An Extended Abstract of International Voluntary Employee Churn Revisited
-The Predicting Power of Applying Machine Learning Techniques-

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Machine Learning Techniques (MLTs) have the potential to improve the quality of decision-making especially of Multinational Corporations (MNCs) through analyzing complex data-sets. However, as of today little is known about MLTs and their applicability in MNCs. Therefore, the aim of this study is to investigate how MLTs facilitate and improve predictions of voluntary employee churn in an international context. In particular, we tested the predictive power of the classification decision tree based on Chi-square Automatic Interaction Detector (CHAID) algorithm.

The majority of research on employee churn has focused on understanding why employees leave by identifying causes and determinants of employee turnover at both individual and organizational level through applying traditional statistical methods (e.g. see reviews by Lee, Hom, Eberly, Li, & Mitchell, 2017; Hom, Lee, Shaw, & Hausknecht, 2017; Griffeth, Hom & Gartner, 2000; Hom & Griffeth, 1995; Peterson, 2004) without explain how these determinants are interrelated. In this light, scholars have recently called for applying new methodological approaches to analyze employees' turnover, encouraging researchers to measure and/or analyze employee churn in non-traditional ways using new models in order to test the validity of historical explanatory constructs well known in the turnover literature (Hom, et al., 2017).

Analyzing a complex database – based on 113 variables and 2,932 employees – of a leading MNC operating in several countries in Europe and Asia, we show that the classification decision tree appears to be a suitable technique in better estimating the probability of employee churn.

The model has identified seven predictors characterizing the voluntary employee risk of churn. The first predictor with a highly significant discriminant power refers to the country in which the firm's subsidiary is located. Then, the classification decision tree has identified different employee churn predictors between Norway and Denmark. In Norway, the best predictors that might explain the voluntary employee churn are the following: job variety, sharing work-related knowledge through social media, sharing work-related knowledge in order to obtain promotion, and gender. Instead, in Denmark predictors are job freedom and sharing work-related knowledge within firm through job rotation (e.g. employee interchange in terms of tasks to be performed).

This study contributes to the literature on employee turnover in an international context from a methodological perspective. Particularly, we demonstrate the potential of MLTs in predicting the determinants of voluntary employee leaves in the context of MNCs. This research also emphasizes the potential impact of MLTs in the decision-making process, highlighting how MLTs could facilitate managers in making a decision with better accuracy, based on solid data evidence rather than strategic thinking (McAfee, Brynjolfsson, Davenport, Patil & Barton, 2012). This may (a) stimulate future research to investigating the real power of MLTs in the decision making process, (b) giving rise to a stream of research exploring the extent to which these techniques represent promising tools to improve the quality of data-driven decision making processes in a world of big data rather than relying on simple cause-effect chains and gut feeling (Agarwal & Dhar, 2014).

This research has several implications from both an academic as well as a managerial perspective. First, from a methodological point of view, it aims at contributing to research on turnover by introducing MLTs as a new method to identify determinants of employee churn. Second, this study

opens a new debate among IB scholars, particularly, in relation to international HRM within the MNC context. In fact, the analysis has clearly demonstrated the importance of the home country of the firm´s subsidiary. Third, this research suggests managerial recommendations for optimizing the decision-making process in the employee churn prediction context. In fact, using a classification decision tree model based on CHAID algorithm, MNCs can more accurately identify employees who are truly at risk to churn, focus their effort on them and potentially save money. Finally, MNCs can mainly keep their current employees by building and maintaining relationships, rather than expending efforts to recruit new employees that will generate high additional costs (Saradhi & Palshikar, 2011) with negative impacts on the overall organizational effectiveness and firm success (Holtom, Mitchell, Lee, & Inderrieden, 2005). Hence, using MLTs, enables the management of MNCs to analyze larger volumes of employee data, to better and in a more efficient way understand their reasons of leave, and to identify employees groups that show at higher risk of churn so as ameliorate their retention strategies and avoid related costs.

In conclusion, this research has the following limitations. First, the choice of the classification algorithm significantly influences the predictive power of the resulting model. Second, the study includes only two subsidiaries located in two different countries, yet, which are characterized by a similar culture. Third, the study has a cross sectional design whereby the determinants identified by the classification decision tree should be retested with new data in order to avoid potential bias.

Keywords: Multinational Corporations, Machine Learning Techniques, Employees Churn.

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