

## Study the Effect of Economic Factors on Business Intelligence: Case Study Iran Khodro Technology in Tehran Province

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### Abstract

The main objective of this study is to investigate the effect of economic factors on the business intelligence in Iran Khodro industry in Tehran Province. The statistical population of the research, Iran Khodro industry employees in Tehran is 20731 people. The sample quantity was obtained 378 people by using Cochran's formula. In order to collect data, the researcher made questionnaire, economic factors and the standard questionnaire, business intelligence were used. The questionnaire validity was confirmed by professionals or experts and reliability of the questionnaires was assessed by using Cronbach's alpha. After completing the questionnaire, in order to analyze the data, Kolmogorov-Smirnov test, and one sample t-test were used. In this study it is found that inflation, exchange rates, interest rate variables is effective on the business intelligence in Iran Khodro industry of Tehran Province.

**Keywords:** economic factors, inflation, exchange rate, interest rate, the business intelligence

### 1. Introduction

One of the most important types of intelligence that is very important in the business environment for the organizational senior managers is the business intelligence. Business intelligence would be useful as an effective tool in improving the decision-making process in any organization. In the past, business intelligence for profitable private companies has performance, but recently, it has been used in governmental agencies. Business intelligence has been accepted as a tool to design and effective management of the system life cycle along with supporting the intelligent decisions. As an accurate and up to date systemic approach such as, business intelligence can have a significant impact on the efficiency and the performance of organizations, many below factors could affect the business intelligence. In this research, it will be tried to identify, extract and prioritize some effective economic factors on business intelligence and it will be studied the rate and the impact of each one on business intelligence. Changes in inflation can be measured by using the Consumer Price Index and other index changes. Suppose that due to inflation, commodity prices somewhat increases more than the price in other countries. As a result, exports will decrease and imports will increase, and consequently, the exchange demand curve shifts to the right and on the one hand, due to the reduction in exports, the supply curve will move to the left and therefore the exchange rate increases. The exchange rate is one of the important variables in the economic system and the price determined in exports and imports and in countries such as Iran that the major source of government revenue is provided for foreign exchange revenue caused by importing the mineral materials, the importance of the exchange rate is much higher. Exchange rate, as an important key variable, includes the effects of changes and foreign relations of economic on domestic economies variables and its impact on other macroeconomic variables is important. The exchange rate is determining the business process, capital flows and foreign direct investment, inflation,

savings and international payments in an economy. (Nosrati, 2008). The other important economic variable that has effects on investment and real economic sectors is interest rates (interest). In fact, interest rates (interest) mean the amount that the borrower will pay for temporary use of a capital. In fact, the interest rate (interest) is the cost which must be paid to receive the credit as well as it is the most important and the best influential factor in the exchange rate, and causing the exchange rate to strengthen a country's currency (Mesah, 2010). The government by increasing the interest rate (interest), encourage the foreigners to entrust their money to the banks, or purchasing currency of the country and thus, it acquires the necessary currency.

The most important affecting variables on the real exchange rate of Iran economy, including business exchange relations, growth of the productivity level, economic openness, government consumption expenditure, gross domestic product and oil revenues (Haghighat, 2002). Researches have been done about the effects of inflation on the performance of industries in different countries, and a review of previous studies implies that the inflation has many negative effects on the firms' performance, including profit margin and industry quality to the extent that higher levels of inflation is aligned with a lower profit margin (Banerjee A. and B. Russell 2005). If the economy could not alleviate itself in front of determined inflation rates completely, disorder will not alleviate in prices caused by inflation, cause difficulty for economic performance (Hadian, 2011). Interest rates (interest) are one of the most important economic factors that have affected the investment and the real sector of the economy.

Given the significant effects of interest rates (interest) on decision making of economic actors, it was raised as one of the politic variables in the macro-economic policy, and always was considered the economic authorities and was attracted the attention of many economic agencies and actors to them (Mehregan, et al., 1385), when the domestic profit rate (interest) will be lower than foreign interest rates (interest), foreign currency value will decline because by going beyond the level of foreign interest rates (interest), the domestic interest rate (interest) will face depreciation value (Utami, et al., 2009).

Therefore, by considering the above texts, the present study focuses mainly on the impact of important economic factors on the business intelligence and in this regard, with a case study, the role of economic factors such as inflation, exchange rate and interest rates (interest) in the Iran Khodro industry of Tehran was examined.

## **2. Research Background**

The research results of Mahyar Hami (2015) showed that, there was a one-way causal relation between inflation and trade openness in and increasing the general level of prices in the country has a positive and significant effect on trade openness. So that one percent increase in the inflation rate in Iran economy will cause a 0.12% increase in trade openness at a later period and 0.19% increase in the degree of trade openness in the next 2 periods. Mustafa Karim Zadeh (2014) showed in his article, econometric models of countries, GDP and wholesale price index have significant positive effects on mutual import, whereas the effect of the export price index of business party and the exchange rate is significantly negative.

In addition, Lashkari, et al., (2016) in a study show that currency depreciation could be a good policy in the development of Iran's exports and its trade partners. Low income leads to higher impact of exchange rate on export prices. The inflation rate has also a positive and significant effect on the rate of exchange rate to export prices. The research results of Ozra Javan Bakht ET. Al. (2013) shows, a compromise between these two policies in terms of its effects on the economy that depending on the goals and priorities of policy maker may be preferred one to another. In an article of Mohsen Salarian et al (2014), the results show that the implementation of business intelligence system is not possible without determining the appropriate performance evaluation indices and cannot lead to an effective improvement for the organizations, thus, clarifying and defining appropriate criteria and indicators to assess the business intelligence system, performance is considered necessary. Ghosh (2013) in an article entitled Crossing the exchange rate, the micro principles and selecting the regime in Latin America, by using a dynamic panel data method, has studied the transmission degree of the exchange rate to the consumer price index and import price index for 9 countries in Latin America during 4 decades (1970 -2000). He found that the ERPT degree has a positive relation to the growth of the money supply, interest rate fluctuations (interest), inflation rate and degree of economic openness. Chit and Judge (2011) in an article entitled nonlinear fluctuations effect of exchange rate on exports, have studied the nonlinear effects of exchange rate volatility on exports of China, Indonesia, Malaysia, the Philippines and Thailand, with emphasis on the role of financial development in strengthen or weaken the works, by using the GMM method. The results of this study during the period 19990-2006 show that financial development will cause weakening the negative effects of exchange rate volatility on exports and strengthen the export growth. The results are also useful for the selection of the appropriate exchange rate system in countries with export promotion policies along with regional alliances in their development plans. Anoumer et al (2012)

has studied the effect of the interest rate liberalization (interest) on savings and investment in Nigeria. This study was conducted by using data from 1999-1976 and OLS method. The results show that the liberalization of interest rates (interest) has no significant effect on savings but it reduces the investment.

### 3. The Research Hypotheses

- Economic factors effect on business intelligence in Iran Khodro industry in Tehran.

#### 3.1 The secondary Hypothesis:

1. The rate of inflation effects on the business intelligence in Iran Khodro industry in Tehran.
2. The exchange rate effects on the business intelligence in Iran Khodro industry in Tehran.
3. The interest rate effects on the business intelligence in Iran Khodro industry in Tehran.

### 4. Research Methodology

In terms of data collection method, it is a descriptive research. In terms of the goal, this research is practical. The statistical population of the research consist all different Iran Khodro employees in Tehran Province, which includes 20731 people. Among the statistical population, according to Cochran's formula, the number of 378 employees who are working in line with the objectives and mission of the organization in the different units of the organization were chosen as a sample.

The data collection tool is a questionnaire. In the questionnaire, economic factors, with Vaezian approach (2016) that was explained in previous articles, were evaluated during the third stages of inflation, exchange rate, interest rate, by using a questionnaire. All the items are in the range of 5 Likert's scales and are measured from strongly disagree to strongly agree. Business intelligence, Porovich approach (2012), in 6-stages data integrity, quality content, the quality of access to information, the decision analysis culture and use of data in the decision-making process is assessed by using a questionnaire. All the items are in the range of 5 Likert's scales and are measured from very low to very high. Distribution of questionnaire method was that the researcher visit Iran Khodro in Tehran Province, and gave the entire questionnaire to employees. The validity of this questionnaire was confirmed by professors of public management and its reliability was measured by Cronbach's alpha, economic factors are calculated, 0.91 and the business intelligence were calculated 0.90. To analyze the data, two methods of descriptive statistical were used (such as frequency, percentage, average and standard deviation) and inferential statistics for hypothesis testing, the statistical methods such as (Kolmogorov-Smirnov test, one-sample t-test) was used.

### 5. Research Findings

#### 5.1 The descriptive findings

The descriptive finding results show that 93% of the samples are men and 7 % is women. In terms of age, 19.8% of the statistical sample is 20-30 years, 37.4% is 30-40 years, 32.6% is 40-50 and 10.2% is over 50 years. In terms of the service period, the results show that 10.4% of the statistical sample are less than 5 years of service, 16.2 % are 5 to 10 years, 27.8% is 10 to 15 years, 26.6 % is 15 to 20 years and 19% over 20 years their years of service.

#### 5.2 The inferential findings

In order to evaluate the normality of the research variables, the Kolmogorov-Smirnov test was used. The test results of Kolmogorov - Smirnov is normal with 95% confidence of statistical distribution of these variables. So, according to the normal distribution of data, we use one sample t-test.

The basic hypothesis: Economic factors effect on Business Intelligence of Iran Khodro industry in Tehran Province.

H0: Economic factors do not effect on the business intelligence of Iran Khodro industry in Tehran Province.

H1: Economic factors effect on the business intelligence of Iran Khodro industry in Tehran Province.

To test the main hypothesis that the statistical population is normally distributed, single-sample Student's t parametric test with the amount of test 3 is used. According to Table 1, it can be seen that the value of t statistic is more than the Student's table t that the null hypothesis (H0) is rejected by 95% confidence. Or because the significance level of

the test is less than 0.05 (P-value = 0/023 <0/05) with 95% confidence, the null hypothesis is rejected, it means the amount of income is effective on Business Intelligence of Iran Khodro industry in Tehran Province. Therefore, the main hypothesis will be confirmed.

**Table 1:** Single-sample t-test for the fourth research hypothesis

Variable	Test Amount = 3					
Economic factors	T statistic amount	Degrees of freedom	Significance level	The difference between average and test amount	95% confidence interval for the difference of the average and test amount	
					upper bound	Lower bound
	15.697	378	0.023	0.6602	0.7430	0.5773

The first secondary hypothesis test: The inflation rate effects on Business Intelligence of Iran Khodro industry in Tehran Province.

H0: The inflation rate does not effect on Business Intelligence of Iran Khodro industry in Tehran Province.

H1: The inflation rate effects on Business Intelligence of Iran Khodro industry in Tehran Province.

To test the first hypothesis that the statistical population is normally distributed, single-sample Student's t parametric test with the test amount of 3 is used. According to Table 2, it can be seen that the value of t statistic is more than the Student's table t that the null hypothesis (H0) is rejected by 95% confidence. Or because the significance level of the test is less than 0.05 (P-value=0/000<0/05) with 95% confidence, the null hypothesis is rejected, it means the inflation rate is effective on Business Intelligence of Iran Khodro industry in Tehran Province. Therefore, the first hypothesis will be confirmed.

**Table 2:** Single-sample t-test for the first research hypothesis

Variable	Test Amount = 3					
The inflation rate	T statistic amount	Degrees of freedom	Significance level	The difference between average and test amount	95% confidence interval for the difference of the average and test amount	
					upper bound	Lower bound
	28.630	378	0.000	1.05026	1.1226	0.9779

The second secondary hypothesis test: The exchange rate effects on Business Intelligence of Iran Khodro industry in Tehran Province.

H0: The exchange rate does not effect on Business Intelligence of Iran Khodro industry in Tehran Province.

H1: The exchange rate effects on Business Intelligence of Iran Khodro industry in Tehran Province.

To test the second hypothesis that the statistical population is normally distributed, single-sample Student's t parametric test with the test amount of 3 is used. According to Table 3, it can be seen that the value of t statistic is more than the Student's table t that the null hypothesis (H0) is rejected by 95% confidence. Or because the significance level of the test is less than 0.05 (P-value=0/005<0/05) with 95% confidence, the null hypothesis is rejected, it means the exchange rate is effective on Business Intelligence of Iran Khodro industry in Tehran Province. Therefore, the second hypothesis will be confirmed.

**Table 3:** Single-sample t-test for the second research hypothesis

Variable	Test Amount = 3					
The exchange rate	T statistic amount	Degrees of freedom	Significance level	The difference between average and test amount	95% confidence interval for the difference of the average and test amount	
					upper bound	Lower bound
	27.563	378	0.005	1.03022	1.1330	0.9734

The third secondary hypothesis test: The interest rate effects on Business Intelligence of Iran Khodro industry in Tehran Province.

H0: The interest rate does not effect on Business Intelligence of Iran Khodro industry in Tehran Province.

H1: The interest rate effects on Business Intelligence of Iran Khodro industry in Tehran Province.

To test the third hypothesis that the statistical population is normally distributed, single-sample Student's t parametric test with the test amount of 3 is used. According to Table 4, it can be seen that the value of t statistic is more than the Student's table t that the null hypothesis (H0) is rejected by 95% confidence. Or because the significance level of the test is less than 0.05 ( $P\text{-value}=0/007<0/05$ ) with 95% confidence, the null hypothesis is rejected, it means the interest rate is effective on Business Intelligence of Iran Khodro industry in Tehran Province. Therefore, the third hypothesis will be confirmed.

**Table 4:** Single-sample t-test for the third research hypothesis

Variable	Test Amount = 3					
The interest rate	T statistic amount	Degrees of freedom	Significance level	The difference between average and test amount	95% confidence interval for the difference of the average and test amount	
					upper bound	Lower bound
	18.610	378	0.007	0.78974	0.8734	0.7060

## 6. Discussion and Conclusion

In this section, according to the results of hypothesis and theoretical and experimental studies, hypothesis analysis and their comparison with the research literature will be discussed.

Based on data analysis of the first hypothesis, because the significance level is less than 0.05, so economic factors effect on the business intelligence of Iran Khodro industry. Continuous and constant profitability do not guarantee profitability of an organization and an organization should apply new rules besides the avoidance of traditional methods so it could have the ability to compete. Compared with other studies, it is seen that continuous researches of Pirayi (2012), Lashkari et al (2016), Ghaffari (2016) and van Wijngaarden (2009) are along with this research.

Based on data analysis of the first hypothesis, because the significance level is lower than 0.05 so the rate of inflation effects on the Business Intelligence of Iran Khodro industry in Tehran Province. In comparison with the results of this hypothesis with other studies in this context, it is possible to refer to researches such as Mahyar Hami (2015), Pirayi and Dadvar (2012), R Ja Vdang (2012), Barro (2013), and the result was compared with their research. According to the above relation confirming in mentioned researches, the obtained result can be considered along with the results of the mentioned researches and in accordance with them.

The results of data analysis in the second hypothesis, because the significance level is less than 0.05 so the exchange rate effects on Business Intelligence of Iran Khodro industry in Tehran Province. In comparison with the results of this hypothesis with other studies in this background, it can be referred to Karim Zade (2015), Lashkari et al (2016), Goush (2013), chit and Judge (2011) researches, and compare the result with their researches. According to verify the above relation in all three mentioned research, the result can also be considered in accordance and along with mentioned research findings.

According to the results of data analysis in the third hypothesis, because the significance level is less than 0.05 so the interest rate effects on Business Intelligence of Iran Khodro industry in Tehran Province. In comparison with the results of this hypothesis with other studies in this context, it can be referred to Ghaffari et al (2016), Javan Bakht et al (2013), Anomer et al (2012), Varman and Trel Wall (2016) researches, and compare the result with their researches. According to verify the above relation in all three mentioned researches, the result can also be considered in accordance and along with mentioned researches findings.

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