IRMM

INTERNATIONAL REVIEW OF MANAGEMENT AND MARKETING

EJ EconJourna

International Review of Management and Marketing

ISSN: 2146-4405

available at http://www.econjournals.com

International Review of Management and Marketing, 2017, 7(3), 220-226.



The Mediating Role of the Entrepreneurial Intention in the Relationship between Critical Thinking and Employee Productivity Telecommunication Company of Isfahan

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ABSTRACT

This study aimed to determine the mediating role of the entrepreneurial intention in the relationship between critical thinking and employee productivity Telecommunication Company of Isfahan with descriptive and correlational method. The population included all experts and managers of Telecommunications Company of Isfahan in 2016. The total number was equal to 1020 and based on Krejcie and Morgan table, 278 individuals were selected through convenience sampling method. A questionnaire was used to collect data. SPSS19 and structural equation modeling software AMOS23 were used to analyze the research data. The results showed that there is a significant direct relationship between critical thinking, employee productivity and entrepreneurial intention. Moreover, the mediation demonstrated that entrepreneurial intention plays a partial mediating role between critical thinking and employee productivity. In addition to these results, research indicates that there are significant differences between respondents' views with regard to employee productivity and critical thinking based on demographic characteristics, employment status and years of service.

Keywords: Entrepreneurial Intention, Critical Thinking, Employee Productivity, Telecommunication Company of Isfahan JEL Classifications: C32, O13, O47

1. INTRODUCTION

In today's society, the role and importance of human resources has been recognized as the most important factor in the process of providing services. Undoubtedly, the human factor is the most important part of the development of modern societies (Arasteh, 2007). It can be said that human resources is the most important infrastructure of any organization and their participation has a great effect on increasing organizational and national productivity. This has increased the importance of employee productivity in today's world and especially in the organizational world (Sayadi et al., 2015).

As the increase in employee productivity at the national level raise living standards, reduce costs, optimize consumption, reduce inflation and create competitiveness power and at the organizational level, the employee productivity is the main basis for competition, quality and appropriate combination of factors to create more value (Saatchi, 2003). In fact, employee productivity is one of the most fundamental assumptions for organizational efficiency and organizational productivity without any effort on employee productivity is meaningless (Mohammadi et al., 2011).

Strong human resources increase creativity and innovation among employees, increase responsiveness, reduce absenteeism, build mutual trust between managers and employees and use other resources efficiently and optimally in the organization (Tavakoli et al., 2001). Employee productivity is to make optimal use of human resources to achieve the goals of the organization and how to use the youth, middle age and even retirees (Taleghani et al., 2011).

Critical thinking is a pervasive and self-improving human phenomenon (Simpson et al., 2002), which was purposeful and the obtained information is reasonable (Black and Hawks, 2009). Through critical thinking, a person can decide successfully by critical questions and logical reasoning about his career issues (Neiestani and Imam, 2011). On the other hand, because of the lack of critical thinking in the organization, people are unable to use their acquired content knowledge in real situations and they are submitted to the opinions of others without any thinking and show undue prejudice about various issues (Castledine, 2011).

At the same time, it seems that the entrepreneurial intention of employees can mediate the relationship between critical thinking and productivity. There are studies in the field which confirm this assumption. Entrepreneurship is the process of creating something new through spending time, much effort, accepting financial, psychological and social risks to obtain financial resources, personal satisfaction and independence (Hersey and Goldsmith, 1980). Based on entrepreneurial model of Toosi, influencing factors in the entrepreneurship include: Achievement, independence, risk-taking and creativity, and in this study they were used to determine the factors affecting entrepreneurship (Saeedikia, 2011).

Other studies have been done that are related to the topic of this article. Including research conducted by Noshadpour and Rouhollahi (2015), "Factors affecting the increase in employee productivity at Kohgiluyeh and Boyerahmad Province Gas Company." Keyvani (2015), teaching methods and promote critical and creative thinking in the humanities. Mir Kazemi et al. (2014), the relationship between entrepreneurship and organizational factors affecting employee productivity in individual sports federations, Alper Ay et al. (2015), the relationships between self-direction and critical thinking skills. Ekwe (2013), the effect of intellectual capital on the productivity of bank employees in developing economies, the experience of Nigeria, Gerba (2012), the impact of entrepreneurship education and entrepreneurial intention on engineering and management students in Ethiopia, Torsoyk (2016), a study entitled employee productivity and reward preferences: Why men who have less productivity, prefer more individual receive? Kleinig (2016) conducted a study entitled confidence and critical thinking. Alper Ay et al. (2015) conducted a study entitled relations between the leadership and critical thinking skills. Ekwe (2013) conducted a study entitled "The effect of intellectual capital on the productivity of bank employees in developing economies: Case study of Nigeria."

According to the titles of these investigations, it is clear that these investigations are limited to one or two variables of entrepreneurship, employee productivity or critical thinking. However, any study has not been done on the mediating role of entrepreneurial intention in the relationship between critical thinking and employee productivity at communication system and for this reason, this study can be used to cover the gap in this field of study.

According to the above, this study seeks to answer this question: Is there a significant relationship between critical thinking and productivity of Telecommunication Employees of Isfahan through entrepreneurial intention of employees?

Overview of the theoretical foundations:

• Entrepreneurship: This is a process of value creation through the formation of a unique set of resources to take advantage of opportunities (Arasteh, 2007).

- Creativity: Entrepreneurs have to offer new resolutions of the meanings and concepts, and turn these qualities into new products.
- Critical thinking: It is a self-regulated and purposeful process that pay considerable attention to evidence, background, concepts, methods and standards (Arasteh, 2007).
- Creativity: Weisberg believes that creativity is the ability to solve the problems that are totally unfamiliar. In other words, creativity occurs when a person uses new solutions in order to solve a problem.
- Growth: Koontz believes that the growth is a disciplined, logical, intertwined, integrated and programmed approach and can be used to improve organizational effectiveness (Toosi, 2001).
- Commitment: It is a frame of reference of values and beliefs that may be prescribed by self or others.
- Employee productivity: It is the ratio between output and input of human resources (Mirsepassi, 2013).
- Ability: It includes the training courses and sense of career success.
- Understanding: It includes the correct understanding of the work and business purposes and mistakes and try to modify the mistakes.
- Organizational support: It includes financial and material resources needed for the job, the support of other departments and authorities in achieving the goals and difficult tasks.
- Motivation: It includes opportunities for promotion, cash bonuses, appreciation and welcoming the initiatives and appease superiors in difficult times.
- Feedback: It is the awareness of the performance, methods to improve the performance, quality of work and positive and negative results.
- Credit: It includes the fair decisions and in accordance with ethical principles and appointing based on merit and confidence.
- Compatibility: It includes the impact of market conditions, economic conditions and competition on the performance (Hersey and Goldsmith, 1980. p. 39).

2. RESEARCH METHODOLOGY

This study aimed to determine the mediating role of the entrepreneurial intention in the relationship between critical thinking and employee productivity Telecommunication Company of Isfahan with descriptive and correlational method. The population included all experts and managers of Telecommunications Company of Isfahan in 2016. The total number was equal to 1020 and based on Krejcie and Morgan table (1970), 278 individuals were selected through convenience sampling method. Some questionnaires including entrepreneurial intention questionnaire by Toosi (2001), employee productivity questionnaire by Hersey and Goldsmith (1980) and critical thinking questionnaire by Ricketts (2003) were used for data collection. Validity of the questionnaire was approved by the supervisor and validity was confirmed by a number of individuals in the statistical population. In this study, Cronbach's alpha coefficient for entrepreneurial intention questionnaire is 0.74, for employee productivity questionnaire is 0.91 and for critical thinking questionnaire is 0.83. Through Spss19 and structural equation software AMOS23, research findings were analyzed in two levels of descriptive statistics including frequency, mean and standard deviation, and inferential statistics including Kolmogorov-Smirnov test, Pearson correlation coefficient, multiple regression analysis, independent t test and multivariate variance and Tukey test.

3. INFERENTIAL FINDINGS

The main research hypothesis testing:

The main hypothesis of this study: There is a significant relationship between critical thinking and productivity of Telecommunication employees in Isfahan by entrepreneurial intention.

At first, Pearson correlation coefficients were calculated to examine the relationship between the variables of the study, then the main hypothesis was tested using covariance-based structural equation modeling and considering the relationship between the main variables.

The results of Table 1 demonstrate that the correlation coefficient between entrepreneurial intention, critical thinking and employee productivity is significant and there is a direct relationship between these three variables. This means that there is a significant and direct relationship between entrepreneurial intention and critical thinking (r = 0.201) and there is a significant and direct relationship between entrepreneurial intention and employee productivity (r = 0.295). Moreover, there is a significant and direct relationship between critical thinking and employee productivity (r = 0.427).

Given the existence of a significant relationship between entrepreneurial intention, critical thinking and employee productivity, the structural equation modeling of the main hypothesis of the study, which is modeled by AMOS23, has been examined. Figures 1 and 2 shows the structural equation modeling of the main research hypothesis with standard and non-standard regression coefficients.

Secondary research hypotheses:

First secondary hypothesis: There is a significant relationship between critical thinking and employee productivity at Telecommunications Company of Isfahan.

The results of Table 2 shows the correlation coefficient between critical thinking and employee productivity is significant. This means that there was a significant relationship between critical thinking and employee productivity (r = 0.427). Based on the coefficient of determination (r^2), 18.2% of the variance of critical thinking and employee productivity is collaborative. Thus the first secondary hypothesis that there is a significant relationship between critical thinking and employee productivity was confirmed.

Figure 1: Structural equation modeling of the main research hypothesis with nonstandard regression coefficients



Figure 2: Structural equation modeling of the main research hypothesis standardized regression coefficients



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| Variable | Coefficient | Entrepreneurial intention | Critical thinking | Employee productivity |
|---------------------------|-------------------------|---------------------------|-------------------|------------------------------|
| Entrepreneurial intention | Correlation coefficient | 1 | 0.201* | 0.295** |
| | Significance level | - | 1 | 0.427 |
| Critical thinking | Correlation coefficient | - | 1 | 0.427** |
| | Significance level | - | - | 0.000 |
| Employee productivity | Correlation coefficient | - | - | 1 |
| | Significance level | - | - | - |

| | Table | 1: | Pearson | correlation | matrix | between | the | variables |
|--|-------|----|---------|-------------|--------|---------|-----|-----------|
|--|-------|----|---------|-------------|--------|---------|-----|-----------|

*P<0.05, **P<0.01

The second secondary hypothesis: There is a significant relationship between entrepreneurial intention and employee productivity at Telecommunication Company of Isfahan.

The results of Table 3 shows the correlation coefficient between entrepreneurial intention and employee productivity is significant. This means that there was a significant relationship between entrepreneurial intention and employee productivity (r = 0.295). Based on the coefficient of determination (r^2), 8.7% of the variance of entrepreneurial intention and employee productivity is collaborative. Thus the second secondary hypothesis that there is a significant relationship between entrepreneurial intention and employee productivity and employee productivity was confirmed.

The third secondary hypothesis: There is a significant relationship between critical thinking and entrepreneurial intention at Telecommunication Company of Isfahan.

The results of Table 4 shows the correlation coefficient between critical thinking and entrepreneurial intention is significant. This means that there was a significant relationship between critical thinking and entrepreneurial intention (r = 0.201). Based on the coefficient of determination (r^2), 4.0% of the variance of critical thinking and entrepreneurial intention is collaborative. Thus the third secondary hypothesis that there is a significant relationship between critical thinking and entrepreneurial intention was confirmed.

The fourth secondary hypothesis: Critical thinking dimensions are able to predict employee productivity at Telecommunication Company of Isfahan.

According to the results obtained from the Table 5 and the significant amount of P-value which is obtained zero, it is concluded that there was a significant relationship between the dimensions of critical thinking and employee productivity and regression model is significant.

The results of Table 6 shows that critical thinking dimensions can predict 15.0% of employee productivity. One of the assumptions which is taken into account in the regression is independence of errors from each other (the difference between the actual values and the values predicted by the regression equation). If the independence of errors hypothesis be rejected and errors be correlated with each other, the regression cannot be used and we should use the Durbin-Watson test to evaluate the independence of errors. Durbin-Watson statistic is between 0 and 4. If there is no serial correlation between the residuals, the value of this statistic should be close to 2. If it is close to zero, it indicates a

Table 2: Correlation coefficient between critical thinking and employee productivity

| Criterion variable | | Employee productivity | |
|-----------------------|-------------------------|---|-----------------------|
| Predictors | Correlation coefficient | The square of the correlation coefficient | Significance level |
| Critical thinking | 0.427** | 0.182 | 0.000 |

**P<0.01

Table 3: Correlation coefficient between entrepreneurial intention and employee productivity

| Criterion variable | Employee productivity | | | | | |
|---------------------------|-------------------------|---|-----------------------|--|--|--|
| Predictors | Correlation coefficient | The square of the correlation coefficient | Significance level | | | |
| Entrepreneurial intention | 0.295** | 0.087 | 0.000 | | | |

**P<0.01

Table 4: Correlation coefficient between critical thinking and entrepreneurial intention

| Criterion variable | 1 | Entrepreneurial intention | |
|--------------------|-------------------------|---|-----------------------|
| Predictors | Correlation coefficient | The square of the correlation coefficient | Significance level |
| Critical thinking | 0.201** | 0.040 | 0.001 |

**P<0.01

Table 5: Significance of regression model (ANOVA) in the fourth secondary hypothesis

| Model | Sum of | Degrees of | Average | F-statistic | Significance |
|------------|---------|-------------------|------------|--------------------|--------------|
| | squares | freedom | of squares | | level |
| Regression | 14.989 | 3 | 4.996 | 16.511 | 0.000 |
| Remain | 84.729 | 280 | 0.303 | | |
| Total | 99.717 | 283 | | | |

Predictor variables (fixed number), creativity, growth, commitment, Dependent variable: Employee productivity

positive correlation and if it is close to 4, it indicates a negative correlation. In general, if the statistic is amongst 1.5-2.5, there would be nothing to worry about. In this hypothesis, the value of this statistic is 1.913, which is very convenient.

As shown in Table 7, in growth dimension, the T-value is 1.942 and the significance level is 0.053. So, critical thinking cannot predict

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employee productivity at the 95% confidence level. However, the creativity dimension whose T-value is 1.146 and the significance level is 0.033 and commitment dimension whose T-value is 3.627 and the significance level is 0.000 can significantly predict employee productivity at the 95% confidence level. And its linear equation with non-standard coefficients is as follows:

Commitment 0.297 + creativity 0.130 = Employee productivity

Fifth secondary hypothesis: Entrepreneurial intention dimensions can predict the employee productivity at Telecommunication Company of Isfahan.

Simultaneous regression method was used to test this hypothesis.

According to the results obtained from the Table 8 and the significant amount of P-value which is obtained zero, it is concluded that there was a significant relationship between the dimensions of entrepreneurial intention and employee productivity and regression model is significant.

The results of Table 9 shows that employee productivity dimensions can predict 29.5% of employee productivity. One of the assumptions which is taken into account in the regression is independence of errors from each other (the difference between the actual values and the

values predicted by the regression equation). If the independence of errors hypothesis be rejected and errors be correlated with each other, the regression cannot be used and we should use the Durbin-Watson test to evaluate the independence of errors. Durbin-Watson statistic is between 0 and 4. If there is no serial correlation between the residuals, the value of this statistic should be close to 2. If it is close to zero, it indicates a positive correlation and if it is close to 4, it indicates a negative correlation. In general, if the statistic is amongst 1.5-2.5, there would be nothing to worry about. In this hypothesis, the value of this statistic is 1839, which is very convenient.

As shown in Table 10, the achievement dimension with T-value (2.957) and the significance level (0.003), the independence dimension with T-value (-7.674) and the significance level (0.000), the risk-taking dimension with T-value (4.432) and the significance level (0.000) and the creativity dimension with T-value (2.115) and the significance level (0.035) can significantly predict employee productivity at the 95% confidence level. And its linear equation with non-standard coefficients is as follows:

1.125 + creativity 0.0142 + risk-taking 0.368 + independence 0.353 - achievement 0.241 = Employee productivity

Sixth secondary hypothesis: Critical thinking dimensions can predict the entrepreneurial intention at Telecommunication Company of Isfahan.

Table 6: Summary of regression model of forth secondary hypothesis

| Model | Correlation coefficient | Square of the | The standard deviation | F-statistic | | Statistics | |
|-------|--------------------------------|---------------|------------------------|--------------------|------------|-------------------|--------|
| | | correlation | error estimates | | Degrees of | Degrees of | Durbin |
| | | coefficient | | | freedom 1 | freedom 2 | Watson |
| 1 | 0.388 | 0.150 | 0.5501 | 16.511 | 3 | 280 | 1.913 |

Predictors: (Constant), creativity, growth, commitment

Table 7: Regression model coefficients of fourth secondary hypothesis

| Model 1 | Nonstandard coefficients | | Standard beta coefficient | T-statistics | Significance level | Collineari | ty statistics |
|-----------------|--------------------------|----------------|------------------------------|---------------------|--------------------|------------|--------------------------|
| | Beta | Standard error | | | | Tolerances | Collinearity coefficient |
| Constant factor | 0.355 | 0.319 | 0.139 | 1.111 | 0.267 | 0.726 | 1.377 |
| Creativity | 0.130 | 0.061 | 0.139 | 2.146 | 0.033 | 0.726 | 1.377 |
| Growth | 0.159 | 0.082 | 0.121 | 1.942 | 0.053 | 0.780 | 1.283 |
| Commitment | 0.297 | 0.082 | 0.230 | 3.627 | 0.000 | 0.756 | 1.322 |

Dependent variable: Employee productivity

Table 8: Significance of regression model (ANOVA) in the fifth secondary hypothesis

| Model | Sum of squares | Degrees of freedom | Average of squares | F-statistic | Significance level |
|------------|----------------|--------------------|--------------------|--------------------|--------------------|
| Regression | 29.407 | 4 | 7.352 | 29.233 | 0.000 |
| Remain | 70.416 | 280 | 0.251 | | |
| Total | 99.823 | 284 | | | |

Predictor variables (fixed number), creativity, growth, commitment, dependent variable: Employee productivity

Table 9: Summary of regression model of fifth secondary hypothesis

| | | 0 | | | | | |
|-------|-------------|-------------------------|------------------------|--------------------|-------------------|-------------------|--------|
| Model | Correlation | Square of the | The standard deviation | F-statistic | | Statistics | |
| | coefficient | correlation coefficient | error estimates | | Degrees of | Degrees of | Durbin |
| | | | | | freedom 1 | freedom 2 | Watson |
| 1 | 0.543 | 0.295 | 0.5014 | 29.233 | 4 | 280 | 1.839 |
| | | | | | | | |

Predictors: (Constant), creativity, achievement, independence, risk-taking

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Simultaneous regression method was used to test this hypothesis.

According to the results obtained from the Table 11 and the significant amount of P-value which is obtained zero, it is concluded that there was a significant relationship between the dimensions of critical thinking and entrepreneurial intention and regression model is significant.

The results of Table 12 shows that critical thinking dimensions can predict 8.1% of entrepreneurial intention. One of the assumptions which is taken into account in the regression is independence of errors from each other (the difference between the actual values and the values predicted by the regression equation). If the independence of errors hypothesis be rejected and errors be correlated with each other, the regression cannot be used and we should use the Durbin-Watson test to evaluate the independence of errors. Durbin-Watson statistic is between 0 and 4. If there is no serial correlation between the residuals, the value of this statistic should be close to 2. If it is close to zero, it indicates a positive correlation and if it is close to 4, it indicates a negative correlation. In general, if the statistic is amongst 1.5-2.5, there would be nothing to worry about. In this hypothesis, the value of this statistic is 1820, which is very convenient. As shown in Table 13, the growth dimension with T-value (0.390) and the significance level (0.697) and the commitment dimension with T-value (1.185) and the significance level (0.237) cannot significantly predict entrepreneurial intention at the 95% confidence level, but the creativity dimension with T-value (3.397) and the significance level (0.001) can significantly predict entrepreneurial intention at the 95% confidence level and its linear equation with non-standard coefficients is as follows.

2.548 + creativity 0.134 = Entrepreneurial intention

4. CONCLUSION

The results showed that there is a significant direct relationship between critical thinking, employee productivity and entrepreneurial intention. Moreover, the mediation demonstrated that entrepreneurial intention plays a partial mediating role between critical thinking and employee productivity. In addition to these results, research indicates that there are significant differences between respondents' views with regard to employee productivity and critical thinking based on demographic characteristics, employment status and years of service.

Table 10: Regression model coefficients of fifth secondary hypothesis

| Model 1 | Nonstar | ndard coefficients | Standard beta coefficient | T-statistics | Significance level | Colli | inearity statistics |
|-----------------|---------|--------------------|------------------------------|---------------------|-----------------------|------------|---------------------------------|
| | Beta | Standard error | | | | Tolerances | Collinearity coefficient |
| Constant factor | 1.125 | 0.342 | | 3.287 | 0.001 | | |
| Achievement | 0.241 | 0.082 | 0.161 | 2.957 | 0.003 | 0.853 | 1.172 |
| Independence | -0.353 | 0.046 | -0.404 | -7.674 | 0.000 | 0.911 | 1.098 |
| Risk-taking | 0.368 | 0.083 | 0.258 | 4.432 | 0.000 | 0.742 | 1.348 |
| Creativity | 0.142 | 0.067 | 0.119 | 2.115 | 0.035 | 0.790 | 1.266 |

Dependent variable: Employee productivity

Table 11: Significance of regression model (ANOVA) in the sixth secondary hypothesis

| _ | - | | | | |
|------------|----------------|--------------------|--------------------|--------------------|--------------------|
| Model | Sum of squares | Degrees of freedom | Average of squares | F-statistic | Significance level |
| Regression | 29.407 | 4 | 7.352 | 29.233 | 0.000 |
| Remain | 70.416 | 280 | 0.251 | | |
| Total | 99.823 | 284 | | | |
| | | | | | |

Predictor variables (fixed number), creativity, growth, commitment, dependent variable: Entrepreneurial intention

Table 12: Summary of regression model of sixth secondary hypothesis

| | v | 0 | | | | | |
|-------|-------------|-------------------------|------------------------|--------------------|-------------------|-------------------|--------|
| Model | Correlation | Square of the | The standard deviation | F-statistic | Statistics | | |
| | coefficient | correlation coefficient | error estimates | | Degrees of | Degrees of | Durbin |
| | | | | | freedom 1 | freedom 2 | Watson |
| 1 | 0.285 | 0.081 | 0.3556 | 8.241 | 3 | 280 | 1.820 |
| | | | | | | | |

Predictors: (Constant), creativity, growth, commitment

Table 13: Regression model coefficients of sixth secondary hypothesis

| Model 1 | Nonstandard coefficients | | Standard beta coefficient | T-statistics | Significance level | Collinearity statistics | |
|-----------------|-----------------------------|----------------|---------------------------|--------------|--------------------|--------------------------------|--------------------------|
| | Beta | Standard error | | | | Tolerances | Collinearity coefficient |
| Constant factor | 2.548 | 0.206 | | 12.341 | 0.000 | 0.726 | 1.377 |
| Creativity | 0.134 | 0.039 | 0.228 | 3.397 | 0.001 | 0.726 | 1.377 |
| Growth | 0.021 | 0.053 | 0.025 | 0.390 | 0.697 | 0.780 | 1.283 |
| Commitment | 0.063 | 0.053 | 0.078 | 1.185 | 0.237 | 0.756 | 1.322 |

Dependent variable: Entrepreneurial intention

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