LINKING OPEN INNOVATION AND NPD PROCESS CAPABILITIES: THE ROLE OF ORGANIZATIONAL STRUCTURE

[1]SANAZMONSEF, [2]NASRIN JORKESH VARNOSFADERANI, [3]SALIM MASOOD NASSERY

[1,2]Deartment of Management, Faculty of Humanities, Najafabad Branch, Islamic Azad University, Najafabad, Isfahan, Iran
[3]Deartment of Management, Industrial Management Institute, Esfahan province
Representative
Email:sanazmonsef2@gmail.com, jorkesh_nasrin@yahoo.com, smasudn@gmail.com

Abstract: The corepoint of this studyremains to scrutinize the relationships betweenOI, organizational structure and soNew Product Development (NPD) process.
This paperprovides a model in examining the controllingpart of organizational structure influencesamongstOI and potentials of NPD developmentcontaining development, planning, commercialization and marketing.
The mainpoint is on the impact of OIover theNPD process skills with anattentionto the part of organizational features. The PROCESS of Hayes along with the Regression analysis wasapplied to assess the theory in a model of 126 firms in Technology Park of Malaysia.
Findingsreveal that, formalization controls the connection amongstthe OI and various points of NPD process. Instead, complexity manages the mattersexcluding marketing while centralization manages just in planning.

Keywords: Open Innovation, Formalization, New Product Development, Complexity and Centralization

I. INTRODUCTION

The NPD has concentrated over the strategy literature andfunctions as a connotation to improve the performance of a firm (Cavusgil et al, 2003, Vorhies et al, 2005). Chesbrough (2003) choseOI as a modelaidingfirmsregardingjoiningthe basestoadvance new products. OImodelletsfirms to utilizenotions from exteriorbasesalong withinteriors(Helfat, 2006). This has focusedonawareness, where notions can run privatelyover the associationover and abovepublically. Here, organizational aspects play significantpartsaimed atdeveloping product expansionprocedure(Calantone et al, 1993, Li et al, 1998, Rindfleisch et al, 2001).

One majorfactcontains, the features of organizational structure include an indirect partover the NPD'sachievement(Droge et al, 2008, Bahemia et al, 2010a).
Therefore, these modelsshowsthat the features of organizational associationstaysignificantinfluencesregardingOI and NPD course(Jones, 2007).
Hence, this paperplans to deliver a superiorsympathetic of establishments'organization altypes in directing the influencesamongOI and NPD process aptitudes. The upcomingsector of theresearch is followed by methodology. Afterward, analysis and discussion is going to bestated before the finaltranscripts.

Literature Review

Open Innovation

Itaidscorporations with information achievement from exterior bases through the innovation development(Martinich, 2005, Minshall et al, 2010).

A firmalong with open innovation refers to external bases for gaining and exploitation of theviewpoints (Martinich, 2005, Spithoven et al, 2011).

Figure 1 shows, OIeliminates the companies' boundaries to concepts, scientificanswers, rationalassets, experts and private discoverers outside refining NPD process operation and solessenthe phase to new market (Cooper et al, 2010, Monsef, 2013). OI is considered as the grade to what companies join the external setting and so how to utilize exterior bases along with being considered as an importantissue in NPD developmentabilities.

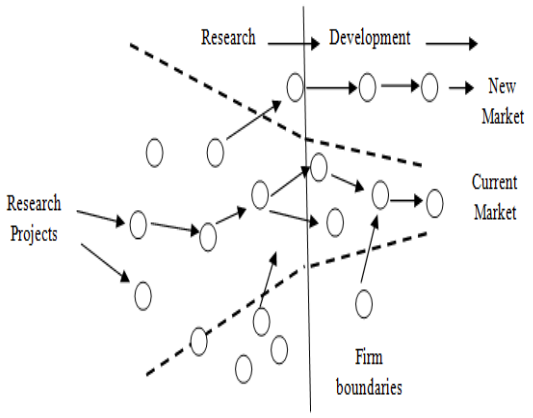


Figure 1: Open innovation Model (Chesbrough, 2003)

Open Innovation classifies the innovative product expansion presentation that internal R&D party can deliver NPD's demand merely over exterior basis like knowledge of folks, clients' influence and technology (Chiaroni et al, 2011, Trott, 2008). Besides, NPD is known as a structure surrounding the active collaboration among internal and external influences(Harmancioglu et al, 2007).

II. NPD PROCESS CAPABILITIES

NPD is formedbyvariousstages(Trott, 2008). Similarly, (Khalil 2000)presented planning, evelopment marketing and commercialization by way of the four mainlevels of New Product Developmentprocedure.

Thedevelopmentmethodsought toadvanceinformation and indulgent of the developments which careabout the planning, development, marketing and commercialization steps(Bessant et al, 1997, Trott, 2008, Ismail et al, 2012). It's been revealed that scopes of organizational structure remain as themajorsubjects in the innovation procedureconsequentlyhold a significantpartat all levelsin innovation procedure (Sisodiya, 2009). In point of fact, the NPD is a compoundaction in which organizational structure featureswouldtouch its progressions.

New Product Development Process and Organizational Structure

Thisincludes the roles, tasks and power of workforce, and consequently a mainfactor of statistics flow in dissimilarstages of association (Dayan et al, 2010, Daft et al, 2008). Daft (2001) offered a set of organizationalfeatures of which centralization, formalization and complexity involveissueswhich have obtained additionalcare in priorstudyaffectingon organizational structure

(Anderson, 1999, Aiken et al, 1971, Dewar et al, 1979, Ettlie et al, 1984, Pierce et al, 1977, Daft, 2001, Kanter, 2003, Simon, 1962, Bækgaard, 2011, Chiu et al, 2009, Hall et al, 1967).

III. THEORIES ADVANCEMENT

Open innovation modelcan aid New Product Developmentprocedureaimed atobtaining advancedskills. The projectedparadigm (Figure 2) showsitremains the individual variable and the NPD process skillsremainas the dependent variable. Consequentlythey equally are debated in this paper. It also may offercompanies with a chance to attain better skills of NPDprogression. At large, advanced companiesare susceptible togetanad just ablearrangement besides a strong strategicway for innovation(Kahraman et al, 2007). Concerning the theoreticalparadigm as revealed in Figure 2, three modulators as formalization, centralization, and complexity are existed.

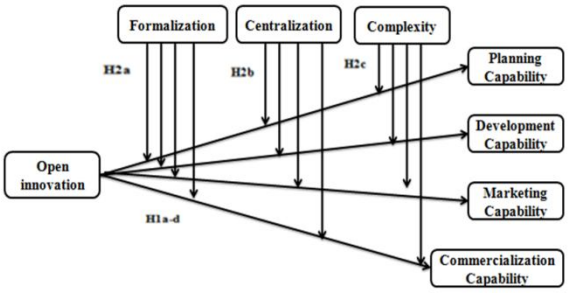


Figure 2: TheoreticalParadigm

Regarding the claims above, the maintheories have been described as:

H_{1a-d}: Companiesfollowingthe OI in New Product Development, attainimprovedstage of NPD procedure in terms of (1) planning skills, (2) development skills, (3) marketing skills and (4) commercialization skills.

H_{2a1-4}: Formalization of associationregulates the connectionamongOI and New Product Developmentprocedureskills in terms of (1) planning skills,(2) development skills,(3) marketing skills and (4) commercialization skills

H_{2b1-4}: Centralization of firmregulates the associationamongOI and New Product Developmentprocedureskills in terms of (1) planning skills,(2) development skills,(3) marketing skills and (4) commercialization skills

H_{2c1-4}: The organizationalcomplexity regulates the associationamongOI and New Product Development procedureskills in terms of (1) planning skills, (2) development skills,(3) marketing skills and (4) commercialization skills

These groups of theoriesinvolve the regulatingconsequence of organizational structure featuresover theassociation of OI and New Product Development procedureskills.Theseconsequences are assessedover four phases of planning skills, development skills, marketing skills and commercialization skills.

IV. METHODOLOGY

The forms ofvariables and complicationsspecify that the numerical methods have been applied for testing the theories. A questionnaire also was established as a study instrument to deal with the all variables exposedthroughout the literature review. Then, the mentioned instrument was authenticatedvia academic authorities and administratorsrelated to the New Product Development procedure like Research & Development directors.

After the authentication, the instrument was adapted and soprepared to be utilized for datacollection.

Thisstudy was directedover 126 Malaysian firms in Technology Park of Malaysia (TPM). The measurement for variables isincluded of five-point Likert-type objects.Experimenting setting would seek for answers from executives or specialists who are straight concerned in the NPD progression. The ultimatequantity of answers was 90 or around 71percent. 5 questionnaires were unworkable leaving eighty five or nearly 67percent of the questionnaires appropriate for nextstudy.

Analysis

Data showing and paradigmauthoritythroughfeatureexamination were completed to arrange the statistics for the paper after the data collection part.

Furthermore, the hypotheses illustratept associations through the dependent variables. Based on what has been stated through the study,indication of convergent, separate, and nomological authority was discovered and so it can be revealed as a conclusion that the theory validity was founded.Consequently, the theories' testing isconceivable.

This research paperemployed regression examinationtoassessconnectionamongOI and NPD process skillsvialinedreversion and SPSS. To reveal the relationship between OI and New Product Development process skills that have been revealed in Figure 2, linedreversionexamination was directedbySPSS. Table 1presents the examinationtheories of the four (H1a, H1b, H1c and H1d) relevant to the majorresultnumerically noteworthyissues for OI (P< 0.05). Based onthe results, four theories were reinforced.

Table 1: Results for linedreversionstudy on Open Innovation and NPD procedureskills

	R square	Beta standard	t	Sig.
Planning	.89	.948	26.321	.000
Development	.76	.876	16.845	.000
Marketing	.66	.814	12.376	.000
Commercialization	. 75	817	12.504	.000

Lastly, to observe the result of regulating variables, this research papertrackedproposals specified by Hayes (2012) andthereforeshowed a PROCESS examination(Hayes, 2012). As said by Andrew Hayes (2012), the PROCESS assesses aninfluential new technique for approximating regulatinginfluences.The reliant variables were examinedover the Figure 2. Table 2 shows the 12theories'examination($\boldsymbol{H_{2a1-4}}$,$\boldsymbol{H_{2b1-4}}$, and $\boldsymbol{H_{2c1-4}}$)relevant to the essentialinfluence.

Table 2: The PROCESS results

		Coeff	t	P
Planning	OI* Formalization	.1407	3.3451	.0013
	OI* Centralization	.0982	2.0730	.0416
	OI* Complexity	.1881	3.2975	.0015
Development	OI* Formalization	.1852	2.8008	.0065
	OI* Centralization	.1015	1.3933	.1676
	OI* Complexity	.2180	2.4022	.0187
Marketing	OI* Formalization	.1600	2.1031	.0388
	OI* Centralization	.0307	.3652	.7160
	OI* Complexity	.1300	1.2362	.2202
Commercialization	OI* Formalization	.2890	3.6914	.0004
	OI* Centralization	-.0005	-.0053	.9958
	OI* Complexity	.3652	3.4111	.0010

The outcomes showed that associatedtheorizes with formalization and everyskillremainimportant (P<0.05). In addition, the outcomesshow that,"centralization coverregulatinginfluencemerely on association between Open Innovation and planning skills" (P<0.05). Furthermore, relevanttheory with regulatinginfluence of complexity on associationamong OI and planning, development and commercialization isreinforced (P<0.05) however not momentouson the marketing ones (P>0.05).

CONCLUSION

The research study offers an examination about the responsibility of organizational structure influences over the connection between OI and NPD process skills. The results indicate that formalization regulates the connection between OI and all steps of New Product Development procedure. Conversely, complexity regulates all substances excluding marketing, while centralization regulates merely in planning. This theory can be smeared to further intricate OI and so aids to a well-improved clarification of New Product Development process for investigators along with experts. Influences of organizational structure have an important position in companies employing exterior and interior bases to apply OI. It is also notable that semi-permeable limitations within the association are permissible therefore that notions, awareness and skill are suggested inside and outside of the institute. Additionally, centralization, formalization, and complexity remain features that direct the connection between OI and NPD process skills. A great grade of formalization takes a destructive association with innovation whereas little formalization encourages

innovation. However, a research on the influence of organizational superiority over the application quality and quantity throughout the procedure levels of New Product Development aid administrators boosting announcement outside the company over OI and ultimately upsurge the possibility of achievement in New Product Development procedure.

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