

Journal of Human Resource & Leadership



Diffusion of Innovation and Leadership in Philadelphia Firms

Andrew Keith & Dr. Nathan Smith

ISSN NO: 2616 - 8421

Diffusion of Innovation and Leadership in Philadelphia Firms

¹ Andrew Keith, University of Pennsylvania, Philadelphia USA

² Dr. Nathan Smith, University of Pennsylvania, Philadelphia USA

*E-mail of corresponding author: keithandrew95@gmail.com

How to cite this article: Keith A., Smith N (2019): Diffusion of Innovation and Leadership in Philadelphia Firms. Journal of Human Resource & Leadership. Vol 3(4) pp. 14-23.

Abstract

The development of commercially viable new products requires technological and market possibilities are linked effectively in the product's design. Innovators in large firms have persistent problems with such linking, however. This research examines these problems by focusing on the shared interpretive schemes people use to make sense of product innovation. Philadelphia has long been perceived as a gritty, hard-working city. However, for some reason, when it comes to business innovation and growth, the city does not always get the praise it deserves. The paper describes in some depth differences among the thought worlds which keep innovators from synthesizing their expertise in Philadelphia. The paper also details how organizational routines exacerbate problems with knowledgeability, capability, innovation implementation and diffusion of innovation barriers. The main implication of the study is that to improve innovation in large firms it is necessary to deal explicitly with the interpretive barriers described here. Suggestions for practice and research are offered.

Keywords: *Diffusion of Innovation, Leadership & Philadelphia Firms.*

1.1 Introduction

Diffusion is largely defined as the rate and process by which a new product or idea gets known and spreads into a particular environment (community, society, organization or country) while, adoption refers to the actual ownership of the new idea or product in a particular environment.

This is also known as the assimilation of a new product or idea (Rogers, 2013). Diffusion and adoption can both be referred to as proliferation integration of innovation into a specific environment (Shelomi, 2015). According to Rogers (2013) time happens to be the most critical factor in the proliferation and integration of the new product or idea because any new idea takes quite some time to take root into the consumers preferences and be adopted as part of the normal routine.

On the other hand, leadership plays a vital role in directing and rallying the follower behavior in many organizations (Northouse, 2017). Therefore, it is normal to discern the changes in an organization flowing down from leaders to their followers/employees. Due to the hierarchical nature of many organizations (Daft, Murphy, & Willmott, 2010), it will be difficult to imagine the proliferation of new products or ideas in an organization if it is not formally ratified, supported and adopted by the leadership and management. Hence, in an attempt to relate the idea of proliferation with organization leadership, it would be thought that as a policy implication, innovative ideas and technologies can be conceptualized to target preferences of organizational and societal leadership in order to achieve he desire proliferation speed.

Furthermore, another defining parameter of diffusion is in the relationship to the compatibility of the concerned parties. Rogers (2013) refer this to as the ‘heterophily’ and the ‘homophily’ within the diffusion process. Rogers further, argues that the nature of diffusion demands that “at least somem degree of heterophily be present between the two participants in the communication process. Ideally, the individuals would be homophilous in all other variables (education, socioeconomic status, and the like) even though they are hetrophilous regarding the innovation.

Christensen, McDonald, Altman, and Palmer (2016) say that the speed of progress that markets demand or can soak up might be different from the progress provided by innovation. This implies that items that do not seem beneficial to our consumers today (that is, disruptive technologies) may directly address their demands tomorrow. Identifying this opportunity, we cannot anticipate our consumers to lead us towards developments that they do not now require. For that reason, while keeping close to our consumers is a crucial management standard for managing sustaining technology, it might provide deceptive data for taking care of disruptive ones. Trajectory maps can aid to analyze conditions as well as to reveal which circumstance a business faces.

1.2 Objectives of the Study

The broad purpose of this study was to establish the obstacles of diffusion of innovations in Philadelphia firms.

2.1 Literature Review

The classical Diffusion Paradigm

According to Rogers (2003), diffusion is the process by which an innovation is communicated through particular networks over time amongst the membership of a social system. Further Dearing (2009) postulates that diffusion researches have shown a mathematically constant sigmoid pattern (the S-shaped curve) of with time adoption for technologies that are regarded to be substantial by possible adopters, when the choices to embrace are voluntary, as well as with consequent logically-related prepositions, certifying this literary works as a concept of social modification.

The core elements of diffusion theory include;

The innovation and more specifically the prospective adopter perceptions of the innovation's qualities of its effectiveness and the cost of efficiency relative to other alternatives, how easy or difficult the innovation is for the potential adopter to understand it, how is this innovation going to fit into the long established ways and methods of accomplishing the same projected goal and vision, and to what extent is the potential adopter going to be committed to the full adoption of the innovation.

The adopter – different adopters have diverse degrees of innovativeness which leads to having early adopters and later adopters of the same innovation. The social system more specifically in regards to the system structures, community informal opinion leaders and the prospective adopters' perception of the social pressure to adopt the innovation. The individual's adoption process brings in the stages ordered model of being aware of the innovation, getting persuaded about the innovation, making a decision to either accept or reject the decision, implementation of the innovation and finally, continue using the innovation.

The diffusion system which is highly affected by the external change agency and its change agents who will properly pursue the innovation and intervene with the customer's systems opinion

leaders, paraprofessional assistants and innovation champions. This will successfully happen if only the change agents are well trained to do this job correctly.

According to Gigerenzer and Selten (2001), diffusion will occur a combination of three elements that are very crucial in this process; a) there is a serious need for an individual to decrease personal uncertainty the moment this new innovation is presented to him/her, b) there is a dire need for an individual to react to his/her perceptions of what exactly other credible people are thinking and doing, and c) the general felt social pressure to do as others have done. The uncertainty in response to an innovation characteristically triggers the urge to search for more information and if the probable adopter is convinced that the innovation is worth a trial and it has a potential for benefits, the adopter searches for evaluative judgement from the respected and trusted individuals commonly known as the ‘informal opinion leaders’. The ‘advice-seeking’ conduct is experiential, that will allow the person making the decision to evade wide-ranging information seeking.

Dearing (2009) presume that demands or motivations vary among people according to their level of originality (earliness in adoption); the first to adopt (pioneers) often tend to do so as a result of uniqueness and having little to lose; the alongside take on (early adopter, consisting of the subset of point of view leaders) do so because of an appraisal of the technology's qualities; and also the succeeding big bulk embraces because others have done so as well as they involve think that it is the best thing to do (an imitative result).

In some circumstances, it is ideal to introduce innovations that are logically related and are balancing and harmonizing and corresponding as an “interrelated bundle of new ideas” can elicit more adoption decisions unlike when it is only one idea (Rogers, 2003). He further argues that the “package approach” makes logic spontaneously.

3.1 Research Methodology

The study used a quantitative approach seeking to understand the organization in depth both contextually and holistically. Bernard (2012) there are four types of quantitative research designs namely; descriptive design which seeks to descriptive the current status of a variable or phenomenon. A correlational design on the other hand explores the relationship between variables using statistical analyses. A quasi-experimental design which is often referred to as causal-comparative seeks to establish a cause-effect relationship between two or more variables. The population of the study consisted of all the regular employees of Philadelphia Firms. This was

considered as the population of the study. Data was collected using a questionnaire on a 5 point Likert scale. This was arrived at due to the time consideration since the questionnaire collects data quite quickly. All participants were given the opportunity to provide feedback, and feedback was generally anonymous which encouraged openness and honesty. The structured questionnaire data was easily processed by SPSS. According to Godwin and Harry (2010) questionnaire as a data collection tool is the best because it gives chance to collect different types of data in one set. This study collected primary data through a structured questionnaire in which a Likert 5 scale was used. Personal administration of the questionnaires was used to administer the questionnaires to all the respondents.

4.1 Results and Discussions

4.2 Correlation Analysis

Table 1 below presents the results of the correlation analysis.

Table 1: Correlation Matrix

	Diffusion	Knowledgeability	Capability	Barriers
Diffusion	1.000			
Knowledgeability	.725** 0.000	1.000		
Capability	.600** 0.000	.521** 0.000	1.000	
Barriers	-.402** 0.021	-.415** 0.016	-.455** 0.008	1.000

The results in table 1 revealed that knowledgeability and prevention and diffusion in innovation are positively and significantly associated ($r=0.725$, $p=0.000$), the table further indicated organizational innovation capability and diffusion in innovation are positively and significantly associated ($r=0.600$, $p=0.000$). The results further showed that new innovation implementation barriers and diffusion in innovation were negatively and significantly associated ($r=-0.402$, $p=0.021$). This implies that an improvement in knowledgeability, organizational innovation capability and reduction in implementation barriers leads to an improvement in diffusion in innovation. The correlation analysis results are consistent with the findings of According to Gigerenzer and Selten (2001) who indicated that diffusion will occur a combination of three elements that are very crucial in this process; a) there is a serious need for an individual to decrease

personal uncertainty the moment this new innovation is presented to him/her, b) there is a dire need for an individual to react to his/her perceptions of what exactly other credible people are thinking and doing, and c) the general felt social pressure to do as others have done

4.3 Regression Analysis

The results presented in table 4.11 present the fitness of model used of the regression model in explaining the study phenomena.

Table 2: Model Fitness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.771 ^a	.595	.553	.31450

a. Predictors: (Constant), Barriers, Capability, Knowledgeability.

From the results on Table 2, barriers, capability and knowledgeability were found to be satisfactory variables in explaining diffusion in innovation at Philadelphia Firms. This fact is supported by coefficient of determination R square of .595. This means that Barriers, Capability and knowledgeability explain 59.5% of the variations in the dependent variable, which is diffusion in innovation. Table 3 gives the outcomes on the examination of the difference (ANOVA).

Table 3: Analysis of Variance

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	4.208	3	1.403	14.181	.000 ^b
Residual	2.868	29	.099		
Total	7.076	32			

a. Dependent Variable: Diffusion

b. Predictors: (Constant), Knowledgeability, Capability, Barriers.

The outcomes of the analysis of variance show that the general model was statistically significant. Further, the outcomes suggest that knowledgeability; Capability and Barriers are good indicators of diffusion in innovation. This was supported by an F statistic of 14.181 and the reported p value (0.000) which was less than the conventional probability of 0.05 significance level.

Table 5: Regression of Coefficient

Model	Unstandardized Coefficients		Standardized t Coefficients		Sig.
	B	Std. Error	Beta		
(Constant)	2.712	.335		8.102	.000
Knowledgeability	.232	.059	.557	3.907	.001
Capability	.112	.056	.293	2.014	.043
Innovation Barriers	Implementation -.018	.066	-.037	-.274	.036

a. Dependent Variable: Diffusion

Regression of coefficients results in Table 5 shows that Knowledgeability and Diffusion are positively and significant related ($r=.232$, $p=0.001$). The table also indicated that capability and prevention and diffusion are positively and significantly related ($r=.112$, $p=0.043$). However, results showed that barriers and diffusion were negatively and significantly related ($r=-0.018$ $p=0.036$). This implies that an improvement in knowledgeability, organizational innovation capability and reduction in implementation barriers leads to an improvement in diffusion in innovation.

The general objective of this study was to establish the obstacles of diffusion of innovations in Philadelphia Firms. Specifically, the study sought to establish the effect of knowledgeability, organizational innovation capability and new innovation implementation barriers on diffusion in innovation. Making inferences to the findings of the study, it emerged that most respondents agreed that Knowledgeability, capability and barriers had effect on diffusion in innovation in Philadelphia Firms. Regression of coefficients results indicated that Knowledgeability and Diffusion are positively and significant related ($r=.232$, $p=0.001$). The results also indicated that capability and prevention and diffusion are positively and significantly related ($r=.112$, $p=0.043$). However, results showed that barriers and diffusion were negatively and significantly related ($r=-0.018$ $p=0.036$). Correlation analysis results indicated that knowledgeability and prevention and diffusion in innovation were positively and significantly associated ($r=0.725$, $p=0.000$), the results further indicated that organizational innovation capability and diffusion in innovation were positively and significantly associated ($r=0.600$, $p=0.000$). However, the results showed that innovation implementation barriers and diffusion in innovation were negatively and significantly associated ($r=-0.402$, $p=0.021$).

5.1 Conclusions

Based on the study findings, it can conclude that, knowledgeability, organizational innovation capability and new innovation implementation barriers are some of the major factors affecting diffusion in innovation in Philadelphia Firms. Concerning knowledgeability, the study findings indicated that use of individual communication innovations (such as e-mails) to communicate with other practitioners, use of individual communication innovations (such as e-mails or web conferences) to communicate with a variety of individuals outside Philadelphia Firms and use of interpersonal communication innovations (such as video conference calls involving face-to-face exchanges) to communicate with others such as offsite employees, clients or business partners, influenced diffusion in innovation at Philadelphia Firms. As far as organizational innovation capability is concerned, it can be concluded that majority of the employees at Philadelphia Firms had innovation implementation capability. Conclusion can be made further that some employees at better living are still resistant to change and others believe they can adopt innovations but cannot attempt to influence others to do so.

Based on the correlation analysis results, it can be concluded that knowledgeability and organizational innovation capability are positively and significantly associated with diffusion in innovation at Philadelphia Firms, however, new innovation implementation barriers and diffusion in innovation are negatively but significantly associated. Finally, based on the regression analysis results it can be concluded that, that knowledgeability and organizational innovation capability are positively and significantly related to diffusion in innovation at Philadelphia Firms, however, new innovation implementation barriers and diffusion in innovation are negatively but significantly related.

6.1 Recommendations

From the findings of the study, the study recommended that the management of Philadelphia Firms should encourage their employees to adopt various communication strategies as a way of enhancing diffusion in innovation in their firms. The firm's management should also assess the innovation capability of their employees and encourage them to embrace innovation as one way of improving diffusion in innovation in the firms. Finally, Philadelphia Firms management should educate their employees on the importance of innovation to break the negativity in them concerning innovation and instead embrace innovation.

References

- Braak, J. (2011). Individual characteristics influencing teachers' class use of computers. *Journal of educational computing research*, 25(2), 141-157.
- Christensen, C. M., McDonald, R., Altman, E. J., & Palmer, J. (2016). *Disruptive innovation: intellectual history and future paths*: Harvard Business School.
- Daft, R. L., Murphy, J., & Willmott, H. (2010). *Organization theory and design*: Cengage learning EMEA.
- Dearing, J. W. (2019). Applying diffusion of innovation theory to intervention development. *Research on social work practice*, 19(5), 503-518.
- Dearing, J. W., Meyer, G., & Kazmierczak, J. (2014). Portraying the new: communication between university innovators and potential users. *Science Communication*, 16(1), 11-42.
- Evitt, F. M. (2017). Modelling the innovation process: A multi-case comparison.
- Gigerenzer, G., & Selten, R. (2011). Rethinking rationality. *Bounded rationality: The adaptive toolbox*, 1, 12.
- Hofstede, G. (2010). Geert hofstede. *National cultural dimensions*.
- Jordan, A., Antomarchi, J., Bongain, A., Tran, A., & Delotte, J. (2016). Development and validation of an objective structured assessment of technical skill tool for the practice of breech presentation delivery. *Archives of gynecology and obstetrics*, 294(2), 327-332.
- Martins, E. C., & Terblanche, F. (2013). Building organisational culture that stimulates creativity and innovation. *European journal of innovation management*, 6(1), 64-74.
- Norman, D. A., & Verganti, R. (2014). Incremental and radical innovation: Design research vs. technology and meaning change. *Design issues*, 30(1), 78-96.
- Northouse, P. G. (2017). *Introduction to leadership: Concepts and practice*: Sage Publications.
- Parisot, A. H. (2017). Distance education as a catalyst for changing teaching in the community college: Implications for institutional policy. *New directions for community colleges*, 1997(99), 5-13.
- Rogers, E. (2015). Diffusion of Innovations (4th Eds.) ACM The Free Press (Sept. 2001). New York, 15-23.
- Rogers, E. (2013). Diffusion of Innovations 5th ed. A Division of Macmillan Publishing Co Inc: Free Press, New York.
- Rumelt, R. P. (2017). Theory, strategy, and entrepreneurship. *The competitive challenge*, 137, 158.
- Sahin, I. (2016). Detailed review of Rogers' diffusion of innovations theory and educational technology-related studies based on Rogers' theory. *Turkish Online Journal of Educational Technology-TOJET*, 5(2), 14-23.
- Shelomi, M. (2015). Why we still don't eat insects: Assessing entomophagy promotion through a diffusion of innovations framework. *Trends in food science & technology*, 45(2), 311-318.
- Sherry, L. (2017). The boulder valley internet project: Lessons learned. *The Journal*, 25(2), 68-72.

- Strychalska-Rudzewicz, A. (2015). Cultural dimensions and innovation. *Соціально-економічні проблеми і держава*(2), 59-67.
- Wernick, D. (2016). Innovation in Africa: A view from the peaks and hilltops of a spiky continent *Innovation in Emerging Markets* (pp. 121-139): Springer.
- Wetzel, K. (2103). Models for achieving computer competencies in preservice education. *Journal of Computing in Teacher Education*, 9(4), 4-6.
- Williams, L. K., & McGuire, S. J. (2010). Economic creativity and innovation implementation: the entrepreneurial drivers of growth? Evidence from 63 countries. *Small Business Economics*, 34(4), 391-412.