ORGANIZATIONAL INNOVATION AND FIRM PERFORMANCE: A STUDY OF ALBANIAN FIRMS

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Abstract: *Organizational innovation theories mostly utilize a dichotomous division between types of innovation and stages of innovation. For instance, the dual core theory dissects innovation in administrative and technical dimensions, hereby emphasizing the dissimilarities between technical and social systems of an organization (Daft 1978; Damanpour & Evan 1984). Moreover, the theory of innovation radicalness uses a different phrasing of organizational innovativeness, whereas the ambidextrous theory of innovation examines how an organization adopts certain innovations by identifying two separate stages. This paper's purpose is to investigate how organizational innovation affects two other aspects of innovation – technical and administrative innovation – which comprise the general innovation construct. The study was conducted employing a sample of 100 Albanian firms, where the organizational innovation model has been enquired to test the effect it exercises on general organizational innovativeness (simply referred to as innovation). This structure is further controlled by the influence of several independent variables, including company size, employee education level, production vs. service-based orientation, and whether the firm sources its research and development (R&D) activities internally or externally. Despite some inconclusive evidence, the empirical findings presented in this study demonstrate an overall positive relationship between organizational innovation and firm innovative activity, as related to technical and administrative innovation. To the best of the author's knowledge, this is the only Albanian study that measures organizational innovation and firm innovativeness.*

Keywords: *Organizational innovation, Technical innovation, Administrative innovation, Firm Innovativeness, Dual core theory, Innovation radicalness, Ambidextrous theory*

1. ORGANIZATIONAL INNOVATION PERSPECTIVE

Organizational innovation theories generally discriminate between types of innovation and stages of innovation. The dual core theory distinguishes between technical and administrative innovation, a conceptualization that refers to the different technical and social systems of the organization (Daft 1978; Damanpour & Evan 1984). In addition, the theory of innovation radicalness, pertains the division in two different terms. Terminology used to describe the division varies from authors. Duncan (1976) used "variation" and "reorientation", or "routine" and "non-routine". The most recognizable categories by researchers are *radical* and *incremental* innovation.

Lastly, the ambidextrous theory of innovation concentrates on how the innovation is adopted. Ambidexterity refers to "*the ability of a complex and adaptive system to manage and meet conflicting demands by engaging in fundamentally different activities*" (Bledow et al. 2009: 320). Theory, according to (Duncan, 1976) identifies two separate stages: initiation and implementation. Initiation includes all those activities such as problem perception, gathering information, attitude formation, evaluation, resource development. On the other hand, implementation includes activities and actions that modify the organization and the innovation process until the initial use of innovation becomes a routine process in the organization. Moreover, the author argues that in order for organizations to absorb necessary conflicts needed for the innovation process, companies need to align their structures with company's strategy over time.

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Regarding innovation, Tushman & O'Reilly (1996) argue that sequential ambidexterity can be ineffective, thus organizations have to explore in a simultaneous way. Research about organizational ambidexterity concepts in the last two decades has known a great interest (Gusenleitner 2016; O'Reilly & Tushman 2013). From the perspective of innovation organizations face different competing situations in the market, thereby requiring a combination of all models of organizational ambidexterity for exploitation and exploration. Whether it is sequential, simultaneous, or contextual ambidexterity it might be complementary or a combination of all (Katila & Chen, 2008) and act as a dynamic capability (O'Reilly & Tushman, 2008) in the pursue of innovation.

Nonetheless, such theories fail to include an important analytical factor such as the context, which is relevant while analyzing unfolding events of an innovative process. Damanpour & Gopalakrishnan (1998) argue that it is important to know environmental conditions, pertaining contextual developments, in which predictors of middle range theories are valid. To a certain extent, environmental change represents a separate dimension per se. In their work, Dess & Beard (1984) described three dimensions constituting the realm in which an organization competes: munificence, dynamism and complexity. According to Damanpour & Gopalakrishnan (1998) dynamism, characterizing environmental change, affects the most organizational innovation capabilities.

Many authors, looking and analyzing from different perspectives, identify several dimensions of innovations such as: technological (Daft 1978; Freeman & Soete 1997; F. Damanpour 1991; Shea 2005; Goffin & Mitchell 2010), administrative (Daft, 1978; Teece 1980; Škerlavaj, Song, & Lee, 2010), process (Abernathy & Utterback 1978), product (Abernathy & Utterback 1978; Lundvall 1985), etc. Different innovation dimensions affect analytical dynamics between organizational variables and the process or the outcome itself. Economists look at innovation from the perspective of how fast a firm can innovate in comparison with other firms, and see it as a process or practice that is new to industry (Gopalakrishnan 2000), hence different dimensions arise from this stand point. Organizational theory focuses on innovation magnitude, thus analyzing how many products or processes are new to the organization. This analysis will follow with the review of several dimensions of innovation surfacing from literature. It is representative, yet not exhaustive.

There are many dimensions of innovation that fall under the umbrella of organizational innovation. There are dimensions that pertain organizational resources such as: knowledge, learning orientation, strategic orientation, methods, organizational culture and management. Organizational innovation (OI), as defined by OECD (2005), refers to new organizational methods for business management in the workplace and/or in the relationship between a company and external agents. The same manual refers to OI as one of the four types of innovation. Relying on the resource-based view of the firm organizational innovation is an internal capability of the firm and relies on internal characteristics.

According to Wernerfelt (1984) a resource is anything being a weakness or a strength of a certain firm, tangible or intangible, such as brand names, knowledge, skilled personnel, contacts, machinery, procedures, capital, etc. Furthermore, according to such theory only firms with internal capabilities associated with special characteristics and certain resources will achieve competitive advantage, thus the superior performance. From this perspective, organizational innovation is a strong source and prospect of a competitive advantage (Camisón & Villar-López 2012; Hamel 2009).

Early research on innovation has been primarily conducted in the form of studies of administrative innovation (Richard L. Daft, 1978; Fariborz Damanpour & Evan, 1984; Kimberly &

Evanisko, 1981), concerning mainly changes in organizational structure, administrative processes and human dynamics or otherwise referring as social systems of an organization (Fariborz Damanpour, Szabat, & Evan, 1989). Even though early stages of innovation studies refer to administrative innovation, the main concern was about whether such administrative change would lead to technical innovations (Fariborz Damanpour et al., 1989). Later, organizational innovation was analyzed more as managerial innovation (Hwang, 2004) regarding organizational structures, processes, and HR systems. The OECD (2005) referred to OI as it is and later it was analyzed under the organizational innovation terminology by other authors as well (Armbruster, Bikfalvi, Kinkel, & Lay, 2008; Stoneman & Battisti, 2010). Later studies refer to OI with the terminology of management innovation (Birkinshaw et al., 2008; Fariborz Damanpour & Aravind, 2011; Gery Hamel, 2006) emphasizing management principles and practices with the intention to enhance firm performance and new knowledge approaches in management functions.

2. METHODOLOGY

Executive summary

In this study, in order to investigate the relation between organizational innovation and innovation we use multi-item scales from two studies. To measure the innovation we used (Škerlavaj, et., 2010)in-depth approaches aimed at achieving higher-level organizational learning. The elements of an organizational learning process that we use are information acquisition, information interpretation, and behavioral and cognitive changes. Within the competing values framework OLC covers some aspects of all four different types of cultures: group, developmental, hierarchical, and rational. Constructs comprising innovativeness are innovative culture and innovations, which are made of technical (product and service instrument which consisted of two constructs and 12 questions. In this model, the first construct, technical innovation, pertains to products, services and the organization's production process or service operations. The second one, administrative innovation, refers to rules, roles, procedures and organizational structures; this construct is related to the communication between organizational members. Of all questions, nine cover technical innovation as a first dimension and three pertain to administrative innovation as the second dimension of construct. For measuring organizational innovation we engaged a third dimension, which was developed by (Vaccaro, Jansen, van den Bosch, & Volberda, 2012), organizational innovation, a construct with 9 questions.

Our hypothesized model's structure allocates a cumulative group of 21 items to 3 constructs. The model further contains two major subdivisions: The *Innovation* structure, comprised of the technical and administrative innovation constructs and their respective measurement items, of which 9 are clustered into the former and 3 assigned to the latter; and the *Organizational innovation* separate structure measured by a further 9 items. This model expands upon the relationship between innovation and organizational innovation, and the role several controlling variables exercise on innovation, such as: firm size, employee skills and education, firm market orientation (product vs. service-based), and R&D source base (internal vs. external). Model fit assessment was conducted via structural equation modeling (SEM analysis), based on several indicators of goodness of fit: chi square test, Comparative Fit Index/Tucker-Lewis Index (CFI/TLI), Root Mean Square Error of Approximation (RMSEA) and Standardized Root Square Residual (SRMR), Akaike's Information Criterion/Bayesian Information Criterion (AIC/BIC). Limitations have been taken into account; our results suggest that increased overall firm innovativeness is indeed linked to an expansion of organizational innovation as well.

Operationalization

The a priori model assumed the existence of 3 latent constructs composed of a group of 21 items, subdivided into 2 major structures. The first comprises the *Innovation* latent structure measured by a cumulative of 12 items allocated to two constructs: technical and administrative innovation, containing 9 and 3 items each, respectively. This structure is further controlled by the influence of several independent variables, including: company size, employee education level, production vs. service-based orientation, and whether the firm sources its R&D activities internally or externally. The second major structure comprises the *Organizational innovation* construct and 9 corresponding items. Our main purpose is to determine the relationship between the two major structures, *Innovation* and *Organizational innovation* and the pattern through which such an association is conditioned (by the influence of the independent variables) and established. These latent constructs, their structure and association patterns were developed based on a comprehensive literature review of the topic. Further schematic reference is offered by Figure 1, which illustrates the hypothesized model's composition and correlations' pattern.

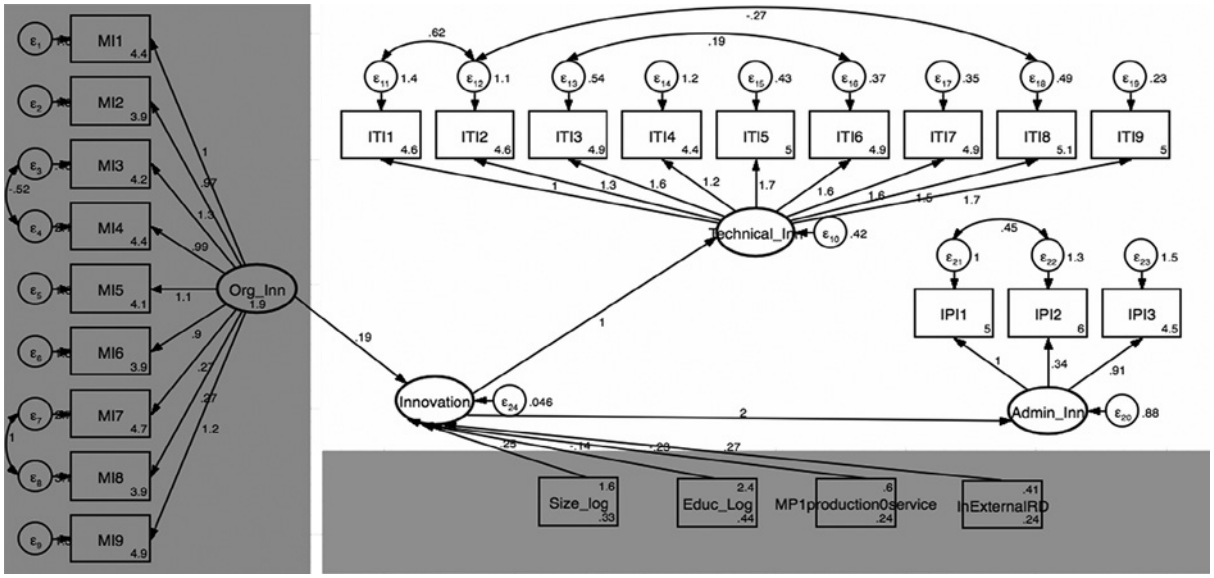

Figure 1. *Model Construction*
Source: Author

The a priori model was afterwards tested empirically through principal component analysis' (PCA) statistical techniques to explore the latent dimensional structure of innovation and the hypothesized model's feasibility in the observed Albanian context.

3. THE DATA

Data was gathered from a sample of 100 randomly-chosen, declared-innovative, small and medium-sized (SME) Albanian firms, as defined in the Albanian context of firm size (based on National Business Center designations). Given a sample size ≤ 100, it is recommendable that the model be structured into 5 or less constructs, each composed of at least 3 observable variables with communalities equal to, or higher than 0.6. This supposition was considered for our model's structural composition.

As summarized previously, the model comprises two separate major structures interconnected through tested relations under the role of the independent variables. The *innovation* structure comprises 12 items, and is further subdivided into 2 different constructs: administrative and technical innovation. The technical innovation construct, which measures product and service innovation, is measured by 9 variables. Administrative innovation, which is based on measurements of organizational processes, including: rules, procedures, and structure, is made up of 3 variables. The other structure incorporated into our model is composed of a single construct, *organizational innovation*, and is measured by 9 items. *Organizational innovation* measures respondents' ability to implement and cope with organizational change, restructuring, management systems, employee tasks and functions allocation, inter and/or intra-departmental communication structure and other organizational systems. Data was collected through a questionnaire, where respondents ranked their stance on issues raised using a 7-point Likert scale, ranging from 1(strongly disagree) to 7 (strongly agree). The model yielded a total of 3 constructs and 21 related items (all of which are further detailed on Table 1).

Table 1. Description of the 25 items, their means and standard deviation

Item		Variable Name	Description	Mean	Std. Deviation
Organizational Innovation	1	MI1	Rules and procedures within our organization are regularly renewed	4.88	1.70
	2	MI2	We regularly make changes in our employees' tasks and functions	4.14	1.99
	3	MI3	Our organization regularly implements new management systems	4.67	1.77
	4	MI4	The policy with regard to compensation has been changed in the last three years	4.58	1.99
	5	MI5	The intra- and inter-departmental communication structure within our organization is regularly restructured	4.31	1.99
	6	MI6	We continuously alter certain elements of the organizational structure	4.12	1.85
	7	MI7	Our employees may pursue different roles within the organization		
	8	MI8	We usually alter the way in which we set our objectives	3.84	1.91
	9	MI9	We regularly invest in developing our structure so as to make the most of our staff	5.28	1.81
Technical Innovation	10	ITI1	In new product and service introduction, our company is often first-to-market.	4.60	1.41
	11	ITI2	Our new products and services are often perceived as very novel by customers.	4.69	1.47
	12	ITI3	New products and services in our company often take us up against new competitors.	4.96	1.43
	13	ITI4	In comparison with competitors, our company has introduced more innovative products and services during the past 3 years.	4.49	1.42
	14	ITI5	We constantly emphasize development of particular products and services.	5.04	1.46
	15	ITI6	We manage to cope with market demands and develop new products and services quickly.	4.95	1.40
	16	ITI7	We continuously modify design of our products and services and rapidly enter new markets.	4.98	1.38
	17	ITI8	Our firm manages to deliver special products/services flexibly according to customers' orders.	5.14	1.38
	18	ITI9	We continuously improve old products and services and raise quality of new products.	5.09	1.41

Administrative Innovation	19	IPI1	Development of new channels for products and services offered by our corporation is an on-going process.	5.15	1.61
	20	IPI2	We deal with customers' suggestions or complaints urgently and with utmost care.	6.05	1.22
	21	IPI3	In marketing innovations (entering new markets, new pricing methods, new distribution methods, etc.) our company is better than competitors.	4.67	1.70

4. HYPOTHESIS

An in-depth literature review of the topics concerning the subject resulted in the formulation of the following hypotheses:

H1: Greater organizational innovation leads to higher firm innovativeness.

5. INDICATORS

Structural equation modeling (SEM) was selected for its ability to impute relationships between unobserved constructs from observable variables, whereas confirmatory factor analysis (CFA) is carried out to assess model fit and evaluate model structure. Criteria applied to assess if the model fit is acceptable include:

- Chi-square test: reasonable fit if p-value > 0.05
- Comparative Fit Index (CFI) / Tucker-Lewis Index (TLI): indicates a good fit if values get around 1
- Root Mean Square Error of Approximation (RMSEA): reasonable fit indicated if ≥ 0.05 to 0.08
- Standardized Root Mean Square Residual (SRMR): reasonable fit if ≤ 0.08

Analyses have been conducted using SPSS software. However, as this software does not provide statistical analysis for Confirmatory Factor Analysis (CFA), STATA software was used instead, in order to test the hypothesized a priori model structure.

6. DESCRIPTIVE STATISTICS

Confirmatory Factor Analysis

Construct validity was checked through convergent and divergent validity. Constructs' internal consistency, tested using Cronbach's alpha coefficient, contemplates question's relatedness in creating a single latent. Results reveal that organizational innovation showed a very good internal consistency with a Cronbach's alpha > .80. Meanwhile, technical innovation's reliability was even higher, as Cronbach's alpha value stood at above .90. However, Cronbach's alpha fell short of .70 for administrative innovation. Altogether, construct reliability is sufficient, considering alpha coefficients for all constructs are above and, only in one occurrence, close to .70, as shown on Table 2.

Table 2. Constructs' reliability indicators

	No. of items	Alpha	CR	AVE
Organizational Innovation	9	0.87	0.99	0.9
Technical Innovation	9	0.95	1.07	2.22
Administrative Innovation	3	0.68	0.78	0.57

Assessing model fit suitability requires using different indexes in order to reliably determine model compactness. Modification of model indices provided for value adjustments for most indicators bringing values to more appropriate goodness of fit ranges. Results show the model has an overall significance (as $p < 0.01$), as well as an acceptable goodness of fit. After the modification of indices, CFI/TLI values further grew approaching 1, indicating increased goodness of model fit. Adjustments affected RMSEA indicator as well; as it fell to a more suitable .084 from .093 (even before though, it was within the $\geq .10$ threshold, a value that most researchers agree indicates poor fit). Simultaneously, the subsequent decrease of AIC and BIC values after adjustments were applied, which further entrenches model enhancement after indices alteration.

Moreover, composite reliability (CR) of the latent constructs, as shown on Table 2, is high. As such, items loaded into each factor manifest sufficiently high internal consistency. All CR coefficients valued at 0.70 and above are deemed acceptable. Additionally, average variance extracted (AVE) is based on estimations of the average amount of variance the latent construct explains, and the most recommended limit value is 0.5. Our constructs display relatively high values, thus evidencing most of the variance rests within the constructs.

Data analysis

SPSS output reveals that the KMO test value is 0.846, hence higher than (> 0.8), which indicates sufficiently compact correlating patterns, as well as substantiating the sample's adequacy and convenience for conducting further factor analysis to explore the latent factor structure (Table 6). Furthermore, Bartlett's test of sphericity is highly significant ($p < 0.001$), therefore rejecting the null hypothesis of the correlation matrix with an identity matrix at the 5% level, and suggesting variables are correlated. Such a result yields traceable relationships between the items. Test values generated are deemed suitable for further scrutiny under factor analysis and PCA.

Principal Component Analysis (PCA) is conducted, as depicted on Table 3, which displays the variance explained by the initial solution, extracted components, and rotated components after extraction. Results suggest extracting just one factor as there is only one identifiable eigenvalue valued at well over 1. However, as only one factor is extracted no rotation of squared loading's sums takes place.

Table 3. Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	Percentage of Variance	Cumulative Percentage	Total	Percentage of Variance	Cumulative Percentage
1	7.866	37.459	37.459	7.866	37.459	37.459

Extraction Method: Principal Component Analysis.

Displayed below (on Table 4) are all communalities before and after extraction. Communalities infer the proportion in each variable's variance that is associated to the underlying latent components (or component in the current context). In the first column all communalities are, by definition, assigned a value of 1 in order to reflect the Principal Component Analysis' (PCA)

initial assumption that every variance is common. Common variance is then restructured under the "Extraction" column, which for example, demonstrates that 68.5% of the variance related to IPI1 is common variance. Therefore, in other words, 68.5% of the variance observed in IPI1 is explained by our factor model (composed of 1 component).

Table 4. Equation factor loadings and communalities

	Organizational Innovation	**Technical Innovation**	**Administrative Innovation**	**Communalities (after extraction)**
MI1	1.000			0.61
MI2	0.971			0.575
MI3	1.301			0.814
MI4	0.987			0.497
MI5	1.085			0.69
MI6	0.896			0.585
MI7	0.274			0.53
MI8	0.265			0.603
MI9	1.154			0.762
ITI1		1.000		0.685
ITI2		1.324		0.698
ITI3		1.586		0.835
ITI4		1.176		0.68
ITI5		1.685		0.797
ITI6		1.640		0.863
ITI7		1.592		0.865
ITI8		1.532		0.746
ITI9		1.717		0.859
IPI1			1.000	0.685
IPI2			0.438	0.562
IPI3			0.719	0.665

7. RESULTS

The a priori hypothesized model was tested for suitability of goodness of fit, leading to a confirmation of our 21-item model composition's viability. Accordingly, data produced fits the hypothesized measurement model. Moreover, adjustments sustained after modification of model indices incurred better model fit suitability by gearing most of the values closer to suitable test coefficient ranges. Our main result is displayed on the table below.

Table 5. SEM factor weights

	Estimate	**S.E.**	**P**
Organizational Innovation → Innovation	0.188	0.056	0.001

As shown above, we discover that increased organizational innovation is linked to an enlargement of +0.188 ($p<0.001$) in firm innovativeness, thereby exhibiting a positive and significant relationship confirming the hypothesis raised.

8. FINDINGS

Observed results in this study indicate there is a link between organizational innovation and other dimensions of general firm innovativeness (innovation). These other dimensions, which for the purpose of this study comprise what has been defined as "innovation" in general, (or, what we have referred to interchangeably by the term "firm innovativeness"), have been widely referred to in literature as comprising changes in organizational structure that are related to administrative processes and the human ecosystem dynamics of an organization (Richard L. Daft, 1978; Fariborz Damanpour & Evan, 1984; Kimberly & Evanisko, 1981), and technical innovation as well. The primary rationale for a link between administrative processes innovation and technical aspects has been evidenced by (Fariborz Damanpour, Szabat, & Evan, 1989), who have argued that administrative changes in an organization have the potential to lead to technical changes, and thus administrative and technical innovation, together comprise the innovative capacity of an organization. Our results suggest that such a link can, in fact, be identified. However, limitations to this study, such as the relatively small sample size, a limited national context, and a general lack of consensus of specific measurements comprising all the three constructs, mean the nature of such a relationship and its underlying mechanisms have yet to be defined and addressed more thoroughly. Nevertheless, organizational innovation appears to be positively linked to administrative and organizational innovation, albeit not as strongly as anticipated.

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