

Driving Innovation and Business Performance through Corporate Entrepreneurship: Innovativeness, Proactiveness, Risk-taking and People

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Abstract— Corporate Entrepreneurship can be a viable instrument for driving innovation and business performance within existing organizations. The objective of this study was to determine the dimensionality of corporate entrepreneurship within airlines and to investigate the impact of its components on innovation and business performance. A mixed research method has been applied involving qualitative and quantitative elements. Expert interviews have been conducted with airline managers in order to justify and enhance the underlying research model. Quantitative research has been conducted using a questionnaire survey among airline executives worldwide. A total of 241 usable cases have been processed for data analysis. Results from principal component factor analysis show that corporate entrepreneurship is determined by innovativeness, proactiveness, risk-taking and people within airlines. Findings from multiple regression analysis reveal a significant positive relationship between airline business performance and innovativeness, proactiveness and people. Proactiveness, risk-taking and people have been found to be determinants of innovation performance. Conclusions and suggestions have been formulated in order to enhance corporate entrepreneurship within airlines.

Keywords—corporate entrepreneurship, innovation performance, business performance, corporate entrepreneurial output

I. Background

Global competitive challenges create an immanent need for new and innovative management methods and approaches. Businesses are reacting in very different ways to these challenges. These can include re-organization, focus on core business competencies, process re-engineering, total quality management, strategic alliances, outsourcing and many more [1]. As external change forces internal change, firms are increasingly aware of the fact that there is no universal way of approaching competitive challenges. Environmental challenges create a need for new and innovative management practices. Challenges can be related to customer, technology, competitive, legal, regulatory and ethical dimensions [1]. Customers segments are increasingly heterogeneous and fragmented, while at the same time customer expectations are constantly rising.

Higher levels of customer orientation and customer centricity require higher levels of organizational capabilities to deal with these aspects. The technology dimension is of central relevance for many firms, as sustainable competitive advantage may be inextricably linked with advanced technology. Thus, the key question which companies have to answer is whether they are simply remaining competitive or if they are achieving sustainable competitive advantage. Managers must therefore understand that their firm will only have a justified market existence in the future, if it is able to achieve sustainable competitive advantage and clearly differentiate itself from major competing market players. Conventional management practice has become obsolete in today's fast-paced global business environment with inevitable diminishing returns, intensified competition and unpredictable external influences [2]. Thus, companies have to understand the imminent need for alternative philosophies in order to achieve sustainable competitive advantages. This requires organizations and their executive leaders to continually reinvent themselves. Moreover, competitive advantage relies on adaptability, flexibility, speed, aggressiveness and innovativeness [1]. Corporate entrepreneurship can be described as a path to sustainable competitive advantage.

The concept of corporate entrepreneurship can be a viable instrument of strategic management for enhancing existing routines in order to build long-term competitive advantage [3]. It shall promote the organisation's attitude towards innovation and constant renewal. Thus, it is a practical goal of corporate entrepreneurship to promote and support entrepreneurial behaviour within existing organisation. The relevance of the philosophy results from increased competitive intensity, growing environmental- and market dynamics as well as from growing complexity in economic systems [4]. Environmental factors include uncertainty, risk and change [5], [6]. Furthermore, the industry life cycle [7] plays an integral role in the strategic behaviour of companies and thus has an important effect on the relevance of corporate entrepreneurship [8]. A large number of companies react to growing competition with non-entrepreneurial answers and strategies, such as restructuring and re-organization. However, the really valuable answers to those challenges lie in strategies around opportunity recognition and sustainable innovation. Businesses, which are following a corporate entrepreneurial approach will increase their innovation activities through strategic re-orientation and corporate venturing, which bundles key competencies and knowledge [9]. Moreover, innovation is at the core of the corporate entrepreneurial concept as it

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focuses on the recognition of new opportunities and their transformation into innovation and change. This requires organizational resources and the development of organizational competencies to implement strategic options and to turn these into innovation for improved performance. Moreover, corporate entrepreneurship follows the logic of maximization of opportunities and chances. Corporate entrepreneurship strategy must possess of a clear strategic entrepreneurial vision, a pro-entrepreneurship organization structure as well as entrepreneurial processes and behaviors throughout the organization. Contributing factors to an entrepreneurial strategy include: [1]

- the development of an entrepreneurial vision,
- the increased perception of opportunities,
- the institutionalization of change,
- the desire to be innovative,
- a commitment to the investment in individual's ideas,
- sharing risks and rewards with employees, and
- the acceptance of failure.

A. *Underlying Dimensions of Corporate Entrepreneurship*

Several works have been elaborated as an attempt to understand overall dimensionality of corporate entrepreneurship, however no general agreement among them can be attested. Lumpkin and Dess [10], for example characterize corporate entrepreneurship by factors of innovativeness, pro-activeness, risk taking, autonomy and competitive aggressiveness. Zahra and Covin [11], only argue a three-dimensional approach, involving venturing, innovation and self-renewal. A widely accepted dimensionality, however is based on the work of Luo et al. [12], which involves three of the above mentioned five dimensions identified by Lumpkin and Dess, namely:

- innovativeness,
- proactiveness, and
- risk-taking.

Firstly, innovativeness can be viewed in a variety of different ways. Generally, however innovativeness applies to products, services, markets and technologies. Already Schumpeter [13] argued that innovation is at the heart of the entrepreneurial process. It possesses of a range of peculiarities as it might be related to many different facets of business, such as cost reduction, repositioning, new applications, product or service improvements, product or service enhancements, new products or services to a certain market or even new to the world [1]. In order to explore the innovativeness dimension, it is important to understand the sources of innovation. These can range from pressure to innovate caused by external forces and new technologies, to globalization effects – to mention just a few. Corporate entrepreneurship and innovation links together

at a point where innovation on the one side and corporate entrepreneurs on the other side must break rules in order to move forward and drive change. The organizational challenge lies in the ability to allow corporate entrepreneurs to break rules and think out of their usual box in order to emphasize the transformation of opportunities into real business ventures. Moreover, innovativeness is a strategic issue and relates to processes and structures, which support innovation within organizations as well as time and speed, which is crucial for implementing innovation on the market. In a strategic context, corporate entrepreneurship attempts to formalize the innovation process in order to make it a key element of every individual within the organization, rather than relying on random innovation. Innovativeness involves seeking of creative, unusual or novel solutions to problems and needs [1].

Secondly, the proactiveness dimension refers to the ability of pursuing initiatives in advance of competitors as well as to the timely execution of anticipated tasks and activities which are necessary for an entrepreneurial opportunity. Moreover, proactiveness deals with how companies recognize opportunities and transform them into change and innovation for increased firm performance. Proactiveness is about an attitude of acting rather than re-acting. It may be manifested in three different ways: seeking new opportunities, introducing innovation ahead of competition and eliminating mature or declining businesses [14]. Corporate entrepreneurship refers to proactiveness not only as transferring ideas into concepts, moreover it involves opportunity recognition, the internal marketing of this opportunity, its implementation and launch as well as its success or failure [1].

Finally, the dimension of risk-taking is inextricably linked to the above discussed factors of innovativeness and proactiveness. It is about the extent to which there is uncertainty about whether potentially successful or disappointing results of a decision will be realised [15]. Innovation is about creating something new, which in-turn is about the unknown and, naturally incurs risk. The focus of corporate entrepreneurship lies on moderate and calculated risk, rather than on extreme, uncontrollable risks. Moreover, risk can better be managed by focussing on frequent, lower-risk innovations rather than on high-risk innovation. These shall be terminated immediately after their probable failure is attested. On the opposite, it is also very risky for companies not to innovate as they are likely to be outperformed by innovative competing market players. Thus, organizations must find the right balance between their innovation activities and related risk involved within their strategy [1].

In light of all the above discussed factors, it is of central importance to reflect on the overall objective of corporate entrepreneurship, which is achieving sustainable competitive advantage, driving innovation and performance [16]. Hence it is legitimate to view corporate entrepreneurship as a strategic attitude towards risk taking, innovation and pro-activeness. Also, aspects such as organization structure, management and

employee leadership must not be forgotten. In a corporate entrepreneurial setting, the employee is the main actor, constituting the corporate entrepreneur, who acts within the strategy, structure and culture defined by middle- and top management, supporting entrepreneurial activities in order to achieve innovation and leverage business performance. Sydow and Windeler [17] describe the nature of corporate entrepreneurship as a dynamic interplay between employees and management, which requires reflexive qualities on both sides. Moreover, innovation and performance are heavily dependent on individuals acting within organizations [18]. Corporate entrepreneurs transform classic entrepreneurial traits and characteristics into a corporate setting in an existing organization, however are different than classic managers [19]. Individuals who have capabilities and the willingness to act as an entrepreneur are key factors in corporate entrepreneurship [20]. Corporate entrepreneurs usually possess of certain traits and characteristics. Moreover, they [21]:

- challenge bureaucracy,
- examine new opportunities,
- acquire resources,
- implement, exploit and commercialize opportunities, and thus:
- encourage innovation.

All aspects discussed above are indeed relevant for describing, characterizing and conceptualizing the construct of corporate entrepreneurship. One aspect, however paramountly stands out, which has not been discussed so far and which is the result of corporate entrepreneurial activity: the objective of corporate entrepreneurship, namely corporate entrepreneurial output.

B. Corporate Entrepreneurial Output

The overall aim of corporate entrepreneurship is to create value for the organization. The output from corporate entrepreneurial activity can have both monetary or non-monetary facets and might range from successful implementations of innovation to failure. However, entrepreneurial output is expected to have a positive influence on company performance, related to measurable metrics, such as growth, profit, sales volume and many more [22]. Corporate entrepreneurship focuses on the creation of new values within organizations through new business ideas, opportunity recognition, change, individual and organisational learning, the creation of new value propositions for the customer and efficiency. Corporate entrepreneurial intensity consists of the degree and frequency of innovation, which ultimately might determine the Return on Corporate Entrepreneurial Intensity (ROCEI), which relates the organisational antecedents of corporate entrepreneurship to the level and frequency of innovation. Moreover, it describes the corporate entrepreneurial output in form of any kind of performance related measure, such as profitability, EBIT margin, turnover, revenue or other key performance indicators. Moreover, it is

suggested that major performance improvements through corporate entrepreneurship may include [23]:

- the stimulation of new demand,
- the exploration of new markets and market niches,
- the development of new products and technology,
- the introduction of technological newness and innovations, and
- the creation of a flexible organizational structure to advance business innovation.

II. Methodology

This study investigated the underlying dimensionality of corporate entrepreneurship and its effects on innovation and business performance in one of the world's most dynamic and competitive industries: airlines. Research has applied mixed methods involving both qualitative and quantitative techniques. First, secondary research has laid the foundation for the research model, which has been validated and enhanced with findings from qualitative expert interviews. Secondly, quantitative research has been conducted using an online questionnaire which has been sent out to a total of 7.797 airline executives from all around the world. A response rate of 3.1% has been achieved, resulting in a sample size of 241 cases which have been used for further statistical analysis. Main component factor analysis has been applied in order to determine the underlying dimensionality of corporate entrepreneurship within airlines, involving 30 measurement items, theoretically relating to innovativeness, proactiveness, risk-taking and people. Multiple linear regression analysis has been used for the measurement of the relationship between the independent and dependent variables. Factor scores have been calculated using the average of all items included in the respective dimensions, which have resulted from the previous factor analysis. Therefore, innovativeness consisted of 9 measurement items, proactiveness of 5, risk-taking of 3 and people of 7 items respectively. Two dependent variables have been defined: innovation performance and business performance. Innovation performance has been operationalized by seven measurement items relating to the degree and frequency of innovation. Business performance has been measured through ten items relating to the development of key performance indicators over the past two years.

III. Results

Results from main component factor analysis regarding the assessment of construct dimensionality reveal a four-dimensional construct. Cronbach's Alpha has been used as reliability coefficient in assessing the internal consistency of the model. The analysis revealed a value of 0,913 ($> 0,7$) which indicates a very high level of internal consistency of the measurement scale for the particular sample. The Kaiser-Meyer-Olkin measure of sampling adequacy has been determined with a value of 0,895, which suggests that the

sample is factorable. Bartlett’s test of sphericity was significant with $p < 0,05$, indicating that there are correlations within the data and that factor analysis was appropriate [24]. Components with Eigenvalues higher than 1 have been accepted and item loadings above 0,5 have been included. Seven main components have been extracted, however only four have been accepted for further consideration given Eigenvalues of the remaining three factors only slightly above 1. The cumulative value of the four dimensions explain 53,7% of the total variance. Innovativeness explains the majority of 33,9%, followed by people (8,7%), proactiveness (5,9%) and risk-taking (5,3%). Based on an analysis of item loadings, the original 30 measurement items have been reduced to 24 items. Thus, 6 items have been rejected. Analyzing individual contributions of each variable to the respective dimension, component score coefficients have been calculated. Negative values indicate a contribution below average, while positive values indicate a contribution above average, compared to all other dimensions. As a result of this analysis, one variable (R1) has been attributed to component 3. The figure below summarized the result of factor analysis, indicating four underlying dimensions of the research construct, operationalized by 24 variables.

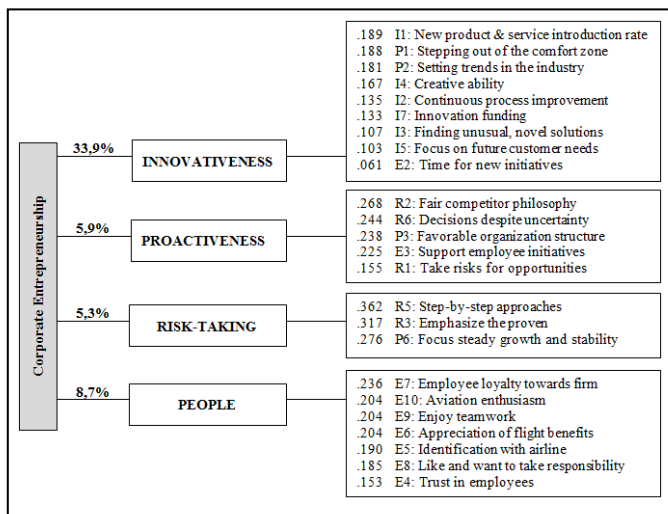


FIGURE I: FACTOR SCORES INDICATING THE INDIVIDUAL CONTRIBUTIONS OF VARIABLES TO MAIN DIMENSIONS AND VARIANCE OF THE MAIN COMPONENTS EXPLAINED

In order to determine the impact of the independent variables on the dependent variable airline business performance, a step-wise approach has been chosen. Firstly, only three independent variables have been included in the model. These were innovativeness, risk-taking and proactiveness. Selection of these variables has been based on the theoretical dimensionality of corporate entrepreneurship as identified in the literature review [10], as well as on the empirical findings from the previously presented factor analysis. Secondly, the newly conceptualized component of people has been added to the construct. Results show that the three-dimensional model explains 14,7% of the total variance in airline business performance. The independent variables innovativeness and

proactiveness have a significant positive influence on airline business performance. However, no significant relationship was found between risk-taking and the dependent variable. Beta levels reveal innovativeness as the biggest predictor of airline business performance (0,260), proactiveness naturally ranging second with a Beta value of 0,159. In order to enhance the level of determination and to examine the impact of the people dimension, the four-dimensional construct has been tested. The table below summarizes the results from multiple regression analysis, involving innovativeness, proactiveness, risk-taking and people as predictors of airline business performance.

TABLE I: MULTIPLE REGRESSION RESULTS REGARDING THE IMPACT OF CORPORATE ENTREPRENEURSHIP ON BUSINESS PERFORMANCE

Model: Business Performance I	Unstandardized Coefficients		Std. Coeff.	t-value	p-level
	B	Std. Error	Beta		
(Constant)	1.302	.339		3.845	.000
Innovativeness	.261	.077	.260	3.392	.001*
Proactiveness	.193	.094	.159	2.059	.041*
Risk-taking	.027	.074	.022	.364	.716
$R^2 = 0.147 (p < 0,05^*)$					

TABLE II: MULTIPLE REGRESSION RESULTS REGARDING THE IMPACT OF CORPORATE ENTREPRENEURSHIP ON BUSINESS PERFORMANCE INCLUDING THE PEOPLE FACTOR

Model: Business Performance II	Unstandardized Coefficients		Std. Coeff.	t-value	p-level
	B	Std. Error	Beta		
(Constant)	.816	.357		2.285	.023
Innovativeness	.147	.081	.147	1.805	.072
Proactiveness	.128	.093	.106	1.379	.169
Risk-taking	-.022	.073	-.018	-.296	.767
People	.323	.090	.265	3.599	.000*
$R^2 = 0.191 (p < 0,05^*)$					

Through the inclusion of the people dimension, the explanatory power of variance in airline business performance has been increased by 4,4% to a total of 19,1%. The four-dimensional construct only finds significant relationships between the newly included people dimension and airline business performance. However, with collinearity tolerance values not under 0,25 and variance inflation factors (VIF) not over 5, no perfect multicollinearity among the independent variables can be attested to the model [25]. Hence, the people dimension only adds content to the model which is already included in the construct through the remaining three dimensions.

Multiple regression analysis regarding the impact of the independent variables on airline innovation performance has reveals an f-value of 4,028 at a significance level of $p=0,004$

(<0.05) for the model also involving the people dimension. P-plot and histogram analyses point at a normal distribution of data within the model. Therefore, significant relationships within the model can be attested and the Null-hypotheses can be rejected. The model possesses of a Durbin-Watson value of 2,022, indicating low autocorrelation, justifying multiple regression analysis [24].

TABLE III: MULTIPLE REGRESSION RESULTS REGARDING THE IMPACT OF CORPORATE ENTREPRENEURSHIP ON INNOVATION PERFORMANCE

Model: Innovation Performance	Unstandardized Coefficients		Std. Coeff.	t-value	p-level
	B	Std. error	Beta		
(Constant)	4.497	4.014		1.12	0.264
Innovativeness	1.22	0.917	0.116	1.331	0.184
Proactiveness	-2.214	1.047	-0.174	-2.114	0.036*
Risk-taking	-1.881	0.825	-0.147	-2.279	0.024*
People	2.539	1.009	0.2	2.517	0.013*
$R^2 = 0.064$ ($p < 0,05^*$)					

The model explains 6.4% of the total variance in airline innovation performance. Significant relationships have been found between proactiveness, risk-taking and people on the one side (all possessing of p-values below 0,05), and the dependent variable on the other side. Beta values point at a negative influence of risk-taking and proactiveness, while a positive influence on innovation performance can be attributed to the dimension of people with the strongest impact on innovation performance. No significant relationship has been found between the factor of innovativeness and innovation performance in the four-dimensional construct. This means that contents from the innovativeness dimension may be explained by the newly included people dimension.

iv. Discussion

Many studies have investigated the impact of corporate entrepreneurship on firm performance and have revealed either partial or general significant positive influences of factors related to the respective construct on quantifiable performance metrics [26], [27], [28], [29]. This study has found partial significant impacts of elements of corporate entrepreneurship on innovation and business performance within airlines.

Innovation performance refers to how often airlines introduce new products, services or processes on the one side, and to the extent of novelty regarding these new introductions on the other side. Entrepreneurial companies find innovation as a core process [30], which is fostered through corporate entrepreneurship. In turn, successful innovation may lead to elevated customer value regarding products and services, or to higher efficiency in regards to processes and business conduct. However, innovation does not simply appear but can be the result of corporate entrepreneurial activity, which has been

partially found true regarding airlines. Moreover, there is a significant relationship between airline innovation performance and proactiveness, risk-taking and people. No significant relationship has been found between innovativeness and innovation performance in a model which includes all four identified dimensions. However, when relating only three dimensions of corporate entrepreneurship to innovation performance (without the component of people), a significant relationship can be attested. This might be explained by the fact that very often people are the inherent driver of innovativeness in a sense that they want and like to take responsibility for new initiatives. Even though no significant relationship can be attested to the component of innovativeness in one of the regression models, findings from airline expert interviews point at the facts that innovativeness is important in order to foresee new trends and future customer demands. In fact, a significant positive influence on innovation performance can only be attributed to the dimension of people. This means that employees, who:

- are satisfied with the general conditions of their workplace,
- identify with the firm they work for,
- like and want to take on responsibility, and
- enjoy working together in effective teams

have a significant influence on airline innovation performance. Further significant relationships, however not in a positive direction have been found regarding proactiveness and risk taking. Simply explained, this means that airline innovation performance is not benefiting from step-by-step approaches to problems, an emphasis on proven and given circumstances and from a focus on steady growth and stability. Thus, innovation performance would require more radical approaches than step-by-step adjustments, less dependency on what has proven successful in the past and less focus on steady growth and stability. Moreover, a fair competitor philosophy harms innovation performance and hesitant decision-making because of uncertainty about the outcome are not supportive as well.

The second dependent variable under investigation has been airline business performance, which was operationalized by growth in quantifiable performance metrics over the past two years. Airline business performance is positively influenced by innovativeness, proactiveness and people. This means that airlines which operationalize their entrepreneurial efforts in an innovative, proactive way, and which understand to successfully involve their employees in the corporate entrepreneurial process tend to generate higher performance levels than non-entrepreneurial airlines. No significant relationship has been found between risk-taking and performance. This underlines findings regarding influencing factors of innovation performance, where risk-taking had a negative impact on the dependent variable. In other words, airline business performance is not influenced by step-by-step approaches to a problem, an emphasis on the proven and a focus on steady growth and stability. Neither in a positive, nor

in a negative way. One reason explaining this might be the fact that for airlines within different business models, risk-taking may have a different relevance and therefore no generalizable, overall significant relationship of this variable has been found. Positive influences can be attributed to aspects related to innovativeness. This means that the rate of new product, service and process introduction benefits business performance. Also, creativity and time for new initiatives together with sufficient funds available for the creation of something new contribute to higher airline business performance. Airlines have to step out of their comfort zone and continuously reinvent themselves in order to drive business performance. A focus on future customer needs appears as of vital importance in this regard. These findings support the argumentation of Ireland et al. [31], stating that the underlying intent of corporate entrepreneurship is to create wealth for an organization. Results show that this is true for the particular case of airlines.

v. Conclusions

The future development of the airline industry bears enormous challenges and risks, but also opportunities for airlines: growth rates of supply are above growth rates of natural demand and external factors can have a substantial impact on airline profitability. Therefore, airlines have to find innovative ways of how to address industry challenges. Corporate entrepreneurship does not protect airlines from external influences such as new market entrants or the effects from extensive governmental regulations, which could harm profitability. However, it provides a viable philosophy to steer competitiveness from internally through a focus on opportunities and constant organizational rejuvenation. Leadership plays an essential role in promoting entrepreneurial behavior within airlines and has to act as a role model. Corporate entrepreneurship can leverage innovation performance and profitability of airlines through a business conduct that focuses on innovativeness, proactiveness and risk-taking as well as on the successful integration of employees in corporate entrepreneurial processes. Airline business performance is significantly influenced by innovativeness, proactiveness and people, which means that corporate entrepreneurial intensity is a reliable predictor of business success. Risk-taking is important for innovation performance, however it has to be controllable and calculated, otherwise it might have a negative impact on business performance. Therefore, airlines have to balance the level of risk they are willing to take between fostering innovation on the one side, and not compromising business performance on the other side. However, corporate entrepreneurship has to take certain risk in order to pursue opportunities and turn ideas into innovation.

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