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International Journal of Current Research
Vol. 6, Issue, 06, pp.7257-7259, June, 2014

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

RESEARCH ARTICLE

CREATIVITY IN THE CONTEXT OF INNOVATION

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ARTICLE INFO

Article History:
Received 23rd March, 2014
Received in revised form
09th April, 2014
Accepted 15th May, 2014
Published online 25th June, 2014

Key words:
Creativity,
Creativity Theories,
Entrepreneurial creativity,
Systems model,
Humanistic theory.

ABSTRACT

There is a lot of investment in research to help ascertain how creativity plays in enhancing business development. Personal-driven factors, as well as contextual factors, affect creativity which happens in organizational contexts. The theories of creativity identified as relevant for our article are: entrepreneurial creativity, systems model theory of creativity and humanistic theory of creativity. Computations are done using SPSS software and the main conclusion is that the theory of creativity applied by a company has a significant impact on the number of successful and innovative projects generated over a certain period of time by that company.

INTRODUCTION

The main objective of this research is to prove that the number of successful innovative projects generated by a company within a period of time is significantly influenced by the way in which the process of creativity is implemented. The research hypothesis is that the creativity theory applied by a company influences significantly the number of successful projects generated by that company. The null hypothesis states the opposite, that such an influence is not statistically significant. The most important creativity theories are: theory of entrepreneurial creativity, systems model of creativity and humanistic theory of creativity. Entrepreneurial creativity resonates from experience that is gained by an entrepreneur by virtue of participation in different business settings (Mahoney and Michael, 2005). When assessed from the outset, creativity enables entrepreneurs to focus on innovative activities through learning and discovering of how to manipulate different things in organizations (Woodman and Schoenfeldt, 1990). The humanistic theory states that the employee develops an inquisitive attitude of different processes and procedures around him or her that leads to attempts to emulate the environment around a person resulting in creativity (Runco, 2007). Another theory that seeks to explain how organizations apply creativity is the systems model of creativity which says that an environment in which creativity takes place has two main aspects.

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The first aspect of the environment is the culture (which is also a symbolic aspect) and the second one is the social aspect. Creativity occurs at the intersection of these two aspects and their interaction in an articulated manner. For creativity to occur there has to be a transmission of a set of rules from one aspect to the other (Koivunen and Rehn, 2009). Each business struggles to ensure that creativity is attained and applied in different organizational tasks. This resonates from the fact that the prevailing corporate environment is dynamic and marked with a lot of competitive forces. Managers and employees have to embrace creativity to help organizations in matching with the corporate demands. The level of creativity differs with the organizational task in question (Shelley and Gilson, 2004).

MATERIALS AND METHODS

We selected fifteen companies, which were divided into three equal groups of five. Each group applies a different theory of creativity (the theories taken into consideration are entrepreneurial creativity, systems model theory of creativity and humanistic theory of creativity). The reasons why these companies were selected are that they are from the same sector of activity (banking sector), they are very innovative and because they were compatible in such a way that each group uses a different model of innovation management and all the firms from the same group implement the same theory. After applying a certain theory of creativity, each company has initiated a number of innovative projects over the last five years (2008-2012 is the period used in doing the necessary computations). The research tries to identify if there is a significant connection between the type of creativity theory

used and the number of successful innovative projects. The data was collected by email. The method we used is called ANOVA, which tests the difference between the means of more than two means. So, in our case, the research hypothesis is that the number of innovative projects is significantly influenced by the type of creativity theory used. The null hypothesis is that the number of innovative projects is not significantly influenced by the type of creativity theory used. In figure 1, we presented the graphical interpretations of the research hypothesis and of the null hypothesis. If the null hypothesis is true, this means that the three groups come from the same population, so the three means are equal ($\mu_1=\mu_2=\mu_3$) and the distributions are overlapped (fig1.a). If the research hypothesis is true, the three groups are different ($\mu_1\neq\mu_2\neq\mu_3$) and they come from different populations (fig1.b).

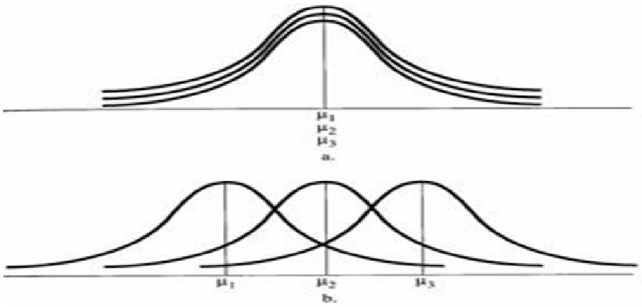

Fig.1 ANOVA Means
Source: Author's computations in SPSS

RESULTS

Table 1. Descriptives

	N	Mean	Std. Deviation
entrepreneurial	5	8.8000	1.30384
systems model	5	5.6000	1.81659
humanistic	5	3.2000	1.30384
Total	15	5.8667	2.74816

Source : Author's calculations in SPSS

In the "Descriptives" table we can see the figures for total population, entrepreneurial group, systems model group, humanistic group and their corresponding means and standard deviations. There are three equal groups of five companies, therefore the total population counts fifteen members. The average number of innovative projects generated by the entrepreneurial group is 8.8, which is the biggest mean, considering that the other values for systems model group and humanistic group are 5.6 and 3.2. The average number of projects for the whole population is 5.86.

Table 2. Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
.148	2	12	.864

Source : Author's calculations in SPSS

The significance value (Sig.) for the test of homogeneity of variances (Levene Statistic) is 0.86, which is bigger than the significance level (5%), this means that our data allows us to apply ANOVA.

Table 3. ANOVA

nr_projects

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	78.933	2	39.467	17.672	.000
Within Groups	26.800	12	2.233		
Total	105.733	14			

Source : Author's calculations in SPSS

The significance value is below the confidence level (0<0.05), meaning that the research hypothesis is true, so there is a significant connection between the number of innovative projects and the creativity theory applied.

Table 4. Post hoc tests

	(I) creativity_theory	(J) creativity_theory	Mean Difference (I-J)
Tukey HSD	entrepreneurial	systems model	3.20000*
		humanistic	5.60000*
	systems model	entrepreneurial	-3.20000*
		humanistic	2.40000
	humanistic	entrepreneurial	-5.60000*
		systems model	-2.40000
LSD	entrepreneurial	systems model	3.20000*
		humanistic	5.60000*
	systems model	entrepreneurial	-3.20000*
		humanistic	2.40000*
	humanistic	entrepreneurial	-5.60000*
		systems model	-2.40000*
Bonferroni	entrepreneurial	systems model	3.20000*
		humanistic	5.60000*
	systems model	entrepreneurial	-3.20000*
		humanistic	2.40000
	humanistic	entrepreneurial	-5.60000*
		systems model	-2.40000

Source : Author's calculations in SPSS

According to the hoc tests, there is no statistical difference between the number of projects generated by the companies which apply entrepreneurial and systems model theories, systems model and humanistic theories, but there is a difference between entrepreneurial and humanistic.

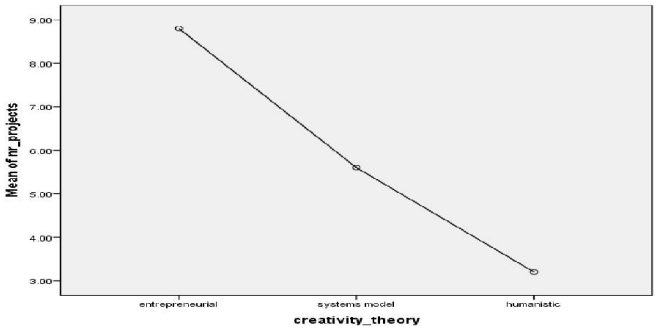

Fig. 2. Means Plots

Source : Author's calculations in SPSS

The means plots is the graphical interpretation of the means computed in the second table. The entrepreneurial and the humanistic groups have the extreme values (the biggest and the lowest mean of successful innovative projects).

DISCUSSION

Our sample counts 15 members (Fig. 2), which are divided in three groups, each one is composed of companies applying a

different creativity theory(the first one entrepreneurial, the second one systems model and the third one humanistic). In Fig.2 we can also see the values for the mean, standard deviation. The values of the means are graphically presented in the "Means plots" (Fig. 6) where the three theories are on the horizontal axis and the their correspondent mean value (average number of projects generated inside each group) is located on the vertical axis. Our purpose is to check whether or not our research hypothesis is true, but before we do that we must see if the data which was collected passed the test of homogeneity of variances. The significance value (Sig.) from Fig.3 is bigger than 5%, the confidence interval (0.86>0.05), so the data passed the homogeneity test. This allows us to go on with the ANOVA analysis. The "Test of homogeneity of variances" table displays the values for intergroup (df1) and intragroup (df2) degrees of freedom. Df1 is computed as the number of groups minus one and df2 as total population minus number of groups. In figure 4, the significance value (Sig.) is zero, which is lower than 5%. This implies that the research hypothesis is accepted and the null hypothesis is rejected, so the creativity theory a company applies influences significantly the number of innovative projects generated by that company.

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