

The integration System Innovation and Adaptation in Business Complexity - Empirical Evidence from Romanian

by

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Abstract. This paper examines the stabilizing Business complexity using innovation and integration as an attribute for business organizations in Romania. Going with the assumption that business environment can be considered an adaptive complex system .Business complexity refers to daily business cycle efficiency of operations with effect on costs, the paper try also to identify the role of innovation attribute found in integration process, the paper apply the Water Fall Model which is an approach in modeling based on interfaces, which can help in identifying integration points respecting the basic design model standards. The paper findings contributes on draw an interest image to the influence of Business modeling combined with innovation integration to keep performance and find flexibility to maintain market segmentation, the paper also will focus on innovation environment and innovation strategic management adaptation in the business network, measuring risk as a segment using model complexity rating .

Key words: Romania, Efficiency, Adaption, Business Complexity, Systems Integration, Innovation Business

JEL Classification: O29, O30, O38, P17

1 Introduction

Economists and business analysts try to find interpretation to sudden cooperation failure and lose of customer preference. Several questions rise in the process, is it the lack of R&D resources, or lack of skilled managers in the needed moment or is it failing to track markets changes. Most well-known brands missed that moment, when they should focus on development with the rethink of their current business model adding a next technology. History shows us almost all those will know brands have severely lost market share for new arrivals in their own business. Missing out radical innovation and leaving themselves under markets control focusing efforts in managing daily business and serve current clients instead of indentifying future opportunities is the answer for their downgrade. No doubt that new innovation products and better customer service in today's business have reached a great amount. (Saebi and Foss 2015) helping certain young companies to evolve rapidly and get high market share .These brands mixed innovative products with special customer care to create higher customer value to their product

or service, enhancing the reduce of costs and minimize the complexity effect, creating a new level of competitive advantage for a new age of business. For insistence Apple Inc new leading market brand in phones market succeeded to create a high perceived customer value with its innovative phones with a remarkable new model to sustain its position in the market. Others succeeded to reduce Complexity and working capital through build-to-order-processes (Vargas, 2015). Business start small and grow wide , a competitor appears with same product or service better features ,lower costs and better distribution chain , the case of Nokia, Blackberry versus Apple and Samsung , we find that these brands become the market leaders in a record time making Nokia and Blackberry lose the ground first and then disappear. (Souto, 2015) Many scientific studies in the last decade discuss the life cycle of a business. In 1955 the five hundred large business companies have been reduced today to 11%, while 89%from the1955 list are completely out of life and influence, the average age companies in this list were 75 years then, but today in a rapid changing world, the average become 15 years old, this average can show the

high levels of competition including innovation with a focus in minimizing complexity, making new products, and new customer communities. (Hu2014) A question rises again is it possible to apply the same model approach to other business, can business age and eventually die, start strong grow then week , age and die (Hittmár, 2014) like its managers and employees and retracts its importance, become with a low impact in the market, get out of competition. (Serrano-Santoyo, 2013). But still 11 percent of companies that have survived in the 1955 list till today. Succeeded to in solve their ability to stay in competition and renew their potential. Studies tell us that the 55 companies left from the 500 largest global company in a 40 years transformed its all visual assets from a visible total assets with 80 percent to invisible such as research studies and inventions which helped them to remain in the global competition circle and not age.

2 The Importance of applying integration and Innovation in Business Models

Usually when managers, entrepreneurs, analysts or developers use the innovation concept people start to link it to technology developments or new products and services, or can be linked directly to new processes of computer systems, software's that have the potential in some cases to reconstruct and reproduce systems that boost business performance and make changes to whole business model in an organizations. (Boons, and Lüdeke-Freund, 2013). But reality shows that Innovation concept goes beyond just classic technological evolution. Innovations are integrated methods used to change and improve organization performance and achieve success to improve economic results, so the notion of innovation is much wider than the concept of technological or new products modifications concept. (Kevin,2012) There are several types of innovations as illustrated in figure number 1 which give us the conclusion that innovation cover wider types and possibilities to study adopting and applying process of integration to gain performance in management. Integration interpretation can be new concepts and practices

in which gives the organization a comprehensive framework, ability to make positive changes and improve results in which lead to effectiveness and performance. (Doganova, 2009) Innovation is the key to survival in conditions of dynamic changing environments and integration is the core attribution of new innovative model of business or production and services in such changing environments (Dhewanto, Prasetioan, Ratnaningtyas, and Group, 2012).

The **BOBZURUB** 2015 Model figure number 2 is an approach to bring complexity to the table and show how business organizations confront with Macro and micro economic complexity forming several level of complexity in the process of gaining for every product produced in Romanian business environment and propose a adaptable changes for N of products to reach N markets.

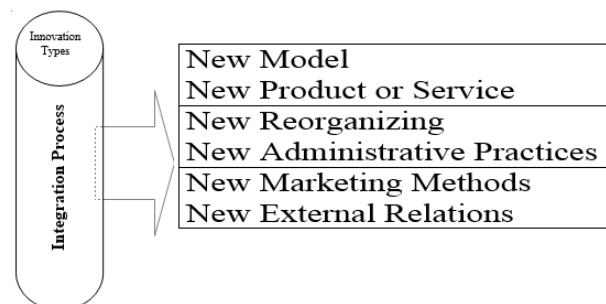


Figure 1. Types of innovation within business organization and integration as innovation attribute

The BOBZURUB model shows the interactions between capital, materials and operations melting together forming processes needed to produce outputs products to reach markets. A complex phenomena to be consider , the model show that interaction of the macro and micro complexity classification types form the different levels of complex environment Low Medium and high to produce N types of products, the model also sets several solutions for every product a part to reduce and stabilize complexity level to every product till reach its market.

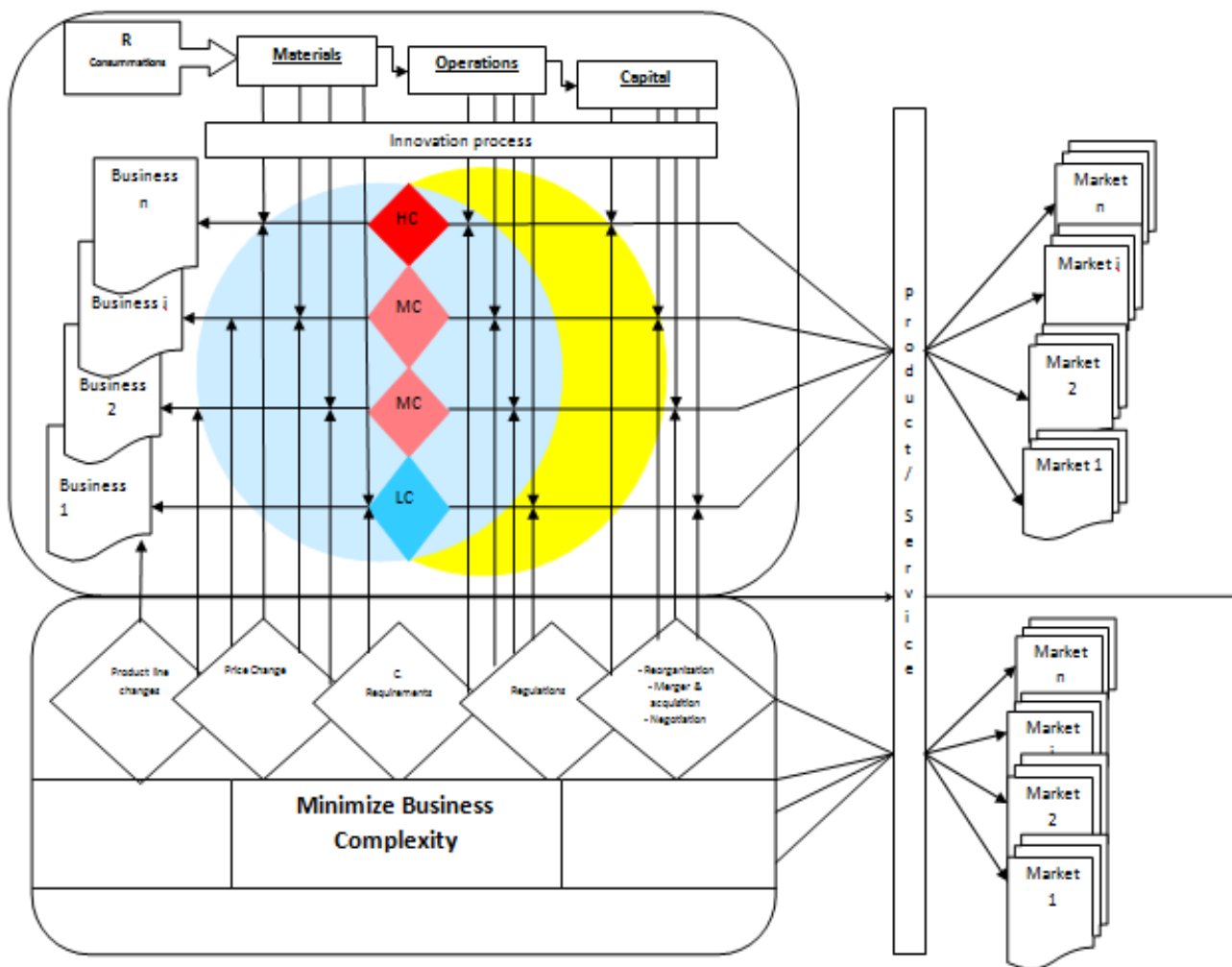


Figure 2. BOBZURUB 2015 Model, Minimizing Business complexity in context of Macro-Micro economic Complex environment

The role of water fall model can be here considered a way to reform or reproduce process to adapt and work on the stabilization of complexity for every line of production. BOBZURUB model bring material and capital efficiency consumption in a scope to put the organization on track, to maintain competitive position on its principal product markets. The most important and most useful result of business complexity study in business organizations, are the founding's innovations attributes at administrative levels as a responded to levels of complexity. It creates a new ways of systematic thinking problem-solving and decision-making leading to development strategies creating a healthy survival, adaptable to change in environment resulting continuous business scaling. (Wonglimpiyarat, 2005).

3 Problems and Methodology

Proving the BOBZURUB model in stabilize and minimize the business complexity environment of production lines process for a Romanian Business organization in our case Namira business Production Srl , a leader in Oil and Gas and Petrochemical fasteners also confirm that integration is an original attribute of innovation in modeling , and in the same time innovation is an attribute of a complex adaptive system , it leads us that business problems can be solved by complexity theory within non-linear thinking using equations and methods applied to rules from parallel sciences, and based on the theory all complex adaptive systems have the same hierarchy shape no matter the scientific filed Economic, Eco

System, Geology, Quantum physiques. Here the role of the waterfall development model can be away to prove the validation of BOBZURUB model for stabilizing the complexity environment the water fall model is used for design or developing process in a sequential order the model can be applied for highly structured environments as manufacturing industries or major projects most of the time is used by software developers in IT modeling.

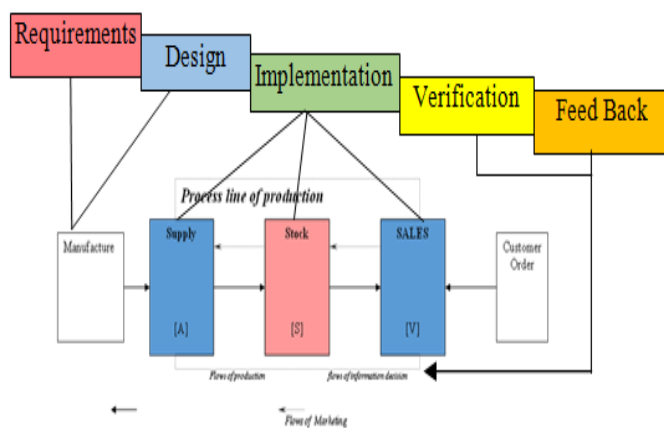


Figure 3. Water fall Model applied to manufacturing business organization

The water fall model is based in five main variables to set a production manufacturing process we also distributed the model to 3 phases of implantation to adapt with the Namira production business model the first phase is based in the first and second factor Requirements and Design the second phase consists from the Implementation factor third phase and last consist of Verification and Feed Back, Elements that represent organized

production process are sales (V), supplies (A), (C) costs and time related to the parameters. using the model concept we have developed the application illustrated on figure number 4, that's allow the production phase to be organized based on the customer requirement, and help to minimize over production to Zero, the efficiency of the production line helps in minimize costs and effort, helps the organization to get over high levels of complexity activating in an environment without this application.

The application involve manufacturing, supply and storage processes C_s the cost of manufacturing and supply-as-consisting of price of the requirement associated with transport costs; The cost of storage, which includes all expenses related to the maintenance, storage and rehabilitee of products during storage; Penalty or cost of breaking stock ,occurs usually when differences arise between supply and demand.

Conceptually, Time parameters are reference items in any manufacturing and stock model. They underlie the construction manufacturing inventory model. In our application the size of the period between the manufacturing and entry into stock and new supply (q_i) and duration of supply (Ca_i) depends on these two indicators to construct other time parameters of time which can be represented by number of days between ordering (α) and its arrival number of days between two replenishment (β).

Table 1. A systematic application process to organize production quantities based on water fall model for Namira business production Srl

Date	Inventory			Entrances			Sales			
	Units Manufacturing and Inventory cost / unit	Total Manufacturing inventory costs	Units	Unit cost supply	Expenses supply	Units	Collections	Nr. days between ordering and its arrival	Nr. days between two replenishment	
q _i	n _i	Cs _i		m _i	Ca _i		V _i		α	β
3-Jan-015	18	325	5,850	0			12	157,810	ORD	
5-Jan-015	6	325	1,950	70	11,600	812,000	12	157,810	1	2
6-Jan-015	64	325	20,800	0			14	184,111	ORD	
7-Jan-015	82	325	26,650	30	11,600	348,000	12	157,810	1	2
8-Jan-015	100	325	32,500	0			13	170,960		
9-Jan-015	87	325	28,275	0			14	184,111		
10-Jan-015	73	325	23,725	0			12	157,810		
12-Jan-015	61	325	19,825	0			15	197,262	ORD	
13-Jan-015	46	325	14,950	0			12	157,810		
14-Jan-015	34	342	11,628	45	12,760	574,200	11	144,659	2	7
15-Jan-015	68	342	23,256	0			10	131,508	ORD	
16-Jan-015	58	342	19,836	0			18	236,714		
17-Jan-015	40	342	13,680	0			17	223,564		
19-Jan-015	23	354	8,142	60	12,760	765,600	14	184,111	3	5
20-Jan-015	69	354	24,426	0			12	157,810		
21-Jan-015	57	354	20,178	0			9	118,357		
22-Jan-015	48	354	16,992	0			8	105,206	ORD	
23-Jan-015	40	354	14,160	0			11	144,659		
24-Jan-015	29	354	10,266	0			12	157,810		
26-Jan-015	17	354	6,018	75	13,920	1,044,000	3	54,288	3	7
27-Jan-015	89	354	31,506	0			6	108,576		
28-Jan-015	83	354	29,382	0			16	289,536		
29-Jan-015	67	354	23,718	0			12	217,152	ORD	
30-Jan-015	55	354	19,470	0			13	235,248		
31-Jan-015	42	354	14,868	50	13,920	696,000	7	126,672	2	5
TOTAL	1356		462,051	330		4,239,800	295	4,161,362		
Averages		341		57	12848		12	14106	2	5
Standard Deviation		5		13	773					
			N=	43						
			M=	70						
			X=	3						

4 Conclusions

The BOBZURUB model has proven its ability combining with water fall model to bring efficiency process of manufacturing to stabilize and minimize the business complexity environment of production lines process in Namira business Production Srl ,

We have confirmed using our innovative administration system application developed to automotive and systemize manufacturing process on a business organization model that innovation is an original attribute of complexity, by succeeding to minimize UN needed production to zero. With important conclusion and by proving that complexity is an original attribute of a system, we can conclude also that innovation is an attribute of a system in case of using integration to create new developed process.

Innovations have several types and extended for several interpretations, but it was most communed used on Information technology, the terms have widened to reach social studies.

The study of complexity science can help to understand economic and business phenomena's by characterization them as a complex adaptive systems , and try to find similar characteristics from other scientific disciplines , and try to use non-linear approaches based on their rules to see what kind or results can produce and if its enough to understand the phenomena.

References

Saebi, T. and Foss N., J., 2015. Business models for open innovation: Matching heterogeneous open innovation strategies with business model dimensions .European Management Journal, 33 (3), pp. 201-213.

Vargas, R., I., M., 2015. Determinant Factors for Small Business to Achieve Innovation, High Performance and Competitiveness: Organizational Learning and Leadership Style. Procedia - Social and Behavioral Sciences, 169(20), pp. 43-52.

Souto, J., E., 2015 Business model innovation and business concept innovation as the context of incremental innovation and radical innovation. Tourism Management, 51, pp. 142-155.

Hu, B., 2014. Linking business models with technological innovation performance through organizational learning. European Management Journal, 32(4), August Pages 587-595.

Hittmár Š. Varmus, M., Lendel, V., 2014. Proposal of Model for Effective Implementation of Innovation Strategy to Business. Procedia - Social and Behavioral Sciences, 109(8), pp.1194-1198.

Boons, F. and Lüdeke-Freund, F., 2013. Business models for sustainable innovation: state-of-the-art and steps towards a research agenda. Journal of Cleaner Production, 45, pp. 9-19.

Serrano-Santoyo, A., 2013. Exploring a Framework for Innovation from the Perspective of Complexity Science. Procedia Technology, V9, pp. 139-145.

Boons, F., Montalvo, C., Quist, J., Wagner, M., 2013 Sustainable innovation, business models and economic performance: an overview. Journal of Cleaner Production, 45, pp1-8.

Dhewanto, W., Prasetyo, E. A., Ratnaningtyas, S., Herliana, S., Chaerudin, R., Aina, Q., Bayuningrat, H., R., Rachmawaty E., 2012. Moderating Effect of Cluster on Firm's Innovation Capability and Business Performance: A Conceptual Framework .Procedia - Social and Behavioral Sciences, 65(3), pp. 867-872.

(Kevin) Chae, B., (K.), 2012. An evolutionary framework for service innovation: Insights of complexity theory for service science. International Journal of Production Economics, 135 (2), pp.813-822.

Doganova, L., Eyquem-Renault, M., 2009. What do business models do?: Innovation devices in technology entrepreneurship . 38(10), pp. 1559-1570.

Wonglimpiyarat, J., 2005. Does complexity affect the speed of innovation?, Technovation, 25(8), pp.865-882

Chapman, R., and Hyland P., 2004. Complexity and learning behaviors in product innovation. Technovation, 24(7), pp.553-561.

Waelbroeck, P., 2003. Innovations, production complexity and the optimality of R&D. Economics Letters, 79(2), pp. 277-282.