



Research Paper

Investigating the value level of pharmaceutical companies in Tehran Stock Exchange

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ABSTRACT

The main purpose of this research is to examine the relationship between human resources productivity and the value level of companies admitted to the stock market of Tehran Stock Exchange. The methods of library study and review of documents and the content of the materials, as well as the preparation of interviews were used to collect information. By reviewing the subject literature and interviewing managers and experts of some pharmaceutical companies, the components affecting the productivity of human resources have been determined and by brainstorming, the three components of the motivational system, work commitment and job enrichment have been determined in priority. The value level of pharmaceutical company's stocks, is determined by the ratio of price to profitability, book and accounting value of companies and their market value. With statistical analysis and hypothesis testing, the significant relationship between the productivity components of human resources and the value levels of pharmaceutical companies have been confirmed. The results of the analysis show that unlike other companies accepted in the stock market of Tehran Stock Exchange, where the components of industry, politics and economy are effective in their success and value, for pharmaceutical companies, human resources and especially their level of expertise play a major role in the level of value. Also, high work commitment despite low motivational systems is one of the other obvious results of this research about these companies.

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1. Introduction

Human resources have a key role in the realization of organizational goals as well as in the integration and combination of other resources entering the organization. Therefore, one of the important tools for creating transformation and survival of the organization and reaching the desired goals and missions is the human element. What guarantees the survival of the organization is human resources. The role of man in the organization and attention to him will have a significant contribution to the success or failure of the organization (Dessler, 2008). Human resource strategy is known as a fundamental element of improving the organization's performance, and it is necessary to address it to increase the effectiveness and efficiency of human resource management and development activities of organizations that have reached a level of maturity in this field (Mariappanadar, 2019). Since the early 1970s, productivity has been one of the most important issues that has attracted special attention at the level of countries and companies. The amount and rate of productivity growth in each country has a significant impact on the standard of living, inflation, unemployment, economic status of society and competitiveness at the global level. In a survey of American industry managers, more than 90% of managers believed that improving productivity is one of the two or three most important issues that the country is facing, and among them, increasing the productivity of human resources is the most important task for managers (McCan & Vorley, 2020; Namazi & Shkrolaahi, 2014).

The productivity of human resources for companies has been investigated with different methods and approaches. Pharmaceutical companies have also been studied and analyzed more in terms of productivity and resources, but less research has been done to compare the indicators and the productivity level of these companies and its relationship with their stocks (Sarfaraz et al., 2022; Mozhdeh et al., 2021). With the complexity of competition in the field of business, especially in pharmaceutical industries and knowledge-based organizations, the role of intangible capital has become stronger than ever before. In fact, as the intensity of competition increases, the importance of intangible capital increases, and the importance of physical and fixed capital decreases. The purpose of this research is to investigate the effect of human, organizational and social capital on knowledge productivity in Iranian pharmaceutical companies. The statistical population of this research is the pharmaceutical industry of the country and its statistical sample is the subsidiary companies of medicine supply holdings. The research findings show the positive and significant effects of the three dimensions of intangible capital on knowledge productivity in Iranian pharmaceutical companies (Sepeh Vand & Aref Nezhad, 2019; Ghanjipour et al., 2021).

Another article has been done with the aim of determining the relationship between intellectual capital and productivity in pharmaceutical companies listed in the Tehran Stock Exchange. In this research, a sample including 19 companies has been studied. The dependent variable is productivity, and to measure this variable, the ratio of added value created for each employee has been used. In order to test the hypotheses of this research, least square regression analysis was used at the five percent error level. The findings of the research indicate the existence of a positive and significant relationship between the value of intellectual capital and productivity (Owla et al., 2016). The key issue for any organization is to identify the specific risks of that organization. In knowledge-based companies, since a set of skills, abilities and experts are together, creativity and innovation are at their peak in these companies, therefore, it plays an essential role in the development of technology and the economic prosperity of the society. The main goal of a research is to explain the relationship between the types of risks in the field of human resources and technological innovation in knowledge-based pharmaceutical companies. The statistical population of this research includes experts and managers of knowledge-based pharmaceutical companies. The tool for collecting information is two questionnaires of risks in the field of human resources and technological innovation. The results show that among the effective components, the risks of skill gaps have the most impact, followed by financial risks, operational risks of human resources, human capital risks, and behavioral risks. Also, in the research phase, the highest risk is related to skill gaps, in the development phase, the highest risk is related

to operational risks of human resources, and in the engineering phase, the highest risk is related to behavioral risks (Pourmansouri et al., 2022).

The main goal identified in another article is to define intellectual capital and its components and to study the relationship between intellectual capital and the market value of companies listed on the Tehran Stock Exchange (TSE). In almost all intellectual property measurement models, its components are defined in three dimensions: human capital, relational capital and structural capital. The subject of this study includes all the companies accepted in TSE. The results of this study showed that there is a significant relationship between human capital, relational capital and market value. In addition, the structural capital of these companies is related to human capital (Rezagholizadeh et al., 2022). Another study examines the impact of intellectual capital on the performance of pharmaceutical companies listed on the Tehran Stock Exchange. This research studies the effects of each component of intellectual capital on the market performance value of 26 companies active in the pharmaceutical industry and admitted to the Tehran Stock Exchange during the years 2008 to 2012. The results show that the coefficient of intellectual capital variables has a significant effect on the market performance variables of pharmaceutical companies (Hossein Chirazi et al, 2016). In another research, the effect of company size and the relationship between intangible resources, including human resources, management and innovation resources, and the performance of Tehran Stock Exchange companies have been investigated. Performance is measured by return on assets and return on sales. The results show that there is a significant difference between human resources and management in small and medium-sized companies, and in large companies, human resources have a significant effect on the return on investment (Arefmanesh and Zare Zardeini, 2020). Stocks as the main core of the capital market can cause sustainable economic growth by creating interaction between investors and mobilizing and allocating financial resources. The tacit knowledge of employees is the main factor for innovation and technical changes in the production process and technology improvement, and as a result, increases the production capacity and productivity of stock companies. Therefore, the knowledge components resulting from the increase in the return of stock companies increase the mobilization of available financial resources. The purpose of a study is to evaluate the effect of knowledge on the financial components of resources in the Iranian stock exchange with quarterly data during the years 1998 to 2014. The results indicate that each of the components of knowledge, including information and institutional infrastructure and financial determinants of resources, has a significant positive effect on the development of the stock market (Shahabadi et al, 2017). Another study aims to investigate the effect of productivity on the policy of increasing the ownership rate of foreign investors in investment performance of businesses listed on the Vietnam Stock Exchange from 2010 to 2017. To estimate the relationship between labor productivity, foreign ownership and other firm-level characteristics and firm performance have been investigated. Research findings show that increasing labor productivity and increasing the rate of foreign ownership help to increase company performance. In addition, except financial leverage, variables such as liquidity and firm size have positive effects on firm performance. Investors can use labor productivity and foreign ownership indicators to select good company stocks for investment (Nguyen et al, 2019).

2. Tools and Methods

In this article, library study methods and field methods have been used to collect information. For this purpose, 21 high-level managers of pharmaceutical and chemical companies in Tabriz city were interviewed and information was collected. The purpose of these interviews was to pay attention to the important aspects of productivity in pharmaceutical companies and to examine the problems, opportunities and challenges of the pharmaceutical industry, especially in the stocks of the companies. To review and analyze the information obtained from the database of pharmaceutical companies, as well as referring to the website of the Tehran Stock Exchange and Securities Organization, the information of the companies accepted in the OTC financial markets has been used. The main tool used in this article is statistical analysis to investigate and describe

statistical parameters, as well as hypothesis testing to compare the productivity of human resources and the value of stocks of pharmaceutical companies accepted in Iran's stock exchange and over-the-counter. In the statistical hypothesis testing methods, a statement about the parameter of the statistical population is examined and unlike estimation methods, it does not calculate a value for the parameter of the population. The statistical hypothesis test has two propositions or two hypotheses. First, the null hypothesis appears, which is usually an opinion that already existed about the parameter or statistical population. To indicate that a statement is a null hypothesis, the symbol H_0 is used at the beginning of it. Usually, the goal of a researcher's statistical hypothesis is to show with the help of a random sample that the null hypothesis is not correct. Because otherwise, his research will be nothing more than confirming previous propositions about the statistical community. After the null hypothesis, there is the opposite hypothesis, which shows the purpose of the researcher to perform the statistical hypothesis. Usually, this hypothesis is the opposite of the null hypothesis and it is denoted as H_a or H_1 (Lupton, 2020).

3. Findings

Based on the results obtained from the interview and with the brainstorming technique that was held among the members of the meeting, the three main components of human resource productivity, employee motivation systems, work commitment and job enrichment are considered to be effective priorities. Our findings from the data of pharmaceutical companies accepted in Tehran Stock Exchange Organization are as Table (1) and (2).

Table 1. Information of pharmaceutical companies of Tehran Stock Exchange Organization

Company symbol	Operating income	Operating Profit	profit margin %	Sales number	average price
Dr. Abidi Lab.	14783310	9048868	61.21	35888570	411923
Farabi Pharm.	8052388	3397887	42.2	1379941	5835313
Exir Pharm.	10385584	5379385	51.75	1.262E+09	8240
Tolid	3255674	1208073	37.11	53765409	60553
Razak Lab.	7486054	3823974	51.08	4621633	161995
Pars Darou	45392096	10415689	22.95	2114234	21469760
Daroupakhash I.	7290461	52848	55.59	3239326	2250610
Osvah Pharm.	3203956	1495196	46.67	517950984	6186
Abouraihan P.	6562955	3346318	50.99	1822298	3601472
Jaber Hayan P.	4410081	1645563	37.31	19800895	22264

Table 2. Information of pharmaceutical companies of Tehran Stock Exchange Organization

Company symbol	salary	Operational personnel	Knowledgeable personnel	total personnel	Average salary
Dr. Abidi Lab.	225711	276	1039	1315	171.64
Farabi Pharm.	103810	215	239	454	228.66
Exir Pharm.	108972	508	364	872	124.97
Tolid	95805	241	198	439	218.23
Razak Lab.	90842	110	298	408	222.65
Pars Darou	69022	109	209	318	217.05
Daroupakhash I.	76397	405	7	452	169.02
Osvah Pharm.	89990	238	137	375	239.97
Abouraihan P.	45440	195	282	477	95.26
Jaber Hayan P.	114081	188	362	550	207.42

The value of shares in the stock market depends on several components, which our findings from the stock market are shown in Table (3).

Table 3. Information on stocks ratios of pharmaceutical companies in Tehran Stock Exchange Organization

Company symbol	P/E	P/B	MC
Dr. Abidi Lab.	20.21	9.04	102150
Farabi Pharm.	9.65	9.11	26368
Exir Pharm.	11.66	19.44	49759
Tolid	26.68	9.41	10235
Razak Lab.	9.88	13.55	34887
Pars Darou	8.7	3.62	30105
Daroupakhash I.	8.29	6.2	33676
Osvah Pharm.	15.76	8.25	18465
Abouraihan P.	9.42	12.81	23301
Jaber Hayan P.	18.45	8.99	30391

The ratio of price to net profit per stock of a company is called P/E ratio. The price is the daily value of that stock. The P/E ratio is one of the most important financial ratios that analysts and investors use to value stocks. In general, the P/E ratio means how much money the investor is willing to pay for each Rial of the company's profit. Also, this ratio shows how many years it takes to get a profit equal to the money invested. Companies use the price-to-book ratio, or P/B ratio, to compare a company's market value to its book value. This ratio is calculated by dividing the price of each of the company's stock by the book value of each stock. In financial sciences, the book value is obtained by dividing the equity in the balance sheet by the number of stocks, and based on that, in case of closing the company and after paying all the debts of the company, it will be given to the stockholders per stock. Investors find it useful to use this ratio because the book value of equity provides a relatively stable and tangible measure that they can easily compare to the market price. Market value (MV) is the total daily value of a public company. This value is obtained by multiplying the daily stock price by the number of stocks issued by the company. Companies with a larger market value have a greater impact on the total stock market index, so when the total index is positive, investors tend to go to companies with a high market value and invest less in small companies. On the other hand, if the total index is almost constant but the equal-weighted index is rising, small companies in the stock market are facing an increase in price, and it is natural for investors to show more desire to buy shares of valuable small companies. The hypotheses defined in this research are as follows:

A) There is a relationship between employee motivation systems (salaries, bonuses and benefits) in pharmaceutical companies and their stock value.

- *H₀: The difference between the average salary and the average value levels is zero.*
- *H_A: The difference between mean salary and mean value levels is opposite to zero.*

The analysis of the test based on Table (4) in the software results shows that at the 95% confidence level, the probability value of the hypothesis between the motivational and value systems (P statistic) is greater than the level of the first type error, i.e. 0.05, and as a result, the null hypothesis is confirmed and the value of the shares and the incentive rate are guaranteed.

Table 4. The results of the hypothesis test of the relationship between the motivational level of human resources and the value level

	salary	P/E	P/B	MC
Average test	dif < 0	dif < 0	dif < 0	dif < 0
Assumed standard deviation	0.119	0.08	0.197	0.218
Mean	102007	13.87	10.04	35934
Std	48018	6.19	4.36	25524
Standard error of the mean	15184	1.96	1.38	8071
Lower bound	98432	14.25	10.95	35970
Z-Value	-10.76	9.02	7.68	-0.67
P-Value	1	1	1	0.747

B) There is a relationship between commitment and work conscience (stability of organizational positions and self-control) in the organization of pharmaceutical companies and the value of their stocks.

For this purpose, the assumption that the mean of quantitative variables is different from the possible middle limit for each is tested. For the stability of the organizational post, the points are scaled from 1 to 5, so the expected middle limit for this variable is 3. The intended test is:

- *H0: The samples mean is greater than or equal to 3.*
- *HA: The samples mean is less than 3.*

The analysis of the test based on the software results in Table (5) shows that at the 95% confidence level, P-Value is greater than the level of the first type error, i.e. 0.05, and as a result, the zero assumption is confirmed and valid. The desirable range of commitment and work conscience is guaranteed by the level of value of stocks for above-mean amounts.

Table 5. The results of the hypothesis test of the relationship between the work commitment level of human resources and the value level

	work commitment level	Value level
Average test	vs < 3	vs < 3
Assumed standard deviation	0.256	0.159
Mean	3.56	4.32
Std	0.025	0.001
Standard error of the mean	0.008	0.000
Lower bound	3.25	4.96
Z-Value	-1.25	2.05
P-Value	1	1

C) There is a relationship between job enrichment and the tendency to improve (training courses, level of expertise and knowledge of employees) among the employees of pharmaceutical companies and the value of their shares.

- *H0: The difference between the average number of knowledge workers in companies and the average value levels of companies is zero.*
- *HA: The difference between the average number of knowledge workers in companies and the average value levels of companies is opposite to zero.*

Table 6. The results of the hypothesis test of the relationship between the level of human resource enrichment and the value level

	working knowledge	P/E	P/B	MC
Average test	dif < 0	dif < 0	dif < 0	dif < 0
Assumed standard deviation	0.106	0.03	0.263	0.425
Mean	318	13.87	10.04	35934
Std	272	6.19	4.36	25524
Standard error of the mean	86	1.96	1.38	8071
Lower bound	289	15.25	10.85	36022
Z-Value	-11.23	10.02	7.58	-4.81
P-Value	1.000	0.800	0.923	0.747

The analysis of the test based on the software results in table (5) shows that at the 95% confidence level, the P-Value is greater than the level of the first type error, i.e. 0.05, and as a result, the null hypothesis is confirmed and the validity of the value of shares and job enrichment is guaranteed.

4. Discussion and Conclusion

In this research, the evaluation of the stocks of pharmaceutical companies accepted in the Tehran Stock Exchange with the productivity of human resources was done based on the findings and statistical analysis and hypothesis testing. The three basic components of human resource productivity, including the level of expertise, motivation of human resources and work commitment, were analyzed according to the value levels of the companies, i.e. the ratio of price to profitability and the book value of the companies, as well as the market value of the companies. Pharmaceutical companies usually have a high potential of profitability and value in the stock market, but the interest in these stocks faces many fluctuations. Unlike other listed companies, the human resources involved in these companies play an essential role in the value of these companies. For example, in the field of petrochemical and basic metals companies, exchange rate and in the banking and automotive group, governing and international policies have a major impact, but for pharmaceutical companies, human resources and especially their work motivation and commitment have a major impact. The results of this research are interesting from some points of view. Profitability and profit margin have a significant relationship with personnel ratio and salary ratio, and some companies such as “Daroupakhash I.” have high profit margin and higher value level despite the low salary ratio, which shows the high work commitment of such companies. It can be said that considering all the components of human power productivity, in terms of market value, a symbol like “Dr Abidi Lab.” is more valuable than a stock price ratio like “Daroupakhash I.”, and in terms of book value, a symbol like “Pars Darou” is more valuable.

One of the important strategies for paying attention to these stocks in the market, along with the human productivity components, is the need to review the role of law firms and the policies of the pharmaceutical industry.

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