

Cultural Values and Innovation in European Companies

Tocar, Sebastian ¹ (Romania)

Citation: Tocar, S. (2026). Cultural values and innovation in European companies. *Cross-Cultural Management Journal*, 28(2), 201-213.

<https://doi.org/10.70147/c28201213>

Received: 12 July 2026

Revised: 9 September 2026

Accepted: 11 September 2026

Published: 20 September 2026



© 2026 The Authors. Published by SEA Open Research.

This is an open access article under the CC BY 4.0 license.

Abstract: This article examines the extent to which national cultural values explain differences in the innovative activity of European firms. Values are operationalized based on the integrated European Values Study / World Values Survey 2017–2022 dataset, weighted and aggregated at the country level, while innovation is measured using disaggregated indicators from the Community Innovation Survey (2018, 2020, and 2022 waves) for 27 European countries. The analysis, conducted in SPSS, combines bivariate correlations, partial correlations with GDP per capita as a control variable, multiple regressions, and t-tests for paired samples. Initial associations between innovation and generalized trust, autonomy, or work ethic disappear after controlling for economic development, as these values are strongly correlated with national wealth. The only dimension that retains an independent effect is perseverance passed on to children, whose association with new-to-market products and with cooperation for innovation is strengthened after controlling for economic development, through a suppression effect. Organizational innovation is not associated with any of the values examined, and differences across firm size classes remain substantial. The results of the analysis suggest that cultural effects on innovation are more selective and more fragile than the literature based on aggregate indicators suggests.

Keywords: Culture, cultural values, innovation, Community Innovation Survey, European Values Study, World Values Survey

JEL Classification: O31, O52, Z13, M14

¹ Faculty of Economics and Business Administration, Alexandru Ioan Cuza University of Iasi, Romania

INTRODUCTION

Innovation is the main driver of long-term productivity and competitiveness, and the gaps in innovation performance among European countries are persistent and significant. In the sample analyzed in this article, the share of firms engaging in business process innovation ranges from 6.03% to 61.43%, and the share of those launching new-to-market products ranges from 2.65% to 24.55%. Such differences are not narrowing rapidly, despite European convergence policies and increased public R&D expenditure, raising the question of whether standard economic factors fully account for the observed variation.

Standard explanations cite the level of economic development, the intensity of research and development spending, the quality of institutions, and the supply of human capital (Furman et al., 2002; Fagerberg & Srholec, 2008). These variables are important, but they fail to account for part of the variation, especially among countries with similar levels of development. One theoretical candidate for explaining these discrepancies is national culture, understood as a set of values and practices shared and transmitted across generations. This hypothesis has a long tradition in the literature, but it is also frequently contested from empirical and methodological standpoints.

The research question of this article can be formulated as follows: Do national cultural values explain the differences in innovative activity among European firms after controlling for the level of economic development? This formulation shifts the focus from the general question “Does culture matter?” to a more methodologically rigorous one, since cultural values and national wealth are themselves closely linked.

The article addresses three gaps in the literature. First, most cross-cultural studies use a single aggregate indicator of innovation—patents per capita or composite scores—and Hofstede’s cultural dimensions (Shane, 1992, 1993; Taylor & Wilson, 2012). Second, few studies distinguish between types of innovation, although theory suggests that different values should be associated with different types (Tian et al., 2018). Third, the use of values recently measured by the EVS/WVS offers an alternative to Hofstede’s scores, allowing for the construction of contemporary, transparent indicators anchored in concrete items (Inglehart & Baker, 2000; Welzel, 2013). Furthermore, the analysis utilizes the breakdown of CIS data by firm size class, which allows for the reporting of cultural associations with a well-documented structural determinant of innovation.

Based on literature, this article tests three hypotheses:

H1: Autonomy values are positively associated with product innovation, particularly with new-to-market products.

H2: Power distance is negatively associated with organizational innovation.

H3: Generalized trust is positively associated with cooperation for innovation.

Each hypothesis links a specific cultural value to a specific type of innovation, in line with the theoretical mechanisms presented in the following section. All three are formulated as statements about associations that persist after controlling for the level of economic development, since this is the main confounding factor identified in the literature; an association that does not survive control does not, therefore, constitute confirmation.

This article proceeds as follows. The second section summarizes the relevant literature. The third section presents the data and methodology. The fourth section presents the results, and the fifth section discusses the implications, draws conclusions, and outlines the study’s limitations.

LITERATURE REVIEW

Theoretical Frameworks of National Culture

National culture is commonly defined as the collective mental programming that distinguishes members of one human group from another (Hofstede, 2001). Hofstede’s framework identifies six dimensions—power distance, individualism, uncertainty avoidance, masculinity, long-term orientation, and indulgence—and owes its popularity to its quantitative nature, rigor, and the availability of numerical scores for a large number of countries (Hofstede et al., 2010).

A distinct approach is offered by Schwartz (2006), who proposes three bipolar dimensions, of which autonomy versus incorporation is the most relevant to the study of innovation: in autonomy-oriented cultures, individuals are viewed as entities who cultivate and express their own preferences, whereas in incorporation-oriented cultures, social order and the subordination of individual interests to the collective take precedence. The third tradition, rooted in modernization theory, is attributed to Inglehart and Welzel. Inglehart and Baker (2000) show that economic development is accompanied by predictable shifts in values along two axes (from traditional to secular-rational and from survival to self-expression), while Welzel (2013) develops the concept of emancipative values. In this tradition, items referring to desired qualities in children—particularly independence and perseverance as

opposed to obedience and religious faith – are used to construct indices of value autonomy. The GLOBE project subsequently expanded the research by distinguishing between practiced and desired values (House et al., 2004).

Hofstede's framework has attracted substantial criticism. McSweeney (2002) challenges the plausibility of generalizing from the employees of a single company to an entire nation; Baskerville (2003) argues that equating culture with the nation is incompatible with approaches in anthropology, and Taras et al. (2010), in a multilevel meta-analysis, show that the predictive power of the dimensions is variable and often lower than assumed. These criticisms, as well as other limitations presented in the literature, justify the use of contemporary data from the EVS/WVS.

Measuring Innovation at the Firm Level

The international benchmark for measuring innovation is the Oslo Manual, now in its fourth edition (OECD/Eurostat, 2018), which defines firm innovation as a new or significantly improved product or business process introduced to the market or put into operation. This edition simplifies the previous taxonomy into two major categories – product innovation and business process innovation—with organizational and marketing functions falling under the latter.

The primary source of harmonized data in Europe is the Community Innovation Survey (CIS), conducted in accordance with this manual. The advantages include methodological harmonization, coverage of a large number of countries, and the ability to break down data by sector and size class. However, the limitations are notable: national implementation varies, self-reporting introduces differences in the interpretation of terms across linguistic contexts, and changes to the questionnaire cause breaks in the data series between waves, which complicate longitudinal analyses.

Empirical Evidence on Culture and Innovation

The seminal studies on the relationship between culture and innovation were conducted by Shane (1992). Shane (1992) shows that national levels of inventiveness, as measured by patents, correlate positively with individualism and negatively with power distance, and Shane (1993) extends the analysis to 33 countries, finding that innovation rates are most closely associated with tolerance for uncertainty. Significantly, the associations were stronger in 1975 than in 1980 for individualism and low power distance, which serves as an early warning against treating cultural scores as invariant. Taylor and Wilson (2012) reexamine the relationship across 62 countries, triangulating

measures of individualism from three theoretical frameworks. They confirm the positive effect of individualism but show that certain forms of collectivism, such as patriotism, can foster innovation, while familism and localism inhibit it. Kaasa and Vadi (2010) introduce methodological innovations by constructing Hofstede-type dimensions from the European Social Survey rather than using the original scores, and find that power distance, uncertainty avoidance, and family collectivism are negatively associated with the intensity of regional patenting. Kaasa (2017) confirms this pattern across the European Union and neighboring countries.

Other studies add further nuances. Williams and McGuire (2010) show, across 63 countries, that the influence of culture on prosperity is mediated by economic creativity. Rinne et al. (2012) confirm the negative relationship with power distance and the positive relationship with individualism but find no effect of uncertainty avoidance. Prim et al. (2017) identify a profile conducive to innovation that combines indulgence, high individualism, and a long-term orientation, while Efrat (2014) shows that three of Hofstede's four dimensions have a strong impact. The picture is not unanimous, however: Tian et al. (2018), in a systematic review, conclude that the effects of culture are complex and heterogeneous. This heterogeneity suggests that aggregating innovation into a single indicator masks divergent relationships between specific values and specific types of innovation.

Mechanisms: From Specific Values to Specific Types of Innovation

The literature suggests distinct mechanisms for distinct types of innovation. In autonomous cultures, individuals are encouraged to pursue their own ideas and to differentiate themselves, which fuels both the supply of new ideas and the demand for new products (Shane, 1993; Schwartz, 2006). Gorodnichenko and Roland (2011, 2017) argue theoretically and empirically that individualism, through the status rewards associated with originality, generates more innovation and growth; using genetic and epidemiological tools for causal identification, they show that the relationship holds even when controlling for institutions. This mechanism underpins H1.

In cultures with high power distance, rigid hierarchies and centralized decision-making limit the reorganization of work responsibilities and the adoption of new human resource management methods (Kaasa & Vadi, 2010; Rinne et al., 2012), which supports H2. Cooperation for innovation, in turn, involves sharing knowledge with external partners and risks of free riding that are difficult to

fully contract out (Chesbrough, 2003), and is therefore sensitive to the level of trust. The literature on social capital shows that trust reduces transaction costs and facilitates cooperation among independent actors (Putnam, 1993; Knack & Keefer, 1997), and Kaasa (2009) documents the effects of social capital on regional innovation activity. This leads to H3. A fourth, less-explored mechanism links long-term orientation and perseverance to investments in innovation with delayed returns. Relevant here is the literature that uses items pertaining to desired qualities in children as cultural measures in economic research. This approach is based on the theory of intergenerational transmission of values (Bisin & Verdier, 2001), according to which parents deliberately transmit values to their children, and these values become observable indicators of a society's culture. Guiso et al. (2006) define culture precisely as the set of beliefs transmitted relatively unchanged across generations, while Tabellini (2010) and Algan and Cahuc (2010) use such values to explain economic and institutional development. Unlike the first three mechanisms, this one was not formalized as a hypothesis in the present study. It is presented here because it provides the theoretical framework within which an exploratory finding will be interpreted in Section 5.

Culture, Economic Development, and the Problem of Confusion

A central obstacle in researching the relationship between culture and innovation is the conflation of values with the level of economic development. Modernization theory posits that development itself produces shifts in values toward self-expression and autonomy (Inglehart & Baker, 2000), which implies a strong correlation between values and GDP per capita. If emancipatory values are, at least in part, a product of wealth, then a correlation between autonomy and innovation may simply reflect the effect of development on both.

The literature on culture and growth has developed strategies to isolate the exogenous component of culture: Tabellini (2010) uses historical variables as instruments across European regions, Gorodnichenko and Roland (2017) employ genetic instruments for individualism, and Guiso et al. (2006) propose using deep and slow-changing aspects, such as religion. These approaches justify the need to control for development in any analysis of the culture-innovation relationship. At the same time, controls can generate suppression effects: a cultural value may not show a significant initial correlation but may become a significant predictor after introducing a control variable, when that variable absorbs the confounded variance.

Recognizing these effects is essential for the correct interpretation of results.

Firm Size and Level of Analysis

Firm size is one of the best-documented determinants of innovative activity: large firms possess greater resources, economies of scale, and absorptive capacity, although the relationship between innovation and performance remains heterogeneous and context-dependent (Rosenbusch et al., 2011). The literature on the transnational transfer of organizational practices further suggests that large firms are more frequently integrated into multinational groups and adopt routines transferred from headquarters, which partially decouples them from the national context (Kostova, 1999), whereas small firms are more strongly anchored in local culture. This observation is not tested in the present study, but it justifies reporting differences between size classes as a term of comparison for the extent of cultural associations. Finally, the country-level analysis raises the issue of ecological fallacy, classically highlighted by Robinson (1950): correlations calculated at the aggregate level cannot be transferred to the individual level. In cross-cultural research, Brewer and Venaik (2014) show that many studies project national cultural patterns onto individuals or, conversely, attribute characteristics derived from individual data to cultures. These caveats do not invalidate country-level analysis but rather define its scope of validity: the inferences concern relationships between country-level characteristics, not individual behavior.

METHODOLOGY

Data

The analysis combines two main sources. Cultural values are drawn from the integrated European Values Study / World Values Survey 2017–2022 (EVS/WVS, 2022), while innovation indicators are drawn from the Community Innovation Survey published by Eurostat (2025). The unit of analysis is the country, as CIS data are publicly available only in aggregated form.

Individual data from the EVS/WVS were aggregated at the country level. Seven cultural indicators were constructed. Generalized trust represents the percentage of respondents who believe that most people can be trusted. Four indicators reflect the percentage of those who mention a specific quality as desirable in children: perseverance, hard work, religious faith, and obedience. The autonomy index, according to Inglehart-Welzel, sums independence and perseverance while subtracting religious faith

and obedience. The distance-from-power index is the average of the standardized scores for respect for authority and obedience. For countries where both an EVS survey and a WVS survey were conducted, the two were combined.

The innovation indicators are drawn from the CIS 2018, CIS 2020, and CIS 2022 waves, for the aggregate of core economic activities mandatorily covered by the CIS regulation and for the size classes of 10–49, 50–249, and 250 or more employees, along with the total. Five dependent variables were selected: product innovation, new-to-market products, business process innovation, organizational innovation—that is, the introduction of new methods for organizing work responsibilities, decision-making, or human resource management—and cooperation for innovation. The control variables used were GDP per capita expressed in purchasing power standards, with the European Union average set at 100, and total research and development expenditure as a percentage of GDP, both calculated as averages for the 2018–2022 period.

Since some of the CIS indicators for the 2022 wave are reported for a smaller reference population than in previous waves, comparability across waves is not uniform. Internal verification confirmed this: in the 2018 and 2020 waves, no subtype of process innovation exceeds the corresponding total, whereas in the 2022 wave, numerous subtypes exceed it, which is impossible on the same reporting basis. Consequently, wave-based averages were calculated for 2018 and 2020 for product innovation, new-to-market products, organizational innovation, and cooperation, and across all three waves for business process innovation as a whole—the only indicator with a stable reporting basis.

The EVS/WVS dataset covers 33 European countries, six of which do not have CIS data. The final sample therefore comprises 27 countries: Austria, Bulgaria, the Czech Republic, Cyprus, Croatia, Denmark, Switzerland, Estonia, Finland, France, Germany, Greece, Iceland, Italy, Latvia, Lithuania, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, the Netherlands, Turkey, and Hungary. For innovation cooperation, six countries do not report data, and the analysis is limited to 21 countries. Table 1 summarizes the variables and sources.

Method

All statistical analyses were performed in IBM SPSS (version 20), based on the dataset constructed by aggregating and combining the sources described above. The analysis was conducted in four stages. The first stage tested the working hypotheses: the distributions of the variables were examined using

the Shapiro-Wilk test, and extreme values were inspected to identify any outliers.

The second stage estimated the bivariate correlations between cultural and innovation indicators. Since some of the cultural variables deviate from a normal distribution, both Pearson and Spearman coefficients are reported in parallel, and the conclusions are based on the convergence of the two. Also in this stage, correlations between cultural values and economic development indicators are estimated to assess the extent of confounding.

The third stage estimates partial correlations with GDP per capita as a control variable, specifically multiple regression models using the least squares method, in which each innovation indicator is explained by the level of development and a cultural variable. The models were tested for multicollinearity using the variance inflation factor, for residual autocorrelation using the Durbin-Watson statistic, and for outliers using Cook's distance. Due to the construction of the autonomy index, which includes religious faith with a negative sign, the two variables are highly redundant and were not included simultaneously in the same model. The fourth stage compares innovation levels across firm size classes. Since the same country contributes observations to each class, the comparisons were performed using t-tests for paired samples, rather than analysis of variance on independent samples. All tests are two-tailed, with a significance level of 0.05.

RESULTS

Descriptive statistics and the results of the normality tests are presented in Table 2. The range of variation is considerable for all variables, which provides an adequate basis for correlational analysis. Four variables deviate significantly from a normal distribution: generalized trust, the autonomy index, hard work, and GDP per capita. All innovation indicators, however, are consistent with normal distribution. The deviations therefore pertain to the explanatory variables, which justifies reporting Spearman's coefficients alongside Pearson's. An examination of extreme values did not identify isolated outliers, but rather extremes corresponding to coherent groups of countries.

Table 3 presents the bivariate correlations between cultural values and innovation indicators. The two sets of coefficients converge, indicating that the results are not dependent on deviations from normality. Three observations stand out in this regard.

First, new-to-market products and cooperation for innovation are the only indicators that are

consistently associated with cultural values. Business process innovation does not reach the significance threshold for any cultural variable, and organizational innovation is not associated with any: the largest coefficient in absolute value is -0.207. This contrast is itself a finding, as it suggests that cultural values, if they play any role at all, pertain to product novelty and the willingness to cooperate, not to the internal reorganization of the firm.

Second, the strongest associations in absolute terms are the negative ones with the value of hard work passed on to children and with religious faith. Both are values characteristic of less economically developed societies, which foreshadows the issue discussed below. Third, perseverance occupies a unique position: its raw associations are significant only with cooperation, while those with new-to-market products remain on the borderline of significance.

Table 4 provides the interpretive key to the entire analysis. Four of the five cultural values examined are strongly and significantly correlated with the level of economic development. The correlation between generalized trust and GDP per capita is 0.857, which means that approximately three-quarters of the variance in trust at the country level is shared with wealth. The methodological implication is clear: any gross correlation between these values and innovation is likely to be confounded. Perseverance is the sole exception, as it is not significantly correlated with either GDP per capita or R&D expenditure, making it the only plausible candidate for a genuine cultural effect.

Table 5 compares the initial correlations with the partial correlations, calculated by holding GDP per capita constant. The contrast is stark and reverses the hierarchy of the results. Generalized trust, which in the initial analysis appeared to be most strongly associated with cooperation, drops to 0.280 and becomes insignificant, while its association with new-to-market products is reduced to virtually zero. The same pattern emerges for the autonomy index, hard work, and religious faith: none of these variables reaches the significance threshold after controlling for other variables. However, it would be incorrect to say that the associations disappear. The confidence intervals for the partial coefficients are wide and include both zero and moderate effects: [-0.18; +0.56] for autonomy and new-to-market products, and [-0.19; +0.64] for trust and cooperation, respectively. With 27 and 21 countries, respectively, the data show that the initial associations are confounded by the level of development but do not allow for distinguishing between the absence of a cultural effect and one of moderate magnitude.

Perseverance evolves in the opposite direction, indicating a suppression effect. The association with new-to-market products increases from 0.334—an insignificant value—to 0.599. With product innovation, it rises from 0.280 to 0.477, and with process innovation from 0.260 to 0.403—two links that were not significant in the raw analysis. For cooperation, the coefficient increases from 0.483 to 0.548, and for Type I cooperation, from 0.546 to 0.646. The mechanism is evident in Table 4: perseverance is slightly negatively correlated with development, while innovation is strongly positively correlated with it, so that the initial correlation is attenuated by the opposing influence of wealth. Once the level of development is held constant, the relationship becomes clear.

Table 6 presents the two regression models. Both are statistically significant overall: the first explains 57.3% of the variance in new-to-market products, and the second explains 49.7% of the variance in innovation collaboration. In both cases, perseverance makes a significant independent contribution, regardless of the level of development, with standardized coefficients close to those of GDP per capita. The interpretation of the unstandardized coefficients is straightforward: a ten-percentage-point increase in the share of respondents who mention perseverance as a desired value in children is associated with an increase of approximately 2.4 percentage points in the share of firms with new-to-market products and approximately 2.6 percentage points in the share of firms collaborating on innovation, at the same level of development.

Diagnostic tests confirm the validity of the first model: the Durbin-Watson statistic falls within the acceptable range, multicollinearity is negligible, and the maximum Cook's distance remains below the conventional threshold of 1. The second model, however, exhibits a maximum Cook's distance of 1.228, indicating the presence of an outlier. With 21 cases, a single influential observation can significantly alter the estimates, so the result regarding cooperation must be considered less robust than that regarding new-to-market products.

Table 7 compares innovation levels across firm size classes. All comparisons are significant at a threshold below 0.001, and the differences are substantial: firms with more than 250 employees outperform small firms by approximately 28 percentage points in product and process innovation, by 20 percentage points in organizational innovation, and by nearly 32 percentage points in innovation cooperation, where the ratio is more than four to one. The correlations between pairs are high, indicating that the hierarchy of countries is maintained across different size classes: differences in size overlap with national differences without

replacing them. These comparisons serve as a benchmark. They show that a structural determinant such as firm size produces differences in the range of twenty to thirty percentage points, while the cultural associations identified above—even those that hold up when controlling for development—explain more modest fractions of the variation. The relative magnitude of these two types of effects is, in itself, a useful finding for interpreting the literature on culture and innovation.

DISCUSSION AND CONCLUSIONS

The study's most robust finding does not correspond to any of the three hypotheses initially formulated. Perseverance passed down to children is the only cultural dimension that retains its association with innovation after controlling for economic development, and this association strengthens rather than weakens, both for new-to-market products and for cooperation. The two regression models confirm this result through standardized coefficients comparable in magnitude to those of the level of development. Perseverance functions as a cultural correlate of persistence in projects with delayed returns—exactly the type of effort required to develop a new product for the market and to maintain a cooperative relationship for innovation.

This is not an isolated correlation: perseverance is also significantly and positively associated with five distinct dependent variables after controlling for development—new-to-market products, product innovation, business process innovation, total cooperation, and Type I cooperation. Furthermore, perseverance is the only variable examined that does not correlate with the level of development (Table 4). This is not a convenient coincidence, but precisely the condition under which one can speak of a cultural effect distinct from national wealth. Third, the effect size is substantial: the standardized coefficients of 0.505 and 0.465 are comparable to those of GDP per capita, in a body of literature where cultural effects typically become marginal after control. Finally, the result aligns with the existing literature: long-term orientation is one of Hofstede's dimensions, and Prim et al. (2017) include it in the innovation-friendly cultural profile, so this finding confirms an already documented mechanism using a new indicator.

The result remains exploratory, however: Section 2.4 describes the theoretical mechanism, but the study did not derive a formal hypothesis from it; the relationship emerges only after introducing the control variable; and the significance thresholds are not adjusted for the number of comparisons made. Confirming this hypothesis requires replication

using independent data, with the indicator specified in advance.

Regarding the hypotheses, H1 receives support at the level of the raw analysis and only for the most stringent indicator. The autonomy index is significantly associated with new-to-market products, but not with product innovation as a whole—a distinction consistent with the hypothesis formulation, which anticipated a stronger effect on market novelties. The association is real and replicates the pattern reported in the literature linking autonomy and individualism to innovation (Shane, 1993; Taylor & Wilson, 2012); the difference from those studies does not result from the data obtained here, but rather from the stringency of the controls applied. However, after controlling for economic development, the association becomes insignificant. Given that autonomy correlates at 0.533 with GDP per capita and at 0.596 with research and development expenditures, the most realistic explanation is that both autonomy and the ability to launch new-to-market products are consequences of development. Formulated as a claim about an association that persists after controlling for development, the hypothesis is not confirmed. At the same time, the confidence interval for the partial coefficient indicates that a moderate cultural effect cannot be ruled out.

H2 is also not confirmed. The Pearson coefficient is practically zero and of the opposite sign to that predicted, and the Spearman coefficient is also zero. The 95% confidence interval, however, indicates that the data do not rule out a moderate negative association, of the type predicted by theory; with 27 countries, the test lacks sufficient power to firmly reject the hypothesis. The result is even more notable given that organizational innovation is not significantly associated with any cultural variable in the analysis. There are two possible explanations, for which the available data cannot distinguish between. The first is that the introduction of new methods of work organization and human resource management is driven by firm- and sector-specific factors, not by national culture. The second is that the CIS indicator captures the mere fact of introducing an organizational change, not its participatory or hierarchical nature, which would make it insensitive to the cultural dimension targeted by the hypothesis. This distinction has important implications, since in the first case the result refutes the theory, while in the second it refutes only the suitability of the indicator.

H3 receives the strongest raw support of all. Generalized trust is associated with cooperation for innovation at a level that corresponds exactly to the theoretical prediction, and the Pearson and Spearman results are consistent. The correlation of

0.571 is among the strongest in the entire set of results and faithfully replicates the prediction from the literature on social capital (Putnam, 1993; Knack & Keefer, 1997). However, controlling for economic development nullifies this relationship. The correlation of 0.857 between trust and GDP per capita explains why. Based on these data, it cannot be argued that generalized trust has an independent effect on cooperation, distinct from a country's overall level of development, and the hypothesis is not confirmed. As with the first hypothesis, the wide range of the partial coefficient calls for caution: the result indicates confounding with development, not the proven absence of a cultural effect.

From a literature review perspective, the study suggests a more general conclusion. Results obtained using aggregate indicators of innovation and without strict control for economic development risk attributing to culture some effects that are produced by wealth. Disaggregation by type of innovation shows that cultural associations are selective: they pertain to market novelty and cooperation, not to process or organizational innovation. For public policy, the immediate implication is that instruments directly targeting cultural values will most likely not prove effective in the short term, while firm size and level of development remain the determinants with the greatest explanatory power.

Limitations and directions for future research

This study has limitations worth noting. The first limitation concerns statistical power; the sample includes 27 countries, and only 21 for cooperation. At these sample sizes, confidence intervals are wide, and the results are sensitive to individual observations. Furthermore, the correlation matrices each contain over forty coefficients, in addition to the partial correlations. Given this volume of comparisons, some of the coefficients with significance thresholds close to 0.05 are expected to occur by chance. The results that deserve to be treated as robust are those confirmed by both the partial correlations and the regression models.

Another limitation relates to the level of analysis. All relationships are established between country-level characteristics and cannot be generalized to firms or individual managers without committing the ecological fallacy (Robinson, 1950; Brewer & Venaik, 2014).

The data source on innovation may also represent a limitation. CIS indicators are self-reported, and survey implementation varies across countries, which may introduce systematic measurement differences. Furthermore, fundamental changes to reporting in the 2022 wave have restricted the usable time range for several indicators.

Research directions arise directly from these limitations. The first direction is to explicitly test the assumption that cultural associations are stronger in small firms than in large ones, for example, through a multilevel model with country $\times$ firm size class observations and an interaction term between the cultural variable and firm size. A second direction is to replicate the finding regarding perseverance using independent data, such as previous waves of values surveys or data by region, to determine whether the suppression effect observed here is robust. A third direction could involve using alternative innovation indicators, such as patents or innovation expenditures, as a robustness test against the limitations of self-reporting. Finally, supplementing the analysis with data on actual managerial practices, derived from firm-level surveys, would allow us to distinguish between the two possible explanations for the negative result regarding organizational innovation.

REFERENCE LIST

- [1] Algan, Y., & Cahuc, P. (2010). Inherited trust and growth. *American Economic Review*, 100(5), 2060–2092.
<https://doi.org/10.1257/aer.100.5.2060>
- [2] Baskerville, R. F. (2003). Hofstede never studied culture. *Accounting, Organizations and Society*, 28(1), 1–14. [https://doi.org/10.1016/S0361-3682\(01\)00048-4](https://doi.org/10.1016/S0361-3682(01)00048-4)
- [3] Bisin, A., & Verdier, T. (2001). The economics of cultural transmission and the dynamics of preferences. *Journal of Economic Theory*, 97(2), 298–319.
<https://doi.org/10.1006/jeth.2000.2678>
- [4] Brewer, P., & Venaik, S. (2014). The ecological fallacy in national culture research. *Organization Studies*, 35(7), 1063–1086.
<https://doi.org/10.1177/0170840613517602>
- [5] Chesbrough, H. W. (2003). *Open innovation: The new imperative for creating and profiting from technology*. Harvard Business School Press.
- [6] Efrat, K. (2014). The direct and indirect impact of culture on innovation. *Technovation*, 34(1), 12–20.
<https://doi.org/10.1016/j.technovation.2013.08.003>
- [7] Eurostat (2025, September). Data Browser. https://ec.europa.eu/eurostat/databrowser/explore/all/all_themes
- [8] EVS/WVS (2022). *European Values Study and World Values Survey: Joint EVS/WVS 2017-2022 Dataset* (Joint EVS/WVS). JD Systems

- Institute & WVSA. Dataset Version 5.0.0, doi:10.14281/18241.26
- [9] Fagerberg, J., & Srholec, M. (2008). National innovation systems, capabilities and economic development. *Research Policy*, 37(9), 1417–1435. <https://doi.org/10.1016/j.respol.2008.06.003>
- [10] Furman, J. L., Porter, M. E., & Stern, S. (2002). The determinants of national innovative capacity. *Research Policy*, 31(6), 899–933. [https://doi.org/10.1016/S0048-7333\(01\)00152-4](https://doi.org/10.1016/S0048-7333(01)00152-4)
- [11] Gorodnichenko, Y., & Roland, G. (2011). Individualism, innovation, and long-run growth. *Proceedings of the National Academy of Sciences*, 108(Supplement 4), 21316–21319. <https://doi.org/10.1073/pnas.1101933108>
- [12] Gorodnichenko, Y., & Roland, G. (2017). Culture, institutions, and the wealth of nations. *The Review of Economics and Statistics*, 99(3), 402–416. https://doi.org/10.1162/REST_a_00599
- [13] Guiso, L., Sapienza, P., & Zingales, L. (2006). Does culture affect economic outcomes? *Journal of Economic Perspectives*, 20(2), 23–48. <https://doi.org/10.1257/jep.20.2.23>
- [14] Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations* (2nd ed.). Sage.
- [15] Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: Software of the mind* (3rd ed.). McGraw-Hill.
- [16] House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. (Eds.). (2004). *Culture, leadership, and organizations: The GLOBE study of 62 societies*. Sage.
- [17] Inglehart, R., & Baker, W. E. (2000). Modernization, cultural change, and the persistence of traditional values. *American Sociological Review*, 65(1), 19–51. <https://doi.org/10.2307/2657288>
- [18] Kaasa, A. (2009). Effects of different dimensions of social capital on innovative activity: Evidence from Europe at the regional level. *Technovation*, 29(3), 218–233. <https://doi.org/10.1016/j.technovation.2008.01.003>
- [19] Kaasa, A. (2017). Culture and innovation: Evidence from the European Union and neighbouring countries. *Tijdschrift voor Economische en Sociale Geografie*, 108(1), 109–128. <https://doi.org/10.1111/tesg.12194>
- [20] Kaasa, A., & Vadi, M. (2010). How does culture contribute to innovation? Evidence from European countries. *Economics of Innovation and New Technology*, 19(7), 583–604. <https://doi.org/10.1080/10438590902987222>
- [21] Knack, S., & Keefer, P. (1997). Does social capital have an economic payoff? A cross-country investigation. *The Quarterly Journal of Economics*, 112(4), 1251–1288. <https://doi.org/10.1162/003355300555475>
- [22] Kostova, T. (1999). Transnational transfer of strategic organizational practices: A contextual perspective. *Academy of Management Review*, 24(2), 308–324. <https://doi.org/10.5465/amr.1999.1893938>
- [23] McSweeney, B. (2002). Hofstede's model of national cultural differences and their consequences: A triumph of faith – a failure of analysis. *Human Relations*, 55(1), 89–118. <https://doi.org/10.1177/0018726702551004>
- [24] OECD/Eurostat (2018). *Oslo Manual 2018: Guidelines for collecting, reporting and using data on innovation* (4th ed.). OECD Publishing. <https://doi.org/10.1787/9789264304604-en>
- [25] Prim, A. L., Filho, L. S., Zamur, G. A. C., & Di Serio, L. C. (2017). The relationship between national culture dimensions and degree of innovation. *International Journal of Innovation Management*, 21(1), 1730001. <https://doi.org/10.1142/S136391961730001X>
- [26] Putnam, R. D. (1993). *Making democracy work: Civic traditions in modern Italy*. Princeton University Press.
- [27] Rinne, T., Steel, G. D., & Fairweather, J. (2012). Hofstede and Shane revisited: The role of power distance and individualism in national-level innovation success. *Cross-Cultural Research*, 46(2), 91–108. <https://doi.org/10.1177/1069397111423898>
- [28] Robinson, W. S. (1950). Ecological correlations and the behavior of individuals. *American Sociological Review*, 15(3), 351–357. <https://doi.org/10.2307/2087176>
- [29] Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing*, 26(4), 441–457. <https://doi.org/10.1016/j.jbusvent.2009.12.002>
- [30] Schwartz, S. H. (2006). A theory of cultural value orientations: Explication and applications. *Comparative Sociology*, 5(2–3), 137–182. <https://doi.org/10.1163/156913306778667357>
- [31] Shane, S. (1992). Why do some societies invent more than others? *Journal of Business Venturing*, 7(1), 29–46. [https://doi.org/10.1016/0883-9026\(92\)90033-N](https://doi.org/10.1016/0883-9026(92)90033-N)
- [32] Shane, S. (1993). Cultural influences on national rates of innovation. *Journal of Business Venturing*, 8(1), 59–73.

- [https://doi.org/10.1016/0883-9026\(93\)90011-S](https://doi.org/10.1016/0883-9026(93)90011-S)
- [33] Tabellini, G. (2010). Culture and institutions: Economic development in the regions of Europe. *Journal of the European Economic Association*, 8(4), 677–716. <https://doi.org/10.1111/j.1542-4774.2010.tb00537.x>
- [34] Taras, V., Kirkman, B. L., & Steel, P. (2010). Examining the impact of Culture's Consequences: A three-decade, multilevel, meta-analytic review of Hofstede's cultural value dimensions. *Journal of Applied Psychology*, 95(3), 405–439. <https://doi.org/10.1037/a0018938>
- [35] Taylor, M. Z., & Wilson, S. (2012). Does culture still matter?: The effects of individualism on national innovation rates. *Journal of Business Venturing*, 27(2), 234–247. <https://doi.org/10.1016/j.jbusvent.2010.10.001>
- [36] Tian, M., Deng, P., Zhang, Y., & Salmador, M. P. (2018). How does culture influence innovation? A systematic literature review. *Management Decision*, 56(5), 1088–1107. <https://doi.org/10.1108/MD-05-2017-0462>
- [37] Welzel, C. (2013). *Freedom rising: Human empowerment and the quest for emancipation*. Cambridge University Press.
- [38] Williams, L. K., & McGuire, S. J. (2010). Economic creativity and innovation implementation: The entrepreneurial drivers of growth? Evidence from 63 countries. *Small Business Economics*, 34(4), 391–412. <https://doi.org/10.1007/s11187-008-9145-7>

LIST OF TABLES

Table 1

Variables, operationalisation and data sources

Variable	Operationalisation	Source
Trust (A165/Q57)	% of respondents stating that most people can be trusted	EVS/WVS (2022)
Autonomy index	(independence + perseverance) – (religious faith + obedience), desirable child qualities; range –2 to +2	EVS/WVS (2022)
Power distance index	Mean of z-scores for respect for authority (E018/Q45) and obedience (A042/Q17)	EVS/WVS (2022)
Perseverance (A039/Q14)	% mentioning perseverance as a desirable child quality	EVS/WVS (2022)
Hard work (A030/Q9)	% mentioning hard work as a desirable child quality	EVS/WVS (2022)
Religious faith (A040/Q15)	% mentioning religious faith as a desirable child quality	EVS/WVS (2022)
Respect for authority (E018/Q45)	% stating that greater respect for authority would be a good thing	EVS/WVS (2022)
Product innovation	% of enterprises introducing a product innovation; mean of CIS 2018 and 2020	Eurostat (2025)
New-to-market products	% of enterprises introducing products new to the market; mean of CIS 2018 and 2020	Eurostat (2025)
Business process innovation	% of enterprises introducing a business process innovation; mean of CIS 2018, 2020 and 2022	Eurostat (2025)
Organisational innovation	% introducing new methods of organising work responsibility, decision making or HRM; mean of CIS 2018 and 2020	Eurostat (2025)
Innovation co-operation	% of enterprises co-operating on R&D or other innovation activities; mean of CIS 2018 and 2020	Eurostat (2025)
GDP per capita	PPS, EU27 = 100; mean 2018–2022	Eurostat (2025)
R&D expenditure	Gross domestic expenditure on R&D, all sectors, % of GDP; mean 2018–2022	Eurostat (2025)

Note: $N = 27$ countries; $N = 21$ for innovation co-operation. Cultural indicators are weighted country aggregates of individual-level survey data.

Source: compiled by the author.

Table 2Descriptive statistics and normality tests ($N = 27$ countries)

Variable	N	Min.	Max.	Mean	SD	S-W W	p
Trust (A165/Q57), %	27	6.76	74.09	35.62	21.17	0.908	0.020
Autonomy index	27	–0.25	0.99	0.56	0.36	0.914	0.029
Power distance index	27	–1.33	1.38	–0.11	0.72	0.963	0.423
Perseverance (A039/Q14), %	27	19.32	68.68	39.59	11.58	0.979	0.850
Hard work (A030/Q9), %	27	8.27	91.30	48.92	25.79	0.919	0.037
Religious faith (A040/Q15), %	27	3.59	47.48	16.90	13.46	n.a.	n.a.
Obedience (A042/Q17), %	27	7.38	45.19	20.92	9.57	n.a.	n.a.
Respect for authority (E018/Q45), %	27	28.79	87.49	52.87	15.35	n.a.	n.a.
Product innovation, %	27	8.45	45.45	30.00	10.27	0.950	0.210
New-to-market products, %	27	2.65	24.55	15.38	5.59	0.971	0.619
Business process innovation, %	27	6.03	61.43	40.14	13.19	0.937	0.101
Organisational innovation, %	27	3.90	40.40	19.36	9.16	0.965	0.482
Innovation co-operation, %	21	2.40	29.30	13.47	6.90	0.932	0.150
GDP per capita (PPS, EU27 = 100)	27	57.20	171.40	96.44	30.07	0.920	0.039
R&D expenditure, % of GDP	27	0.48	3.45	1.80	0.86	n.a.	n.a.

Note: S-W = Shapiro-Wilk. n.a. = normality test not computed for this variable. Innovation indicators are wave means as defined in Table 1.

Source: SPSS output tables “Descriptive Statistics” and “Tests of Normality”.

Table 3

Zero-order correlations between cultural values and innovation indicators

Cultural value	Product innov.	New-to-market	Business process	Organisational	Co-operation (total)	Co-operation profile I
Trust (A165/Q57)	0.318 (0.290)	0.486* (0.398*)	0.274 (0.259)	-0.116 (-0.016)	0.571** (0.578**)	0.602** (0.443*)
Autonomy index	0.280 (0.248)	0.459* (0.425*)	0.208 (0.118)	-0.140 (-0.079)	0.427 (0.492*)	0.494* (0.525*)
Power distance index	-0.251 (-0.368)	-0.271 (-0.328)	-0.126 (-0.241)	0.048 (-0.020)	-0.375 (-0.473*)	-0.300 (-0.355)
Perseverance (A039/Q14)	0.280 (0.321)	0.334 (0.350)	0.260 (0.250)	0.288 (0.335)	0.483* (0.462*)	0.546* (0.608**)
Hard work (A030/Q9)	-0.396* (-0.361)	-0.544** (-0.522**)	-0.372 (-0.313)	-0.040 (-0.168)	-0.447* (-0.490*)	-0.563** (-0.440*)
Religious faith (A040/Q15)	-0.267 (-0.360)	-0.413* (-0.451*)	-0.269 (-0.263)	0.106 (-0.092)	-0.511* (-0.614**)	-0.518* (-0.612**)
Respect for authority (E018/Q45)	-0.373 (-0.447*)	-0.339 (-0.366)	-0.274 (-0.330)	-0.207 (-0.196)	-0.447* (-0.394)	-0.388 (-0.325)

Note: Pearson coefficients, with Spearman's rho in parentheses. $N = 27$ for the first four columns, $N = 21$ for co-operation. * $p < 0.05$; ** $p < 0.01$ (two-tailed).

Source: SPSS output tables "Correlations".

Table 4

Correlations between cultural values and economic development

Cultural value	GDP per capita (PPS)	R&D expenditure (% of GDP)
Trust (A165/Q57)	0.857** ($p < 0.001$)	0.777** ($p < 0.001$)
Autonomy index	0.533** ($p = 0.004$)	0.596** ($p = 0.001$)
Perseverance (A039/Q14)	-0.244 ($p = 0.220$)	0.030 ($p = 0.883$)
Hard work (A030/Q9)	-0.766** ($p < 0.001$)	-0.812** ($p < 0.001$)
Religious faith (A040/Q15)	-0.548** ($p = 0.003$)	-0.624** ($p = 0.001$)

Note: Pearson coefficients, $N = 27$. ** $p < 0.01$ (two-tailed).

Source: SPSS output table "Correlations".

Table 5

Zero-order (r) and partial (rp) correlations, controlling for GDP per capita

Cultural value	New-to-market		Product innovation		Business process		Co-operation (total)		Co-operation profile I	
	r	rp	r	rp	r	rp	r	rp	r	rp
Perseverance	0.334	0.599**	0.280	0.477*	0.260	0.403*	0.483*	0.548*	0.546*	0.646**
Trust	0.486*	-0.020	0.318	-0.240	0.274	-0.150	0.571**	0.280	0.602**	0.268
Autonomy index	0.459*	0.218	0.280	0.021	0.208	-0.008	0.427	0.209	0.494*	0.276
Hard work	-0.544**	-0.193	-0.396*	-0.027	-0.372	-0.108	-0.447*	-0.029	-0.563**	-0.188
Religious faith	-0.413*	-0.141	-0.267	0.007	-0.269	-0.064	-0.511*	-0.291	-0.518*	-0.268

Note: r = zero-order Pearson correlation; rp = partial correlation controlling for GDP per capita. $N = 27$ ($df = 24$) for the first three indicators, $N = 21$ ($df = 18$) for co-operation. * $p < 0.05$; ** $p < 0.01$ (two-tailed).

Source: SPSS output tables "Correlations". Confidence intervals quoted in the text were computed from these coefficients using Fisher's z transformation.

Table 6
OLS regression models

Predictor	Model 1: New-to-market products (N = 27)			Model 2: Innovation co-operation (N = 21)		
	B (SE)	Beta	p	B (SE)	Beta	p
(Constant)	-6.815 (4.083)	—	0.108	-12.654 (6.311)	—	0.060
GDP per capita (PPS)	0.130 (0.026)	0.701	< 0.001	0.177 (0.058)	0.514	0.007
Perseverance (A039/Q14)	0.243 (0.066)	0.505	0.001	0.264 (0.095)	0.465	0.012
R ²	0.573			0.497		
Adjusted R ²	0.537			0.441		
F (df)	16.102 (2, 24), p < 0.001			8.883 (2, 18), p = 0.002		
Durbin-Watson	2.530			1.778		
Max. VIF	1.063			1.001		
Max. Cook's distance	0.633			1.228		

Note: 95% confidence intervals for the perseverance coefficient: [0.107; 0.380] in Model 1 and [0.064; 0.464] in Model 2. Standard errors in parentheses.

Source: SPSS output tables "Model Summary", "ANOVA", "Coefficients", "Residuals Statistics", "Descriptive Statistics".

Table 7
Innovative enterprises by size class: paired-samples t-tests

Indicator	10–49	50–249	250+	Mean diff.	t	df	p
Business process innovation, %	36.92	48.84	65.50	28.574	15.142	26	< 0.001
Product innovation, %	26.96	—	54.98	28.011	18.056	26	< 0.001
Organisational innovation, %	17.29	—	37.37	20.085	13.624	26	< 0.001
Innovation co-operation, %	10.34	—	42.11	31.771	14.277	20	< 0.001

Note: mean difference and test statistics refer to the comparison between the 250+ and the 10–49 size class. For business process innovation, the 50–249 versus 10–49 comparison yields a mean difference of 11.915 ($t = 11.473$, $df = 26$, $p < 0.001$). Within-country correlations between size classes range from 0.764 to 0.932 (all $p < 0.001$). Source: SPSS output tables "Paired Samples Statistics", "Paired Samples Correlations", "Paired Samples Test".