Available online at www.jcsonline.in Journal of Current Science & Humanities8 (1), 2020, 1-13

Impact Factor- 2.05

The analysis of coordination state between innovation and business strategies and its impact on performance

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Abstract
Nowadays in many industries, technologic innovation change to basic stimulus for achieving success and many corporations in wide range of industries more than 1/3 of their sale and benefits are indebted to product s, which introduced in last five years. Increasing importance of innovation is as a result of universalizing markets. Universal competition, make the corporations to produce different product, services, and always attend to innovation. Coming new products to markets help corporations to keep their benefit whiles investing on innovation process helps corporations to decrease their cost gradually. Complete effect of technologic innovation can be seen by cross domestic product. If compression for innovation can be represent that achieving success for organizations becomes more difficult ; but can clearly observe that effect of this action for community had was positive. Innovation make the possibility to present wide range of products for people in all of the world .making food and other products and services to people is more efficient by innovation and achieve to medicine and treatment is more easier and improve health of people; also enables people to travel all of the world and make relationship with them.

Keywords: Strategy, business, innovation, performance.

Literature Review

Numerous studies have highlighted the importance of innovation as a critical success factor in business performance. Developing a business environment that supports and promotes innovation often requires extensive changes in organizational culture and systems, which can be difficult to achieve, not to mention disruptive, costly, and time-consuming. Though the potential long-term benefits are considerable, firms are often focused on short-term gains and cost reductions and are unwilling to invest time and resources into organizational transformation efforts. The high risks of failure associated with major organizational change projects may also be a deterrent.

It is clear from previous research that following a clearly-defined innovation strategy rather than an ad hoc approach is one of the preconditions for success in innovation. In a way, this seems counterintuitive: strategy implies constraints, and it might be argued that creativity should not be stifled in this way.

1. A method or plan chosen to bring about a desired future, such as achievement of a goal or solution to a problem.

non-economic contribution it intends to make to its shareholders, employees, customers, and communities." (Andrews' definition of strategy is rather all-encompassing and is perhaps best viewed as a variation on the military notion of

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e-ISSN: 2347-7784

Available online at www.jcsonline.in Journal of Current Science & Humanities8 (1), 2020, 1-13

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"grand strategy".)

Innovation Strategies are different from "Classical" business strategies due to the need to accommodate uncertainty. This uncertainty occurs due to the difficulty in predicting the steps, time and impact of the innovation. Therefore many common approaches used to develop a Classical business strategy are inappropriate for innovative businesses.

What is an Innovation Strategy?

An innovative strategy guides decisions on how resources are to be used to meet a firm's objectives for innovation and thereby deliver value and build competitive advantage. Strategic matters include analysis of a company's competitive and technological environment; assessment of its external challenges and opportunities; and where its distinctive advantages lie. It involves prioritizing and developing the right technological innovations by ensuring the appropriate resources, capabilities and processes are used to best effect in delivering value. The extent to which this can be achieved willvary in relation to the desired outcome of the innovation and the type of innovation.

Types of Innovation Strategy

Companies rarely comply with ideal types of innovation strategy. However, the ideal types of innovation strategies can provide a starting point for the development of your innovation strategy. The ideal types of innovation strategy can be classed as proactive, active, reactive and passive2. Each is described in greater detail below.

Proactive. Companies with proactive innovation strategies tend to have strong research orientation; they will often have first mover advantage and be a technology market leader. These companies access knowledge from a broad range of sources and take big bets/high risks. Companies like Dupont, Apple and Singapore Airlines have proactive innovation strategies. The types of technological innovation used in a proactive innovation strategy are radical and incremental. Radical innovations (as described in Why Innovate) are breakthroughs that change the nature of products and services. Incremental innovation is the constant technological or process changes that lead to improved performance of products and services.

Active. An active innovation strategy involves defending existing technologies and markets. But with the preparedness to respond quickly once markets and technologies are proven. These companies have mainly incremental innovation with in-house applied R & D. Companies with active innovation strategies also have broad sources of knowledge and have medium to low risk exposure. They tend to hedge their bets and include companies such as Microsoft, Dell and British Airways.

Reactive. The reactive innovation strategy is used by companies that are followers and have a focus on operations, have a wait and see approach and look for low risk opportunities. They will copy proven innovation. Companies with reactive innovation strategies use entirely incremental innovators and include budget airlines such as Ryan-air which has successfully copied the no frills service model of Southwest Airlines.

Passive. Companies with passive innovation strategies wait until their customers demand a change in their products or services. Many of the companies that supply to automotive companies have passive innovation strategies as they wait for the automotive companies to demand changes to specification before implementing these changes.

Integrate Innovation into Business Objectives

Global surveys have found that the top motivators for innovation are leaders who

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encourage and protect innovation and top executives who spend their time actively managing and driving innovation. Inhibition of innovation commonly occurs where executives pay lip service to innovation but do

nothing about it3. For an innovation strategy to be effective there needs to be an integration of innovation into senior leaders' agenda. By developing performance metrics and targets for innovation senior management integrate innovation into their normal pattern of business. This routine also creates an environment where managers and floor staff are comfortable with innovating, thereby making better use of an existing talent for innovation.

Open innovation greatly benefits from KS behaviors that enhance the inter-unit cooperation, mutual learning, idea generation, and knowledge repository enrichment in firms (Zander & Sölvell 2000). Svetlik et al. (2007) found that the enjoyment of helping others, the self-efficacy of knowledge and the support from the top management were all crucial in KS processes, and that the willingness to donate and collect knowledge could enhance the innovation capability of firms from internal and external sources. Dyer and Nobeoka (2000) investigated the case of Toyota and found that creating a high-performance knowledge sharing network could facilitate the transfer of explicit and tacit knowledge and enhance firm innovation. Dodgson et al. (2006) also investigated the information technology, KS and innovation in P&G, a famous multinational corporation, and found that information technology had a crucial role in facilitating communications amongst stakeholders, suppliers and customers. The knowledge of the firm was then integrated into its innovation process, which was supported by an advanced information technology. Previous studies have provided a foundation for this study to investigate ICT, in- and extra-role KS and open innovation.

The relationship between product innovation and organizational performance

With innovation, quality of products could be enhanced, which, in turn, contributes to firm performance and, ultimately, to a firm's competitive advantage (Al Ansari et al., 2013). Bayus, Erickson and Jackson (2003) proved that product innovation had positive and significant link with organizational performance. Also, Hernandez Espallardo and Ballester (2009) confirmed a significantly positive impact of product innovation on firm performance. Similarly, Alegre, Lapiedras and Chiva (2006) found that both product innovation dimensions (efficacy and efficiency) were strongly and positively related to firm performance.

The relationship between organizational innovation and organizational performance Despite the weak link they found, Lin and Chen (2007) associated innovations with increased Firm sales; and they argued that organizational innovations, rather than technological innovations, appeared to be the most vital factor for total sales. Dadfar, Dahlgaard, Brege, and Alamirhoor (2013) examined the relationship between organizational innovation capability and performance in pharmaceutical small and medium enterprises in Iran. They concluded that a positive relationship between innovation capabilities and performance existed. They attributed this relationship to the effective innovation management and commitment across the organization. Using 280 senior, executive and administrative level managers from 106 Iranian manufacturing firms through structural equation modeling, Noruzy, Dalfard, Azhdari, Nazari Shirkouhi and Rezazadeh (2013) found that organizational learning and organizational innovation directly influenced organizational performance.

- The correlation between innovation and business strategies affects the promotion

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ofperformance.

Secondary hypothesis

1. The correlation between immediate and analytic strategies affects the promotion ofperformance.
2. The correlation between immediate and futuristic strategies affects the promotion ofperformance.
3. The correlation between active and analytic strategies affects the promotion of performance.
4. The correlation between active and futuristic strategies has positive effect on promotion of performance.
5. The correlation between reaction and analytic strategies has positive effect on promotion of performance.
6. The correlation between reaction and futuristic strategies has positive effect on promotion of performance.
7. The correlation between inactive and analytic strategies has positive effect on promotion of performance.
8. The correlation between inactive and futuristic strategies has positive effect on promotion of performance.

Methodology

The population of study includes 35 middle rank managers of a R&D organization in which the data is gathered from all the participants.

Data Gathering Methods

Each phenomenon has its unique characteristics that the awareness about these characteristics is related to the nature and the way reaching them. The aim of any research (descriptive/prescriptive), is to understand and reach to data and information. To find an answer and a solution to each problem is related to the availability of data in which the researcher could test the hypothesis as the social answers and solution to the problems of the research.

Generally, four main tools are available for data gathering. The data in current research could be initial or secondary in which may borrowed from other sources of previous researches, formal statistics, informal statistics and or organizational documents. Researchers usually gain the necessary data by observation and designing questionnaires without any barrier.

According to the data gathering methods, the researcher in current study has used two methods:

1. Using the existed data and documents, these data include previous researches on topic such asresults, the variable decryptions and other data gathered from library research.
2. Questionnaire, due to the importance of current research, a 5- likert scale questionnaire is used to gather the relevant data.

Questionnaire design. The very step to design the required tool for data gathering as questionnaire is to bear in mind the research aims that led to the extraction of indexes related to variables of research based on the literature review. To gather the data for this study, three questionnaires has been designed and produced. The first questionnaire used to evaluate business strategies, the second used to evaluate innovation strategies and the third one used to evaluate design performance.

Business strategies questionnaire includes twenty questions, innovation strategies questionnaire includes nine questions and design performance questionnaire includes sixteen items based on 5- likert scale. The format of questionnaire is designed in a way that the early item asks about the employment years of the participants.

Data Analysis Method

Due to the format of questionnaires, which are based on likert scale, therefore,

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to evaluate the relationship between two variables (business strategies - performance and innovation strategies – performance) it is necessary to use Pearson coefficient.

As described above in this research the author has used three different questionnaires; according to the data gathered by the first, second and third questionnaire, the type of business strategy, the type of innovation strategy and the type of performance result (by performance indexes and weighting them) are gained respectively. With the help of performance result it is desired to know what kind of business strategies (defensive/analytic/Futuristic) with which kind of innovation strategies (Immediate/Active/Reaction/Inactive) are coordinated and result to better outcome; so could extract coordinated strategies then using them to get better performance.

Calculating Reliability of Questionnaires

To estimate the reliability of research questionnaires as data gathering tool, the Cronbach's alpha is calculated for each section of business strategies questionnaire that is shown in table 2. The

calculation shows that there are adequate and internal efficiency in question items for businessstrategies.

Table 2
Cronbach's alpha for Business Strategies Questionnaire

Strategies	Questions (items)	Cronbach's alpha
Defensive	1-2-3-4-5	7850/
Analytic	6-7-8	7600/
Futuristic	9-10-11-12-13	8010/

Also, the Cronbach's alpha is calculated for each section of innovation strategies questionnaire that is shown in table 3. The calculation shows that there are adequate and internal efficiency in question items for business strategies.

Table 3
Cronbach's alpha for Innovation Strategies Questionnaire

Strategies	Questions (items)	Cronbach's alpha
Immediate	1-2	0.813
Active	3-4	0.785
Reaction	5-7	0.768
Inactive	8-9	0.762

Then to calculate the reliability for performance questionnaire, the Cronbach's alpha is calculated for all items, which shows to be 0.868 that indicates there is a good and adequate internal efficiency in questionnaire items.

Description of Data

The indexes of work experience (period) of all participants are calculated which is shown in table 4.

Table 4
Descriptive Indexes of Work Experience

	Total	Average	Standard deviation	Minimum	Maximum

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Work experience	35	11.14	99.6	0.002	30.00

The descriptive indexes of business strategies' questionnaire scores were calculated and are shown in table 5. The score for each item is set in range of 0 to 5.

Table 5
Descriptive Indexes of Business Strategies' Questionnaire Scores

Strategy	Total	Average	Standard deviation	Minimum	Maximum
Defensive	35	17.06	3.72	8.00	24.00
Analytic	35	9.57	2.33	8.00	15.00
Futuristic	35	19.08	4.49	11.00	27.00

Because the total numbers of questions of each business strategies questionnaire were different, and to gain better results the average total scores of business strategies were calculated that could be seen in table 6.
Descriptive Indexes of Business Strategies Total Scores

Strategy	Total	Average	Standard deviation	Minimum	Maximum
Defensive	35	3.41	0.745	1.60	4.80
Analytic	35	3.19	0.776	2.00	5.00
Futuristic	35	3.18	0.749	1.83	4.50

The descriptive indexes of innovation strategies questionnaire scores were calculated that is shown in table 7.

Table 7
Descriptive Indexes of Innovation Strategies Questionnaire Scores

Strategy	Total	Average	Standard deviation	Minimum	Maximum
Immediate	35	7.26	1.61	3.00	10.00
Active	35	9.14	2.34	4.00	10.00
Reaction	35	6.74	1.84	5.00	14.00
Inactive	35	7.26	1.61	4.00	10.00

Because the total numbers of questions of each innovation strategies' questionnaire were different, and to gain better results the average total scores of innovation strategies were calculated that are shown in table 8.

Table 8
Descriptive Indexes of Innovation Strategies Average Scores

Strategy	Total	Average	Standard deviation	Minimum	Maximum
Immediate	35	3.63	0.81	2.00	5.00
Active	35	4.57	1.17	2.00	7.00
Reaction	35	3.00	0.78	1.67	4.67
Inactive	35	3.37	0.92	2.00	5.00

The descriptive indexes of performance questionnaire scores were calculated that is shown in table 9.

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Table 9
Descriptive Indexes of Performance Questionnaire

Variable	Total	Average	Standard deviation	Minimum	Maximum
Performance	35	28.55	03.8	.0041	.0068

Data Analysis

Hypothesis 1: there is a relationship between business strategies and performance.

Pearson coefficient was calculated among each business strategies. Results are shown in table 10.

Table 10
Correlation Scores of Business Strategies and Performance

Variables	Total number	Correlation Coefficient	Meaningful Level
Defensive-performance	35	0.383	0.023
Analytic-performance	35	0.351	0.005
Futuristic -performance	35	0.673	0.021

**= p < 0/00 *= p < 0/00

The results of table 10 shows that the correlation coefficient between defensive strategy with a performance of ($r = 0.383$, $P<0.05$) and analytic strategy with a performance of ($r= 0.35$, $P<0.05$) and correlation coefficient between futuristic strategy with a performance of ($r=0.673$, P, 0.01) are meaningful. It should be noted that these correlation coefficients are positive, i.e. by increase of defensive, analytic and futuristic strategies, the performance increases, too, or vice versa. The highest correlation coefficient belongs to futuristic strategy. Thus, research hypothesis based on the presence of relations between business strategies and performance are confirmed.

The distribution diagram of defensive, analytic and futuristic strategies and performance also demonstrates the positive linear relation between these coefficients.

There is a relation between innovation strategies and performance.

Pierson correlation coefficient between each of business strategies and performance were calculated. The results are shown on table 11.

Table 11
Correlation of Grades of Innovation Strategies and Performance

Variables	Total number	Correlation Coefficient	Meaningful Level
Immediate-Performance	35	0.091	0.602
Active- Performance	35	0.280	0.103
Reaction- Performance	35	-0.071	0.685
Inactive- Performance	35	-0.492 ***	0.003

The results of Table 11 shows that only correlation coefficient between inactive strategy with a performance of ($r= -0.492$, $p<0.05$) is meaningful. It is worth noting that this correlation coefficient is negative, i.e. if inactive strategy increases, the performance decreases and vice versa.

The distribution diagram of inactive strategy and performance demonstrates inverted linear relation between these two variables

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Table 12
Correlation Matrix between Business and Innovation Strategies with Performance

	Innovation Strategies				
	Immediate	Active	Reaction	Inactive	Performance
Defensive	**.5330	**.6230	-.1800	-.0750	*.3830
Analytic	**.5960	*.3980	-.1290	-.1910	*.3510
Futuristic	*.4290	*.3860	-*.3950	-**.5780	**.6730

0.05 = P < * 0.01 = P < **

Analytic strategy has meaningful positive relation with immediate and active strategies with performance.

- Immediate strategy has meaningful positive relation with performance.
- Inactive strategy has meaningful negative relation with performance.

However, regarding the meaningful relation between business strategies and innovation strategieswith performance, the following question was examined:
Which one of business strategies and innovation strategies are better predictors for performance?

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It should be noted that in order to carry out Regression Analysis, Liendman and colleagues (1980) believe that sample volume to carry out regression analysis must be at least 100 or 20 times more than the number of predictive variables between the biggest one. However, since in the present research, there was a limitation in setting the sample volume, having the said sample volume was impossible. Therefore, the regression equation resulting from this sample group will not be reliable for future predictions.

By the way, multi-variable regression analysis for examining the share of business andinnovation strategies was used in performance prediction. For this purpose, multi-variable systematic regression method was used. The results of multi-regression analysis in systematic method are shown in table 4-12.

Table 13
Results of Meaningfulness of Regression Model for Predicting Performance

Source of Changes	Total Squares	Degree of Freedom	R	R^2	F	Meaningful Level
Regression	991.43	1				
Remainder	1199.71	33	0.673	0.452	27.27	0.001
Total	2191.14	34				

Considering R^2 as the percentage of common variation of business and innovation strategies in performance prediction and in table 4-9 since the calculated meaningful level in F test is lower than 0.001, so it is a meaningful linear regression and therefore at least one of the business and innovation strategies has meaningful linear relation with performance. The results of meaningful model estimation in regression coefficients are shown in able 4-11.

Table 14
Regression Coefficients

Variable	b	Standard Error	Beta	t index	Meaningful Level
Fixed	35.32	51.4		18.7	0.001
Futuristic	20.1	2300.	6730.	22.5	0.001

Regarding the fact that b is the regression coefficient outcome of gross grades and also t meaningful test for futuristic strategy regression coefficient, it can be inferred that among business and innovation strategies, only futuristic strategy is capable of predicting performance.

Discussion

Strategy is a useful concept, even in all its many variations. Strategic planning is a useful tool, of help in managing the enterprise, especially if the strategy and strategic plans can be successfully deployed throughout the organization. Thinking and managing strategically are important aspects of senior managers' responsibilities, too. With regard to research hypotheses and the results of analyzing questioners' information, the following results are generated. It is worth noting that despite the performed multiple regressions, as explained in chapter 4, in the conclusion only the correlations between innovation and business strategies and also performance are considered and due to obtaining no results from regression, it is not used.

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Answers to Questions

Main Question: Does the correlation between innovation and business strategies affect performance?

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Result: Yes, the correlation between innovation and business strategies affects performance.

Detailed Questions:

1. Does the correlation between immediate and analytic strategies affect performance? Answer: Yes, the correlation between immediate and analytic strategies affects performance.
2. Does the correlation between immediate and futuristic strategies affect performance? Answer: No, the correlation between immediate and futuristic strategies does not affectperformance.
3. Does the correlation between active and analytic strategies affect performance? Answer: Yes, the correlation between active and analytic strategies affects performance.
4. Does the correlation between active and futuristic strategies affect performance? Answer: No, the correlation between active and futuristic strategies does not affect performance.
5. Does the correlation between reaction and analytic strategies affect performance? Answer: No, the correlation between reaction and analytic strategies does not affect performance.
6. Does the correlation between reaction and futuristic strategies affect performance? Answer: No, the correlation between reaction and futuristic strategies does not affectperformance.
7. Does the correlation between inactive and analytic strategies affect performance? Answer: No, the correlation between inactive and analytic strategies does not affect performance.
8. Does the correlation between inactive and futuristic strategies affect performance? Answer: No, the correlation between inactive and futuristic strategies does not affect performance.

- The correlation between innovation and business strategies affects the promotion ofperformance. *Result*: Yes, The correlation between innovation and business strategies affects the promotion of performance.

Secondary Hypotheses

1. The correlation between immediate and analytic strategies affects the promotion of performance. *Result*: With regard to positive meaningful relation between immediate and analytic strategies and also performance, the correlation between these two strategies does have a positive effect on promotion of performance.
2. The correlation between immediate and futuristic strategies affects the promotion of performance. *Result*: Since there is no meaningful relation between these two strategies, the correlation between them does not affect promotion of performance.
3. The correlation between active and analytic strategies affects the promotion of performance. *Result*: Since there is positive meaningful relation between active and analytic strategies and also performance, the correlation between them does affect promotion of performance.
4. The correlation between active and futuristic strategies has positive effect on promotion of performance.

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Result: Since there is no meaningful relation between these two strategies, the correlation between them does not affect promotion of performance.

5. The correlation between reaction and analytic strategies has positive effect on promotion of performance.

   Result: Since there is no meaningful relation between these two strategies, the correlation between them does not affect promotion of performance.

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6. The correlation between reaction and futuristic strategies has positive effect on promotion of performance.
   Result: Since there is no meaningful relation between these two strategies, the correlation between them does not affect promotion of performance.
7. The correlation between inactive and analytic strategies has positive effect on promotion of performance.
   Result: Since there is no meaningful relation between these two strategies, the correlation between them does not affect promotion of performance.
8. The correlation between inactive and futuristic strategies has positive effect on promotion of performance.
   Result: Since there is no meaningful relation between these two strategies, the correlation between them does not affect promotion of performance.

Therefore, by considering these results, it can be concluded that the general hypothesis of this research is accepted and the correlation between innovation and business strategies affects the promotion of performance. However, from the total 12 possible conditions for correlated strategies, only for three hypotheses the correlated strategies are acceptable. No conclusion can be generated by prioritizing these three hypotheses because as explained in chapter 4, multiple-regression cannot be used.

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