
Culture and international cooperation – an underestimated power!?

The effect of culture on cooperation tendencies in European technological regions

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Extended abstract

According to a vast literature, culture has effects on economic factors, including innovation rates, entrepreneurship activities, new product development, growth or economic development in general (Shane 1992, 1993; Wennberg et al. 2013; Nakata, Sivakumar 1996; Huggins, Thompson 2015; Harutyunyan, Özak 2016). Based on four of Hofstede's six indices of cultural values (namely power distance, uncertainty avoidance, masculinity/ femininity and individualism/ collectivism), numerous empirical investigations have shown the impact culture can have e.g. on innovation rates or entrepreneurship activities, having corresponding but as well contradictory results. Analogous to Hofstede's national-based cultural dimensions, most studies investigating these connections are focused on the national level, conducting cross-national comparisons (Shane 1993; Rinne et al. 2012; Strychalska-Rudzewicz 2016; Rossberg, Krause 2012; Rinne et al. 2012). Recently, first studies start to take into account the regional differences, that culture on one side and innovation rates as well as entrepreneurship activities on the other side show (Kaasa, Vadi 2010; Kaasa 2017). However, when connecting culture to innovation rates, the question arises, whether there has not been left out a step, making the cultural impact on innovation only an indirect one. Namely this missing link is cooperation, normally a precondition for a patent if it has more than one inventor. Only very few papers have dealt with the connection of cooperation and cultural traits, however, still ignoring other than the national cultural level (Steensma et al. 2000). The present paper seeks to approach this gap, trying to answer the following research question:

To which degree can international R&D cooperation patterns of a certain technological region be explained through a single cultural dimension or through a Culture Index (combined cultural dimensions)?

In line with former research connecting culture with economic factors, culture is here defined as “[...] the collective programming of the mind distinguishing the members of one group or category of people from others [...]” (Hofstede et al. 2010, p. 6). Differences between cultural entities can be described with the help of the six Hofstede dimensions of power distance, uncertainty avoidance, masculinity/ femininity, individualism/ collectivism and the two more recent dimensions of long-/short-term orientation and restraint/ indulgence (Hofstede et al. 2010b). Hofstede’s cultural concept has been criticised extensively, concerning among other things his data being based on the staff of only one company (IBM) and his dimensions not covering the full range of cultural values (Kaasa, Vadi 2010; Schwartz 1999). Still, it can be seen as an established approach, having been used and replicated by himself and others in numerous (international) studies since the first publication in 1980 (e.g.; Hofstede et al. 2010b; Kaasa 2017; Shane 1993). While he first defined these cultural indices on a national level, meanwhile studies have shown that they are as well valid on a regional level, of which however a comprehensive investigation is limited in most cases by the lack of representative data (Hofstede et al. 2010a; Kaasa et al. 2013, 2014; Minkov, Hofstede 2014).

Cooperative arrangements of firms show a great variety in their implementation as they can have distinct objectives as well as differ due to the involved partners (e.g.; Tether 2002; Miotti, Sachwald 2003). The present paper deals with international R&D cooperation, most commonly formed in high-tech sectors and normally motivated by the firm-internal lack of requested resources (comprising knowledge) and the urge to reduce risks related to innovative activities. The choice of the cooperation partner depends on whether the objective is to get access to new knowledge (universities), get access to complementary / congruent knowledge or ease the introduction of a new product into the market (competitors), improve the acceptance of the new product (customers) or spread the risk (competitors, suppliers) (Miotti, Sachwald 2003; Tether 2002). Apart from these ‘hard’ cooperation-motivations, the present paper is going to analyse a rather ‘soft’, moderating factor, namely regional culture.

Based on an extensive literature review, covering different strands like cultural studies, institutional studies and international management studies, the following six (working) hypotheses are derived, connecting each of the cultural dimensions with inter-regional research cooperation:

H1 *Power Distance has a negative relationship with the number of external R&D cooperation.*

H2 *Uncertainty avoidance has a negative relationship with the number of external R&D cooperation.*

H3 *Masculinity has a negative relationship with the number of external R&D cooperation.*

H4 *Individualism has a negative relationship with the number of external R&D cooperation.*

H5 *Long-term orientation has a positive relationship with the number of external R&D cooperation.*

H6 *Indulgence has a positive relationship with the number of external R&D cooperation.*

Taking data from the latest European Values Study (EVS) wave from 2008, at firstly separate measures for the six cultural dimensions will be calculated for each European region (NUTS1 level), giving the possibility to investigate the impact of the single cultural dimension (EVS 2016). In a second step, based on the measures of the six dimensions, a Culture Index will be calculated (again for each region), revealing the combined effect of the cultural dimensions. Data for cooperation tendencies will be derived from patent database, focusing on patents with more than one inventor and covering the years 2003 to 2013 (culture is expected to not change too quickly in a radical way; hence, a time period covering five years before and five years after the EVS-wave has been chosen). Patent data is seen as an appropriate source in this context, as every co-authored patent can be expected to have been preceded by cooperative activities, even though it has to be considered that some cooperation might not lead to a patent application and hence will not be captured in this analysis. To control for the different technological specializations that might coexist in a geographical region, so-called technological regions will be defined, consisting of firms in a certain region, engaged in a certain technology (Cantner, Graf 2004).

Apart from broadening the knowledge about what moderates the formation and performance of international R&D cooperation, the present paper has several practical implications for regional internationalization strategies. A starting point could be raising awareness: When aiming at international arrangements for R&D activities, a firm should be aware of the 'cultural position' of its region in relation to the international partner's one and the effect this can have on collaboration. Moreover, measures and instruments to cope with possible cultural difficulties could be developed in advance and when looking for partners the 'cultural fit' (according to the different dimensions) could be taken into consideration.

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