



New Trends and Issues Proceedings on Humanities and Social Sciences



Volume 4, Issue 10, (2017) 33-42

www.prosoc.eu

ISSN 2547-8818

Selected Paper of 6th World Conference on Business, Economics and Management (BEM-2017)
04-06 May 2017, Acapulco Hotel and Resort Convention Center, North Cyprus

Radical or incremental innovation adoption: do demographics and the frequency and form of innovation matter?

Cigdem Kaya^{a*}, Istanbul Arel University, Turkoba Mah. Erguvan Sok. No:26/K Tepekent–Buyukcekmece, 34537 Istanbul, Turkey

Goksel Ataman^b, Marmara University, Ressay Namik Ismail Sk. No:1, 34180 Bahcelievler, Istanbul, Turkey

Ibrahim H. Elbasi^c, Commercialization Center of Istanbul, Resadiye street, 34112 Eminonu, Istanbul, Turkey

Suggested Citation:

Kaya, C., Ataman, G. & Elbasi, I. H. (2017). Radical or incremental innovation adoption: do demographics and the frequency and form of innovation matter? *New Trends and Issues Proceedings on Humanities and Social Sciences*. [Online]. 4(10), 33–42. Available from: www.prosoc.eu

Selection and peer review under responsibility of Prof. Dr. Cetin Bektas, Gaziosmanpasa University, Turkey

©2017 SciencePark Research, Organization & Counseling. All rights reserved

Abstract

This study aims to describe managers' adoption of radical and incremental innovation based on managers' and organisations' demographics, and forms and frequencies of innovation. With this purpose, data collected from 161 managers who work for companies operating in various industries have been analysed. According to our findings, there is a significant difference between men and women with respect to their adoption of incremental or radical innovation. Female managers adopt incremental innovation 71.7%, whereas male counterparts adopt incremental innovation 50%; female managers adopt radical innovation 28.3%, whereas male counterparts adopt radical innovation 50%. Another significant difference is found among the frequencies of applying innovation (apply innovation consistently, apply innovation occasionally and apply innovation rarely). Data indicate that the companies that are applying innovations consistently adopt incremental innovation rather than adopting radical innovation. In the companies applying innovations occasionally, percentages of adoption of incremental and radical innovation are equal to each other. Radical innovation percentage is relatively higher by 69% compared to incremental innovation percentage at the companies that apply innovations rarely. Managerial implications of our findings and directions for future research are discussed.

Keywords: Radical innovation adoption, incremental innovation adoption, the frequency of applying innovation, form of innovation, managers' demographics, organisations' demographics.

* ADDRESS FOR CORRESPONDENCE: **Cigdem Kaya**, Istanbul Arel University, Turkoba Mah. Erguvan Sok. No:26/K Tepekent Buyukcekmece, 34537 Istanbul, Turkey
E-mail address: cigdemkaya@arel.edu.tr / Tel.: +90 850 850 2735

1. Introduction

Innovation is a source of competitive advantage by providing companies being effective. Innovation, hence, is an important concept for companies to survive (Damanpour & Schneider, 2006). Scholars have widely investigated organisational processes such as organisational structure and management traits that support the generation or adoption of innovation to recognise the motives of some organisations' capability for generating or adopting innovation more than other organisations' capability to do so (Germain, 1996; Tidd, 2001; Damanpour & Schneider, 2006). There, however, is a research gap that these processes have not been clearly examined to detect innovative organisations (Damanpour & Schneider, 2006).

Factors that are external and internal to the innovation affect the organisation's tendency to innovate. Structure of the organisation, strategy and context of the organisation, management traits, culture and production processes are the external factors, and the phase of innovation, radicalness of innovation, compatibility, risk, cost and the organisation's innovative nature (e.g., an administrative versus a technological) are the internal factors (Germain, 1996). In this study, our goal is to describe managers' adoption of radical and incremental innovation based on managers' and organisations' demographics, and forms and frequencies of innovation to be able to understand the effects of some of these factors. With this aim, we collected and analysed data from 161 managers who work for companies operating in various industries. We first provide the literature review in adoption of radical and incremental innovations and our research purpose, and then, we present methodology and findings sections. Lastly, we discuss our findings and provide a conclusion with the directions for future research.

2. Adoption of radical and incremental innovation

Scholars from different perspectives paid a widespread attention to innovation. Innovation is generally defined as 'the development and use of new ideas or behaviors in organisations' and 'a new idea could be a new product, service or method of production (technical innovation) or a new market, organisational structure or administrative system (administrative or organisational innovation)' (Damanpour & Wischnevsky, 2006, 271). The concept of innovation is related to financial growth and can be a foundation of sustained competitive advantage to companies (Tushman et al., 1997; Damanpour & Wischnevsky, 2006). The principal goal of innovation is to organisational change for creating new opportunities or exploiting existing ones. Globalisation and thus global competition, resource rareness, and the speed of technological developments characterise today's environmental conditions and firms that operate under these conditions and that desire to grow must innovate (Damanpour & Wischnevsky, 2006). Managers decide to adopt innovation to gain anticipated benefits from variations that the innovation may transfer to the organisation (for internal efficiency). They may also decide to innovate because of environmental adaption and thus an organisation's performance levels and efficiency are increased (Damanpour & Schneider, 2006).

Innovation adoption has extensively been studied in the literature as the adoption of incremental and radical innovation (e.g., Moore & Benbasat, 1991; Germain, 1996; Kuan & Chau, 2001; Damanpour & Schneider, 2006). Radical innovation refers to create foremost differences in the products, processes, technologies, and organisational structure and methods of firms. On the other hand, refinement and reinforcement of current products, processes, technologies, organisational structure and methods address incremental innovation (Fores & Camison, 2016). To be able to understand why some organisations are able to generate or adopt innovation more than other organisations necessitate investigations of organisational processes that enable the generation or adoption of innovation (Germain, 1996; Tidd, 2001; Damanpour & Schneider, 2006).

Research findings on the effects of managerial and organisational characteristics such as gender, education, organisational size, structure and innovativeness on the decisions of the managers adopting innovation are mixed (e.g., Frambach & Schillewaert, 2002; Damanpour & Wischnevsky,

2006; Laforet, 2013; Jaskyte, 2013). Innovation is a very vital concept for the survival of the organisations. Moreover, in organisational operations, managers are key decision makers. Koberg, Detienne, and Heppard (2003) state that researchers may include organisational factors such as the age and size of the firm and structure of the firm and managerial characteristics such as managers' demographics to see if they have an effect on the managers' decisions. It is, therefore, essential to examine innovation adoption from managers' point of view.

3. Methodology

This study aims to describe managers' adoption of radical and incremental innovation based on managers' and organisations' demographics, and forms and frequencies of innovation. With this purpose, the questionnaire was distributed to managers working in Istanbul, Turkey. With this purpose, data collected from 161 managers who work for companies that operate in various industries have been analysed. Convenience sampling was used in this research. In total, 161 managers filled out the paper questionnaire, of which 32.9 % of the sample was female and 67.1 % was male; 52.6 % of the participants had a university degree; 36.5 % had a master degree; 5.2 % had a PhD degree.

We first asked questions to the participants based on their gender, their educational level, the size of the companies they are working for, the age of the organisation they work for, the frequency of applying innovation in their companies and the forms of innovation they choose in terms of product innovation, process innovation, marketing innovation and organisational innovation. We, then, ask participants their innovation adoption decisions based on radical and incremental innovation because innovation adoption has widely been worked in the literature as incremental innovation adoption and radical innovation adoption (e.g., Kuan & Chau, 2001; Moore & Benbasat, 1991; Tornatzky & Klein, 1982; Damanpour & Schneider, 2006; De Lancer Julnes & Holzer, 2001; Germain, 1996).

We first used cross-tabulation analysis to investigate managers' innovation adoption decisions based on managers' and organisations' demographics, and forms and frequencies of innovation to see a joint frequency distribution of cases based on two or more categorical variables. We then analysed the joint frequency distribution with the *chi-square* statistic to determine whether the variables are statistically independent or if they are associated. Lastly, if a dependency between variables does exist, we used Cramer's *V* to describe the degree which the values of one variable predict or vary with those of the other variable (Michael, n.d.).

4. Findings

We first used cross-tabulation analysis to see the percentage of categories within each independent variable in each of the dependent variables namely adopting incremental and radical innovation and presented our findings below.

Gender: Table 1 shows the percentage of males and females in each of the dependent variables based on cross-tabulation analysis. According to analysis, 71.7% of female managers choose to adopt incremental innovation, and 28.3% of female managers chose to adopt radical innovation. On the other hand, 50% of male managers choose to adopt incremental innovation, and 50% of female managers chose to adopt radical innovation. Cross-tabulation analysis also shows percentage rates of each group based on the total number of the groups within each dependent variable. According to this, from incremental innovation adopters, 41.3% of managers are female managers and 58.7% are male managers. On the other hand, from radical innovation adopters, 21.7% of managers are female managers and 78.3 % are male managers. This means there is a slight difference between male and female managers for adopting incremental innovation, whereas there is a big difference between male and female managers for adopting radical innovation.

Table 1. Adoption of incremental and radical innovation based on gender

Gender		Dependent		Total
		Incremental	Radical	
Female	Count	38	15	53
	% within gender	71.7	28.3	100.0
	% within dependent	41.3	21.7	32.9
Male	Count	54	54	108
	% within gender	50.0	50.0	100.0
	% within dependent	58.7	78.3	67.1

We then employed chi-square analysis to see whether this difference between male and female managers is statistically significant (Table 2).

Table 2. Chi-square test for the adoption of incremental and radical innovation based on gender

	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	6.835 ^a	1	0.009
Likelihood ratio	7.024	1	0.008
Linear-by-linear association	6.792	1	0.009
No. of valid cases	161		

^a0 cells (.0%) have expected count less than 5. The minimum expected count is 22.71.

As shown in Table 2, the value of chi-square (0.009) is lower than 0.05 and this difference between male and female managers based on their innovation adoption decisions is statistically significant. We then used Cramer’s V (Table 3) to see how important and strong the impact of the gender is on innovation adoption decisions.

Table 3. Cramer’s V test for the adoption of incremental and radical innovation based on gender

Symmetric measures		Value	Approx. Sig.
Nominal by Nominal	Phi	0.206	0.009
	Cramer’s V	0.206	0.009
N of Valid Cases		161	

^a Not assuming the null hypothesis.

^b Using the asymptotic standard error assuming the null hypothesis.

Cramer’s V test shows that there is a medium impact of the gender on the innovation adoption decisions (0.206).

Education level: Table 4 indicates the percentages of incremental and radical innovation adoption in terms of education level.

Table 4. Adoption of incremental and radical innovation based on education level

Education level		Dependent		Total
		Incremental	Radical	
High school	count	2	3	5
	% within education level	40.0	60.0	100.0
	% within dependent	2.2	4.3	3.1
Vocational school	count	2	2	4
	% within education level	50.0	50.0	100.0
	% within dependent	2.2	2.9	2.5
Undergraduate	count	56	29	85
	% within education level	65.9	34.1	100.0
	% within dependent	60.9	42.0	52.8
Master	count	28	30	58
	% within education level	48.3	51.7	100.0
	% within dependent	30.4	43.5	36.0
PhD	count	4	5	9
	% within education level	44.4	55.6	100.0
	% within dependent	4.3	7.2	5.6

Table 4 shows that managers from all the education levels choose to adopt incremental and radical innovation almost the same level except managers from undergraduate level. They adopt incremental innovation two times more than adopting radical innovation. However, this difference is not significant according to chi-square test ($p = 0.520$). Because of the page limitation, we did not give place to the tables of chi-square tests when the tests are insignificant.

Organisational size: Table 5 indicates that large sized and small sized companies adopt incremental innovation more than adopting radical innovation. On the other hand, middle-sized companies adopt radical innovation more than adopting incremental innovation. However, this difference is not significant according to chi-square test (0.323).

Table 5. Adoption of incremental and radical innovation based on organisational size

Organisational size		Dependent		Total
		Incremental	Radical	
Small sized companies	Count	35	18	53
	% within organisational size	66.0	34.0	100.0
	% within dependent	38.0	26.1	32.9
Medium sized companies	count	9	11	20
	% within organisational Size	45.0	55.0	100.0
	% within dependent	9.8	15.8	12.4
Large sized companies	Count	48	40	88
	% within organisational size	54.5	45.5	100.0
	% within dependent	52.2	58.0	54.7

Age of the organisation: Table 6 indicates that companies in almost all ages adopt incremental innovation more than adopting radical innovation. Thus, it can be said that there is no difference between groups in terms of innovation adoption. Yet, this difference is not significant according to chi-square test (0.092).

Table 6. Adoption of incremental and radical innovation based on age of the organisation

Organisational age		Dependent		Total
		Incremental	Radical	
0–1 year	Count	8	1	9
	% within organisational age	88.9	11.1	100.0
	% within dependent	8.7	1.4	5.6
2–4 years	count	9	10	19
	% within organisational age	47.4	52.6	100.0
	% within dependent	9.8	14.5	11.8
5–6 years	count	9	4	13
	% within organisational age	69.2	30.8	100.0
	% within dependent	9.8	5.8	8.1
7–9 years	count	5	5	10
	% within organisational age	50.0	50.0	100.0
	% within dependent	5.4	7.2	6.2
10–12 years	count	12	4	16
	% within organisational age	75.0	25.0	100,0
	% within dependent	13.0	5.8	9,9
13 years and more	count	49	44	93
	% within organisational age	52.7	47.3	100.0
	% within dependent	53.3	63.8	57,8

Frequency of applying innovation: Another significant difference is found among the frequencies of applying innovation (apply innovation consistently, apply innovation occasionally and apply innovation rarely). Data indicate that the companies that are applying innovations consistently adopt incremental innovation rather than adopting radical innovation (Table 7). In the companies applying innovations occasionally, the percentages of both innovation adoption types are equal to each other. Radical innovation percentage is relatively higher by 69% compared to incremental innovation percentage at the companies which apply innovations rarely.

According to percentage rates of each group based on total numbers of the groups within each dependent variable, from incremental innovation adopters, 60.9% of managers are the managers who choose to innovate consistently, 33.7% of managers are the managers who choose to innovate occasionally, 5.4% of managers are the managers who choose to innovate rarely. On the other hand, from radical innovation adopters, 39.1% of managers are the managers who choose to innovate consistently, 44.9% of managers are the managers who choose to innovate occasionally, 15.9% of managers are the managers who choose to innovate rarely. This means there is a difference among the levels of frequency of innovation for adopting incremental innovation and for adopting radical innovation.

Table 7. Adoption of incremental and radical innovation based on frequency of applying innovation

Frequency of applying innovation		Dependent		Total
		Incremental	Radical	
Consistently	Count	56	27	83
	% within frequency of applying innovation	67.5	32.5	100.0
	% within dependent	60.9	39.1	51.6
Occasionally	count	31	31	62
	% within frequency of applying innovation	50.0	50.0	100.0
	% within dependent	33.7	44.9	38.5
Rarely	count	5	11	16
	% within frequency of applying innovation	31.3	68.8	100.0
	% within dependent	5.4	15.9	9.9

As shown in Table 8, the value of chi-square (0.010) is lower than 0.05 and this difference among three frequencies of applying innovation levels and innovation adoption decisions is statistically significant. We then used Cramer’s V (Table 9) to see how important and strong the impact of the frequency of applying innovation is on innovation adoption decisions.

Table 8. Chi-square test for the adoption of incremental and radical innovation based on frequency of applying innovation

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson chi-square	9.286(a)	2	0.010
Likelihood ratio	9.358	2	0.009
Linear-by-linear association	9.224	1	0.002
No. of valid cases	161		

^a 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.86.

Table 9. Cramer’s V test for the adoption of incremental and radical innovation based on frequency of applying innovation symmetric measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	0.240	0.010
	Cramer’s V	0.240	0.010
N of valid cases		161	

^a Not assuming the null hypothesis.

^b Using the asymptotic standard error assuming the null hypothesis.

Cramer’s V test shows that there is a medium impact of the frequency of applying innovation on the innovation adoption decisions (0.240).

Types of innovation: Based on the companies that we analysed, incremental innovation percentage is relatively high in all types of innovation except process innovation (Table 10). It seems like companies need radical innovation more than incremental innovation in their processes. Yet, this difference is not significant according to chi-square test (0.280).

Table 10. Adoption of incremental and radical innovation based on types of innovation

	Types of innovation	Dependent		Total
		Incremental	Radical	
Product innovation	Count	25	17	42
	% within types of innovation	59.5	40.5	100.0
	% within dependent	27.2	24.6	26.1
Process innovation	count	32	34	66
	% within types of innovation	48.5	51.5	100.0
	% within dependent	34.8	49.3	41.0
Marketing innovation	count	12	6	18
	% within types of innovation	66.7	33.3	100.0
	% within dependent	13.0	8.7	11.2
Organisational innovation	count	23	12	35
	% within types of innovation	65.7	34.3	100.0
	% within dependent	25.0	17.4	21.7

5. Discussion and conclusion

In this study, we aimed to describe managers' adoption of radical and incremental innovation based on managers' and organisations' demographics, and forms and frequencies of innovation. According to the analysis, there is significant difference between gender and managers' choices of innovation adoption. From Social Role Theory point of view (Eagly & Crowley, 1986; Eagly, 1987), differences in societal roles between women and men (e.g., their role in family, in organisations, or in communities) lead them to behave in different ways and their roles can be explained in two dimensions—the communal and the agentic. Women are likely to behave in communal dimension (friendly, unselfish, and concerned with others), whereas men are likely to behave in the agentic dimension (independent, masterful, and competent) (Eagly & Wood, 1988, 4). Scholars have examined the role of gender differences on various organisational areas such as organisational ethics (e.g., McDaniel, Schoeps, & Lincourt, 2001), job satisfaction, and leadership styles (e.g., Collins, Burrus, & Meyer, 2014). Leadership studies, for example, have found mixed results on whether the differences in characteristics and values between men and women would affect their leadership styles or behaviors (Damanpour & Schneider, 2008). Wang et al. (2013) have investigated Taiwanese employees and found that gender of managers has differentiator effect on perceived leadership effectiveness. Bass (1990); Hooijberg and DiTomaso (1996) have underlined that there is no strong evidence about the effects of differences on gender on managers' leadership styles or behaviors. In terms of innovation adoption, Damanpour and Schneider (2006) have found that innovation adoption decisions have not been affected significantly by gender. According to the results of this study, in terms of gender, female managers adopt incremental innovations rather than adopting radical innovations while male managers adopt both types of innovations equally. This can be interpreted as women tend to show less risk-taking behavior than their men counterparts and this interpretation is coherent with the literature specifying that male traits are defined as being competitive, aggressive, task-focused and female as sensitive, cooperative, and people-focused (Sumner & Niederman, 2004, 30).

Another significant difference is found between frequencies of applying innovation and managers' choices of innovation adoption. In terms of the frequency of applying innovation, the companies which are applying innovations consistently adopt incremental innovation rather than adopting radical innovation. In the companies applying innovations occasionally, adoption of incremental and radical innovation ratios is equal to each other. Radical innovation percentage is relatively higher compared to incremental innovation percentage at the companies which apply innovations rarely. This result can be interpreted as companies that innovate frequently adopt continuous improvement philosophy (e.g., kaizen philosophy in total quality management) that is resulted in incremental improvements. On the other hand, companies innovate rarely adopt breakthrough innovations more than adopting continuous improvement. Bhaskaran (2006) underlines that 'incremental innovations are, generally, cheaper to uptake and can be operationalised much more rapidly than radical innovations and could lead to the growth of more competitive and profitable firms' (76). Therefore, managers may adopt radical innovation rarely because of its cost-increasing nature.

Although this study makes some contributions to the literature, it has some limitations. The first limitation of this research is that we applied the survey on organisations that function in various industries. Yet, different industries have different dynamics. Hence, research may examine innovation adoption decisions of the managers and organisational factors that have effect on these decisions in specific industries, and may compare the managers' perceptions about innovation adoption in those industries. Secondly, we conducted this research from organisations located in Istanbul. It would be very valuable to gather data from several cities in Turkey to be able to generalise the findings.

Kaya, C., Ataman, G. & Elbasi, I. H. (2017). Radical or incremental innovation adoption: do demographics and the frequency and form of innovation matter? *New Trends and Issues Proceedings on Humanities and Social Sciences*. [Online]. 4(10), 33–42. Available from: www.prosoc.eu

References

- Bhaskaran, S. (2006). Incremental Innovation and Business Performance: Small and Medium-Size Food Enterprises in a Concentrated Industry Environment. *Journal of Small Business Management*, 44 (1), 64-80.
- Bass, B. M. (1990). *Bass and Stogdill's handbook of leadership: Theory, research, and managerial application*. New York: Free Press.
- Collins, B.J., Burrus, C. J. and Meyer, R. D. (2014). Gender differences in the impact of leadership styles on subordinate embeddedness and job satisfaction. *The Leadership Quarterly*, 25, 660–671.
- Damanpour, F. and Schneider, M. (2006). Phases of the Adoption of Innovation in Organizations: Effects of Environment, Organization and Top Managers. *British Journal of Management*, 17, 215-236.
- Damanpour, F. and Schneider, M. (2008). Characteristics of Innovation and Innovation Adoption in Public Organizations: Assessing the Role of Manager's, *Journal of Public Administration Research and Theory*, 19, 495-522.
- Damanpour, F. and Wischnevsky, J. D. (2006). Research on innovation in organizations: Distinguishing innovation-generating from innovation-adopting organizations, *Journal of Engineering and Technology Management*, 23, 269–291.
- De Lancer Julnes, P. and Holzer, M. (2001). Promoting utilization of performance measures in public organizations: an empirical study of factors affecting adoption and implementation. *Public Administration Review*, 61, 6, 693-708.
- Dulin, A. M. (2007). A Lesson on Social Role Theory: An Example of Human Behavior in the Social Environment Theory. *Advances in Social Work*, 8 (1), 104-112.
- Eagly, A. H. and Crowley, M (1986). Gender and Aggressive Behavior: A Meta-Analytic Review of the Social Psychological Literature. *Psychological Bulletin*, 100 (3), 309-330.
- Eagly, A. H., and Johannesen-Schmidt, M. C. (2001). The leadership styles of women and men. *Journal of Social Issues*, 57 (4), 781–797.
- Eagly, A.H. (1987). *Sex Differences in Social Behavior: A Social-Role Interpretation*, Erlbau, Hillsdale, NJ.
- Eagly, A.H. and Wood, W. (1988). Explaining Sex Differences in Social Behavior: A Meta-Analytic Perspective. *96th Annual Meeting of the American Psychological Association*, Atlanta, GA.
- Fores, B. and Camison, C. (2016). Does incremental and radical innovation performance depend on different types of knowledge accumulation capabilities and organizational size? *Journal of Business Research*, 69, 831–848.
- Frambach, R. T., and Schillewaert, N. (2002). Organizational innovation adoption: A multi-level framework of determinants and opportunities for future research. *Journal of Business Research*, 55, 163– 176.
- Germain, R. (1996). The Role of Context and Structure in Radical and Incremental Logistics Innovation Adoption. *Journal of Business Research*, 35, 117–127.
- Hooijberg, R., and DiTomaso, N. (1996). Leadership in and of demographically diverse organizations. *Leadership Quarterly*, 7, 1–19.
- Jaskyte, K. (2013). Does Size Really Matter? Organizational Size and Innovations in Nonprofit Organizations. *Nonprofit Management & Leadership*, 24(2), 229-247.
- Koberg, C. S., Detienne, D. R., and Heppard, K. A. (2003). An empirical test of environmental, organizational, and process factors affecting incremental and radical innovation. *Journal of High Technology Management Research*, 14, 21-45.
- Kuan, K.K.Y., and Chau, P. Y. K. (2001). A perception based model for EDI adoption in small businesses using a technology-organization-environment framework. *Information & Management*, 38, 507-521.
- McDaniel, C., Schoeps, N. and Lincourt, J. (2001). Organizational Ethics: Perceptions of Employees by Gender. *Journal of Business Ethics*, 33(3), 245-257.

- Kaya, C., Ataman, G. & Elbasi, I. H. (2017). Radical or incremental innovation adoption: do demographics and the frequency and form of innovation matter? *New Trends and Issues Proceedings on Humanities and Social Sciences*. [Online]. 4(10), 33–42. Available from: www.prosoc.eu
- Laforet, S. 2013. Organizational innovation outcomes in SMEs: Effects of age, size, and sector. *Journal of World Business*, 48, 490-502.
- Michael, R. S. n.d. Crosstabulation & chi square. Retrieved from, http://www.indiana.edu/~educy520/sec5982/week_12/chi_sq_summary011020.pdf (Accession date: 04.04.2017)
- Moore, G. C. and Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, 2 (3), 192-221.
- Sumner, M. and Niederman, F. (2004). The Impact of Gender Differences on Job Satisfaction, Job Turnover, and Career Experiences of Information Systems Professionals, *Journal of Computer Information Systems*, 44(2), 29-39.
- Tidd, J. (2001). Innovation management in context: environment, organization and performance. *International Journal of Management Review*, 3(3), 169-183.
- Tornatzky, L. G. and Klein, K. J. (1982). Innovation characteristics and innovation adoption-implementation: a meta-analysis of findings. *IEEE Transactions on Engineering Management*, 29(1), 28-43.
- Tushman, M.L., Anderson, P., O'Reilly, C.A., (1997). Technology cycles, innovation streams, and ambidextrous organizations: organizational renewal through innovation streams and strategic change. In: Tushman, M.L., Anderson, P. (Eds.), *Managing Strategic Innovation and Change*. Oxford, New York, 3–23.
- Wang, A.C., Chiang, J.T.J., Tsai, C.Y., Lin, T.T. and Cheng, B.S. (2013). Gender makes the difference: The moderating role of leader gender on the relationship between leadership styles and subordinate performance. *Organizational Behavior and Human Decision Processes*, 122(2), 101-113.