the potential treatment of human capital by analyzing existing widely accepted accounting standards, the qualitative characteristics of accounting reports and current worldwide reporting practices.

2.3. Treatment of human capital: record or report

In order to report and measure human capital, the first question that has to be answered is whether to record human capital under statement of financial position[6] or only to report as non-financial information. In order to answer this question, one must understand the nature of items under the statement of financial position. The accounting world is dominated by two accounting standards' set; The IASB's International Financial Reporting Standards (IFRS) and USA-based Financial Accounting Standards Board's (FASB) Generally Accepted Accounting Principles (US GAAP). The two prevailing standard sets are under a convergence

[6] IASB name old "balance sheet" concept under the aim of US GAAP and IFRS convergence project

project. So, the accounting standards and definitions in the standards now on would be illustrated as the US GAAP and IFRS.

2.3.1. Assets definition

The IASB 2014 Bluebook Conceptual Framework[7] defines the asset as "a resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow to the entity" (4.4.). Statement 6 of FASB Concepts defines asset "probable future economic benefits obtained or controlled by a particular entity as a result of past transactions or events" (p.25) and paragraph 26 states:

> *"An asset has three essential characteristics:*
> ***(a)** it embodies a probable future benefit that involves a capacity, singly or in combination with other assets, in order to contribute directly or indirectly to future net cash inflows,*
> ***(b)** a particular entity can obtain the benefit and control others' access to it, and*
> ***(c)** the transaction or other event giving rise to the entity's right to or control of the benefit has already occurred."*

The basic terms attached to the asset definition in both the IFRS Conceptual Framework and FASB are "resource", "control by the entity", "result of past event" and "expected future benefits".[8] (Jenkins and Upton, 2001)

Resources are expected to provide economic benefits in future. The IASB defines the future economic benefits as "the potential to contribute, directly or indirectly, to the cash flow and cash equivalents to the entity" (IFRS Conceptual Framework, 4.8.). FASB Concepts Statement 6 specifies that most assets presently included in financial statements qualify as assets under its definition

[7] As of the year of 2013, the IFRSs are included under the Blue Book versions. Now on in the text, the "IASB 2014 Blue Book Conceptual Framework" will be named as "IFRS Conceptual Framework".

[8] Recognition criteria for all financial statement items developed by IASB and discussed between QC1 and QC39, would be explained in the following section of "Qualitative characteristics of accounting"

because they have future economic benefits (p.177). Human capital undoubtedly is a "resource" both for the production and for knowledge creating phases. Although the developed machines, electronic devices and intelligent computerized systems have lowered the use of human capital factor especially in the production phase, the companies still need manpower and human intelligence in their processes. Cañibano et al. (2000) support those by concluding that a firm with more capable employees is likely to earn higher profits.

As explained in the previous section, human capital is called as the IC component owned by the human but controlled by the entity. Those, who oppose the recognition of human capital as assets, strongly defend their view through the lack of ownership on the human resources (Vergauwen and Alem, 2005; Theeke, 2005). However, human capital advocates (capitalizers) make objection such that there is no need for the ownership; the most important factors are the control on the human capital and the impact of human capital on the firm processes (Mirvis and Macy, 1976; Rowbottom, 1998; Jenkins and Upton, 2001; Andriessen, 2001; Chen and Lin, 2004). Bokhari et al. (2012) state that the value of human resources is based on the knowledge, capabilities and skills developed in the organization, i.e., the importance of human resources is company-specific. Lev and Schwartz (1971) highlight that, although individual employees can resign or can be replaced, the human capital as a labor force is constantly associated with the firm, so it can be constructively regarded as being "owned" by the firm. Rhode et al. (1976) categorize human capital as quasi-assets since they are in a sense possessed or controlled by the firm. They state that especially human capital employed in the athletics such as football teams satisfy the contracted the labor force and so asset definition. Flamholtz (1974a) and Rowbottom (1998) explain that the human cannot be owned unless they exist in a slave society, but the services of human capital are expected to be controlled or owned by the company. Rowbottom (1998) also concludes that the labor force can be bought and sold in acquisition or merger.

As IFRS Conceptual Framework and FASB make a point of the "control by the entity" rather than the "ownership" and the concept of "control by the entity"

is satisfied by the human capital, it would be better to include human in the statement of financial position rather than excluding them. An entity usually gains the ability to control an asset's future economic benefits through a legal right. However, an entity still may have an asset without having an enforceable legal right to it if it can obtain and control the benefit some other way, for example, by maintaining exclusive access to the asset's benefits by keeping secret a formula or process (SFAC No. 6[9], p.184).

IFRS Conceptual Framework does not limit the "past transaction" to only direct acquisition or inside dynamics: "Entities normally obtain assets by purchasing or producing them, but other transactions or events may generate assets" (4.8.). Although, those opposing the human capital recognition defend their motto through the absence of "past transaction" for gaining the "control" of human capital, the human capital advocates argue that contractual relationship between the human resources and the employer is "past transaction", which generates the ground for human capital recognition whether the employees could resign without any obligation (Rhode et al., 1976).

Besides that, the arguments that support the capitalization of human capital as asset, IFRS Conceptual Framework, states there is no need for expenditure in order to make an asset (p.4.14). Although those, who oppose the human capital capitalization, i.e., recognition as assets, because the human capital is lack of expenditure activity. This IASB argument makes human capital a candidate for recognition in the statement of financial position. Lev and Schwartz (1971) and Samudhram et al. (2008) defend that human capital expenditures such as employee training programs, orientation courses etc. are examples for expenditures that have been made in order to create future returns, i.e., to receive better service potential although they are treated as expenses in the period that they have occurred. They conclude that the ability of human capital to create future earnings is an asset characteristic of human capital.

IAS 41, which is about agriculture, could be helpful to develop a theoretical design for human capital recognition. Unlike other intangible asset classes, IAS

[9] Statement of Financial Accounting Concepts No.6

41 covers living animals and plants, which have similar properties like human resources such as their importance as a means of production process, to have improvable production capacity etc. Although you could legally own living animals and plants and, for living animals and plants, there is always risk of death or obsolescence and living animals lose their productivity without the impact and/or "control" of the owner of them. The standard requires firms to recognize agricultural assets, similar to other standards for different asset classes, to measure fair value or costs of the assets reliably (p.10).

2.3.2. Liabilities definition

IFRS Conceptual Framework defines liability as "a present obligation of the entity arising from past events, the settlement of which is expected to result in an outflow from the entity of resources embodying economic benefits" (4.4.b.). FASB Concepts Statement 6 explains that "liabilities are probable future sacrifices of economic benefits arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events" (p.35).

Similar to the advocates of human capital recognition as assets, Theeke (2005) defends that HR is important for firms and have to be capitalized. However, he suggests the recognition of human capital as liabilities under the statement of financial position rather than assets. He supports his proposition firstly by the failure of accountants to develop a commonly accepted method for capitalization as assets even after considerable amount of studies. So, he suggests a new direction for the human resources accounting, capitalizing human resources as liabilities. Theeke (2005) summarizes the reason to treat the human resources as liabilities as follows:

> "*...workers are the owner of human capital, which they loan to the companies. Companies borrow human capital because they need it to meet the demand for the goods and services... Companies do not own the human capital that they borrow any more than banks own the demand deposit they borrow...The owner could remove either at any time....If we could measure the amount of liability at the time that the*

company incurred to acquire the human capital that a worker loaned to a company, ...and create a corresponding liability account called Borrowed Human Capital. ...there would to be an asset account called ΄Unassigned Human Capital`...." (pg.53)

Also, Garcia-Parra et al. (2009) show that non-fulfilment of perceived obligations, which could be conceptualized as intangible liabilities by the company, might cause organizational members to retrain from deploying their organizational knowledge in organizational processes..

2.3.3. Equity definition

IFRS Conceptual Framework defines equity as the residual interest in the assets of the entity after deducting all its liabilities (4.4.7). IFRS Conceptual Framework 4.22 states the amount, at which equity is shown in the balance sheet, is dependent on the measurement of assets and liabilities. FASB Concepts Statement No 6 uses equity term interchangeably with net assets, and defines equity as residual interest in the assets of an entity that remains after deducting its liabilities. FASB definition requires the firm to distribute assets to settle the obligation. A clear equity concept emerges: Equity applies solely to the claim of the current common shareholders (and all other claims are debt)[10].

Both of the prevailing standard sets consider equity as an item dependent on the assets and liabilities. Although there are opposing views about classifying the human capital under assets or liabilities, there is a no direct claim that human capital has to be taken as a part of equity. Whether as a candidate for assets or liabilities class, there are supportive arguments that the human capital has to be recognized under statement of financial position rather than to be reported only. However, accounting has six principal qualitative characteristics determining the borders to recognize a transaction, a resource or an obligation under the statement of financial position: (1) relevance, (2) faithful representation, (3) comparability,

[10] Center for Excellence in Accounting & Security Analysis, "Debt vs. Equity: Accounting for Claims Contingent on Firms' Common Stock Performance"

(4) verifiability, (5) timeliness and (6) understandability (IFRS Conceptual Framework). The next section would briefly define them, and emphasize the *faithful representation*[11]*-reliability trade-off* in the accounting reporting, which directly affects whether or not record an asset or a liability, and the level of aggregation/disaggregation in the accounting reporting in order to reach a conclusion about the possible treatment of human capital.

2.4. Qualitative characteristics of financial statements

In substance, the purpose of accounting reporting is to provide information about the companies through financial statements and also the non-financial information presentation. Accountability and decision usefulness are broadly two views of what should be the objectives of financial statements (Drever et al., 2007; pg.32). Drever et al. (2007) state historically the main objective was the accountability. The IASB 1989 framework defines accountability or, i.e., stewardship as whether management uses the company's resources efficiently in the interests of the ones, who use the company's accounting reporting (p.14). However, as Drever et al. (2007) conclude, there is a shift in the objective of accounting from accountability to decision-usefulness. The IFRS Conceptual Framework explains this view respectively as:

> *"IFRSs apply to all general purpose financial statements. Such financial statements are directed towards the common information needs of a wide range of users, for example, shareholders, creditors, employees and the public at large. The objective of financial statements is to provide information about the financial position, performance and cash flows of an entity that is useful to those users in making economic decisions."* (preface, p.10), and

> *"The Board believes that the financial statements prepared for this purpose meet the common needs of most users. This is because nearly all users are making economic decisions."* (Introduction)

[11] Instead of *Faithful Representation* term *Reliability* term had been used in the 1989 IASB framework. Now both terms will be used in the text interchangeably (IFRS Conceptual Framework BC3.20.).

The IASB 1989 framework categorizes the users of financial statements as present and potential investors, employees, lenders, suppliers and other trade creditors, customers, governments and their agencies and the public in IASB framework (p.9). However, IFRS Conceptual Framework distinguishes the users as primary users and other parties and, in OB8, it specifies that "*The Board, in developing financial reporting standards, will seek to provide the information set that will meet the needs of the maximum number of primary users*." The IFRS Conceptual Framework defines primary users as existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity (OB2). FASB categorizes the users as present and potential investors and creditors (FASB Concepts Statement No.1).

Qualitative characteristics are the attributes that make the information provided in financial statements useful to the users defined in the IFRS Conceptual Framework, QC4. The fundamental qualitative characteristics are the *relevance and faithful representation* (QC5). The remaining four qualitative characteristics are comparability, verifiability, timeliness, and understandability put in the picture in order to enhance the usefulness of financial information (QC4). FASB Concepts Statement No 2 (SFAC No.2), issued in 1980, also states that most important characteristic of information is the usefulness for decision making. SFAC No.2 makes a hierarchical categorization for the qualitative characteristics for the accounting. The *understandability* is classified under the user-specific qualities class, *relevance* and *reliability* are classified under the primary decision-specific qualities class respectively, and *comparability* and *consistency* are classified under the secondary decision-specific qualities class respectively. The common characteristics under two prevailing standards would be respectively defined and analyzed: (1) understandability, (2) relevance, (3) faithful representation and (4) comparability.

2.4.1. Understandability

The IFRS Conceptual Framework defines the understandability such as classifying, characterizing and presenting information clearly and concisely makes it understandable (QC30). FASB grounds the understandability on the reasonable knowledge of users about business and economic activities and their ability to read a financial report (SFAC No.1). However, as explained in IFRS Conceptual Framework, the users include present and potential investors, employees, lenders, suppliers and other trade creditors, customers, governments and their agencies and the public and those parties have different information needs and there are differences between the users' accounting and financial knowledge (OB2, OB8 & OB10). It is not possible for all users to understand all of the reported information. Then, a question emerges about the understandability characteristic of financial statements: what should be the level of information to be included in the financial statements? IFRS Conceptual Framework answers this as:

> *"Some phenomena are inherently complex and cannot be made easy to understand. Excluding information about those phenomena from financial reports might make the information in those financial reports easier to understand. However, those reports would be incomplete and therefore potentially misleading."* (QC31), and
>
> *"Financial reports are prepared for users, who have a reasonable knowledge of business and economic activities and who review and analyzes the information diligently. At times, even well-informed and diligent users may need to seek the aid of an adviser to understand information about complex economic phenomena."* (QC32)

Above statements underline the relevance of information rather than the reliability to include it in the financial statement. This promotes human capital capitalizers on their thesis about the importance of human capital because of its relevance.

2.4.2. Relevance

The IFRS Conceptual Framework states that the relevant financial information is capable of making a difference in the decisions made by users.

Information may be capable of making a difference in a decision even if some users choose not to take advantage of it or are already aware of it from other sources (QC6). FASB SFAC No.2 emphasizes that the relevant accounting information is capable of making a difference in a decision by helping users to make predictions about the outcomes of past, present, and future events or to confirm or correct prior expectations (page 5). Drever et al. (2007) clarify that relevance why the information is needed and classify relevance as often the first test applied to information.

Also, SFAC No.2 categorizes the relevance as one of the primary qualities of accounting information. However, the relevance cannot surpass all other qualitative characteristics. The dilemma for usefulness of information because of its relevance is limited by two concepts: faithful representation and materiality of information. Firstly, financial information needs to not be a prediction or forecast itself in order to have predictive value (QC8). Reliable measurement techniques have to be applied in order to include information in the financial statements.

The IFRS Conceptual Framework states that "To be useful, financial information must not only represent relevant phenomena, but it must also faithfully represent the phenomena that it purports to represent." (QC12). Also, the information should have materiality characteristic in order to be included in the financial statements. The IFRS Conceptual Framework explains that the information is a material if omitting it or misstating it could influence decisions that users make on the basis of financial information about a specific reporting entity (QC11). However, the materiality provides a threshold or cut-off point rather than being a primary qualitative characteristic of information (QC11).

2.4.3. Faithful representation

The IFRS Conceptual Framework describes that, in order to be a perfectly faithful representation, a depiction should have three characteristics; it should be complete, neutral and free from error (QC12). A complete depiction includes all information necessary for a user to understand the phenomenon being depicted,

including all necessary descriptions and explanations (QC13); a neutral depiction is without bias in the selection or presentation of financial information (QC14); and free from error means that there are no errors or omissions in the description of the phenomenon and the process used to produce the reported information has been selected and applied with no errors throughout the process (QC15), and information must be complete within the bounds of materiality and cost (QC16). FASB SFAC No.2 states accounting information is reliable to the extent that it is verifiable, is a faithful representation and is reasonably free of error and bias. To sum up, SFAC No.2 explains that to be reliable, accounting information must include verifiability, representational faithfulness, and neutrality properties (page 6). Also, SFAC No2 includes reliability under the primary qualities of accounting information.

2.4.4. Comparability

The IFRS Conceptual Framework states the users must be capable of comparing the financial statements of an entity through time and also they must be capable of comparing different entities (QC20). FASB SFAC No.2 explains that the information is useful if it can be compared with similar information about other enterprises and with similar information about the same enterprise for some other period or some other point in time (page 6).

This characteristic is more about the standardization of accounting reporting. However, this must not be misunderstood and the need for comparability should not be confused with mere uniformity (IFRS Conceptual Framework, QC23). Relevance and faithful representation are the determinative characteristics on the need for comparability characteristic of accounting information. If there is change for a transaction or an event, it is not appropriate for an entity to report in the same manner with preceding reporting periods, and also excluding a new transaction or event in order to keep accounting information unchanged (IFRS Conceptual Framework, QC23).

SFAC No.2 supports that the comparability is not a quality of information such as relevance and reliability but it is rather a quality of the relationship between two or more pieces of information. SFAC No.2 warns that improving comparability may weaken the relevance or reliability if, to secure comparability between two measures, one of them has to be obtained by a method yielding less relevant or less reliable information.

As a conclusion, for the common four qualitative characteristics of accounting information, both standard set approve that the need of user is the most important determinant of accounting reporting and the relevance and faithful representation are the fundamental qualitative characteristics. The next section briefly defines the faithful representation-relevance trade-off[12] or, i.e., balance concept, and generally examines literature about human capital reporting through the faithful representation -relevance trade-off concept.

2.4.5. Faithful representation-relevance balance (trade-off)

The IASB 1989 framework states about the timelines of accounting information:

> *"If there is undue delay in the reporting of information, it may lose its relevance. Management may need to balance the relative merits of timely reporting and the provision of reliable information. ... Conversely, if reporting is delayed until all aspects are known, the information may be highly reliable but of little use to users, who have had to make decisions in the interim. In achieving a balance between relevance and reliability, the overriding consideration is how best to satisfy the economic decision-making needs of users."* (p.43)

The IFRS Conceptual Framework explains that a balancing, or trade-off, between the qualitative characteristics is necessary, and denotes that the aim is to achieve an appropriate balance among the characteristics in order to meet the objective of financial statements using professional judgment (p.45). IFRS

[12] Reliability-relevance trade-off

Conceptual Framework also contains arguments that support the need for a balance between relevance and faithful representation, and states:

> *"... First, identify an economic phenomenon that has the potential to be useful to users of the reporting entity's financial information. Second, identify the type of information about that phenomenon that would be most relevant if it is available and can be faithfully represented. Third, determine whether that information is available and can be faithfully represented. If so, the process of satisfying the fundamental qualitative characteristics ends at that point. If not, the process is repeated with the next most relevant type of information."* (QC18), and

> *"Information must be both relevant and faithfully represented if it is to be useful. Neither a faithful representation of an irrelevant phenomenon nor an unfaithful representation of a relevant phenomenon helps users make good decisions."* (QC17)

FASB SFAC No.2 indicates that reliability and relevance often impinge on each other; reliability may be influenced when an accounting method is changed to gain relevance, and *vice versa* (p.90). SFAC No.2 points out whether there is a net gain to users of the information obviously depends on the relative weights attached to relevance and reliability. SFAC No.2 also specifies that the accounting information must attain some minimum level of relevance and also some minimum level of reliability if it is to be useful. Beyond those minimum levels, sometimes users may gain by sacrificing relevance for added reliability or by sacrificing reliability for added relevance, and some accounting policy changes will bring gains in both (p.133).

Kirk (1991) and Jenkins and Upton (2001) explain that there should be a balance between the relevance and reliability, which means that certain level of relevance is essential for reliability and certain level of relevance is essential for relevant information to be useful. Rowbottom (1997) specifies that the inclusion of intangibles in financial reports depends on a trade-off between relevance and reliability, and the information about intangibles is relevant to decision making. However, this causes reliability problems, and he expresses that the current objective of accounting standards is to find a balance between those two paradigms. Drever et al. (2007) also indicate that relevance of information may override reliability in some cases, but in all cases reliability should be considered

along with relevance. Arvidsson (2011) supports that the comparability and reliability are vital in developing information that is both relevant and useful.

Brummet et al. (1968a) denote that a favorite cliché in annual reports is "Our employees are our most important asset". However, as they underline, the financial statements do not include any information about that "most important asset". They conclude that users of financial information could not observe that relevant information. Flamholtz (1972) agrees that the failure to measure the economic value of people may lead managers to ignore their decisions regarding the value of employees. He concludes that this problem directly originates from the managers' tendency to base their decisions on the quantifiable variables. Rhode et al. (1976) explain that the human resources might be more important than physical or financial assets, and the financial statements could be informative if they reflect their value. They corroborate that the accounting information lacks of relevance and consequently the usefulness because of neglecting the human resources. Dittman et al. (1976) define the problem as lack of relevance by indicating the improper matching of revenues and related expenses. They comment that expenses of recruiting, hiring, training and other costs of human capital in the period they occur lower the present profits and exaggerate the future profits that would be brought to the company by those employees. Harvey and Lusch (1999) point out that the knowledge work is increasing and firm's only appreciable asset is human capital, and they conclude that human capital is usually ignored despite its relevance. Rennie (1999) indicates that the knowledge-based companies suffer from the failure of recognizing knowledge assets because of the traditional accounting implications in terms of relevance. Cañibano et al. (2000) explain that the source of economic value is especially the creation and manipulation of intangibles, which are not completely reported under financial statements. They emphasize that the financial statements are less informative because of this reason, and they also underline that reliability focus harms the relevance, which could be realized by the difference between market and book values of companies. However, they state that there is a trend towards the relevance concern. Lev (2001) advocates that the accounting information is

becoming more irrelevant because of ignoring the intangibles, and he states that this could be observed in the high levels of market-to-book ratios. He claims that a new system that will cover the knowledge assets is needed.

Rodov and Leliaert (2002) state that today's accounting systems are still dominated by the traditional factors of production and ignore the importance of knowledge. However, they also conclude that there is a need to capture the value of knowledge capital and management would rediscover the relevance of human capital. Garcia-Ayuso (2003) includes the lack of relevance consideration under the problems with accounting information and states that this problem occurs because of the conservatism in accounting arising from the concerns about the reliability. Mouritsen et al. (2004) denote that the value relevance of traditional annual reports is declining and non-financial information is related with the market value. They also suggest that the intellectual capital statements can be used to bridge the gap between managers and investors by the informing investors about how intellectual capital creates future value.

Seetharaman et al. (2004) suggest that, while physical assets experience diminishing returns, the knowledge assets can increase the returns, and the authors also support the relevance of human capital by remarking that the resignation of certain key employees such as CEOs can be observed due to the fall of stock prices. Chen and Lin (2004) agree that the financial statements compiled according to the GAAP do not satisfy the purpose of providing useful information to the investors, because they do not disclose human capital. Sonnier (2008) points out that the relevance of accounting reports has been declining because IC components such as human capital, organizational capital and relational capital are not accounted in the traditional accounting model, and he also determines that this decline is more significant for high-technology and service-oriented firms. It is also stated that, if an organization is more reliant on its stock of IC, its financial accounting would be less useful. Skinner (2008) mentions that the economy has changed in a way that the conventional financial statements have become less relevant because of not recognizing knowledge assets, and that this fall has an increasing trend. Andrikopoulos (2010) affirms that the knowledge capital value

is value relevant because of their importance in today's economic environment. Mitchell (2010) represents that the companies have given more importance to knowledge as of the late 20th and early 21st centuries, but the accounting rules fail at recognizing the knowledge assets and this lowers the value relevance of financial statements.

Flamholtz et al. (2002) group the HR accounting (HRA) studies in five main stages such as:

(1)Derivation of basic HRA concepts (1925-1967): Scott (1925) and Paton (1962) provided support for treating people as assets and accounting for their value. Hermanson (1964) described a model for measuring the human resource value in reports.

(2)Basic academic measurement research developing measurement models (1968-1970): Brummet et al. (1968a), Brummet et al. (1968b), Flamholtz (1969) and Brummet et al. (1969)-Brummet et al. (1968a) is the first study that uses "Human Resources Accounting" and all of these studies support the human resource reporting because of its relevance (Bullen and Eyler, 2010).

(3)Significant academic research and growth (1971-1977): It was a period of rapid growth of interest in HRA especially in Western world, Australia and Japan. The most prominent studies were carried out by Elias (1972), Hendricks (1976), and Acland (1976).

(4)Declining interest in HRA (1978-1980): Because of complexity for calculation of HR values, a decline was observed.

(5)Resurgence of interest in HRA (1981-still): Basic reason behind this upward trend is the growing importance of knowledge assets in the economy. (p.948-951)

As summarized by Flamholtz et al. (2002) above, there has been a growing interest in HR accounting literature. This could be related to the growing importance and concern of relevance about HR. Flamholtz (1971) remarks that the

attempts towards human asset accounting would improve the management of organizations. Rhode et al. (1976) express that the human resource data could be beneficial for the investors by providing them with new and accurate data about the present state of organizations, and the authors also indicate that it could help managers through providing information about their employees. Craft and Birnberg (1976) state the relevance of information is gaining importance and this could be observed from the implications such as inflation accounting. Moreover, they expect that human resource accounting would become a part of audited external reports in a short time. Rowbottom (1997) signifies that the measurement of HRA is said to aid internal decision-making and especially external decision-making by allowing investors to accurately assess a firm's performance and its future prospects. Cañibano et al. (2000) indicate that the human resources have direct impact on companies' profits and future performance and HR have to be reported by considering the relevance of their importance.

Jenkins and Upton (2001) underline the increasing importance of relevance by stating that that, in a perfect world, financial statements would include all items that provide decision-useful information about their values. Stolowy et al. (2001) comment the process and outcome of IASB standards are significantly influenced by the Anglo-American accounting approach, which theoretically emphasizes the relevance rather than the reliability. Since 1970's, FASB allows current cost measurement, which increases the relevancy of financial statements rather than historical cost (Zeff, 2007). Stolowy et al. (2001) also indicate that the reluctance of Continental-European countries to adopt IAS could be explained by the phenomenon that those countries are supposed to emphasize reliability, objectivity and relevance. Lev (2002) proposes that size and number of knowledge-based firms are increasing and this makes measurement, management and reporting of knowledge assets so relevant.

Bukh (2003) examines disclosure of information on IC for Danish firms' initial public offerings (IPOs) for years 1991 and 1999, and confirms that there is an increasing trend in IC disclosure and this is evidence about the shift towards concern over relevance of information. Landsman (2007) stated that the relevance

and reliability impact of assets' and liabilities' fair valuation would be understood in subsequent years. Daske et al (2008) specify that the mandatory adoption of IFRS make European accounting more capital-market oriented, which could be interpreted as a focus shift towards relevance of information. Samudhram et al. (2008) assert that the information on human resources are value relevant because it influences the decisions of certified public accountants and information on human capital lead to better forecasts of net income. Sonnier (2008) adds that FASB acknowledged that individual companies will need to determine their own appropriate, useful and relevant disclosures. Bullen and Eyler (2010) support their view by exemplifying the recent developments for FASB such as complex measurement techniques like fair value of assets. They interpret those developments such that human resource accounting would be used in external financial reporting in future. Mir and Singh (2011) commentate that the strong growth of International Financial Reporting Standards (IFRS) is an indication that future financial reports may include non-traditional measures such as human resource accounting methods by the developments in complex measurement techniques such as fair value accounting.

Besides those arguments stated above about the accounting implications' shift towards relevance, there also is evidence about the analysts' use of intellectual capital in their reports. Garcia-Meca (2005) showed that the information about the intellectual capital is widely reported to the financial analysts in order to improve the quality of their reports. Nielsen et al. (2006) state the analysts' reports about knowledge-intensive firms indicating that aspects concerning the training and education of employees all appear as relevant factors. They also indicate that, in a world of increasing technological development, the firm performances are better reflected if non-financial indicators including IC are also represented. Dahmash et al. (2009) investigate the IC reporting for Australian companies about the identifiable intangible assets by using Ohlson (1995) methodology of valuation in order to test the relevance-reliability trade-off for years 1994-2003. They find out that the reports are value-relevant but not reliable.

As stated above, the literature agrees the relevance level in accounting reports shows a decline. Also, this is explained by the increase in the relative importance of intellectual capital, especially for human capital, for firms. Also, authors generally agree that although accounting information requires both relevance and faithful representation as fundamental qualitative characteristics, accounting standards are more relevance-concerned by the impacts of Anglo-American culture and growing importance of user needs on information. Besides that, the authors also agree on the need for human capital reporting in order to increase the relevance of accounting information through satisfying the user needs. The next section examines the existing measurement techniques for human capital, determines the industry, in which the value of human capital would be measured, explains the reasons of selecting that industry to study, briefly summarizes the conditions for the selected industry, and concludes on the appropriate technique of measuring the human capital for the selected setting.

CHAPTER 3

HUMAN RESOURCE ACCOUNTING

3.1. Measurement/reporting techniques

In order to record the human capital in the asset class, first step is to determine the measurement/reporting technique for human capital of the organization. Human capital as an intellectual capital is subject to diverse techniques applicable for intellectual capital measurement. Although different techniques exist to record human capital such as the remaining intellectual capital items, all techniques have both advantages and disadvantages. This section would firstly cover the existing categories for techniques and methods to quantify and measure human capital then define sub-categories classified under those main categories and lastly state the advantages and disadvantages associated with those techniques. Authors that deal with measurement techniques for intellectual capital items, agree on five main categories to classify those techniques:

(1)Scorecard methods (SC) (Rodov and Leliaert, 2002; Snyder and Pierce, 2002; Martin, 2004; Sveiby, 2007; Choong, 2008; Martens, 2009; Hoscanoglu, 2010; Mitchell, 2010)

(2)Market capitalization methods (MCM) (Rodov and Leliaert, 2002; Abeysekera, 2003; Steenkamp, 2004; Martin, 2004; Ortiz, 2006; Sveiby, 2007; Hoscanoglu, 2010)

(3)Return over (on) assets (ROA) methods (Rodov and Leliaert, 2002; Steenkamp, 2004; Martin, 2004; Ortiz, 2006; Sveiby, 2007; Choong, 2008; Hoscanoglu, 2010)

(4)Direct intellectual capital (DIC) methods (Rodov and Leliaert, 2002; Abeysekera, 2003; Steenkamp, 2004; Martin, 2004; Ortiz, 2006; Sveiby, 2007; Hoscanoglu, 2010)

(5)Financial method of intangible assets measurement (FiMIAM) (Rodov and Leliaert, 2002; Steenkamp, 2004; Sveiby, 2007)

The following chapters would briefly disaggregate the main categories mentioned above into sub-categories, and point out the pros and cons of those sub-categories in order to choose the most appropriate method for this study.

3.1.1. Scorecard (SC) methods

Martin (2004) and Hoscanoglu (2010) indicate that the scorecard methods identify various components of IC and use scorecards or graphs to report indicators and indices. Hoscanoglu (2010) states that the scorecard (SC) methods are similar to direct intellectual capital (DIC) methods except that no monetary estimation is made for IC. Martens (2009) emphasizes that the SC models are achieved by focusing management attention on measures of activities and processes relevant to organizations' strategic context, and also underlines that there is a need for reliable procedures to develop indicators and indices.

Regarding the advantages of SC methods, Sveiby (2007) states that they can create a more comprehensive picture of an organization's status than financial metrics and they can be easily applied at any level of an organization similar to DIC methods. Moreover, he also concludes that SC methods can measure closer to an event and so allow faster and more accurate results than pure financial measures. Sveiby (2007) and Hoscanoglu (2010) state the SC methods are very useful for non-profit organizations, internal departments and public sector organizations as well as the environmental and social purposes, because they do not measure IC in terms of monetary value. Sveiby (2007) specifies that the SC methods have disadvantages; the indicators are contextual, i.e., event or organization-specific and this makes the comparisons very difficult. He also reminds that, because of its non-financial nature, it is hard for potential users, who are accustomed to financial perspectives, to comply with the SC methods. The

most widely used SC methods are separately analyzed below in their chronological order.

3.1.1.1. Balanced scorecard (BSC)

Sveiby (1997) and Hoscanoglu (2010) accept that the balanced scorecard (BSC) is a method firstly introduced in 1992 by Robert Kaplan and David Norton. Kaplan and Norton issued a book about this method in 1996 and enhanced the details for the method. This was not the first attempt for measuring non-financial performance of organizations such as customer satisfaction, cycle rates etc. (Hoscanoglu, 2010). However, the balanced scorecard is based on double-loop learning (Martens, 2009). The method uses the information provided by the selected measures to drive changes in the measures themselves.

This method analyzes a company's performance through the indicators covering four major focus perspectives: (1) financial perspective, (2) customer perspective, (3) internal process perspective, and (4) learning perspective. The indicators are based on the strategic objectives of the firm (Sveiby, 1997; Rodov and Leliaert, 2002; Choong, 2008; Martens, 2009; Hoscanoglu, 2010; Mitchell, 2010). As stressed by Kaplan and Norton (1996), the balanced scorecard is a measuring system using qualitative indicators having causal relationship with the strategic objectives of the company. Mitchell (2010) expresses that there is a similarity between balanced scorecard and Skandia Market Value Scheme (Scandia Navigator), which is also a SC method for measuring IC, in terms of the measurement perspectives, but balanced scorecard has a strong focus on innovation in learning and growth and values the importance of knowledge workers for the company.

Hoscanoglu (2010) classifies the main strength of the balanced scorecard as its simplicity to apply, which enables companies to use it easily. However, as it is explained above, it is company-specific and this makes it hard to make comparative analysis between the companies, and also decreases its repeatability (Martens, 2009; Hoscanoglu, 2010). Besides that, in terms of its potential ability

to be used for this study to measure HC, it provides non-financial information rather than financial value. Because of those facts, this method is not an appropriate candidate for this study to measure human capital.

3.1.1.2. Intangible asset monitor (IAM)

Intangible asset monitor (IAM) is a system based on Sveiby (1997). It aims to value the intangibles of organizations, which have few tangible assets and mostly work on knowledge operations. Snyder and Pierce (2002) state that the methodology developed by Sveiby (1997) recommends an accounting perspective, in which the traditional financial statements are used together with non-financial measures for intangible assets. Sveiby (1997) defines intangibles under three-leg classical categorization: internal structure, external structure and professional competence. Bontis (2001) stated that Sveiby recommends replacing the traditional accounting framework with a new framework that contains a *knowledge*-perspective. Sveiby (1997) categorizes three indicators, namely *growth and renewal*, *efficiency* and *stability*, for each of the intangible asset classes explained above. Then, Sveiby (1997) proposes to classify employees such as professionals and support group. Bontis (2001) enlightens that Sveiby uses term "professionals" in order to define competent personnel, who create value and should be measured. The last step in Sveiby's (1997) methodology is to find values for indices defined under the three indicators of *growth and renewal*, *efficiency* and *stability*. Hoscanoglu (2010) expresses that IAM focuses on the risks and sustainability, and this is an advantage of the technique. However, similar to BSC, IAMs are also organization-specific, which decreases its usability, because this does not enable analysts to make comparisons based on IAMs' results. Besides that, as Snyder and Pierce (2002) underlines without relating to a system of appropriate financial feedback, it may not be possible for IAM technique to be widely used. To sum up, this is also not an appropriate technique for this study to measure HC.

3.1.1.3. Skandia Navigator™ (SN)

Skandia is considered the first large company to have made a truly coherent effort at measuring knowledge assets (Bontis, 2001). Skandia first developed its IC report internally in 1985, and became the first company that issued an IC addendum accompanying its traditional financial report to shareholders in 1994 (Bontis, 2001; Snyder and Pierce, 2002; Martens, 2009). Leif Edvinsson, the chief architect behind Skandia's initiatives, developed a dynamic and holistic IC reporting model called the Navigator (Bontis, 2001; Snyder and Pierce, 2002; Martens, 2009). The studies of Edvinsson (1997) and Edvinsson and Malone (1997) are the ones that introduced the Skandia Navigator™ into the academic literature. According to Skandia's model, the hidden factors of human and structural capital comprise the intellectual capital when added together (Bontis, 2001). The Skandia IC report uses up to 91 new metrics in addition to 73 traditional metrics to measure five areas of focus: financial, customer, process, renewal and development, and human capital (Bontis, 2001; Rodov and Leliaert, 2002; Snyder and Pierce, 2002; Martens, 2009; Hoscanoglu, 2010). However, Edvinsson (1997) and Edvinsson and Malone (1997) recommend 112 metrics in the universal IC report that they designed (Bontis, 2001; Martens, 2009). The Skandia Navigator™ finds a balance between financial and non-financial issues. Also, it is a balance between information on past financial performance, information about today, including human capital, processes and about tomorrow's renewal and development (Hoscanoglu, 2010).

The Skandia Navigator™ is one of the most important tools in the measurement of intellectual capital. The Skandia Navigator™, as previous SC methods mentioned above, does not assign monetary value to the IC items. However, it uses proxies to track trends in the assumed value added (Martens, 2009). Those, who oppose the usefulness of Skandia Navigator™, claim that the method follows a balance sheet approach, i.e., provides only a snapshot in time, so it cannot represent the dynamic flows of an organization; for example, it presumes human capital as sitting in front of their computers and end up investing

knowledge into that computer (Bontis, 2001; Martens, 2009). These disadvantages of the method stated above, especially its measurement of human capital in terms of non-monetary values, cause the Skandia Navigator™ not to be an appropriate candidate for this study to measure human capital.

3.1.1.4. Intellectual capital index™ (IC-index)

Göran Roos and Johan Roos created the IC-index™, and the model was firstly used by Skandia Insurance Company in 1997 (Hoscanoglu, 2010). The IC-index™ is a second generation method that combines IC in one consolidated index and indicates the relationship between the changes in IC and market (Roos et al., 1997; Bontis, 2001; Rodov and Leliaert, 2002; Martens, 2009; Hoscanoglu, 2010). Roos et al. (1997) explain that IC-index ™ attempts to consolidate the various individual indicators into a single index and synthesizes strategy, non-financial measurement (e.g. BSC), finance (e.g. economic value added and firm valuation) and management value added (Rodov and Leliaert, 2002). In order to apply IC-index ™ as a measurement tool, organizations firstly have to identify indicators of capital as follows; human capital and structural capital (relationship capital e.g. relationships with customers, organization capital e.g. culture of organization and renewal and development capital e.g. R&D). Then, each indicator is assigned a numerical value based on their current position, the importance of indicators is weighted and those weighted values are consolidated in one index (Martens, 2009; Hoscanoglu, 2010).

Although the IC-index ™ is a step taken forward because it allows managers to understand the effects of a particular strategy on the IC of a company and allows managers to analyze their organizations' IC value within years, it is not applicable for comparisons among companies because the IC-index is context-specific and depends on value adjustments based on subjective judgments. Besides that, it provides only a single value for the IC of organizations, which makes it inappropriate for using in this study for measuring and recording human capital.

3.1.2. Market capitalization methods (MCM)

Rodov and Leliaert (2002), Steenkamp (2004), Martin (2004), Ortiz (2006), Sveiby (2007), and Hoscanoglu (2010) explain that the market capitalization methods (MCM) calculate the intellectual capital as the difference between the organization's market capitalization and stockholders' equity; the excess of the company's market capitalization over stockholders' equity is its intellectual capital. Hoscanoglu (2010) expresses that the MCM is useful for illustrating the financial value of intellectual capital and are helpful in comparing organizations within the same industry. Sveiby (2007) also specifies that, similar to return on assets (ROA) Methods, MCM is useful in merger & acquisition situations and for stock market valuations because they offer monetary values and they can be used for comparisons between companies within the same industry.

However, Sveiby (2007) underlines the common disadvantages of two classes of methods by stating that, by translating everything into money terms, they can be superficial; some of MCM are of no use for non-profit organizations, internal departments, and public sector organizations. Steenkamp (2004) indicates that the difference between market value and book value is only residual and this is the main weakness of this method. The study provides two criticisms for the method. First, the market value is not an appropriate and objective resource to be used as a benchmark for IC because market prices may be speculative. Second, the book value for organization may also be misleading because of the factors such as undervaluation of tangible and financial assets. Rodov and Leliaert (2002) also discourage the use of this method because the part of difference between book and market value may still need to be explained by something like "market sentiment", a correction factor or weight, with which the value of intangibles is adjusted. Besides, Hoscanoglu (2010) adds that MCMs do not provide any information about the individual components contributing to IC. In sum, because of the reasons stated above, the MCMs are not appropriate for this study to calculate the value of human capital. Although there are several motives that

discourage the use of MCMs for this study, the widely used MCMs are briefly explained below.

3.1.2.1. Tobin's q

James Tobin, a Nobel-Prize winning economist at Yale University, invented the ratio called as Tobin's q in 1950s. It is calculated by dividing total market value with replacement value of physical assets (Wilkins and Hoog, 1997; Snyder and Pierce, 2002; Hoscanoglu, 2010). Tobin's q is used to reflect the value the market places on items not on the balance sheet, part of which are knowledge assets. The Tobin's q is usually proposed as a method of avoiding the depreciation issue mentioned in Calculated Intangible Value (CIV) method (Snyder and Pierce, 2002).

Snyder and Pierce (2002) and Hoscanoglu (2010) explain that if Tobin's q of an organization is greater than 1 as well as higher than its competitors, it indicates that the organization has an advantage over its competitors because of its higher IC value and it is presumed to produce higher profits than its competitors. It is most useful in making comparisons between the firms that are in the same industry and similar level of hard assets (Snyder and Pierce, 2002). The replacement costs are used for assets rather than the historic costs, and this enables Tobin's q ratio to overcome some difficulties of market-to-book ratio arising from the fact that historic book values are misleading. However, as stated before for all MCM, the Tobin's q is not a useful tool for this study and it also has disadvantage of providing only a simple ratio rather than a monetary value.

3.1.2.2. Market-to-book value

Stewart (1997) introduces the market-to-book value term into the literature. Sveiby (2007) indicates that the value of intellectual capital is considered to be the difference between the firm's stock market value and the company's book value.

However, as Hoscanoglu (2010) underlines, the market values are subject to fluctuations whether the organization is not subject to major changes, i.e., depending on outside factors such as speculative investments or sector/index-specific fluctuations and also book values may be misleading because of the undervaluation and/or miscalculation of tangible assets. Also, it provides a single value for all IC categories. All these facts make it inappropriate to use CIV in this study.

3.1.3. Return over (on) assets (ROA) methods

Rodov and Leliaert (2002), Steenkamp (2004), Ortiz (2006), Sveiby (2007) and Hoscanoglu (2010) state the return on (over) assets (ROA) method is the ratio of a company's average pre-tax earnings over three to five years divided by the average tangible assets over the same period of time. Then, the ratio is compared with the industry average to calculate the difference. If the difference is zero or negative, then the company is assumed to have no excess IC when compared to its industry. But, if the difference is greater than zero, then the company is assumed to have excess IC when compared to its industry. In the following step, that excess ROA is multiplied by the company's average tangible assets to calculate the average annual excess earnings. Then, the result is divided by the company's average cost of capital in order to reach company's estimated IC value.

Rodov and Leliaert (2002) express that the main advantages of this method are the ease-of-use of the formulae and the availability of all required information in historical financial statements. Sveiby (2007) and Hoscanoglu (2010) specify that ROA methods share the similar advantages with market capitalization methods since both provide monetary evaluation and both are useful in merger and acquisition decisions, as well as stock market valuations. However, Rodov and Leliaert (2002) indicate that, similar to other single-figure IC measurements, this method is fast and simple but does not provide insights that management requires to proactively manage their IC. Moreover, they also point out the backward-looking feature of this method, which decreases its exploratory power

of future performance. Steenkamp (2004) outlines that the concern raised in this method about what a fair industry average would be created skepticism about the objectivity of any industry average to be used in this method. Sveiby (2007) and Hoscanoglu (2010) state the disadvantages of ROA methods including the same disadvantages of market capitalization methods that are based from the financial evaluation. They also underline that most of ROA are not applicable for non-profit organizations, internal departments and public sector organizations. Although, the value found for IC is a general value that includes all three IC categories and it does not provide specific values for each. All the facts stated discourage the use of ROA methods in this study for measuring the human capital. Besides that, the widely used ROA methods are briefly explained below.

3.1.3.1. Value added intellectual coefficient (VAIC™)

Although this method is classified by all authors under ROA methods, Sveiby (2007) interprets that Value Added Intellectual Coefficient (VAIC™) does not quite fit any of the categories. Ante Pulic designed VAIC™ in 1997 in order to measure the efficiency of key resources in organizations. Hoscanoglu (2010) summarizes that, according to VAIC™, there are two major resources that create value added in organizations; capital employed and IC. Then, capital employed is grouped into physical and financial capital and IC is grouped into human capital (HC) and structural capital (SC). Hoscanoglu (2010) explains that *value added* (VA) is the difference between output of the organization, which is the sales revenue, and input of the organization, which refers to everything that comes from outside the organization. Sveiby (2007) denotes the VAIC™ as an equation that measures how much and how efficiently intellectual capital and capital employed create value based on the relationship with three major components: (1) capital employed; (2) human capital; and (3) structural capital. The formula for VAIC™ is as follows:

$$\text{VAIC™} = CEE + HCE + SCE \quad (1)$$

,where CEE refers to capital employed efficiency, HCE refers to HC efficiency, and SCE refers to SC efficiency and. CEE is calculated by the following formula:

$$CEE = VA / CE \quad (2)$$

VA refers to the value added as explained above, and CE refers to the book value of the net assets for firm. The HCE value is calculated by the following formula:

$$HCE = VA / HC \quad (3)$$

VA is same as it is explained in the CEE formula, and HC refers to the total investment salary and wages for firm. Then, the SCE is calculated as follows:

$$SCE = SC / VA \quad (4)$$

In this formula, SC refers to difference between VA and HC, and VA is similar as in the preceding formulae.

The key assumption of the value added IC is that labor expenses are considered as assets instead of costs, but this creates a major problem since the separation of expenses and assets are not clear for human capital salary and wages (Hoscanoglu, 2010).

3.1.3.2. Economic value added (EVA™)

Economic value added (EVA™) was introduced by Stern Stewart as a comprehensive performance measure in 1997 (Bontis, 2001; Rodov and Leliaert, 2002). EVA™ method aims to develop a performance measure that considers all possible ways an organization can gain or lose its corporate value (Hoscanoglu, 2010). EVA™ is calculated by the equation below:

$$EVA = \text{Net Sales} - \text{Operating Expenses} - \text{Taxes} - \text{Capital Charges} \quad (5)$$

Capital charges are calculated as the weighted average cost of capital multiplied by the total capital invested. In practice, EVA™ is increased if the weighted average cost of capital is less than the return on net assets, and vice versa (Bontis, 2001; Tayles et al., 2002; Hoscanoglu, 2010).

Rodov and Leliaert (2002) express that the strong points of this approach are its good correlation with stock price, and a connection between financial planning, budgeting, goal setting and compensation. They also indicate that EVA™ provides a common language and benchmark for managers to discuss value creation. However, EVA™ consists of 164 adjustments, which makes it a complex tool to be used, and also uses book assets relying on historical costs, which gives little indication of current market or replacement cost (Bontis, 2001; Rodov and Leliaert, 2002; Hoscanoglu, 2010). Also, analysis assumes that companies should be run in parallel with the interest of shareholders, but this may not be the objective of organizations.

3.1.4. Direct intellectual capital (DIC) methods

Direct intellectual capital (DIC) methods are used in order to estimate the monetary value of intellectual capital by identifying its various components (Abeysekera; 2003; Martin, 2004; Steenkamp, 2004; Ortiz, 2006; Sveiby, 2007; Hoscanoglu; 2010). Once the components are identified, they can be directly evaluated, measured and aggregated (Steenkamp, 2004; Ortiz, 2006; Sveiby, 2007; Hoscanoglu, 2010). These methods focus on the market assets such as customer loyalty, intangible assets such as patents, technology assets such as know-how, human assets such as education and training, and structural assets such as information systems (Steenkamp, 2004; Ortiz, 2006).

DIC methods can create a more comprehensive image of the organization's IC compared to solely financial methods (Sveiby, 2007; Hoscanoglu, 2010). DIC methods allow separate valuation of IC items and allow a combination of monetary and non-monetary valuations, which provides flexibility in the application of the methods (Hoscanoglu, 2010). However, although it is the most

complex, it is not widely used (Steenkamp, 2004; Sveiby, 2007; Hoscanoglu, 2010). Abeysekera (2003) state that the IC valuations are still not perfected and so it is not easy to apply DIC methods. DIC methods are contextual or, i.e., event-based and which creates difficulties in comparisons (Hoscanoglu, 2010). Despite the negative evaluation of DIC methods stated above, the most important characteristic that differentiates the DIC methods from the previous valuation methods is its ability to make separate valuation of IC components. In order to reach unique monetary value of human capital (HC), the DIC methods are the most appropriate valuation methods. The widely used DIC methods are explained below in their chronological order.

3.1.4.1. Citation-weighted patents

The use of patent data in economic research dates back to the researches of Scherer and Schmookler in 1960s (Hall et al., 2005; Hoscanoglu, 2010). Dow Chemical Company is the pioneer of using patents for measuring IC in practice (Bontis, 2001; Sveiby, 2007; Hoscanoglu, 2010). Hoscanoglu (2010) expresses that a technology factor is calculated based on the patents developed by a firm, and summarize that IC and its performance is measured based on the impact of research development efforts on a series of indices describing the firm's patents such as the ratio of the number or cost of patents to the sales.

The main advantage of using the patents as a data source is that patents contain detailed information on the innovation ability of organizations. However, citation-weighted methods only considers the patents as IC, do not provide any direct information about the other IC items and also there is a lag to granting a patent so citation-weighted methods provide retrospective info (Hoscanoglu, 2010). The method is not appropriate for the valuation of HC because of the facts stated above.

3.1.4.2. Technology broker

Technology broker is an IC valuation method based on the work of Annie Brooking in 1996 (Bontis, 2001; Snyder and Pierce, 2002; Rodov and Leliaert, 2002; Sveiby, 2007; Hoscanoglu, 2010). According to technology broker, IC assets have four components:

(1)*Market assets: They are the market-related intangibles that give a competitive advantage to the organization in the marketplace such as brands, customers and their loyalty, repeat business, backlog, distribution channels, contracts, and agreements such as licensing and franchising (Bontis, 2001; Rodov and Leliaert, 2002; Hoscanoglu, 2010)*

(2)*Intellectual property assets: They are legally protected corporate assets that can be evaluated financially, which include know-how, trade secrets, copyrights, patents, design rights, patents, trade and service marks and enable the organization to maintain its competitive advantage that is created by innovations franchising (Bontis, 2001; Rodov and Leliaert, 2002; Hoscanoglu, 2010)*

(3)*Human-centered assets: They are the knowledge of the employees, including the collective expertise, creativity, problem-solving, capability, leadership, and managerial and entrepreneurial skills. They cannot be owned by the organization (Bontis, 2001; Rodov and Leliaert, 2002; Hoscanoglu, 2010)*

(4)*Infrastructure assets: They are technologies, methodologies, and processes, such as corporate culture, methodologies for assessing risk, methods of managing a sales force, financial structure, databases of information on the market or customers, communication systems such as e-mail and teleconferencing systems, that enable the organization to function (Bontis, 2001; Rodov and Leliaert, 2002; Hoscanoglu, 2010)*

Technology broker method proposes a six-step IC audit, and evaluation of the different types of assets (Hoscanoglu, 2010). The audit process is composed of up

to 20 questions answered by the organization about the IC components in the organization (Bontis, 2001; Rodov and Leliaert, 2002; Sveiby, 2007; Hoscanoglu, 2010). Once the IC audit is completed, the values of IC assets are translated into monetary values (Bontis, 2001; Rodov and Leliaert, 2002; Snyder and Pierce, 2002; Hoscanoglu, 2010). Brooking (1996) offers three methods to calculate the monetary value for the IC identified by the audit (Bontis, 2001; Rodov and Leliaert, 2002; Snyder and Pierce, 2002; Hoscanoglu, 2010; Rahaman et al., 2013; Stanko et al., 2014):

(1)Cost approach: uses the replacement cost of the assets,
(2)Market approach: uses market value of comparable assets,
(3)Income approach: assesses the income-producing capability of the asset (NPV of its net cash benefits)

The main advantage of technology broker is its accessibility. Also, it provides a comprehensive overview of the intangible assets of the organization (Bontis, 2001; Rodov and Leliaert, 2002; Hoscanoglu; 2010). The authors agree on the major problems with technology broker that valuation methods to calculate IC are not completely perfect and audit questions are subjective in nature (Bontis, 2001; Rodov and Leliaert, 2002; Snyder and Pierce, 2002; Hoscanoglu; 2010). However, the valuation methods have to be tested in order to reach the perfect valuation method, and this is not an obstacle to apply technology broker in order to calculate HC of an organization. This study would employ cost approach for contract fees in football industry and market approach for salaries of football and basketball players in order to test the appropriate valuation method.

3.1.4.3. Inclusive valuation methodology (IVM)

Philip K. McPherson developed inclusive valuation methodology (IVM) in 1999, which combines information and monetary value by blending measurement theory and combinatorial mathematics (Hoscanoglu, 2010). The first step is to

create a mathematical model of the business of the organization to simulate various alternative management actions, which provide output performance measures and cost revenue data, while the second step is to define the goals of the organization from the perspective of shareholders and transformed into measurable attributes using a criterion hierarchy. In final step, the output performance measures are used as inputs for criterion hierarchy and overall combined intangible value is calculated (McPherson and Pike, 2001; Hoscanoglu, 2010). Hoscanoglu (2010) specifies that, although IVM offers a comprehensive and accurate solution to measure IC, its application is complex and difficult.

3.1.5. Financial method of intangible assets measurement (FiMIAM)

The FiMIAM method is a combination of direct intellectual capital (DIC) methods and market capitalization methods (MCM) (Sveiby, 2007). Rodov and Leliaert (2002) define the methodology in six steps in their theoretical design. According to this model, a firm's IC consists of human customer and structural classes, and it is based on the overlapping three-leaf model originally developed by Leliaert, who converted Edvinsson's tree structure for IC classes of human, customer and organization capital (Rodov and Leliaert, 2002):

(1) *Combination of human and customer capital: consists of individuals' closeness to customers and the application of their creativity to specific customer needs*

(2) *Combination of structural and customer capital: reflects a company's ability to leverage customers' brands, as well as the value that customers attribute to the firm's brand name*

(3) *Combination of human and structural capital: lies within the knowledge processes*

According to FiMIAM, the value of IC is calculated in six steps as explained below (Rodov and Leliaert, 2002; Steenkamp, 2004):

Step 1: determine the "realized IC" that is the difference between book value and market value

Step 2: identify the relevant components of IC and cluster them according to human, customer and structural classes, on which the model is based

Step 3: assign appropriate coefficients to the IC components, reflecting the relative weight that each component has in the entity's overall IC

Step 4: justify those coefficients

Step 5: calculate the monetary value of the IC components by multiplying their respective coefficients by the total realized IC value

Step 6: add the IC values to the book value creating a new "market value bottom line"

The "market value bottom line" is the attainable market value explained in the formula below:

$$\text{Attainable market value} = \text{Tangible Capital} + \text{Realized IC} + \text{IC erosion} \quad (6)$$

Steenkamp (2004) states that steps 3 & 4 are not explained by Rodov and Leliaert (2002). Rodov and Leliaert (2002) argue that FiMIAM has a big advantage over the MCM because MCM do not attribute the entire difference between book value and market to intangible assets. As explained before, the book values and market values are subject to some problematic facts. The FiMIAM also does not provide a completely objective valuation of IC (Steenkamp, 2004). Moreover, the value provided by this method gives an aggregation of IC components, it is not appropriate to be used for this study in order to measure human capital separately.

3.2. Direct intellectual capital (DIC): appropriate method to record HC

As explained in the sections above, the basic terms regarding the asset definition in both the IFRS Conceptual Framework and FASB are "resource",

“control by the entity”, “result of past event” and “expected future benefits”. HC undoubtedly is a “resource” both for the production and for knowledge creating phases. IFRS Conceptual Framework states that the entities normally obtain assets by purchasing or producing them, but other transactions or events may also generate assets (4.8.) An entity usually gains the ability to control an asset’s future economic benefits through a legal right such as signing a contract. IAS 41 covers living animals and plants, which have similar properties like human resources such as their importance as a means of production process, having improvable production capacity, and etc. The standard requires firms to recognize agricultural assets in order to measure fair value or costs of the assets reliably (p.10). As a conclusion, in order to recognize an item/concept as an asset, there must be sufficient evidence that the item would bring future economic benefits and it should be possible to measure that item reliably in monetary terms.

The IFRS Conceptual Framework describes a perfectly faithful representation; a depiction should be complete, neutral and free from error (QC12). SFAC No.2 explains that, in order to be reliable, the accounting information must include verifiability, representational faithfulness, and neutrality properties (page 6). SFAC No2 also includes reliability under the primary qualities of accounting information.

To sum up, in order to include HC under assets, they should be reliably and separately measured and past information should be applied in order to measure the value of assets. As the methods analyzed above, first of all, SC methods could not be used in order to record HC, because they do not allow financial measurement. MCM, ROA and FiMIAM share the advantages that they allow financial measurement and are easy to apply. However, they also share the similar disadvantages such as they are all subject to stock market valuations, which are speculative in nature. They also do not allow disaggregation of IC components. In order to reach unique monetary value of human capital (HC), the DIC methods are the most appropriate valuation methods, so the NBA basketball players’ values will be analyzed using DIC methods. The next chapter will briefly examine the NBA court and team formation rules, contracts that NBA players are subject to,

and other theoretical background about NBA such as salary cap and minimum contract level, which are used to determine the methodology that will be used in this study.

CHAPTER 4

THEORETICAL BACKGROUND FOR THE FIELD OF STUDY

4.1. The importance of human resources

Historically, the sustainable competitive advantages of companies were based on resources such as property, plant, machines, financial strength for production and/or sales. Companies, who were called as first movers, i.e., companies that invented the product type, were able to dominate the market for a long time because the competitors were unable to imitate the product easily. They were not capable of providing the creativity function needed to copy the product class because of the scarcity of physical resources such as production facility needed, as well as the lack of information about the new product type.

In today's knowledge era and highly competitive work environment, all of the large-sized companies, especially those in high-technology industry, have access to physical resources needed and especially information about the other companies. First mover advantage does not provide economic benefits for a long time. So, due to the financial concerns, firms have to issue new products more frequently. Human resources are the most important assets in any corporate enterprise because competitive business world largely depends upon the quality of creativity function of companies, which is provided by human resources. Because of that, since 1980's, there is tendency towards human resources reporting and companies place their core focus on production operations based on the human creativity. There is a shift from physical assets to resource-based economies. This study aims to discover how the value of human resources could be set, and the new section will cover the factors that affect the wages of employees.

4.2. Factors that affect the value of human resources

The workplace for employees can be called as free market because employees are able to switch to another job without any restriction, the companies and potential employees have access to information about the wages and available benefits provided by companies and the prices. The wages are assumed to be determined by the market based on the supply-demand equilibrium (Seitz, 1976).

The demand for labor is derived from the demand for the ultimate goods and services that the labor is used in order to produce and the supply is the workforce available in the market. Today's economic environment forces companies and workers to professionalization. Professional workers, especially those in high-technology industry, are employed for wages determined by the market (Seitz, 1976; Glinow, 1983). Companies employ workers in large scales and from different worker categories. The questions have to be answered is whether all workers have same importance for the companies and whether their effect on production/creativity are similar. Authors argue that not all employees are seeking for the monetary benefits and human resource accounting should concentrate on effective management of this fact (Bokhari et al., 2012).

As explained before, Seetharaman et al. (2004) define the human capital as all employees, but conclude that the workers in an assembly line are also human capital for the companies, but they are not knowledge workers. Knowledge workers are those, who spend share of their time converting knowledge to value. The worker categories in the companies can be grouped under three main headings such as knowledge, administrative/support and assembly workers.

Knowledge workers are R&D workers, project managers and industrial designers. They are creative side of personnel. The salary of knowledge workers is usually subject to negotiation. Although human capital theory predicts that the wage of workers should be determined by ability/capability of workers multiplied with marginal revenue product of the worker, the knowledge workers can achieve a higher level of wage from the company because the number of those workers is limited and they usually have direct impact on the success of companies. The

surplus between the final wage and marginal revenue product is determined by the potential abilities/capabilities of the worker (Rockerbie, 2013).

Administrative/support category can be sub-grouped under top level management, mid-level managers, accounting staff, human resources department, sales/distribution department and support services such as transportation, communication, security etc. The main characteristics attached to this class could be defined such that they have neither creativity function nor production function. Except the top level and mid-level management, the wage of workers vary neither between companies in the same industry nor between different industries. The ability of the worker does not affect his/her potential wage level too much.

Assembly workers produce the products or directly serve the final customer and do not have creativity function. The technicians for production facilities and the waiters in a restaurant are examples for this category. The wages of this category of workers is also not subject to negotiation. There is fixed level of wage set in the market for this category of workers, which usually equals to the legal minimum wage. The performance of workers does not have a direct impact on the wages.

Companies have to be innovative and competitive in order to sell their products or services in high technology industry and the creative side of companies (i.e. knowledge workers) is a scarce resource. The publicly available information about the wages of human resources in high technology industry is limited, and there is no available data for performance figures of professionals. So, the professional working environment does not provide direct and proper field of study.

Professional knowledge workers are similar to professional athletes in terms of scarcity of resources and the potential direct impact on company/team success. Professional sports may provide a better field of study because of large set of publicly available information about wages and performance statistics. Sports labor markets can be seen as a laboratory whether economic propositions at least have a chance of being true (Kahn, 2000). The next section will detail the similarities and differences between professional business and professional sports,

and will also clarify the pros and cons of using professional sports in field of study.

4.3. Professional business vs. professional sports

Seitz (1976) states that, in a free market, the compensation of professionals and corporate officials, as well as players in professional sports, should be determined by the market. Foster (1915) specified that the motivation of sports industry is to make money, as well as to win games. Kerrick (1980) explains that, in professional wrestling, the first objective is to create money like other industries. He concludes that the jargons used in professional wrestling are similar to professional business. For example; those, who make the most money for the *boss*, are called *top men*, all wrestlers are called *workers*, a wrestler goes into a ring to do a *job*, and wrestlers sell their effort to satisfy the customers' need: the job is an entertainment.

Rosen and Sunderson (2001) express that professional sport is one of the few empirical cases, where the marginal product of a player can be directly assessed, i.e., personal contributions are relatively easy to observe and can be measured from the data on past performances. They also state what we tend to use in professional sports markets and also in other entertainment services such as movies as well as in patent drugs, computer software and investment banking is that the audience-quality gradient is very steep and heavily concentrated on the best contestants, but the unit price-quality gradient is relatively flat.

Rosen and Sunderson (2001) exclusively clarify that sports is labor-intensive and scale economies are what make potential earnings so large. That is usually because of the scarcity of talented players. The explanation of the salary differences is a "personal scale of operations" effect in sports when compared to teaching and most other jobs. They underline that the wage of a teacher is determined by his/her performance in the classroom and the scale of a teacher's personal business is constrained. However, in professional sports, the audience is high in volume and a player's effort is determined in low mark-up but in high-

volume. A teacher or a doctor that uses internet to teach or to make objections might reach millions and earn at least as much as star players.

Kahn (2000) states that, although the professional sports provide a unique research setting because there is no research setting other than sports, where we know the name, face, and life history of every production worker in the industry, the sports industry can be used in order to observe performance impact on wages because there is free-market setting in professional sports. He also concludes that the athletes are motivated by similar forces that affect workers in general and the recent developments in North American sports (NBA, NFL[13] etc.) will provide some additional opportunities to observe economic theories at work. Zimbalist (2003) expresses that, although the professional sports provide different working setting from other businesses, the club owners are the utility or profit maximizers similar to the business owners in different industries.

Rockerbie (2013) mentions that, if factors are scarce and producing more output requires the bidding away of factors, the costs can rise quickly and the supply curve will be steep, which is true for the high technology industries where factors of production are scarce and expensive. This property of high technology industry is similar to the professional sports. He also states that the professional sports industry is not different from any other industry that is operated by business owners; the owners aim to earn profit and the ruthless accumulation of profit guides their business decisions. These industries are not perfectly competitive in nature and there are barriers for new entrants to enter sometimes because start-up costs are high and sometimes there is a restrictive rule for firms to enter. This creates a monopsony, in which the prices of output are not determined by the markets but they are determined by the monopsony and the consumers pay relatively high for the goods and services than they would pay for goods and services in as perfectly competitive industry.

As a conclusion, the professional sports industry is similar to industries like high technology industry, in which there is scarcity of inputs and there is need for firms to employ high talents to sell their products and/or services. These industries

[13] NFL stands for National Football League

are highly competitive in nature; the wages are high because there is scarcity of resources. Moreover, the prices of goods and/or services are high because the industries have barriers preventing the perfect competition. The next section will analyze the historical background of National Basketball Association (NBA) in order to explain the factors that make it a good candidate for a field of study.

4.4. The historical background of NBA

Basketball is attributed to Dr. James Naismith in 1891 in Massachusetts. Originally, the game was played by nine players per team using peach baskets fixed to balconies of the gym, and soccer ball. There was no limit to the number of players in the field between 1891 and 1900; the game was defensive and the scores were low. By 1900, the five-man teams rule, two-point field goals and one-point foul shot rules were set which are still in use (Rockerbie, 2013).

America organized first national basketball championship among men in 1897 and that was followed by the first national basketball championship among women in 1900. They had organized matches between club teams at the Olympic Games in 1904 in St. Louis in order to promote the basketball as a sport worldwide. The world's largest gym in New York's Madison Square Garden has opened its doors to basketball in 1905. Fédération Internationale de Basketball (FIBA) was founded in 20 June 1932 in Geneva/Switzerland. European Basketball Championship has started in 1935 and has been arranged once every two years. Men World Championship began in 1951 and it was followed by Ladies World Championship in 1953. The European league began in the 1995-1996 season. The basketball is now one of the most popular sports in the world.

In the beginning, the teams were formed from the players available in the gym and the players were paid on the daily attendance. The team rosters varied for every game. First professional league, the National Basketball League (NBL) was formed in 1898, but the leagues were regional until the formation of American Basketball League in 1925. Basketball Association of America (BAA) was

founded in 1946 and, by the merger of NBL and BAA, National Basketball Association was formed in 1949.

The professionalization of basketball players in the NBA has increased because NBA has been a countrywide league. Besides that, the rivalry between the teams has increased because the teams have been located in big cities and so they have higher financial power in order to finance high-priced contracts. Although professionalization of the league and players have increased, there were restrictions on players' mobility and wages were usually determined by the club owners until 1970s. The players were signed to one-year contracts with an option for a second year, a rule which was named as reserve clause. The reserve clause bound the athlete to his employer throughout his professional career (Scott et al., 1985). It permitted the team to renew the contract unilaterally year after year or to transfer the player to another club in exchange for cash or by another player. By the mid of 1970s, the major leagues in North America have been subject to dramatic changes in terms of player rights and labor market structures.

First movement has been observed in Major League Baseball (MLB) and two players, Dave McNally and Andy Messersmith, who refused to sign new contracts and played the 1975 season without signing contracts. At the end of 1975 season, they declared themselves as free agents and the legal problems, which started with declarations, have ended with a right of restricted free agency, i.e., mobility for baseball players.

Also, NBA had dealt with players' mobility movement including 1964 All-Star Game Boycott. Before this movement, the team owners had a monopoly on their business, and they had treated the players as commodities rather than a work force. They had all the power, while the players had none (Higgins and Defago, 2009). In 1967, the American Basketball Association (ABA) was formed, and the new competition helped cause players' salaries to rise. Recognizing this trend, the NBA soon opened discussions with the ABA over a possible merger, which would eliminate this fair competition for player services. In response, the players filed the "Oscar Robertson Suit" under the antitrust laws in 1970.

Through the lawsuit, the players hoped to block the merger and also to ease the burden of various other player restraints, including the option clause bounding players to a team in perpetuity. The National Basketball Players Association (NBPA) won a restraining order to block the merger, and the owners came to the table, though not before unsuccessfully attempting to gain Congressional approval for a merger. New president Paul Silas made use of the court victory in order to secure a new agreement with the NBA (February, 1976). The new deal gave players a limited form of free agency, eliminating the option clause in all contracts. In addition, the owners paid 500 players a total of $4.3 million as a settlement and the union $1 million for legal fees, pending dismissal of the Oscar Robertson Suit. The ABA and NBA finally merged, but the collective bargaining agreement had brought the players an increase in the minimum salary from $20,000 to $30,000, also an increase in pension benefits, medical and dental coverage, All-Star Game pay, term life insurance, and a fair per diem[14].

The restriction on mobility of players depressed the players' wages and removal of that restriction allowed the players to negotiate their wages with the team owners, which increases the average wages and makes it possible to reflect their potential and abilities on their wages (Zak et al., 1979; MacDonald and Reynolds, 1994; Rosen and Sunderson, 2001; Rockerbie, 2013). Under the free agency, the players receive more of the revenues they generate. So, the players are motivated to perform at their maximum level; the performance statistics determine player's compensation.

To sum up, NBA provides free market conditions for players' wages, there is scarcity in the talents such as high-technology industry, which affects the level of players' wages upward when compared to other industries, and the players' performance statistics are the most important factor to determine the difference between the players. The next section will explain the rules of the game.

[14] http://nbpa.com/about/

4.5. Team formation, game rules

Each team consists of five players and no team may be reduced below five players (Rule 3, Section I). The limitation of players in the court with five increases the possibility of individual player's personal performance impacting on the team performance. Each periods of a game in the NBA will be twelve minutes (Rule 5, Section II), so the whole game will end in forty-eight minutes. In other professional basketball leagues, the game is played over four periods each ends in ten minutes. This feature of NBA increases the chance of players, who are not in the starting-five to play in the court because as the time increases, team rotation has to be made more frequently. Also, as there will be always a difference between the minutes that players are on the court, the minutes played has to be taken into consideration for the potential model in this study. A successful field goal attempt from the area on or inside the three-point field goal line will count two points, a successful field goal attempt from the area outside the three-point field goal line will count three points, and a successful free throw attempt shall count one point (Rule 2, Section I). The point guards, shooting guards have more chance to attempt 3-points shots and pivots have more potential to go to the free-throw line because they are exposed to fouls more frequently. All players have chance to be on the court until the player reaches to six personal fouls and then ejected from the field.

4.6. NBA as a professional industry

The National Basketball Association is now a global money machine; NBA' revenue, which was $118 million for the 1982-83 season, hit $4.6 billion for the league's 30 teams. The average NBA franchise is worth (equity plus debt) $634 million. Collectively, 30 teams are worth $19 billion when compared to $400 million in 1984, when there were 23 teams. One third of 30 teams of NBA have changed hands since 2010. One of the attractions to the NBA for new owners is

the global nature and potential of the sport, which are much greater than with baseball and American football (forbes.com).

The above statements show that NBA is highly professional in nature and this has an increasing trend. The average player salary, which was $330,000 in 1984-85 season, increased to $5.2 million in 2007-08 season (wikipedia.com).

NBA is a professional league so that the players have an organization called National Basketball Players Association (NBPA). This association protects the rights of players against National Basketball Association (NBA) and the parties sign-up a Collective Bargaining Agreement (CBA), which determines the salary cap and related rules, the tax agreement, and the other rules that both players and the NBA have to obey and rights that each party has. The last Collective Bargaining Agreement (CBA) began effective with the 2011-12 season (December 8, 2011) and will remain in force until 2020-21 season (June 30, 2021). The NBA and NBPA each have an option to terminate the CBA after its 6th season (i.e., on June 30, 2017) by notifying the other party on or before December 15, 2016[15].

Under the CBA, all teams are subject to a Salary Cap and Minimum Team Salary for each season. The "Salary Cap" places a limit on the total salaries each team can pay its players during the season, subject to certain "Exceptions". The actual amount of the salary cap varies on annual basis and is calculated as a percentage of the league's revenue in the previous season (wikipedia.org). Like many professional sports leagues, the NBA has a salary cap to control cost. The Salary Cap for 2014-15 is $63.065 million. Teams employ popular and successful players, who are called "superstars" and sign maximum player salary contracts. Rookies, who are drafted from The National Collegiate Athletic Association (NCAA), high school or other professional leagues, sign rookie salary contracts[16], while veterans (over 36) or low potential players receive the minimum player

[15] CBA 101

[16] The rookie players sign for one years or two years, but contract agreements include also Team Option, maximum two years, which allow teams to keep high-potential players more than base contract years. The Team Option Contracts are now on will be called as "Option" contracts

salary contracts[17] and remaining players sign for the contracts between maximum and minimum salary limits in order to satisfy salary cap and do not pay Luxury Tax[18]. The limitation based on Team Salary Cap helps NBA to be a more competitive league and to balance teams' potential through not allowing any team to employ only "superstars".

This study aims to determine whether the values of players are based on their past NBA performance or not so rookie players' base contracts will not be classified as a group, but "Option" contracts will be analyzed. The other contract types that will be analyzed are grouped as "Minimum Salary" and "Cap Space" contracts, which also include maximum salary contracts. The next chapter will cover data collection methods and model construction steps.

[17] These limits are defined under Minimum Annual Salary Scale which are set for each year separately and vary based on player's total NBA service

[18] A luxury tax payment is required of teams whose payroll exceeds a certain "tax level"

CHAPTER 5

METHODS OF DATA COLLECTION AND ANALYSES

This chapter discusses the sampling, data collection techniques used in modelling, and outlines how the variables have been collected, and explains the model(s) used to test whether contract values for NBA players reflect their past field performance.

5.1. Sampling and data gathering

The NBA was formed on June 6, 1946 with the name of BAA (Basketball Association of America). "National Basketball Association" (NBA) name was given in 1949 after the merger of BAA with another professional league of "National Basketball League" (NBL), which was founded in 1937. Moreover, in 1967, another national league was formed under the name of ABA (American Basketball Association). The NBA and ABA merged under the NBA title in 1976. So, the sources take the starting season of NBA as the BAA, which started in 1946-47 season.

This study includes the NBA players listed in team rosters for seasons between 2005-06 and 2013-14. The players contracted under the NBA teams are collected from storytellerscontracts.info and eskimo.com.The players' list for seasons between 1946-47 and 2013-14 consist of 4,139 players[19]. 914 players are listed under team rosters between 2005-06 and 2013-14 seasons. I analyzed the players' contracts from prosportstransactions.com and storytellerscontracts.info and checked whether the players have *ex-ante* NBA statistics[20] before those contracts from basketball-reference.com. 140 players, who have no ex ante statistics before their contracts, were eliminated from the sampling group and the

[19] The players' list is taken from www.basketball-reference.com

[20] Regular season statistics were used because all teams and thus all players could not play in the play-offs.

group was shrunk to 774 players. The sampling group of those 774 players' all career contracts with ex ante statistics were determined using prosportstransactions.com, storytellerscontracts.info and basketball-reference.com, and I finally achieved the a list of 2,059 contracts for 774 players that are useful for this study. As mentioned in the previous chapter, I grouped the contracts under three headings as "Option", "Minimum Salary" and "Cap Space" contracts for further analyses. The distribution of the contracts according to the specified grouping is summarized in the following table:

Table 1: *Contract type distribution*

Contract Group	**# of contracts**
Cap Space	966
Minimum Salary	593
Option	500

NBA players may sign for multi-year contracts and this would affect the study's comparability function. So, all the contracts collected were also sub-grouped based on ***Total Contract Years***. The sub-group distribution of contracts based on ***Total Contract Years*** is as follows:

Table 2: *Contract type distribution based on Total Contract Years*

	1	**2**	**3**	**4**	**5**	**6**	**7**	**9**	**12**
Option	500	-	-	-	-	-	-	-	-
Min.Salary	479	103	9	2	-	-	-	-	-
Cap Space	138	208	190	138	129	114	47	1	1

Players contracted under NBA may re-sign or teams may terminate the contracts of players in their contract years and players may sign with another NBA team during the season. In order to standardize the data set and keep the player-contract year combination unique, the highest value contract signed by a player within all contracts signed by the player in that year was used for data gathering process.

Also, teams may sign usually "Cap Space" contracts with high-performers, except for the NBA transfer period[21]. Contracts, which were signed after the mid of the season (February in which All-Star Game is played), were accepted to be signed at the end of normal season and the contracts, which were signed before the mid of the season, are accepted to be signed at the end of previous season. By this acceptance, the ex-ante statistics for the contracts were determined.

5.2. Model specification: Base model

The NBA players may sign multiple-year contracts. As summarized in **Table 2**, the length of contracts collected for this study varied between 1 and 12 years. This brings the difficulty in modelling because the comparability of contract values reduces. Furthermore, as explained before, there are 3 types of contracts namely "Option", "Minimum Salary" and "Cap Space". In order to increase the comparability of contract values, firstly the multiple-year contract values were averaged by dividing total contract values to the total contract years (ACPY). And then, all the contract values are normalized by dividing the values to "*Salary Cap Divider*" which is calculated like that:

$$Salary\ \ Cap\ \ Divider\ \ = \frac{Salary\ \ Cap\ _{contract\ \ year}}{Salary\ \ Cap\ _{1990\ -91\ season}} \qquad (7)$$

The 1990-91 season is used for normalizing the ACPY for that season because it is the first available season for the contracts used in this study and Salary Cap determines the clubs' contract offers to players. The final value was called as *NACPY* (normalized average contract per year).

The literature about players' performances provides many performance indices, but mostly used ones are Tendex, Modified Tendex, NBA Efficiency Index, and Hollinger Game Score Formula. I preferred to use Hollinger Game Score Formula, as Harbili et al. (2011) did, because the formula includes all positive and negative field statistics. *Game Score* was created by John Hollinger,

[21] The NBA transfer period was taken as July-September which is between the end of play-offs and the beginning of the new season.

who was an analyst and writer for ESPN, primarily covering the NBA, to give a rough measure of a player's productivity for a single game[22]. The formula is as follows:

$$PI = (P \times 1.0) + (FGM \times 0.4) - (FGA \times 0.7) + (FTM \times 0.4) - (FTA \times 0.7) + (OR \times 0.7) + (DR \times 0.3) + (S \times 1.0) + (A \times 0.7) + (B \times 0.7) - (PF \times 0.4) - (TO \times 1.0) \quad (8)$$

PI	Performance Index value	**DR**	Defensive rebounds
P	Points scored	**S**	Steals
FGM	Field goals made	**A**	Assists
FGA	Field goals attempted	**B**	Blocks
FTM	Field throws made	**PF**	Personal fouls made by player
FTA	Field throws attempted	**TO**	Turnovers
OR	Offensive rebounds		

The player statistics collected from basketball-reference.com were used in order to separately calculate the personal seasonal *PI* for the years. Then, the values calculated for the seasons were divided by the total games played by the players (PI per game). In calculating the final base model *PI*, all pre-contract *PI* values for the players were grouped and those per minute *PI* values were separately averaged for all contract values. *PI* values were taken as an independent variable in order to test if the dependent variable of *ACPY* (averaged contract per year) values is determined by the previous NBA field statistics. Simple linear regression was used in the model test. The base model used in this study is:

$$NACPY = B0 + B1.PI_{ave.} + e \quad (9)$$

NACPY = average contract per year for the player / Salary Cap Divider for contract year

$PI_{ave.}$= Hollinger Game Score value / games played for the season, then averaged for the available years

[22] http://en.wikipedia.org/wiki/John_Hollinger

CHAPTER 6

TEST RESULTS AND INTERPRETATION

This chapter will discuss the hypotheses, assess the results of statistical tests and relate the results to the specified hypotheses. In testing the hypotheses, the model was Equation (9), but for testing further hypotheses alternative models were constructed which will be explained in this chapter.

6.1. H_1: PI values do not determine the contract values

To test this hypothesis, simple linear regression of Equation (9) for all 2,059 contract values of 774 players were analyzed using ex-ante contract year average PI-values. The results for the base model are summarized in table below:

Table 3: *Base model statistical output (α=0.05)*

Model	Adjusted R Square	Std. Error of the Estimate	N	F
Base	0.408	811,432,97	2,059	1,419.953

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-192,944.924	33,525.396		-5.755	0.000
$PI_{ave.}$	197,205.920	5,233.388	0.639	37.682	0.000

R square is the percentage of the response variable variation that is explained by a linear model. Although the value of 0.408 seems to be low, it does not give oneself explanatory information for the model. The correlation coefficient is high and the ANOVA results are significant, so H_1 is rejected. The NBA basketball players' previous field statistics have significant positive impact on the contract values. However, for more information, I would conduct further analyses using alternative models.

6.2. H_2: PI values for "Cap Space" contracts do not differ from other contracts in terms of impact on contract values

As explained in the sampling and data gathering section, I grouped the contracts under three headings as "Option", "Minimum Salary" and "Cap Space" contracts for further analyses. "Minimum Salary" contracts are usually signed by veteran players or under-performing players. This group of players is similar to the assembly workers in the professional business, and field performance is not directly effective on the total contract value because there is a specified value for the relevant year in the NBA for all players under this group.

Moreover, "Option" contracts are signed in the NBA drafts, clubs and players agree on a pre-determined value, when there exists no previous NBA career years at the contract year. Clubs may use the option whether player performance is outstanding or normal. They do not extend the contracts only if players under-perform. This group of players is similar to administrative/support category in professional workers in the professional business. Field performance is not directly effective on the total contract value such as for "Minimum Salary" contracts. So, for an alternative, I used dummies for "Option" and "Minimum Salary" contracts in order to understand whether values for "Cap Space" contracts differ from other two contracts in terms of the explanatory power of *PI* on contract values.

$$NACPY = B0 + B1.PI_{ave.} + B2.D1.PI_{ave.} + B3.D2.PI_{ave.} + e \quad (10)$$

NACPY = average contract per year for the player / Salary Cap Divider for contract year

D_1= 1 if the contract is Minimum Contract

D_1= 0 otherwise (any contract type other than Minimum Contract)

D_2= 1 if the contract is Option Contract

D_2= 0 otherwise (any contract type other than Option Contract)

For ***Comparison Model***, the ***Base Model*** standpoint was used. The model results are compared in the table below:

Table 4: *Base model vs. Comparison Model (Base model with contract dummies) (α=0.05)*

Model	Adjusted R Square	Std. Error of the Estimate	N	F
Base	0.408	811,432,97	2,059	1,419.953
Comparison	0.615	654,254.71	2,059	1,097.745

Table 5: *Coefficients table for Comparison Model (α=0.05)*

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	40,538.985	27,963.711		1.450	0.147
$PI_{ave.}$	222,864.070	4,327.518	0.722	51.499	0.000
$PI_{ave.}$ for minimum	-193,687.197	6,716.995	-0.407	-28.835	0.000
$PI_{ave.}$ for option	-131,209.,751	5,674.891	-0.,333	-23.121	0.000

The correlation between the ***NACPY*** and two dummy variables is different from zero. The R square and adjusted R square figures indicate that approximately 62% of variance in ***NACPY*** is explained by PI_{ave}. B values and t results for the contract dummies indicate that type of the *PI* values for "Minimum Salary" contracts and "Option" contracts' impact on *NACPY* are significantly different from "Cap Space" contracts. So, we can reject H_2 and support that, for "Cap Space" contracts, *PI* values are more effective in determining the contract values. ($F_{cri.val.}$= 1,2402 > 1,0752 Comparison vs. Base Model)

In order to analyze the "Cap Space" contracts independently for 966 *Cap Space* contracts, a separate regression model was set. The results are summarized in tables below:

Table 6: *Cap Space model statistical output (α=0.05)*

Model	Adjusted R Square	Std. Error of the Estimate	N	F
Cap Space	0.482	924,735.06	966	898.772

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-191,688.366	62,401.333		-3.072	0.002
$PI_{ave.}$ Cap Space	250,160.691	8,344.384	0.695	29.980	0.000

When compared to ***Base Model*** results, "Cap Space" contracts' model regression has higher adjusted R square values (0.482 vs. 0.408) and also higher correlation coefficient value (0.695 vs. 0.639). The results support that, for "Cap Space" contracts that have similar properties to knowledge workers' contracts in professional business, *PI* values are more effective in determining the contract values and also "Minimum Salary" and "Option" contract values could be affected from other factors such as the existence of pre-determined values for "Option" contracts and the "Minimum Salary" contracts signed by the veterans, who have high pre-contract performance index values. ($F_{cri.val.}$= 1,1396 > 1,0940 Cap Space vs. Base Model)

For further analyses, both whole data set, which covers "Cap Space", "Minimum Salary" and "Option" contracts, and also the data set for only "Cap Space" contracts will be analyzed separately. The next section will cover whether the contract values are affected from the experience, i.e., "Total Career Years in NBA before the contract".

6.3. H_3: Experience has an impact on contract values (Revised Model)

In the base model, by taking the average of the pre-contract total career years' *PI* values, the experience of players was not considered as an independent variable. However, the experience of players may also have an impact on determining of *NACPY*. So, as an alternative model, "pre-contract total career years" value was taken into consideration as a variable in ***Revised Model*** as follows:

$$NACPY = B0 + B1.PI_{ave.} + B2.preTC + e \quad (11)$$

NACPY = average contract per year for the player / Salary Cap Divider for contract year

$PI_{ave.}$= Hollinger Game Score value / minutes in the field averaged for the years analyzed

preTC= pre-contract total career years before the contract

For all 2,059 contracts simple linear regression was conducted. The results of ***Base Model*** and ***Revised Model*** are compared in the tables below:

Table 7: *Base model vs. Revised Model (Base model with preTC variable) (α=0.05)*

Model	Adjusted R Square	Std. Error of the Estimate	N	F
Base	0.408	811,432,97	2,059	1,419.953
Revised	0.443	778,220.09	2,059	819.063

Table 8: *Coefficients table for Revised Model (α=0.05)*

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-49,196.268	34,892.168		-1.410	0.159
$PI_{ave.}$	219,206.848	5,432.909	0.710	40.348	0.000
preTC years	-55,905.357	4,913.021	-0.200	-11.379	0.000

The NBA basketball players' previous field statistics have significant positive impact on contract values. However, B values show that when "pre-contract total career years" variable is added to the ***Base Model,*** it has a significant negative impact on the ***NACPY*** value. In other words as the "pre-contract total career years" increase, the players contract values decrease.

As explained in **H2**, the veteran players, in other words the players that have the longest career years in the NBA, sign "Minimum Salary" contracts. Also, "Option" contracts are signed in the NBA drafts, clubs and players agree on a pre-determined value whether there exists no previous NBA career year at the contract year. Clubs may use the option when player performance is outstanding or normal. These can affect the results because there is not a direct relation between the performance and the contact value for "Minimum Salary" and "Option" contracts. In order to understand the impact of "pre-contract total career years" on contract values, a Revised Model for "Cap Space" (***Revised Cap Space***) contracts was conducted. The results of ***Cap Space Model*** and ***Revised Cap Space Model*** are compared in the tables below:

Table 9: *Cap Space model vs. Revised Cap Space Model (with preTC variable) (α=0.05)*

Model	Adjusted R Square	Std. Error of the Estimate	N	F
Cap Space	0.482	924,735.06	966	898.772
Rev.Cap Space	0.577	835,659.08	966	659.028

Table 10: *Coefficients table for Revised Cap Space Model (α=0.05)*

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	192,245.333	62,110.513		3.095	0.002
$PI_{ave.}$ Cap Space	297,872.606	8,205.405	0.827	36.302	0.000
preTC years	-126,973.675	8,610.299	-0.336	-14.747	0.000

The NBA basketball players' previous field statistics have significant positive impact on contract values. However, the results for ***Revised Cap Space Model*** are similar with ***Revised Model*** that includes "Minimum Salary" and "Option" contracts. The B values show that when "pre-contract total career years" variable is added to the ***Cap Space Model***, it has a significant negative impact on the ***NACPY*** value. In other words, as the "pre-contract total career years" increase, the players contract values decrease.

The "Cap Space" contracts have distribution in terms of "pre-contract total career years:

Table 11: *Cap Space contracts distribution based on* Pre-contract Total Career Years

1-3 years	4-6 years	More than 6 years (7 to 18 years)
343	308	315

In order to understand whether there is a difference between "pre-contract total career years, separate regressions were conducted for the groups defined in **Table 11**. The results are summarized in the tables below:

Table 12: *Revised Cap Space Models for different pre-TC years (with preTC variable) (α=0.05)*

Model	Adjusted R Square	Std. Error of the Estimate	N	F
Cap Space	0.482	924,735.06	966	898.772
Pre-TC 1-3 years	0.631	841,085.38	343	293.264
Pre-TC 4-6 years	0.570	719,995.15	308	204.354
Pre-TC 7-18 years	0.544	900,241.57	315	188.093

Table 13: *Coefficients table for Revised Cap Space Model for 1-3 Pre-Contract TC years (α=0.05)*

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-293,068.342	168,974.323		-1.734	0.084
$PI_{ave.}$ Cap Space	307,190.431	13,183.924	0.784	23.300	0.000
preTC years	93,075.241	66,194.564	0.047	1.406	0.161

Table 14: *Coefficients table for Revised Cap Space Model for 4-6 Pre-Contract TC years (α=0.05)*

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-148,907.477	259,267.919		-0.574	0.566
$PI_{ave.}$ Cap Space	291,888.954	14,452.368	0.756	20.197	0.000
preTC years	-15,459.446	52,457.007	-0.011	-0.295	0.768

Table 15: *Coefficients table for Revised Cap Space Model for 7-18 Pre-Contract TC years (α=0.05)*

	Unstandardized Coefficients		Standardized Coefficients		
Model	**B**	**Std. Error**	Beta	**t**	**Sig.**
(Constant)	1,228,130.662	208,221.937		5.898	0.000
$PI_{ave.}$ Cap Space	282,313.625	14,841.112	0.762	19.022	0.000
preTC years	-200,439.680	21,207.007	-0.379	-9.452	0.000

These results indicate that, for all groups, the NBA basketball players' previous field statistics have significant positive impact on contract values. For early total careers (1-3 years), performance affects ***NACPY*** values more than the other two groups. In other words, for higher total career years, an increase in the PI_{ave} affects the ***NACPY*** values less. This can be understood such that as available

NBA careers increase, clubs have more information to value players so deviation from the objective valuation decreases.

For only "more than 6 pre-contract total career years" group, total career value has a negative significant impact on the ***NACPY*** values. For other two groups, there is insignificant positive relationship. In the early periods of total career, NBA clubs may positively value the previous career. But, as the age of players (total careers) increase, the clubs expect a decreasing future performance from the players and thus the ***NACPY*** values decrease in relation with the increase in total career years.

To sum up, "pre-contract total career years" variable may be added to the model, but its impact is not significant for all available total career years. So **H3** can be rejected.

6.4. H_4: The average of last *n*-years' statistics have same informativeness on contract values

With the assumption that variations in effort are expressed through variations in performance Jean (2010) analyzes whether players will increase effort in the contract year, which is the season prior to signing a new contract, or decrease effort in the following season. His findings suggest that players show a significant increase in contract year. Separate models constructed such as ***NACPY*** depend on ***average of last n-years of players' field statistics*** before contract year rather than ***all career PI averages*** before contract year (n=1,2,..,6)[23].

The normalized contract values, which were common for different *n* values, were used for all existing n years separately. For all contract values in each group, all the available ***PI average data*** for that group was calculated for that contract value and all groups were combined in a set. ***Table 16*** and ***Table 17*** show all model results separately:

[23] The most common existing year statistics were taken as groups. The most signed contract years was taken as reference years.

$$NACPY = B0 + B1.PI_{n\ years\ ave.} + e \quad (12)$$

NACPY = average contract per year for the player / Salary Cap Divider for contract year

$PI_{ave.}$ = Hollinger Game Score value / games played for the season, then averaged for n-years before the contract

Table 16: *Base model vs. Separate n-years averages PI (α=0.05)*

Model	Adjusted R Square	Std. Error of the Estimate	N	F
Base	0.408	811,432,97	2,059	1,419.953
PI Last 1 year	0.538	716,968.14	2,059	2,396.531
$PI_{ave.}$ Last 2 years	0.548	750,396.16	1,691	2,047,676
$PI_{ave.}$ Last 3 years	0.558	773,721.62	1,252	1,582,800
$PI_{ave.}$ Last 4 years	0.522	782,560.85	993	1,083.709
$PI_{ave.}$ Last 5 years	0.500	814,962.11	769	768.222
$PI_{ave.}$ Last 6 years	0.471	876,029.51	652	579.840

Table 17: *Coefficients Base model vs. Separate n-years averages PI (α=0.05)*

Base Model					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-192,944.924	33,525.396		-5.755	0.000
$PI_{ave.}$	197,205.920	5,233.388	0.639	37.682	0.000
PI Last 1 year					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-247,948.817	27,864.794		-8.898	0.000
PI Last 1 year	200,973.473	4,105.322	0.734	48.954	0.000
$PI_{ave.}$ Last 2 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-330,667.473	34,087.521		-9.701	0.000
$PI_{ave.}$ Last 2 years	225,198.933	4,976.634	0.740	45.251	0.000

Table 17 (continued)

$PI_{ave.}$ Last 3 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-397,796.735	42,533.683		-9.353	0.000
$PI_{ave.}$ Last 3 years	240,439.029	6,043.547	0.747	39.784	0.000
$PI_{ave.}$ Last 4 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-444,046.452	49,493.433		-8.972	0.000
$PI_{ave.}$ Last 4 years	227,271.259	6,903.801	0.723	32.920	0.000
$PI_{ave.}$ Last 5 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-494,084.364	58,994.853		-8.375	0.000
$PI_{ave.}$ Last 5 years	217,256.896	7,838.450	0.707	27.717	0.000
$PI_{ave.}$ Last 6 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-549,816.820	71,161.546		-7.726	0.000
$PI_{ave.}$ Last 6 years	216,965.988	9,010.263	0.687	24.080	0.000

In the analysis, independent regressions were carried out for each group separately to compare the results. For all models, the PI average values affect ***NACPY*** values significantly positively. R square and B values increase up to 3-years average and then both decrease. It means that 3-years statistics would be most useful in order to determine the ***NACPY*** value. The results support the findings for ***Revised Cap Space*** model analyzed in H3. To test the findings above, separate models were set for ***Cap Space*** model. The ***Table 18*** and ***Table 19*** show all model results separately:

Table 18: *Cap Space model vs. Separate n-years averages PI (α=0.05)*

Model	Adjusted R Square	Std. Error of the Estimate	N	F
Cap Space	0.482	924,735.06	966	898.772
PI Last 1 year	0.588	824,455.89	966	1,379.471
$PI_{ave.}$ Last 2 years	0.562	846,877.05	924	1,183,335
$PI_{ave.}$ Last 3 years	0.536	832,570.75	825	952.752
$PI_{ave.}$ Last 4 years	0.522	847,876.71	623	679,141
$PI_{ave.}$ Last 5 years	0.512	902,766.82	448	469,632
$PI_{ave.}$ Last 6 years	0.488	972,849.02	373	355.021

Table 19: *Coefficients Cap Space model vs. Separate n-years averages PI (α=0.05)*

Base Model					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-191,688.366	62,401.333		-3.072	0.002
$PI_{ave.}$	250,160.691	8,344.384	0.695	29.980	0.000
PI Last 1 year					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-247,948.817	56,758.063		-7.240	0.000
PI Last 1 year	254,229.151	6,844.932	0.767	37.141	0.000
$PI_{ave.}$ Last 2 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-358,108.043	60,319.135		-5.937	0.000
$PI_{ave.}$ Last 2 years	255,620.952	7,430.919	0.750	34.400	0.000
$PI_{ave.}$ Last 3 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-270,914.201	64,019.542		-4.232	0.000
$PI_{ave.}$ Last 3 years	244,578.404	7,923.701	0.732	30.867	0.000

Table 19 (continued)

$PI_{ave.}$ Last 4 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-362,228.226	76,095.761		-4.760	0.000
$PI_{ave.}$ Last 4 years	240,332.456	9,222.153	0.723	26.060	0.000
$PI_{ave.}$ Last 5 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-470,170.437	97,360.901		-4.829	0.000
$PI_{ave.}$ Last 5 years	239,783.251	11,062.348	0.716	21.676	0.000
$PI_{ave.}$ Last 6 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-556,439.966	119,853.023		-4.643	0.000
$PI_{ave.}$ Last 6 years	245,090.650	13,007.680	0.699	18.842	0.000

The results indicate that for all models, performance statistics positively affect the contract values. However, ***Cap Space Model*** results indicate that last year performance model has the highest R square value and the R square values decrease by using more past statistics in calculating the PI_{ave}.

6.5. H_5: Separate independent PI values have same explanatory power with $PI_{ave.}$ model

For the n-years model, ***Alternative model 3*** was constructed such as:

$$NACPY_t = B0 + B1.PI_{t-1} + B2.PI_{t-2} + ... + Bn.PI_{t-n} + e \quad (13)\ n = 2,...,6$$

n was restricted with 6 years because contracts were mostly signed for 1 to 6 years. The model was carried out in model regressions for each n values separately and the comparable results are summarized below:

Table 20: *n-years averages model vs. Disaggregated n-years PI for all cont.(α=0.05)*

Model	Adjusted R Square	Std. Error of the Estimate	N	F
$PI_{ave.}$ Last 2 years	0.548	750,396.16	1,691	2,047,676
$PI_{dis.}$ Last 2 years	0.560	739,881.91	1,691	1,077.816
$PI_{ave.}$ Last 3 years	0.558	773,721.62	1,252	1,582,800
$PI_{dis.}$ Last 3 years	0.635	703,563.90	1,252	725.976
$PI_{ave.}$ Last 4 years	0.522	782,560.85	993	1,083.709
$PI_{dis.}$ Last 4 years	0.621	696,544.87	993	407.689
$PI_{ave.}$ Last 5 years	0.500	814,962.11	769	768.222
$PI_{dis.}$ Last 5 years	0.630	700,965.42	769	262.433
$PI_{ave.}$ Last 6 years	0.471	876,029.51	652	579.840
$PI_{dis.}$ Last 6 years	0.630	732,137.57	652	185.960

Table 21: *Coefficients n-years averages vs. Disaggregated n-years PI for all cont. (α=0.05)*

$PI_{ave.}$ Last 2 years averages					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-330,667.473	34,087.521		-9.701	0.000
$PI_{ave.}$ Last 2 years	225,198.933	4,976.634	0.740	45.251	0.000
PI Last 2 years disaggregated					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-339,712.580	33,634.558		-10.100	0.000
PI t-1	163,579.237	7,660.822	0.575	21.353	0.000
PI t-2	59,942.269	7,887.412	0.205	7.600	0.000
$PI_{ave.}$ Last 3 years averages					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-270,914.201	64,019.542		-4.232	0.000
$PI_{ave.}$ Last 3 years	244,578.404	7,923.701	0.732	30.,867	0.000
$PI_{ave.}$ Last 4 years	227,271.259	6,903.801	0.723	32.920	0.000

Table 21 (continued)

PI Last 3 years disaggregated					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-402,430.501	38,725.650		-10.,392	0.000
PI t-1	192,815.700	8,539.042	0.664	22.580	0.000
PI t-2	50,399.889	10,989.826	0.170	4.586	0.000
PI t-3	-4,697.509	8,593.162	0.016	-0.547	0.585
$PI_{ave.}$ Last 4 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-444,046.452	49,493.433		-8.972	0.000
PI Last 4 years disaggregated					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-465,688.948	44,098.157		-10,560	0.000
PI t-1	179,057.712	9,998.142	0.614	17,909	0.000
PI t-2	50,066.080	12,104.231	0.174	4,136	0.000
PI t-3	30,592.452	11,993.313	0.107	2,551	0.011
PI t-4	-23,341.772	9,829.447	0.085	-2,375	0.018
$PI_{ave.}$ Last 5 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-494,084.364	58,994.853		-8.375	0.000
$PI_{ave.}$ Last 5 years	217,256.896	7,838.450	0.707	27.717	0.000
PI Last 5 years disaggregated					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-441,362.915	50,872.418		-8.676	0.000
PI t-1	182,975.868	12,171.416	0.642	15.033	0.000
PI t-2	50,395.549	14,462.982	0.176	3.484	0.001
PI t-3	23,275.421	13,605.761	0.083	1.711	0.088
PI t-4	-5,316.368	14,123.216	-0.019	-0.376	0.707
PI t-5	-22,183.928	11,445.928	-0.084	-1.938	0.053

Table 21 (continued)

$PI_{ave.}$ Last 6 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-549,816.820	71,161.546		-7.726	0.000
$PI_{ave.}$ Last 6 years	216,965.988	9,010.263	0.687	24.080	0.000
PI Last 6 years disaggregated					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-432,119.889	59,987.989		-7.203	0.000
PI t-1	188,515.090	14,023.098	0.654	13.443	0.000
PI t-2	47,268.116	16,752.843	0.164	2.821	0.005
PI t-3	28,396.639	15,713.670	0.099	1.807	0.071
PI t-4	-2,860.816	15,902.334	-0.010	-0.180	0.857
PI t-5	-16,579.526	15,382.273	-0.059	-1.078	0.282
PI t-6	-16,638.175	12,437.622	-0.061	-1.338	0.181

The disaggregated models show similar results that last two years' performance statistics are the most effective variables for determining the ***NACPY***. The previous years' impact on the ***NACPY*** is insignificant. So, the results support **H4** findings; although the whole career statistics have an impact on valuing contracts, the last two years' performances are the most important determinant on contract values. To understand whether "Cap Space" contracts show similar results, also the regressions were conducted for only "Cap Space" contracts. The results are summarized in the tables below:

Table 22: *n-years averages model vs. Disaggregated n-years PI for Cap Space.(α=0.05)*

Model	**Adjusted R Square**	**Std. Error of the Estimate**	**N**	**F**
$PI_{ave.}$ Last 2 years	0.562	846,877.05	924	1,183,335
$PI_{dis.}$ Last 2 years	0.588	821,362.59	924	658.583
$PI_{ave.}$ Last 3 years	0.536	832,570.75	825	952.752
$PI_{dis.}$ Last 3 years	0.603	770,547.16	825	417.376

Table 22 (continued)

$PI_{ave.}$ Last 4 years	0.522	847,876.71	623	679,141
$PI_{dis.}$ Last 4 years	0.606	769,292.65	623	240,332
$PI_{ave.}$ Last 5 years	0.512	902,766.82	448	469,632
$PI_{dis.}$ Last 5 years	0.627	788,834.98	448	151.497
$PI_{ave.}$ Last 6 years	0.488	972,849.02	373	355.021
$PI_{dis.}$ Last 6 years	0.632	824,288.48	373	107.551

Table 23: *Coefficients n-years averages vs. Disaggregated n-years PI Cap Space (α=0.05)*

$PI_{ave.}$ Last 2 years averages					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-358,108.043	60,319.135		-5.937	0.000
$PI_{ave.}$ Last 2 years	255,620.952	7,430.919	0.750	34.400	0.000
PI Last 2 years disaggregated					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-438,117.433	59,419.306		-7.373	0.000
PI t-1	214,806.897	11,869.811	0.646	18.097	0.000
PI t-2	45,502.912	11,290.541	0.144	4.030	0.000
$PI_{ave.}$ Last 3 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-270,914.201	64,019.542		-4.232	0.000
$PI_{ave.}$ Last 3 years	244,578.404	7,923.701	0.732	30.,867	0.000
PI Last 3 years disaggregated					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-440,539.032	61,051.840		-7.216	0.000
PI t-1	193,956.529	11,747.919	0.608	16.510	0.000
PI t-2	62,384.497	14,618.063	0.204	4.268	0.000
PI t-3	-1,337.858	11,367.127	-0.005	-0.118	0.906

Table 23 (continued)

$PI_{ave.}$ Last 4 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-362,228.226	76,095.761		-4,760	0.000
$PI_{ave.}$ Last 4 years	240,332.456	9,222.153	0.723	26,060	0.000
PI Last 4 years disaggregated					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-612,809.270	72,368.234		-8.468	0.000
PI t-1	19,0952.544	14,313.176	0.572	13.341	0.000
PI t-2	63,475.659	16,564.752	0.206	3.832	0.000
PI t-3	25,082.764	16,788.681	0.086	1.494	0.136
PI t-4	-14,097.547	13,591.827	-0.050	-1.037	0.300
$PI_{ave.}$ Last 5 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-470,170.437	97,360.901		-4.829	0.000
$PI_{ave.}$ Last 5 years	239,783.251	11,062.348	0.716	21.676	0.000
PI Last 5 years disaggregated					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-677,752.219	87,019.179		-7.789	0.000
PI t-1	203,352.253	18,159.272	0.613	11.198	0.000
PI t-2	67,822.652	21,311.910	0.213	3.182	0.002
PI t-3	11,970.170	20,169.708	0.040	0.593	0.553
PI t-4	3,681.363	21,002.129	0.012	0.175	0.861
PI t-5	-19,772.699	16,990.194	-0.069	-1.164	0.245
$PI_{ave.}$ Last 6 years					
	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	-556,439.966	119,853.023		-4.643	0.000
$PI_{ave.}$ Last 6 years	245,090.650	13,007.680	0.699	18.842	0.000

Table 23 (continued)

PI Last 6 years disaggregated

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	**Std. Error**	**Beta**		
(Constant)	-722,614.008	102,806.823		-7.029	0.000
PI t-1	217,958.055	21,198.734	0.644	10.282	0.000
PI t-2	64,706.558	24,461.124	0.197	2.645	0.009
PI t-3	13,685.129	23,362.811	0.044	0.586	0.558
PI t-4	6,134.916	23,849.883	0.020	0.257	0.797
PI t-5	-16,376.409	22,659.271	-0.053	-0.723	0.470
PI t-6	-15,055.362	18,406.935	-0.051	-0.818	0.414

The disaggregated models for "Cap Space" contracts show similar results that last two years' performance statistics are most effective variables to determine the ***NACPY***. The previous years' impact on the ***NACPY*** is insignificant. So, the results support both disaggregated models for all contracts and **H4** findings that although the whole career statistics have an impact on valuing contracts, the last two years' performances are the most important determinant on contract values.

6.6. Discussion

In order to recognize an item/concept as an asset, there must be sufficient evidence that the item would bring future economic benefits and it should be possible to measure that item reliably in monetary terms. In order to include human capital under the assets, this study analyzes whether the values of players are based on their past NBA performance or not (**H1** analysis for ***Base Model***). I found that, for all 2,059 contracts available for the study, NBA basketball players' previous field statistics have significant impact on contract values.

The contracts that NBA clubs sign with players differ based on ages of players, performance of players, or existence of previous NBA careers. "Minimum Salary" contracts are usually signed by veteran players or under-performing players, and the field performance is not directly effective on the total contract value because there is a specified value for the relevant year in the NBA for all players under this group. "Option" contracts are signed in the NBA drafts,

clubs and players agree on a pre-determined value whether they have no previous NBA career at the contract year. Clubs may use the option whether player performance is outstanding or normal. They do not extend the contracts only if the players under-perform. So, the field performance is not directly effective on the total contract value such as for "Minimum Salary" contracts. I used dummies for "Option", "Minimum Salary" and "Cap Space" contracts in order to understand if values for "Cap Space" contracts differ from other two contracts in terms of the explanatory power of *PI* on contract values (**H2** analysis).

Test results indicate that the previous *PI* values are significantly effective on "Cap Space" contracts but not on "Option" and "Minimum Salary" contracts. The correlation of *PI* with contract values for "Minimum Salary" contracts is ***-0.304***, and this can be explained with the fact that minimum salary value for the contract year was used to normalize the contract values and the veteran players with high average *PI* values for their all career sign "Minimum Salary" contracts. The correlation of *PI* with contract values for "Option" contracts is ***-0.092***, and we can explain this situation with that players with low option values outperform between their draft year and option year in order to convenience the clubs to use the option and to increase their chance of signing better future contracts. However, players with higher option values underperform or at least show average performance and this can be explained with the fact that the players with high option values do not need to prove their ability to their clubs in as much as players with low option values have to do.

Then, I analyzed whether experience of players (*preTC* variable) affect their valuation and added pre-contract total NBA experience as a variable to the ***Base Model*** (**H3** analysis). The results indicate that "pre-contract total career years" variable may be added to the model, but its impact is not significant for all available total career years. So, **H3** can be rejected.

The study executed a model based on previous available field statistics for NBA players (*PI*), and analyses whether *PI* variable has an impact on NBA contracts. However, the tests above did not analyze the impact of information extensity. For further information, I conducted a test in order to understand

whether information extensity has an impact on contract valuation, and analyzed average pre-contract career *PI* values with last n-years' average PI values (**H4** analysis). The results indicate that, for all models, performance statistics positively affect the contract values. However, ***Cap Space Model*** results indicate that last year performance model has the highest R square value and the R square values decrease by using more past statistics in calculating the PI_{ave}. The last year is especially the highest determinant in the contract values.

To understand the separate years' *PI* values' impact on the contract values, the ***Disaggregated Model*** was constructed, where PI values are separately entered (**H5** analysis). The disaggregated models show that last two years' performance statistics are most effective variables in determining the ***NACPY***. The previous years' impact on the ***NACPY*** is insignificant. So, the results support both disaggregated models for all contracts and **H4** findings; although the whole career statistics have an impact on valuing contracts, the last two years' performances are the most important determinant on contract values. The findings also tell us that separate *PI* values provide higher information than all last-*n*-years' average *PI* values. The correlation matrix exposes that the last year's *PI* has the highest correlation with **N*ACPY***. This means that the clubs use last year's field statistics in valuing the players more than remaining available information. This result support Jean (2010) as player productivity is found to increase significantly in the contract year:

T**able 24**: *Separate PI values for n-years correlation matrix [all contract types] (α=0.05)*

	NACPY for 6-years	**NACPY for 5-years**	**NACPY for 4-years**	**NACPY for 3-years**	**NACPY for 2-years**	**NACPY for 1-year**
t-1	0.789	0.788	0.779	0.792	0.739	0.734
t-2	0.720	0.715	0.702	0.698	0.665	-
t-3	0.647	0.635	0.616	0.564	-	-
t-4	0.586	0.578	0.526	-	-	-
t-5	0.518	0.498	-	-	-	-
t-6	0.451	-	-	-	-	-

CHAPTER 7

CONCLUSION

This chapter begins by an overview of the thesis and then comments on findings. It then represents the *Human Capital* accounting implications based on the findings revealed by the thesis. Finally, it underlines areas for future research and recommends implications for *Human Capital* accounting.

Chapter 1 briefly summarized dominant economic and social forces that have an impact on accounting and explained the knowledge society as Toffler (1980) hypothesized to be the 3rd Wave. The users of accounting information, especially the shareholders of companies, demand for more relevant information and human capital is ignored in the financial statements, which leads to a decline in the relevance of information provided by the financial statements. In order to recognize an item/concept as an asset, there must be sufficient evidence that the item would bring future economic benefits and it should be possible to measure that item reliably in monetary terms. It is assumed that active market conditions allow wages and transfer fees to be determined by the players' talents. NBA is a good candidate for academic research because it allows analyses based on wages set by active market conditions.

Chapter 2 identified intellectual capital and classified its sub-categories as human capital, structural capital and relational capital, and covered the literature on existing disclosure policies for them. Then, the accounting treatment for human capital was analyzed under the related accounting framework and qualitative characteristics of financial statements. Finally, the importance of relevance-faithful balance (trade-off) about intellectual capital, more specifically about human capital reporting, was discussed. Although the accounting information requires both relevance and faithful representation as fundamental qualitative characteristics, accounting standards are more relevance-concerned under the effects of Anglo-American culture and growing importance of user

needs on information. Human capital reporting will increase the relevance of accounting information through satisfying the user needs.

Chapter 3 described the reporting/recording techniques for human capital and analyzed pros and cons of each technique. In order to include human capital under assets, they should be reliably and separately measured and past information will be applied to measure the value of the assets. In order to reach the unique monetary value of human capital (HC), the *Direct Intellectual Capital* (DIC) methods are the most appropriate valuation methods, so the study used performance-based valuation in testing the values of NBA players.

Chapter 4 demonstrated the human resource accounting, provided a comparison of professional business and professional sports, National Basketball Association (NBA) theoretical background and explicitly clarified the team formation and game rules. Then, the reasons to study NBA were explained and types of contracts that players sign with clubs were defined. This study aimed to determine whether the values of players are based on their past NBA performance or not so only the type of contracts which are grouped under "Minimum Salary", "Cap Space" and "Option" contracts were collected for the study.

Chapter 5 summarized the sampling and data collection techniques and the ***Base Model*** that was used in the study. This study involved the NBA team rosters for seasons between 2005-06 and 2013-14. Players, who have no ex ante statistics before their contracts, were eliminated from the sampling group. The sampling group consisted of remaining 774 players', all of which have ex-ante statistics. I finally obtained a list of 2,059 contracts that are usable for this study. I grouped the contracts under three headings, namely "Option", "Minimum Salary" and "Cap Space" contracts. In order to increase the comparability of contract values, firstly the multiple-year contract values were averaged by dividing total contract values by total contract years (***ACPY***), and then all contract values are normalized by dividing ***ACPY*** by ***Salary Cap Divider***. The final value was called as ***NACPY*** (normalized average contract per year). I preferred to use Hollinger Game Score Formula for PI calculation because the formula includes all positive and negative field statistics. Then, the values calculated for seasonal performance index (*PI*)

values were divided by the total games the players were on the field. In calculating the final base model *PI*, all pre-contract PI values for the players were grouped and those per game PI values were separately averaged for all contracts values. *PI* values were taken as independent variable in order to test whether the dependent variable of ***NACPY*** values are determined by the previous NBA field statistics.

In Chapter 6, the tests were conducted and the results were interpreted. **H1** results show that the NBA basketball players' previous field statistics have significant impact on the contract values. **H2** results show that previous *PI* values are significantly effective on "Cap Space" contracts but not on "Option" and "Minimum Salary" contracts. Players with low option values outperform between their draft year and option year in order to convince the clubs to use the option and in order to increase their chance of signing better contracts in future. However, players with higher option values underperform or, at least, show average performance, and this can be explained with the fact that the players with high option values do not need to prove their skills to their clubs as much as players with low option values have to do. Also, veteran players with high average *PI* values for their all career sign "Minimum Salary" contracts. Further research might be conducted for "Option" and "Minimum Salary" contracts. In other words, a further research might test whether pre-NBA field statistics have an impact on "Option" contract values. **H3** results indicate that the experience of players has not a significant impact on the contract values. So, "pre-contract total career years" variable is not added to the model.

H4 and **H5** findings indicate that the performance has an impact on the contract valuation, but the most important determinant is the performance in previous year. **H5** findings also tell us that the clubs use last year's field statistics in valuing the players more than remaining available information.

In general, we can conclude that ex-ante NBA field statistics have an impact on contract values. In other words, the active market conditions allow wages and transfer fees to be determined by the players' performance. So, the contract values determined by the market could be used to capitalize human capital. A limitation

of this study is that information was provided by a selected group of professional athletics, NBA players.

Business is any establishment that produces or distributes goods like clothing and food and services such as intangible things like entertainment, medical and legal services, and the services provided by professional players. Both the professionals in the business and sports try to build a successful, thriving business or career. Something both accomplished sporting and business professionals have in common is their outlook and drive. They push themselves to be the best they can be and oftenly to be better than others.

Additional research from multiple perspectives is necessary to address human capital diversity in the workplace. IAS 41 explains that the biological assets are measured on initial recognition and at subsequent reporting dates at fair value less estimated costs to sell unless fair value cannot be reliably measured (p.12), and presumes that fair value can be reliably measured for most biological assets. IAS 41 also clarifies that the asset is measured at cost less accumulated depreciation and impairment losses whether any fair value measurement is not probable (p.30). Professional business provides active market conditions such that the employees are able switch their jobs without any limitation and the average wages in the industry are usually known by the firms. The firms can determine fair value for their employees based on their workplace performance and expectation of future performance or can use Net Present Value (NPV) of future wages (cash outflows) for the employees in order to capitalize their Human Capital whether they cannot set a fair value for their employees. Bokhari et al. (2012) Islam et al. (2013) and Rahaman et al. (2013) refer to Human Capital Valuation Method that includes acquisition investment, familiarization investment, development investment, and performance appraisal investment to value workers.

Moreover, further research is needed in order to determine the amortization policy for capitalized human capital, revaluation of human capital based on new information provided by ex-post performance, i.e., value in use, determination of disposal value, i.e., impairment of assets, and write-off policy for the human capital that quits his/her job or retires.

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http://www.basketball-reference.com (last access 23/11/2014)

http://www.prosportstransactions.com/basketball (last access 13/01/2014)

http://www.nba.com (last access 27/11/2014)

http://nbpa.com/about/ (last access 28/10/2016)

APPENDIX A

CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: Yılmazer, Berkant
Nationality: Turkish (TC)
Date and Place of Birth: 19 February 1980 , Kastamonu
Marital Status: Married
Phone: +90 312 427 72 85
C.Phone: +90 505 485 73 01
email: berkantyilmazer@hotmail.com

EDUCATION

Degree	Institution	Year of Graduation
BS	İhsan Doğramacı Bilkent University Business Administration	2003
High School	Samsun Anadolu High School, Samsun	1998

WORK EXPERIENCE

Year	Place	Enrollment
2017- Present	ASELSAN Inc.	Manager
2014- 2016	ASELSAN Inc.	Chef
2010- 2013	ASELSAN Inc.	Senior Expert
2008- 2009	ASELSAN Inc.	Expert
2003- 2007	ASELSAN Inc.	Assistant Expert

FOREIGN LANGUAGES

Advanced English

HOBBIES

Reading, Swimming, Basketball

APPENDIX B

TURKISH KUMMARY

GÖRÜNMEZ SERMAYE

BÖLÜM 1

GİRİŞ

1.1. Genel bakış

Muhasebe, çift giriş kayıt defteri olarak bilinen kayıt sistemini temel alır ve özellikle Rönesans veya Aydınlanma Çağı ile gelen geleneksel ve modern toplumlar arasındaki farklılaşmanın muhasebe üzerindeki etkisini göstermek bir gerekliliktir. (Gaffikin, 2005). Muhasebe sonuçları, ekonomik ortama, teknolojik gelişmelere ve özellikle muhasebe bilgi kullanıcılarının ihtiyaçlarına bağlı olarak sürekli bir değişime tabii tutulmuştur. Gaffikin (2005), muhasebenin, ekonomik ve sosyal güçlerin yarattığı bir talebe yanıt olarak gelişen toplumsal bir yapı olduğunun altını çizmektedir.

Toffler (1980), ekonomik ve teknolojik koşulları üç evre yani dalga olarak sınıflandırmaktadır. Yerleşik tarım toplumu olan 1. Dalga'da üretim maliyetinin daha çok insan emeği tarafından belirlendiğini belirtmektedir. Muhasebe, üretim maliyetini belirlemek için insan çalışma saatlerini hesaplamayı amaçlıyordu. Bilgi, insan sermayesinin ve basit cihazların tanınmasıyla sınırlıydı.

İkinci Dalga ile makineler beşeri sermayenin yerini aldı. Muhasebe, bu "maddi varlıkları" ve Sanayileşme Çağı'nın "standardizasyon" ilkesiyle uyumlu amortisman politikalarını geliştirmiştir. Sanayileşme Çağı'nın ortalarında, şirketlerin finansal konumu hakkında daha ayrıntılı bilgi talep eden hissedarlar önem kazandı.

Toffler (1980) 3. Dalgayı bir kelime ile özetlemektedir: Bilgi. Makineler hala önemlidir, ancak entelektüel sermayenin, özellikle de bu makinelerin ve bilgisayarların kontrol eden beşeri sermayenin önemi tekrar artmıştır. Günümüzde, uzmanlık ve farklılaşmanın son derece önemli olduğu bir bilgi toplumunda yaşıyoruz. Tüketiciler, ihtiyaçlarını karşılayan özel ürünler için talep ederler; şirketler, bu ihtiyaçları karşılamak için makine yoğun üretim teknikleri geliştirir, süreçlerini ve teknolojilerini iyileştirmek için Ar-Ge çalışanlarını çalıştırır. Bu ihtiyaçlar sadece fiziksel ürün tüketicileri ile sınırlı değildir: Muhasebe bilgisinin kullanıcıları, özellikle de şirketlerin hissedarları, bu ihtiyaçlarını karşılamak için gerçeğe uygun değerleme, karşılıklar ve değer düşüklüğü testleri gibi daha önemli bilgi ve teknikler kullanılmasını talep etmektedir.

Muhasebe, ekonomik bilginin bilgi kullanıcılarına aktarılması, bilginin ölçülmesi ve iletilmesi süreci olmasına rağmen, muhasebe düzenlemeleri hala entelektüel sermayeyi doğru bir şekilde ölçmemektedir: Örneğin, Amerika Birleşik Devletleri'nde uygulanan *Genel Kabul Görmüş Muhasebe İlkeleri* (US GAAP) Ar-Ge masraflarını gider olarak kaydettirmekte ve *Uluslararası Muhasebe Standartları Kurulu* (IASB), Ar-Ge faaliyetlerini, entelektüel sermayenin önemli bir kategorisi olan yapısal sermayenin altında tanımlanmasına rağmen, Ar-Ge faaliyetlerinin aktifleştirilmesinde katı kurallar koymaktadır. Her iki standart da beşeri sermayeyi kayıt altına almamaktadır. Beşeri sermayenin kayıtlarda bulunmaması finansal tabloların ihtiyaca uygunluğunda önemli bir azalmaya yol açmaktadır.

1.2. Motivasyon

Yukarıda açıklandığı gibi, geleneksel muhasebe beşeri sermayeyi hesaplamalarda dikkate almamaktadır. Varlıklar, geçmiş işlemler veya olayların bir sonucu olarak işletmeler tarafından elde edilen veya kontrol edilen muhtemel gelecekteki ekonomik faydalar olarak tanımlanır. Bununla birlikte, özellikle beşeri sermaye üzerindeki kontrol eksikliği onu entelektüel sermaye varlığı olarak

tanımlamak için tartışmalı bir alan doğurmaktadır. Beşeri sermayenin tanınması üzerinde bir fikir birliğine varılamamasına rağmen, gittikçe daha fazla sayıda şirket, hissedarlarına yenilikçi ve üretken kapasitelerini göstermek için beşeri sermayelerini entelektüel sermaye tablolar aracılığıyla ayrı olarak raporlamaya başlamıştır. Finansal analistler, şirketlerin entelektüel sermaye potansiyellerini yansıtmak için beşeri sermayeye daha fazla önem vermeye başlamıştır. Bu gelişmeler, beşeri sermaye muhasebesine olan artan talebi göstermektedir. Brummet ve diğ. (1968a), genel müdürlerin yıllık raporlarda beşeri sermayeyi şirketlerinin en değerli varlıkları olarak tanımlamalarına rağmen finansal tabloların bu "değerli varlıkları" içermediğini vurgulamaktadır.

Bir kalemi/varlığı varlık olarak tanımlamak için kalemin gelecekteki ekonomik fayda getireceğine dair yeterli kanıt bulunmalı ve bu kalemin güvenilir bir şekilde ölçmenin mümkün olması gerekmektedir. Bilgi çağı, beşeri sermayenin önemini ve beşeri sermayenin mevcut ve gelecekteki organizasyon performansı ve geliri üzerindeki etkisini arttırmaktadır. Beşeri sermayeyi içermeyen finansal tablolar, yönetim kararları ve hissedarların yatırım kararları için yanıltıcı olacaktır. Likert (1967), beşeri sermayeyi dikkate almayan muhasebe sistemlerinin, her seviyedeki yöneticiyi yetersiz ve hatalı bilgilerle karar alma süreçlerinde engellediğini iddia etmektedir. Enyi ve Akindehinde (2014), beşeri sermayenin bir varlık olarak görülmesi ancak mali tablolarda bu şekilde ele alınmaması durumunda, finansal tabloların örgütlerin durumunun gerçek bir resmini sunmadığı diğer bir söyleyişle yanıltıcı olacağını belirtmektedir. Stanko ve diğ. (2014), maddi varlıkların tarihsel olarak olduğundan daha az önemde olduğunu ve organizasyonun gerçek değerini yansıtmak için muhasebenin beşeri sermayeyi kayıt altına alması gerektiğine değinmektedir.

Mali tablolarda beşeri sermayeyi genellikle göz ardı eden bir başka sebep, işletmelerin beşeri sermayeyi güvenilir bir şekilde ölçmede yaşadığı zorluktur. Dean ve diğ. (2012) ve İslam ve diğ. (2013) beşeri sermayeye değer biçmede yaşanan sıkıntının, genellikle ihmal edilmesindeki en önemli etken olduğunu vurgulamaktadır. Stanko ve diğ. (2014) bir çalışanın değerini oluşturan yüzlerce faktör bulunduğunu, ancak bir değerleme yönteminin geliştirilebileceğini de

belirtmektedir. İslam ve diğ. (2013), Bavali ve Jokar (2014) ve Okeke (2016), beşeri sermaye muhasebesi için zorlukların, beşeri sermaye muhasebe sisteminin geliştirilmesinin yararları hakkındaki bilgi eksikliği, beşeri sermaye muhasebesinin yüksek maliyeti ve bu alan hakkındaki muhasebe standartlarının eksikliği olduğuna değinmektedir. Ayrıca yazarlar beşeri sermayenin uygun bir şekilde ölçülmesinin mümkün olduğunu savunmaktadır. Son dönemde Amerika Birleşik Devletleri'nde uygulanan *Genel Kabul Görmüş Muhasebe İlkeleri* (US GAAP) ve *Uluslararası Muhasebe Standartları (IAS)* şirketlerin varlıklarını ölçmede daha gelişmiş teknikler kullanmaları için yönlendirici olmaya başlamış olup, piyasada varlıkların değerleri hakkında daha nitelikli bilgiye ulaşma konusunda bir eğilim oluşmuştur (Bullen Ve Eyler, 2010; Stanko ve diğ., 2014). Şirketler bu nitelikli ve zor hesaplama tekniklerini kullanma konusunda tecrübe kazanmaya başlamıştır. Ayrıca, kullanmakta oldukları gelişmiş veri tabanları ve yazılımlar sayesinde beşeri sermayenin ölçülmemesinin temel sebeplerinden biri olarak değerlendirilebilecek ölçümünün zorluğu ortadan kalkmaktadır.

Beşeri sermayenin finansal tablolarda gösterilmemesi gerektiğini savunanlar, görüşlerini beşeri sermaye için aktif piyasaların bulunmamasına, bu nedenle şirketlerin beşeri sermaye değerlemesinde kullanabilecekleri ana unsur olan personel ücretlerinin güvenilir bir araç olarak değerlendiremeyeceğine dayandırmaktadır. Bununla birlikte, profesyonel atletizm beşeri sermayenin ölçülmesi için hem aktif piyasa koşullarımı hem de farklı mobilite özelliklerini sağlamaktadır. Herhangi bir profesyonel sporda, en önemli kaynak oyuncuların yetenekleridir (Gerrard, 2001). Aktif piyasa koşullarının ücretlerin ve transfer bedellerinin oyuncuların yetenekleri tarafından belirlenmesine izin verdiği varsayılmaktadır. Ayrıca, mobilitenin kısıtlanmasındaki artış varlık oluşturma olasılığını arttırmaktadır (Dittman ve diğ., 1976). Profesyonel basketbol, potansiyel analizler için geniş bir istatistiki bilgi seti sağlamakta ve aktif bir piyasa özelliği taşımaktadır.

Basketbolda, özellikle Ulusal Basketbol Federasyonu'nda (NBA) oyuncuların kulüpler arasındaki transferi bonservis ücretine tabi değildir. Sözleşmeli oyuncular kulüpler arasında takas yoluyla transfer olabilmekte veya serbest

oyuncu statüsüne geldikten sonra başka bir kulüple anlaşabilmektedir. NBA'deki oyuncu ücretleri kulüp ve oyuncu arasındaki pazarlık ile belirlenir. Transferlerde uygulanan kurallar, Toplu İş Sözleşmesi (CBA) ile getirilmiştir. 1900 yılından bu yana takımları sahada beş oyuncu ile yer almaktadır. Bu kural, her oyuncunun bireysel katkısının takım başarısındaki direkt etkisini artırmaktadır. Bunlar dışında, NBA'de uygulanmakta olan *Ücret Tavanı* (Salary Cap) kuralı NBA'de takımların oyunculara gerçekçi transfer ücretleri önermesini sağlamaktadır. Tüm bunların dışında, takımlar sözleşmeli olan oyuncularına ödemekte olduğu ücretler toplam ücret sınırlarını aşarsa, bir lüks vergi ödemekle yükümlüdürler. NBA'in bu özellikleri, oyuncu ücretlerinin performansa ve potansiyele odaklı hale getirmekte ve bu da ücretlerin analizde kullanılmasındaki güvenilirliği artırmaktadır (Zak ve diğ., 1979).

Beşeri sermaye muhasebesinin geleceği, güvenilir ve kapsamlı ölçüm tekniklerine bağlıdır (Bullen ve Eyler, 2010), NBA aktif piyasa koşullarına göre belirlenen ücretlere dayalı analiz yapılmasına izin verdiği için akademik araştırma için iyi bir adaydır. Profesyonel iş dünyasında da NBA'deki koşullara benzer olarak çalışanların mobiliteye sahip olması etkin piyasa koşulları sağlanmasına yol açmaktadır. Piyasadaki ortalama ücretlerin şirketler tarafından bilinmesi nedeniyle de bu özelliği desteklemekte olup, bu durum gelecekteki araştırmalarda profesyonel iş dünyasının da kullanılabileceği için temel oluşturmaktadır. Çalışanlara ait gelecekteki tahmini ücretlerinin *Net Bugünkü Değer* (nakit çıkışlar) kullanılarak çalışanlara ait aktifleştirme değerinin hesaplanabileceği düşünülmektedir.

1.3. Amaç

Finansal tabloların entelektüel sermayeyi içermemesinin, yatırımcıların yanlış bilgilenmesine neden olup olmadığı gittikçe daha tartışmalı bir başlık haline gelmektedir. Entelektüel sermayenin de aktifleştirilmesi gerektiğini savunanlar entelektüel sermayenin finansal tablolarda gösterilmemesinin şirketlerin varlıklarının eksik raporlanmasına neden olduğunu iddia etmektedirler. Beşeri

sermayenin finansal tablolarda gösterilmemesinin bir olgu olarak gözlenmesinde en önemli neden ise entelektüel sermayenin ölçülmesinin zor olduğu düşüncesidir.

Bu çalışma modern ekonomideki en önemli entelektüel sermaye sınıfı olan beşeri sermayenin doğru bir şekilde ölçülmesi için teknik geliştirerek beşeri sermayenin finansal tablolarda dikkate alınmasını sağlamayı amaçlamaktadır. Bu amaçla profesyonel atletizmin beşeri sermayeye dayalı olması ve oyuncuların takımları için en önemli varlıklar olması nedeniyle NBA oyuncuları kullanılarak bir analiz yapılacaktır.

1.4. Araştırma soruları

Bu amaçlara ulaşmak için aşağıdaki araştırma soruları incelenecektir:

a) Oyuncuların değerlerini hangi faktörler etkilemektedir?
   Oyuncuların sahip oldukları kontrat türlerinin oyuncunun değerlerinin belirlenmesinde bir etkisi var mıdır?
c) Tecrübe oyuncuların değerlerini belirleyici bir unsur mudur?
d) Hangi model(ler) oyuncuların değerlerinin belirlenmesin için en uygundur?

1.5. Yöntem

Çalışmada oyuncuların saha içi istatistik değerleri basketball-reference.com sitesinden alınmış, oyucuların kontratları ve takım kadroları prosportstraction.com ve storytellerscontracts.info sitelerinden edinilmiş ve minimum kontrat değerlerinin ve NBA kurallarını da içeren genel bilgiler web sitesi ve eskimo.com sitelerinden sağlanmıştır. Çalışma, yukarıda tanımlanan soruların cevaplanabilmesi adına değişik modeller uygulamaktadır.

BÖLÜM 2

ENTELEKTÜEL SERMAYE HAKKINDA GENEL BİLGİ

Günümüz ekonomik ortamında seri üretim ve kitlesel özelleştirme teknikleri gibi temel üretim yöntemleri müşteri sadakatini sağlamakta yeterli olmamaktadır: Şirketler satışlarını arttırmak veya en azından sektördeki rekabet güçlerinin korumak için ürün farklılaşmasını sağlamaya çalışmaktadır. Bu nedenle, şirketler şirkete özel teknolojiler yaratmak için araştırma ve geliştirme (Ar-Ge) faaliyetlerini yürütmek, üretim süreçlerine veya hizmetlerine verimli, etkili ve değer katan yetenekli çalışanları istihdam etmek ve patent, hak vb. elde ederek bu yasal avantajlarla satışlarını arttırmak zorundadır.

2.1. Beşeri Sermaye tanımı

Araştırmacılar beşeri sermayenin en önemli entelektüel sermaye sınıfı olduğu konusunda genellikle hemfikirdir. Brummet ve diğ. (1968), Allee (2000), Thorbjørnsen ve Mouritsen (2003), Bozbura (2004), Theeke (2005), Sonnier (2008), Mitchell (2010), Castro ve diğ. (2011) ve Rahaman ve diğ. (2013) beşeri sermayenin en önemli entelektüel sermaye sınıfı olmasında yaratıcılık özelliğine sahip olması olduğunu belirtmektedir.

Rowbottom (1998), Luthy (1998), Meer-Koostria ve Zijlstra (2001), Chen ve Lin (2004), Vergauwen ve Alem (2005), Martinez-Torres (2006), Mitchell (2010) ve Okeke (2016) beşeri sermayeyi organizasyondaki tüm çalışanların değerleri toplamı ve onların bilgi ve yeteneklerinden elde edilebilecek faydalar bütünü olarak tanımlamaktadır. Seetharaman ve diğ. (2004) beşeri sermayeyi şirket çalışanları olarak tanımlamakla beraber, bilgi işçileri ile beşeri sermayeyi birbirinden farklı olarak ele almaktadır. Yazarlar, üretim hattında çalışan personelin beşeri sermaye içinde yer almakla beraber bilgi işçisi sınıfında olmadıklarını açıklamaktadır: Bilgi işçileri zamanlarını bilgiyi değere dönüştüren kişiler olarak ele alınmalıdır.

Cañibano ve diğ. (2000), Bloom ve Kamm /2014) ve Okeke (2016) şirket süreçlerini içeren faaliyetleri yürütmede daha nitelikli personele sahip şirketlerin daha fazla kazanan şirketler olacağını öngörmektedir. Brüggen ve diğ. (2009) ve Arvidsson (2011) raporlamada şirketlerin beşeri sermayelerini daha fazla değinmeye başladıklarını tespit etmektedir. Andrikopoulos (2010), Bokhari ve diğ. (2012) ve Dean ve diğ. (2012) bu değişimin altında yatan nedenin beşeri sermayede yer alan bilgi işçilerinin bilgi ekonomisi içindeki önemi olduğunu savunmaktadır. Wilkins ve diğ. (1997), Seetharaman ve diğ. (2004), Pike ve diğ. (2005), Vergauwen ve Alem (2005) ve Castro ve diğ. (2011) beşeri sermayeyi çalışanlar tarafından sahip olunan fakat şirket tarafından kontrol edilen sermaye olarak tanımlamaktadır.

2.2. Beşeri Sermayenin raporlanması hakkındaki literatür

Patra ve diğ. (2003) şirketlerin hedeflerine ulaşmada ve başarısında beşeri sermayenin çok büyük bir rolü olduğunu doğrulamaktadır. Brummet ve diğ. (1968) ve Seleim ve diğ. (2004) beşeri sermayenin şirket performansındaki önemini desteklemektedir. Beşeri sermayenin doğrudan etkilerinin yanı sıra diğer entelektüel sermaye sınıflarını da etkileme gücü bulunmaktadır. St-Pierre ve Audet (2011) beşeri sermayenin yapısal sermayeyi (structural capital) direkt olarak ve iletişim sermayesini de (relational capital) endirekt olarak etkilediğini ortaya koymaktadır.

Entelektüel sermayenin raporlaması ile genel teori şirketin piyasa değeri ile defter değeri arasında artan entelektüel sermaye ile ilişkili olarak bir artış gözlenmesi gerektiğini kabul etmektedir. Bozbura (2004) çalışması bu teori desteklemektedir. Bryant-Kutcher ve diğ. (2009) piyasanın beşeri sermayeyi pozitif yönde değerlediğini tespit etmektedir.

Yukarıda değinilen nedenlerle finansal analistlerin, şirket değerinin tespitinde oluşan yönetim ile hissedarlar arasındaki bilgi dengesizliğini kapatma yönünde bir çaba harcamaları gerekmektedir. Rhode ve diğ. (1976) beşeri sermaye raporlamasının şirket hakkındaki bilgi aktarımında olumlu bir etkisinin olacağını

değerlendirmektedir. Rowbottom (1998), Garcia-Meca (2005) ve Simpson (2010) çalışmaları da bu öneriyi desteklemekte ve finansal analistlerin beşeri sermayeyi dikkate alarak yapacakları öngörülerinin şirket değerinin doğru bir şekilde tespitinde büyük önemi olacağını vurgulamaktadır.

2.3. Beşeri Sermayenin raporlanmalı mı yoksa aktifleştirilmeli mi?

Uluslararası Finansal Raporlama Standartları Kavramsal Çerçeve (IFRS Conceptual Framework) göre varlık, geçmişte olan işlemlerin sonucunda ortaya çıkan ve hâlihazırda işletmenin kontrolünde olan ve gelecekte işletmeye ekonomik fayda sağlaması beklenen değerlerdir. Finansal Muhasebe Standartları Kurulu Kavramlar Tablosu (FASB Concepts Statement) No 6 da benzer bir tanımlama yapmaktadır (p.25)

Bu noktada varlıklara ait ortak olarak değinilen özellikler "kaynak", "işletme kontrolü", "geçmişte olan işlemlerin sonucu" ve "gelecekte beklenen ekonomik fayda" olarak özetlenebilir.

Beşeri sermayenin şirket açısından hem üretim hem de bilgi yaratma özelliğiyle bir "kaynak" olduğu tartışılmaz bir olgudur. Her ne kadar gelişmiş makineler, elektronik aletler ve akıllı bilişim sistemlerinin kullanımında artış gözlense ve direkt üretimde insan faktörü azalsa da, şirketler süreçlerinde hala insan gücüne ihtiyaç duymaktadır.

Beşeri sermaye muhasebesine karşı çıkanlar tezlerini özellikle beşeri sermayenin "işletme kontrolü" dışında kalmasına dayandırmaktadır. Bu teorik olarak geçerli gibi gözükse de beşeri sermaye muhasebesini destekleyenler bu teze karşı, şirketlerin beşeri sermaye üzerinde sahiplik ile değil de beşeri sermayenin kullanım hakkına sahip olmakla bu tanımın karşılandığını savunmaktadır. Lev ve Schwartz (1971) bireysel olarak çalışanların istifa edebilmelerine veya işten çıkarılabilmelerine rağmen işgücünün şirket tarafından sahip olunan bir kavram olduğuna değinmektedir. Rhode ve diğ. (1976) beşeri sermayeyi şirket tarafından değerlendirildiği veya kullanıldığı için yarı-varlık olarak sınıflamaktadır. Yazarlar, özellikle de futbol takımları gibi profesyonel atletizmde yer alan

oyuncuların bu tanımı dolayısıyla varlık tanımını sağladığını savunmaktadır. Flamholtz (1974a) ve Rowbottom (1998) bir köle düzeninde yer almadığımız sürece doğal olarak sahiplik kavramının beşeri sermaye için geçerli olmayacağına değinmekle beraber çalışanların şirketlere sundukları hizmetin şirketler tarafından kontrol edildiğinin altını çizmektedir. Rowbottom (1998) şirket birleşme veya satın alınmalarında çalışanların da yeni yapıya transfer olmasını bu kapsamda değerlendirmektedir.

"Geçmişte olan işlemlerin sonucu" ifadesinin de çalışanların şirket ile yapmış oldukları sözleşme olarak değerlendirilmesi gerektiği düşünülebilir. Ayrıca bir varlığın satın alma yolu ile değil de şirket bünyesine bedelsiz olarak da katılması aktifleştirme için yeterli olabilmektedir. Çalışanların hizmetlerinden elde edilecek "gelecekte beklenen ekonomik fayda" da beşeri sermayenin varlık olarak değerlendirmesi konusunda destekleyici bir unsurdur. Uluslararası Muhasebe Standardı 41 (IAS 41) altında tarımsal faaliyetlerde kullanılan hayvanların ve bitkilerin de varlık olarak değerlendirilmesini içerir ifade, beşeri sermayenin varlık olarak değerlendirilmesi konusunda teorik bir zemin oluşturmaktadır. Bu canlılar da aynı beşeri sermaye muhasebesi uygulanmaması gerektiği konusundaki endişelere konu olmakta ama bu varlık olarak sınıflandırılmalarına engel olmamaktadır.

Finansal tabloların dört temel niteliksel özelliği Anlaşılabilirdik (understability), İhtiyaca Uygunluk (relevance), Gerçeğe Uygun Şekilde Sunum (fair representation) ve Karşılaştırılabilirdik (comparability) olarak tanımlanmıştır. Hem Uluslararası Finansal Raporlama Standartları hem de Amerika Genel Kabul Görmüş Muhasebe İlkeleri İhtiyaca Uygunluk ve Gerçeğe Uygun Şekilde sunumu finansal tabloların en önemli özellikleri olarak işaret etmektedir. Bu iki özellik birbirlerinin etkisini ve uygulanabilirliğini karşılıklı olarak negatif yönde etkilemektedir. İki temel özelliğin raporlamalarda kullanım yoğunluğu finansal tablo kullanıcılarının bilgi ihtiyacını karşılamalarında belirleyici etken olarak ele alınabilir. Bir bilginin kullanılabilir olması için ikisinin de bir gerekli ölçüde dikkate alınması kritik bir öneme sahiptir.

Lev (2001) şirketlere ait muhasebesel bilgilerin gittikçe daha az ihtiyaca uygun hale geldiğini, bu durumun da genel olarak maddi olmayan varlıkların dikkate alınmamasından kaynaklandığına değinerek bu durumun şirketlerin piyasa değeri-defter değeri oranında gözlemlenebileceğinin altını çizmektedir. Yazar, maddi olmayan varlıkları da kapsayan yeni bir sistem oluşturulması gerektiğine değinmektedir. Genel olarak yazarların paylaştığı ortak görüşün beşeri sermayenin şirket için önemli bir değer olduğu, bu nedenle raporlamalarda beşeri sermayenin de dikkate alınması gerektiği ve nitelikleri gereği de bir varlık olduğu değerlendirilebilir.

BÖLÜM 3

BEŞERİ SERMAYE MUHASEBESİ ÖLÇME/RAPORLAMA TEKNİKLERİ

Beşeri sermayenin varlık olarak sınıflandırılmasında birinci adımın hangi ölçme/raporlama tekniğinin kullanılması gerektiği kararını vermek olacaktır. Beşeri sermayenin de, dâhil olduğu entelektüel sermaye başlığında uygulanan tekniklere konu olduğu değerlendirilebilir. Birçok teknik kullanılabilecek olmasına rağmen bütün teknikler özü itibariyle hem pozitif hem de negatif özellikler taşımaktadır. **Araştırmacılar** tüm ölçme/raporlama tekniklerini beş ana sınıf altında gruplamaktadır:

(1)Puan kartı yöntemleri (Scorecard methods)
(2)Piyasa değerleme yöntemleri (Market capitalization methods)
(3)Varlıkların getirisi yöntemleri (Return over (on) assets yöntemleri)
(4)Doğrudan entelektüel sermaye yöntemleri (Direct intellectual capital methods)
(5)Maddi Olmayan Varlıkların Finansal Ölçüm Metodu (Financial method of intangible assets measurement-FiMIAM)

Kurumsal Karne (Balanced Scorecard), *Maddi Olmayan Varlık Monitörü* (Intangible Asset Monitor) vb. teknikleri içeren *Puan Kartı* yöntemleri mali olmayan bilgi sunma anlamında yeterli olsalar da maddi değer hakkında bir hesaplama sunmamaktadır. Bu nedenle bu sınıf altında yer alan teknikler beşeri sermayenin ölçülmesinde yeterli ve uygun değildir.

Tobin's q ve *Piyasa/Defter oranı* gibi tekniklerden oluşan *Piyasa Değerleme* yöntemleri de, her ne kadar mali değer verseler de, ölçümlerin birçok dış etkenden de etkilenmesi ve aynı anda tüm entelektüel sermaye sınıfları için tek bir değer sunması nedenleriyle beşeri sermaye ölçümünde uygun olmayacaktır.

Ekonomik Katma Değer (Economic Value Added-EVA™) ve *Entelektüel Katma Değer Katsayısı* (Value Added Intellectual Coefficient-VAIC™) tekniklerini içeren *Varlıkların Getirisi* yöntemleri de *Piyasa Değerleme* yöntemleri ile benzer eksikliklere ve özelliklere sahip oldukları için beşeri sermayenin ayrı bir sınıf olarak ölçümünde kullanılmayacaktır.

Kapsayıcı Değerleme Metodolojisi (Inclusive Valuation Methodology) gibi teknikleri içeren beşeri sermaye ölçme/raporlama yöntemleri diğer yöntemlerde kısmi olarak yer alan maddi değer sunma özelliklerinin dışında, özel olarak beşeri sermaye sınıfı için ölçüm olanağı sağlaması ile en uygun yöntemler olarak değerlendirilebilir.

Maddi Olmayan Varlıkların Finansal Ölçüm Metodu (Financial method of intangible assets measurement-FiMIAM) Varlıkların Getirisi ve *Piyasa Değerleme* yöntemleri birçok açıdan benzer özellikler göstermektedir. Birebir ölçüm imkanı sunmadığı için bu yöntem de uygulamada sorunlar yaratacak ve doğru değerlere ulaşmamızı engelleyecektir.

BÖLÜM 4

ÇALIŞMA İÇİN TEORİK ALTYAPI

4.1. Beşeri sermayenin değerini etkileyen faktörler

Çalışanlar iş yerleri arasında herhangi bir kısıtlama olmadan değişiklik yapabildikleri ve genel olarak aldıkları ücretler tüm şirketler için öngörülebilir olduğundan, iş dünyası serbest piyasa olarak adlandırılabilir.

Günümüz ekonomik ortamı şirketleri ve işçileri bir alanda profesyonelleşmeye yönlendirmektedir. İşlerinde profesyonelleşmiş olan çalışanların, özellikle de yüksek-teknoloji ağırlıklı sektörlerde çalışanların, ücretleri piyasa koşullarında yetenek ve kapasitelerine göre belirlenmektedir. Şirketler çok yüksek miktarda ve değişik özellikte çalışanlar istihdam etmektedir. Burada irdelenmesi gereken asıl soru tüm çalışanların şirket karlılığına eşit düzeyde etki gösterip göstermedikleri diğer bir söyleyişle şirketin tüm çalışanları aynı değerde görüp görmediğidir. Personeli üç ana başlık altında sınıflayabiliriz: Bilgi işçileri, yönetsel/destek personel ve montaj işçileri.

Bilgi işçileri Ar-Ge personeli, proje yöneticileri ve endüstriyel tasarımcılardan oluşmaktadır. Bu personel sınıfı, şirketlerin yaratıcı kısmını oluşturmaktadır. Bu sınıfta yer alan personelin ücretleri pazarlıkla belirlenmeye daha açıktır. Her ne kadar beşeri sermaye teorisi ücretlerin personelin yeteneği ve kapasitesi ile belirleneceğini söylese de bilgi işçileri şirketle pazarlık ederek daha yüksek ücretler talep edebilmektedir. Bu durumun temel nedeni, ilgili sınıfta yer alan personelin piyasada zor bulunmasıdır.

Yönetsel/destek personel sınıfı üst yönetim, orta düzey yöneticiler, muhasebe personeli, insan kaynakları departmanı, satış/pazarlama departmanı ve ulaştırma, iletişim, güvenlik vb. birimleri içeren destek hizmetleri altında gruplanabilir. Bu sınıfta yer alan personel üretim veya tasarım süreçlerinde görev almaz. Üst yönetim ve orta düzey yöneticiler dışında kalan personelin ücretleri piyasada yer

alan tüm şirketler için hemen hemen aynıdır. Performansa veya potansiyele bağlı olarak ücret seviyesinde büyük bir değişim gözlenmez.

Montaj işçileri doğrudan üretim süreçlerinde çalışan veya son müşteriye doğrudan hizmet veren personeldir. Örnek olarak, üretim şirketlerindeki teknisyenler ile restoranlardaki garson bu sınıf altında yer almaktadır. Bu sınıfta yer alan personelin ücretleri pazarlık ile değil, piyasa için genel olarak asgari ücret ile belirlenen ücret seviyesi ile tanımlanır. Performansın ücretlerde doğrudan bir etkisi yoktur.

Akademik çalışmada en önemli aşamalardan birinin veri setine ulaşılabilmesi olduğu için ve özellikle ileri teknoloji şirketlerinde yer alan bilgi işçileri ile ilgili ücret bilgilerine erişim kısıtlı olduğundan bu çalışmada profesyonel iş dünyasından örneklem kullanılmamıştır. Onun yerine benzer özellikler gösteren profesyonel atletizm üzerine bir inceleme yapılmıştır.

4.2. Profesyonel iş dünyası-profesyonel atletizm kartlaştırması

Seitz (1976) serbest piyasada, kurumsal çalışanların ücretlerinin de profesyonel atletizm ile uğraşan oyuncu ücretleri gibi piyasa koşullarında belirlendiğine değinmektedir. Rosen ve Sunderson (2001) profesyonel atletizmin doğrudan oyuncu performans etkisinin gözlemlenmesi nedeni ile önemli bir çalışma sahası olduğunu belirtmektedir. Yazarlar ayrıca, profesyonel atletizmin insan gücüne dayalı olduğunu ve ölçek ekonomisi nedeni ile ücretlerin çok yüksek olduğu tespitinde bulunmaktadır. Bunun bir diğer nedeni bu piyasada yetenekli personel kısıtlı olmasıdır. Yazarların da belirttiği gibi ölçek ekonomisi çok kalabalık bir son müşteri kitlesine hitap edilmesinden kaynaklı olarak ortaya çıkmaktadır. Televizyondan ders veren bir öğretmen veya sağlık programı yapan bir doktor da benzer ücret farklılıklarına konu olabilmektedir.

Kahn (2000) profesyonel atletizmin çalışma için ideal bir alan olmasında spor takımlarının tüm verilerinin ve oyuncu geçmişlerinin erişilebilir ve bilinir olmasından nedenlerinin belirleyici olduğunun altına çizmektedir. Fakat yazar, profesyonel atletlerin de profesyonel çalışanlar ile aynı faktörlerden

etkilendiklerini ve benzer koşullarda kararlar verdiklerine değinmektedir. Yazarın üzerinde önemle durduğu diğer bir konu da özellikle Kuzey Amerika'daki profesyonel atletizm kulüplerinde yaşanan gelişmelerin ekonomik teorileri doğrudan gözlemleyebilme fırsatı verdiğidir.

Rockerbie (2013) profesyonel atletizmin de diğer profesyonel iş dünyası ile benzer faktörlerden etkilendiğini tanımlamaktadır. Yazar, buna örnek olarak yüksek-teknoloji şirketlerinin de yetenekli personele erişimde profesyonel atletizm gibi bir kısıtla çevrelenmesini vermektedir. Yazarın dikkat çektiği bir husus da, profesyonel atletizm kulüplerinin de yönetimsel olarak öncelikli amacının maksimum getiri olduğu gerçeğidir. Yazar, profesyonel atletizmde kulüp sayısında ve kulüp kurulmasında uygulanan kısıtlamaların *tek alıcı* (monopsony) etkisi yarattığını bunun da bilet fiyatlarında bir artışa neden olduğunu aktarmaktadır. Bir sonraki başlıkta NBA'in yaşadığı tarihsel gelişimi ve bu gelişimin NBA'i çalışma için uygun bir hale getirme nedenleri irdelenecektir.

4.3. NBA'in tarihsel gelişimi

Dr. James Naismith tarafından 1891 yılında Massachusetts'te oluşturulan basketbol, başlangıçta dokuz oyuncu takımların bir futbol topunu salon balkon duvarına asılı bir sepete atış yapmaları ile oynanmaktaydı. 1900 yılına kadar savunma ağırlıklı ve düşük skorlu maçlar yaşanmaktaydı. 1900 yılında mevcut sistemde de uygulanmakta olan, sahada takımların sahada beş kişi bulundurması ve iki sayılık atış-tek sayı faul kuralları getirildi.

Amerika'da ilk ulusal çapta şampiyona 1897 yılında erkekler için, 1900 yılında da kadınlar için organize edildi. Basketbolun olimpik spor olması da 1904 yılında St. Louis'te düzenlenen Olimpiyat Oyunları ile gerçekleşti. *Uluslararası Basketbol Federasyonu* (Fédération Internationale de Basketball-FIBA) 1932 yılında in bir İsviçre kenti olan Cenevre'de kuruldu. İlk Avrupa Şampiyonası 1935 yılında düzenlenmiş olup, o dönemden itibaren iki yılda bir organize edilmektedir. Erkeklerde ilk Dünya Şampiyonası Men World 1951 yılında,

kadınlarda ise 1953 yılında organize edildi. Basketbol şu anda dünyanın en popüler sporlarından biridir.

Başlangıçta oyuncular salonda yer alan insanlardan toplanıyor, oyunculara günlük yevmiye veriliyordu. Kadrolar doğal olarak her oyunda farklı oluşuyordu. İlk profesyonel lig olan, *Ulusal Basketbol Ligi* (National Basketball League-NBL) 1898 yılında kurulmuş olmasına rağmen *Amerika Basketbol Ligi* (American Basketball League) 1925 yılında kurulana kadar ligler yerel ölçekte devam etmiştir. *Amerika Basketbol Birliği* (Basketball Association of America-BAA) 1946 yılında kuruldu ve *Ulusal Basketbol Ligi* ile *Amerika Basketbol Birliği* tek çatı altında toplanarak 1949 yılında *Ulusal Basketbol* Birliği (National Basketball Association-NBA) adını aldılar.

Basketbolda profesyonelleşme NBA'in tüm ülkeye yayılan yapıda olması, takımların maddi anlamda güçlü büyük şehirlerde kurulmasının rekabetçi bir ortam doğurması ile artış gösterdi. Böyle rekabetçi bir ortam olmasına rağmen oyuncuların transferleri üzerinde 1970'li yıllara kadar çok büyük kısıtlamalar vardı, oyuncuların aldığı ücretler de kulüp sahiplerinin inisiyatifleri ile belirlenmekte olup günümüze kıyasla oldukça düşüktü. Oyuncular ile bir yıllık kontratlar imzalanıyor ve takip eden yıl için de kulübe sözleşmeyi aynı koşullarda devam edebilme imkânı tanınıyordu. Bu bir anlamda oyuncunun tüm kariyerini tek bir kulüpte geçirebilme ihtimalinin oluşmasına neden oluyordu. 1970'li yıllarının ortalarından itibaren Amerika'daki büyük liglerde oyuncu haklarını ve piyasa koşullarını etkileyen önemli olaylar ve gelişmeler yaşandı.

Bu çalışma oyuncuların geçim dönemlerdeki saha içi istatistiklerinin imzaladıkları sözleşmeler üzerinde etkisini inceleyecektir. Bu nedenle NBA kariyerine yeni başlayan oyuncuların transfer ücretleri kapsam harici bırakılacaktır. Kontrat tipleri sözleşme uzatma hakkının kullanılması ile doğan *Opsiyon Kontratları* (Option Contracts), veteran oyuncular ile düşük performansa sahip oyunculara imzalatılan *Minimum Ücret Kontratları* (Minimum Salary Contracts) ve bu iki kategori dışında kalan tüm kontratları içeren *Ücret Limitli Kontratlar (*Cap Space Contracts) olarak üç ana başlık altında toplanacak ve incelenecektir.

BÖLÜM 5

VERİ TOPLAMA YÖNTEMLERİ VE ANALİZLER

5.1. Örnekleme ve veri toplama

Bu çalışma, 2005-06 ve 2013-14 sezonları arasında NBA kadrolarında listelenmiş tüm oyuncuların kariyerleri boyunca imzaladıkları sözleşmeleri içermektedir. Takım kadroları storytellerscontracts.info ve eskimo.com sitelerinden elde edilmiştir. 914 oyuncudan oluşan bu liste 1946-47 sezonundan itibaren oynayan toplam 4139 oyuncu ile karşılaştırıldığında önemli bir örneklem oluşturmaktadır. 914 kişiden oluşan bu listede yer alan oyuncuların imzaladıkları kontratlara ait yıl ve parasal değerler prosportstransactions.com ve storytellerscontracts.info sitelerinden toplanmış ve kontratların öncesinde oyuncunun saha içi istatistiklerinin olup olmadığı basketball-reference.com sitesinden kontrol edilmiştir. Kontratları öncesi saha içi istatistik verileri olmayan 140 oyuncu elimine edildikten sonra kalan 774 oyuncuya ait NBA saha içi istatistikleri prosportstransactions.com, storytellerscontracts.info ve basketball-reference.com kullanılarak toplanmış ve 2059 kontrat ve 774 oyuncu bu çalışmanın veri tabanını oluşturmuştur. *Opsiyon Kontratları* (Option Contracts) kapsamında 500 kontrat, *Minimum Ücret Kontratları* (Minimum Salary Contracts) kapsamında 593 kontrat ve *Ücret Limitli Kontratlar (*Cap Space Contracts) kapsamında 966 kontrat olduğu incelemeler sonucu tespit edilmiştir.

NBA oyuncuları bir yılı aşkın kontratlar imzalayabilmektedir. Bu nedenle, çalışmada kontrat birim fiyatlarının karşılaştırılabilir olması için kontrat değerleri toplam kontrat yılına bölünerek *Ortalama Kontrat Değeri* (Average Contract Per Year-ACPY) değişkeni her bir kontrat için hesaplanmıştır. Oyuncular sene ortasında çeşitli sebeplerle serbest oyuncu statüsüne geçip başka kulüplerle de sözleşme imzalayabilmektedir. Çalışmada kontrat-oyuncu ilişkisindeki tekilliği korumak için, bir oyuncu eğer bir yılda iki veya daha fazla kontrata imza atmışsa

en yüksek ortalama değere sahip kontrat çalışmada kullanılmış ve diğerleri elimine edilmiştir. Normal kontrat imzalama dönemi dışındaki kontratlarda kontrat öncesi verileri doğru bir şekilde toplayabilmek adına *En İyiler Maçı* (All-Star Game) öncesi dönemde imzalanan kontratlar sezon başında imzalanmış olarak değerlendirilmiş, sonrasında imzalananlar sezon sonu imzalanmış olarak kabul edilmiştir. Veri setinin yıllara yaygın bir dönemi karşılaştırmasından ve sektör dışı veya içi nedenlerle oyuncu ücretlerinde yaşanan artışlar karşılaştırılabilirliği azaltabileceğinden, *Ortalama Kontrat Değerleri* için NBA tarafından yıllık olarak ilan edilen *Ücret Tavanları* (Salary Cap) kullanılarak Normalize Ortalama Kontrat Değeri (Normalized Average Contract Per Year-NACPY) değeri hesaplanmıştır.

5.2. İstatistiki yöntem ve Temel Model

Saha içi istatistiklerin değerlerini raporlama konusunda birçok endeks mevcuttur. Tendex, *NBA Verimliliği Endeksi* (NBA Efficiency Index) ve *Hollinger Oyun Skoru Formülü* (Hollinger Game Score Formula) çoğunlukla kullanılan hesaplama yöntemidir. Bu çalışmada pozitif ve negatif tüm saha içi istatistiklerini içerdiği *Hollinger Oyun Skoru Formülü* kullanmıştır. *Hollinger Oyun Skoru Formülü*, John Hollinger adındaki analist ve ESPN yorumcusu tarafından maç başı istatistik verilerini değerlendirme amaçlı olarak yaratılmıştır.

Hollinger Oyun Skoru Formülü yıllık verilere uygulanmış ve daha sonra bu yıllık değer üzerinden maç başı *Hollinger Oyun Skoru Formülü* değeri hesaplanmıştır. Bu değerler analiz edilecek dönemler için yıllık ve/veya yıllara göre ortalama değerler için hesaplanmış ve *Normalize Ortalama Kontrat Değeri*nin bağımlı değişken, *Hollinger Oyun Skoru Formülü* değerinin bağımsız değişken olarak alındığı doğrusal regresyon uygulaması *Temel Model* olarak belirlenmiştir.

BÖLÜM 6

HİPOTEZLER VE YORUMLAR

6.1.H1: Saha içi istatistikleri Normalize Ortalama Kontrat değerlerini etkilemez

Bu kapsamda tüm veri seti için doğrusal regresyon yöntemi uygulanmıştır. Ayarlanmış R-kare değeri 0,408 çıkan modelde, korelasyon katsayısı yüksek çıkmış olduğu için bu hipotezin reddedilmesi gerekmektedir. Saha içi istatistiklerinin *Normalize Ortalama Kontrat* değerlerini etkilediği söylenebilir.

6.2.H2: Saha içi istatistikleri *Ücret Limitli Kontratlar* ile diğer kontrat tipleri açısından aynı oranda etkilidir

"Minimum Ücret" kontratları genellikle veteran oyuncular düşük performansa sahip oyuncular ile imzalanmaktadır. Bu grupta yer alan oyuncuların, çalışmada daha önce açıklanmış olan montaj işçileri ile benzer ücretlendirme ve katkıda oldukları söylenebilir. Her biri NBA tarafından belirlenmiş olan asgari ücretle sözleşme imzalamaktadır. Performansın ücret belirlemede doğrudan bir etkisinin olmaması beklenmektedir.

"Opsiyon" kontratları oyuncu NBA'e ilk imza atarken ya da uzun süreli kontratların opsiyonu ile imzalanmaktadır. Kulüp ile oyuncu değer üzerinde anlaştığında henüz oyuncunun saha içi performansı ile ilgili bir veri bulunmayabilmektedir. Kulüpler opsiyonu sadece oyuncu beklentilerin karşıladığında ya da beklentilerin üzerinde performans sergilediğinde kullanmaktadır. Bu sınıf altındaki kontratlar için yönetsel/destek personel ile benzer özellikler taşıdığı söylenebilir. Performansın ücret belirlemede doğrudan bir etkisinin olmaması beklenmektedir. Bu iki kontrat tipindeki değerlerinin ile

"Ücret Limitli" kontratların değerleri hayali değişken (dummy variable) kullanılarak karşılaştırılmıştır.

Normalize Ortalama Kontrat değerleri ile saha içi istatistikleri arasında "Ücret Limitli" kontrat dışında kalan her iki kontrat için de B değerleri ve t değerleri de incelendiğinde "Ücret Limitli" kontratlardan farklı ve negatif değerlidir. Bu sebeple bu hipotezin reddedilmesi gerekmektedir. "Ücret Limitli" kontratlarda saha içi istatistikleri daha etkili ve pozitif yönlü etki göstermektedir. Ayrıca, sadece "Ücret Limitli" 966 kontrat için *Temel Model* yürütüldüğünde de bu sonuçlar desteklenmektedir. R-kare değerleri sadece "Ücret Limitli" kontratlar için tüm kontrat tiplerinden daha yüksektir (0,482 vs. 0,408) ve daha yüksek bir korelasyon katsayısı vardır (0,695 vs. 0,639). Bu sonuç, bilgi işçileri aynı özellikte olarak değerlendirebileceğimiz "Ücret Limitli" kontrata sahip oyuncuların performansların ücretlerine daha doğrudan yansıdığını ispatlamaktadır.

6.3.H3: Deneyim de kontrat değerleri üzerinde etkilidir (Gözden geçirilmiş model)

Temel modele kontrat yılı öncesi toplam NBA geçmişini gösterir değer eklenmiş ve regresyon analizine bu değer de dahil edilmiştir. Sonuçlara göre bu değerin B değeri negatif yönlüdür. Diğer bir söyleyişle deneyim arttıkça *Normalize Ortalama Kontrat* değerinde düşme eğilimi gözlenmektedir.

Bu ekleme sadece "Ücret Limitli" kontratlarda yapılmış ve sonuçlar tüm kontrat değerleri için yapılan regresyon ile tutarlı çıkmıştır. Beklenti NBA'de geçirilen yıllarla orantılı olarak kulüplerin oyuncu hakkında bilgisinin daha fazla olacağı ve dolaysıyla kapasite/biçilen değer ilişkisinin daha efektif olacağı olduğundan, daha derinlemesine analiz yapılmaya ihtiyaç duyulmuştur. Bu nedenle "Ücret Limitli" kontratlar toplam NBA yıllarına göre "1-3 yıl", "4-6 yıl" ve "6 yıl üstü" olarak gruplanarak ayrı regresyonlar yürütülmüştür. Tüm gruplar için R-kare değeri yüksek olmakla beraber, "1-3 yıl" grubu için B-katsayı değeri daha yüksek oluşmaktadır. Diğerleri için bu değerde düşme gözlenmiştir. Bu da beklentinin doğrulandığını ve kulüplerin daha fazla bilgiye sahip olduklarında

daha az sapma ile değerleme yapabildiklerini düşünebiliriz. Özetle, tecrübe modele eklenebilir ama etkisinin tüm alt modeller için önemli olmaması nedeniyle H3 reddedilebilir.

6.4.H4: t-n yıllara ait ortalamaların tümünün etkisi aynıdır

Birçok çalışmada oyuncuların kontrat imzalamadan önceki son sezon performanslarını arttırdığı ve bu nedenle değerlemede son sezon etkisinin daha yoğun olarak gözlemlenebileceği iddia edilmiştir. Bu görüşü test etmek için tüm veri seti için "son yıl saha içi istatistikleri", "son iki-son altı yıl ortalama değerleri" ayrıca hesaplanarak ayrı regresyonlar kurgulanmıştır.

Son yıl değerlerinden "son üç yıl" ortalamalarına kadar R-kare ve B değerlerinde artış, sonrasında ise düşüş gözlenmiştir. Ayrıca tüm "son yıl ortalamaları" da tüm kariyer ortalamalarına göre daha yüksek R-kare ve B değerleri sunmaktadır. Sadece "Ücret Limitli" kontratlar için en yüksek değer "son yıl" değerinde gözlenmiştir. Hangi yılın daha çok etkisinin olduğu bilgisini ve ortalamadansa ayrı ayrı yıl etkisinin açıklama gücünü anlamak için bir sonraki hipotez oluşturulmuştur.

6.5.H5: Bağımsız ayrı yıllara ait istatistik verileri ortalama değer ile aynı açıklayıcı etkiye sahiptir

Hem tüm kontrat tipleri için olan modellerde hem de sadece "Ücret Limitli" kontratlar için "son iki yıl değerleri" kontrat değerleri üzerinde en belirleyici etkiye sahiptir.

BÖLÜM 7

SONUÇ

Genel olarak NBA saha içi istatistiklerinin kontrat değerleri pozitif yönlü önemli bir etkisinin olduğu söylenebilir. Diğer bir söyleyişle, aktif piyasa koşullarında ücretlerin oyuncuların sergiledikleri performansa bağlı olarak belirlendiği değerlendirilebilir. Bu nedenle, piyasanın değerleme yaptığı ücretlerin bu durumda oyuncuların aktifleştirilmesinde kullanılabileceği söylenebilir. Bu çalışmanın kısıtlılığı, sadece belli bir grupla, profesyonel atletlerle, yapılmış olmasıdır.

İş dünyası ürün üretme ve/veya hizmet sunma amaçlı kurulan şirketlerden oluşmaktadır. Hem profesyonel iş dünyası hem de profesyonel atletizm başarılı olma ve/veya getiri üzerine odaklanmaktadır. Çalışanlar da oyucular da aynı amaç doğrultusunda yani başarılı olma ve kariyerlerini yükseltme amaçlarını taşımaktadır.

Farklı iş alanlarındaki değişik çalışan grupları için ek çalışmalar yapılması bu konunun uygulanabilirliği için destekleyici olacaktır. Uluslararası Muhasebe Standardı 41 (IAS 41) tarımsal ürünler varlık olarak alınabileceğini ve birçok tarımsal ürün ve tarımda kullanılan canlı için gerçekçi değer tespitinin yapılabileceğini söylemektedir. Uluslararası Muhasebe Standardı 41 (IAS 41) ile belirlenen ilkelerin beşeri sermaye için de uygulanması olası olarak değerlendirilebilir. Şirketler çalışanlarının aktifleştirilmesi için personelin iş yerinde sergiledikleri performansı doğru tanımlamalarla belirleyerek ve gelecekteki potansiyel katkılarını öngörerek makul değer tespit edebilirler veya en azından gelecekte çalışanlara ödeyecekleri ücretlerin *Net Bugünkü Değerlerini* (Net Present Value-NPV) kullanabilirler.

Gelecekte bu konuda yapılacak çalışmaların, aktifleştirilen beşeri sermaye varlığının hangi yöntemle amortize edileceği, kullanım değerinin oluşturulması için yeniden değerleme yöntemlerinin tespiti, işten ayrılan/emekli olan personel kayıtlarından çıkarma yöntemi gibi konuları incelemesi uygun olacaktır.

APPENDIX C

TEZ FOTOKOPİSİ İZİN FORMU

ENSTİTÜ

Fen Bilimleri Enstitüsü ☐

Sosyal Bilimler Enstitüsü ☐

Uygulamalı Matematik Enstitüsü ☐

Enformatik Enstitüsü ☐

Deniz Bilimleri Enstitüsü ☐

YAZARIN

Soyadı :
Adı :
Bölümü :

TEZİN ADI (İngilizce) :

TEZİN TÜRÜ : Yüksek Lisans ☐ Doktora ☐

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir. ☐
2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir. ☐
3. Tezimden bir bir (1) yıl süreyle fotokopi alınamaz. ☐

TEZİN KÜTÜPHANEYE TESLİM TARİHİ: