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The links between knowledge management structures and national culture: A comparative study of apple users in Italy and Brazil

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Abstract

Knowledge management structures (KMs) can be defined as structures whose purpose is to encourage people to build relationships, networks and trust. Global companies like Apple, Inc. have promoted these structures to transform its organisation into a knowledge-based organisation. This paper identifies the role of national culture on four KMs namely open-mindedness (OM), counter-knowledge (CK), environmental innovation (EF) and customer capital (CC). In doing so, this study uses data collected from 354 end users of Apple (161 from Italy and 193 from Brazil). This paper provides evidence that while Apple end users from Brazil are more positively associated with higher levels of OM and CC, Italy users are more positively associated with higher levels of CK and EF. This paper discusses the role of the six dimensions of national culture—power distance, individualism, masculinity, uncertainty avoidance, long-term orientation and indulgence of a nation that plays a significant role in how they impact the KMs. Hence, this study serves as an important contribution to global companies that are trying to develop their KMs to sustain competitive advantages.

1 | INTRODUCTION

Culture is a major factor that impacts the success of Knowledge management structure (KM) in organisations. Hofstede (1997) describes 'culture' as the collective programming of the mind that distinguishes the members of one group or category of people from others. Culture is distinguished into individual, national or organisational culture. Organisational culture—also referred to as corporate culture, refers to a set of values, beliefs and behaviour patterns that form the core identity of organisations and help in shaping their employees' behaviour (Erwee et al., 2001:7; van de Smit et al., 1997:147). Organisational culture may vary from one organisation to another within the same country and often differ from what is understood to be the culture of

the country where they operate. National culture—defined by Khan and Law (2018) as 'a set of historically evolved, learned and shared values, attitudes and means', influences how organisations are managed in different environments (Tayeb, 1994) and hence play a critical role in defining the culture of organisations. For organisations that own and control activities in more than one country, such as Apple, the differences in national cultures pose a challenge to efforts to maintain the organisational culture across borders.

The differences between organisational and national cultures gain importance in the current context, where knowledge becomes the primary factor of production (Drucker, 1993) and its management one of the biggest business challenges of the 21st century for organisations of all sizes (Garcia-Perez et al., 2019). Today, learning and innovation

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are continuous processes expected to occur in all parts of a company. For multinational enterprises such as Apple, where similar activities are being conducted in different locations, it is increasingly recognised that one of the greatest benefits of multinationality is distributed learning (Grant, 2000). Apple's employees in 100 of countries are likely to encounter many similar problems and opportunities, and sharing the knowledge gained in tackling these issues brings significant benefits to the business and its customers.

In light of the above considerations, it is not surprising that a significant number of scholars have studied the impact of organisational culture on multinational enterprises in different contexts (e.g., Kidger, 2002; Luiz & Stewart, 2014; Shen, 2004). Paradoxically, the review of the literature reveals that limited research has been conducted to study the relationship between multinational enterprises and their environment from a strategic management perspective, particularly the influence of national culture on the implementation of those elements that help such enterprises promote the growth and communication of knowledge, and in general preserve knowledge within the organisation. Such components—described by Steels (1993) as KMs, become essential in the efforts of multinational enterprises to maintain their organisational culture whilst aligning it with the national cultures of the different countries where they operate. Hence, this research was set to explore the role of some of the KM structures that are key in helping multinational enterprises align their culture with the culture of the countries where they operate.

In our efforts to better understand the multinational enterprise in its relationship with its environment, this research identified a number of relevant concepts from the fields of knowledge management and organisational theory. The research studies the relationship between national culture and open-mindedness (OM), counter-knowledge (CK), environmental innovation (EF) and customer capital (CC) through the analysis of data about users' perception of a global company, collected in two culturally diverse countries. Aspects defining the cultural differences between those two countries (e.g., power distance, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance and long-term versus short-term orientation) therefore become key concepts underpinning this research.

2 | THEORETICAL BACKGROUND

As the nature of an organisation has always been acknowledged as being dependent upon an exchange with outside parties (Child, 1972; Hannan & Freeman, 1989; Pfeffer & Salancik, 2015; Thompson, 1967), the relationships between organisations and their environments have raised interest in scholars and practitioners since early developments in the open-systems models of organisations (Rosenzweig & Singh, 1991).

2.1 | National cultures

National cultures are among those environmental forces that have the greatest influence on organisational structures and decision-making,

particularly for multinational enterprises (Aldrich & Pfeffer, 1976; Lawrence & Lorsch, 1967; Rosenzweig & Singh, 1991). Defined by Hofstede et al. (2010) as 'the collective programming of mind acquired by growing up in a particular country', national cultures are shaped by forces such as history, language, wars, and religion, which indoctrinate the population at an early age (Petersens & Ibsen, 2013). Within an organisation—argue Cegarra-Navarro et al. (2011), a national culture influences what is perceived by the organisation as useful, important—and often valid, knowledge.

Hofstede et al. (2010) identify five dimensions of national cultures that distinguish their differences and characteristics between countries. These are power distance, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance and long-term versus short-term orientation, most of which have a particular influence on organisational design and behaviour. Although Hofstede's work is not without its critics (e.g., Javidan et al., 2006), his study continues to provide a basic framework for research in the field of cross-cultural management. His five dimensions of national culture have been found to affect knowledge management activities, particularly knowledge creation (e.g., Wang et al., 2011), knowledge transfer (e.g., Wilkesmann et al., 2009) and knowledge reuse (e.g., Lin, 2014) in organisations. Furthermore, such dimensions of the national culture also have an effect on customers' perceptions of the products and services provided by multinational enterprises, particularly in the tourism and hospitality domain (Nazarian et al., 2017; Seongseop Kim & Mc Kercher, 2011).

Power distance refers to the extent to which the less powerful members of a culture accept and expect distribution of power (Hofstede et al., 2010). The concept has received significant attention by organisational strategy and knowledge management scholars over the last two decades (Dasi et al., 2017; Greiner et al., 2007; Wang et al., 2011). Overall, there seems to be a consensus that cultivating low power distance has a positive impact on innovation through improved knowledge sharing (Taminiau et al., 2009). In low-power-distance cultures such as those of European countries, individuals are predisposed to desire situations in which they can imagine themselves participating in the decision (Paharia & Swaminathan, 2019). Italy scores 50 on the Power Distance Index, although this is higher than most developed countries such as Denmark with 18, or UK that scores 35, it is not as high as certain developing countries that have a high power distance. Scoring midway among the 76 countries, Tavanti (2012) states that Italians expect differences and formality in titles and status. However, Hofstede et al. (2010) assume that if the Italian Power Distance Index were controlled by North and South regions, it would show a lower and higher Power Distance Index, with Northern Italy demonstrating preferences of equality and decentralisation, while Southern Italy having a higher Power Distance Index. In high-power-distance cultures such as those in South America, however, individuals may experience relatively weaker feelings of empowerment because they believe that everyone should have a 'defined' place in the social order regardless of position (Winterich & Zhang, 2014). Wilkesmann et al. (2009). This is the case in Brazil, with a score of 69, Brazilians respect hierarchy and accept inequalities among people. The culture of respecting elders is also reflected in businesses where one boss takes responsibility.

Despite such results at a national level, limited research has been reported on how power distance—in relation to the national culture, affects efficiency, innovativeness and knowledge management in multinational enterprises.

Individualism is the degree to which individuals in a particular society look after themselves, as opposed to how much they care about others, –that is, collectivism. Businesses functions in multinational enterprises often rely on the sharing and reuse of knowledge which, instead, depend on trustworthy and long-lasting relationships in the workplace. Thus, scholars from different domains have found significant links between these two concepts at a national level and corporate innovativeness, knowledge management and performance (e.g., Siau et al., 2010; Tajeddini & Trueman, 2012). In Europe, where individual independence and interests are protected and promoted, and the route to happiness is through personal fulfilment, societies are generally seen as individualist compared with other areas of the world. This is the case for Italy, with a score of 76, Italy is defined largely as an individualist culture. Italians are known for having individualistic objectives and life goals and believe that the route to happiness is by achieving personal fulfilment. This however, contrasts with Southern Italians where less individualistic behaviours have been observed.

Collectivism, on the other hand, refers to group-oriented cultures such as those in South America, where group interests often override individual interests (Hofstede, 1997).

Brazil with a score of 38, thrives on a collectivist culture, where families are integrated into strong, cohesive groups. This subsequently is reflected in business and work environments too, where families are expected to look out for each other and help each other.

Another key dimension of a national culture refers to the masculine and feminine distribution of emotional roles, which is a measure of how individuals in a particular culture are motivated by competition, personal achievement and success (Gardiner, 2002). Organisations from those cultures that emphasise achievement, earnings, and assertiveness—that is masculinity, respond to ‘merit-based opportunities for high earnings, recognition, advancement, and rewards’ (Newman & Nollen, 1996, p. 759). This is the case in many European countries, particularly those from Southern Europe.

Italy is a largely masculine society with a high score of 70 on this dimension, Italians are highly success-oriented and driven. In addition to a culture that thrives on competition from an early age, status symbols such as expensive cars and houses, exotic holidays drive Italians. Competition is perceived as a key to attaining this success.

On the other hand, organisations from countries that favour personal goals, quality of life, group decision-making, a friendly environment, and nurturance—that is femininity, often emphasise the quality of interpersonal relations and quality of working life (King, 2007). Brazil with a score of 49 is defined to be intermediate on this dimension.

Uncertainty avoidance measures the extent to which members of a culture feel comfortable in unstructured situations. Individuals from societies where uncertainty avoidance is high—such as those in South America, are considered not adventurous and risk-takers in decision-

making. Such individuals may need more time, information, planning, and support before they make any decisions about the future. With a high score of 76, Brazil demonstrates the need for rules and strong legal systems, although an individual's need to obey laws is not very stringent.

At 75, Italians also score high on Uncertainty Avoidance. Italians are normally uncomfortable in ambiguous situations, in addition as Italy scores high on both Masculinity and UA, work and life can be both stressful, resulting in Italians being very passionate and emotional people.

Contrastingly, individuals from societies where uncertainty avoidance is low, for example, in European countries, tend to be high-risk-takers when making decisions about the future (Hofstede, 1997). Authors who have studied the effects of uncertainty avoidance in the workplace have found that it becomes a mediator in the correlation between creativity and innovation (Sarooghi et al., 2015).

Although initially, Hofstede (1997) had only identified these four culture dimensions, the fifth dimension, that is, Long-Term Orientation and the sixth dimension Indulgence were subsequently assigned to the model.

2.2 | Long-term orientation

Long-term orientation refers to how society has to maintain some links with its own past while dealing with the challenge of the present and future Hofstede et al. (2010). Change in certain societies and businesses has always been viewed and received with trepidation. Hence, culture in organisations should be tangible, observable and measurable, and the results quantifiable (Atkinson, 1998). Societies with a long-term orientation prefer virtues oriented towards future rewards, perseverance and encourage thrift. In contrast, societies located at the short-term pole prefer virtues related to the past and present, in particular respecting tradition, protecting one's ‘face,’ and fulfilling social obligations (Guo et al., 2018).

Brazil with a score of 44, scores intermediate in this dimension. Italy on the other hand has a high score of 61, Hofstede et al. (2010) describe Italians as having a pragmatic approach, demonstrating a positive attitude to change and transitioning traditions.

2.3 | Indulgence

In this final dimension of Hofstede's cultural dimensions, Indulgence indicates the extent to which people give way to desires or enjoy out of gratification. A high Indulgence score stands for a relatively weaker constraint of feelings and primitive human needs regarding the enjoyment of life and having fun (recreation, money spending, consumption, and sex), while a low IVR score stands for a relatively stronger constrain of these needs through strict social norms (Hofstede et al., 2010). Hofstede (1997) describes cultures as either having weak control, hence labelling them as indulgent or having strong control, referring to them as restrained.

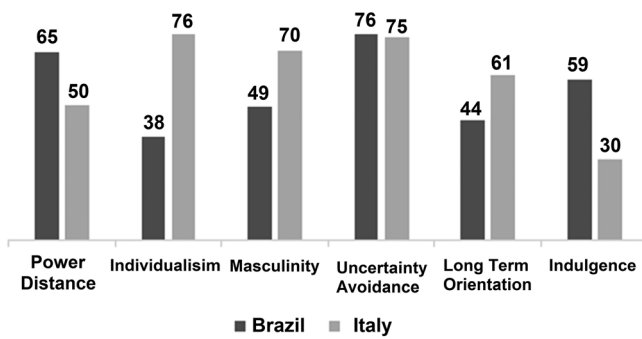


FIGURE 1 Dimensions of a national culture (Brazil and Italy).

Brazil scores a high of 59, classing them as an indulgent society, while Italy with a score of 30 is more constrained. Societies with a high indulgence score are more likely to be gratified, with a culture that encourages people to express emotions and enjoy life (Hofstede et al., 2010). As a result, it is said that indulgent societies are found to have greater percentages of happy people than restrained societies (Minkov, 2009). Hofstede et al. (2010) further states that indulgent societies possess positive attitudes and are more optimistic, while restrained societies have a tendency to cynicism and pessimism (Figure 1).

The literature shows that most dimensions of a national culture transpire in organisational contexts, influencing the perceptions of management and shaping what teams define as valid knowledge. They set the 'cultural ground rules' that shape how people interact within the organisation, and have a major impact on knowledge creation, sharing and use (De Long & Fahey, 2000; Hernández-Mogollon et al., 2010). Paradoxically, limited research has been found to address how national culture of a country affects the adoption of products and/or services offered by multinational enterprises that are perceived to have a different culture. Considering this, we propose that end-users from divergent national cultures can have different perceptions of the effectiveness and efficiency of KMs (e.g., OM, CK, EF and CC) in organisations.

2.4 | Open-mindedness

Although national cultures pose ingrained beliefs in individuals, it is believed that OM provides an opportunity to challenge long-held beliefs and practices. OM is the willingness to actively search for evidence against one's favoured beliefs, plans, or goals, and to weigh such evidence fairly when it is available (Sinkula et al., 1997). By studying the perception of end-users towards OM of a multinational enterprise in order to understand the potential value of its initiatives to re-orientate organisational values, norms, and/or behaviours by changing cognitive structures (Nystrom & Starbuck, 1984), mental models (Day & Nedungadi, 1994), dominant logics (Bettis & Prahalad, 1995), and core assumptions (Shaw & Perkins, 1991).

While familiar approaches to formulating problems and their solutions may have proven successful in the past, they may not be (as) relevant for the same organisation in the future. Hence OM provides an opportunity to question current thinking and practice,

receptiveness to emerging possibilities, the sharing of ideas, and the consideration of differing perspectives.

National culture plays a role in the creation of an OM culture that is more likely to result in the questioning of long-held practices and beliefs (Sinkula et al., 1997) and encourage the sharing of strategic information among decision-makers (Day & Nedungadi, 1994). Achieving an open-minded strategy becomes in itself an innovation that can potentially help organisations to focus on the right things and, thus, find the best way to provide benefits for end-users with limited resources (Stoker, 2006).

These considerations lead us to propose the following hypothesis:

Hypothesis 1. National culture is positively associated with end-users' perceptions of an organisation's open-mindedness.

2.5 | Counter-knowledge

Martínez-Ortiz et al. (2017) refer to CK as obsolete knowledge and inappropriate knowledge structures. The creation of CK occurs when an individual or group creates inappropriate or false interpretations of events or sequences of events. This CK leads individuals to develop worldviews that are distorted and at most partially true. CK refers to flaws in citizens' mental models arising from utilisation of rumours, inappropriate knowledge structures, outdated routines or procedures (Martínez-Ortiz et al., 2017). They further state that the term CK refers to the flaws in citizens' mental models (e.g., misperceptions and misinformation) that arise from rumours or inappropriate knowledge structures. This may impact the intended communication between the organisations and its end-users. Thompson further proposes that CK is based on gossip, rumours and malicious lies and may lead to inappropriate or outdated assumptions that, in turn, can lead to a contortion of knowledge between users (Darr et al., 1995; Fernandez & Sune, 2009; Markoczy, 1994). National culture plays a significant role in the way CK is perceived, absorbed and accepted. Furthermore, we argue that culture is a key reason leading employees to engage in a number of counterproductive knowledge behaviours such as the sharing of CK. For instance, in cultures with a high power-distance, information that appears from sources of high influence/hierarchy may more easily be accepted as true. Further, such societies may propagate rumours or gossip with more a higher intensity even without support and evidence.

Hence, it becomes vital for organisations to consider the evaluation of the real perception of CK or inappropriate assumptions among end-users.

This perceived role of national culture on employees' engagement in the acceptance and sharing of CK helps us frame our second hypothesis as follows:

Hypothesis 2. National culture is positively associated with end-users' perceptions of an organisation's counter-knowledge.

2.6 | Environmental innovation

EI consists of new or modified processes, techniques, systems and products to avoid or reduce environmental damage (Kemp, 2009). In 2009 the Environmental Protection Agency (EPA) reported that U.S. consumers generated over 3.19 million tons of e-waste including televisions, telephones, video cameras, and computer equipment. Of these, only 13.6% were disposed of or recycled (Department of environmental conservation, n.d). In the same year, global electronic waste was estimated to be approximately 40 million tons and the United Nations Environment Programme (UNEP) estimated that, by the end of this year 2020, e-waste levels could rise by as much as 500%. These high levels of e-waste that are not properly disposed of or recycled have had a massive negative impact on the environment, raising air toxicity to dangerous levels Walsh (2009). There has been an increased customer interest in carbon footprints, environment and recycling.

Organisations widely are now focusing on reducing their environmental footprint and are obligated to directing work towards climate change and reducing greenhouse gas emissions that contribute to climate change. Hence, EF consisting of innovative production processes, alternate management methods, new business models and may also result in different new products or services has become vital. The objective of this innovation would be to substantially reduce or prevent altogether environmental risks and environmental pollution.

Ngo (2008) found that consumers were now more likely to make purchases based on product labelling design combining specific environmental details, this subsequently has had an effect on the success of organisations that associate themselves with environmental causes. Companies that develop and sell sustainable and environmentally friendly products have gained in sales and popularity (Berger & Finkbeiner, 2010). Hence end-users perceptions of an organisation's EF can contribute immensely to their popularity and sales. Therefore, this paper proposes the following:

Hypothesis 3. National culture is positively associated with end-users' perceptions of an organisation's environmental innovation.

2.7 | Customer capital

An organisation's relationship with its customers contributes to the current and future financial climate of that organisation. This is termed as 'customer capital' and refers to how an organisation understands their customers' business, market and specific problems and challenges (Duffy, 2000; Saint-Onge, 1996; Stewart, 1997). This facilitates an organisation's ability to develop capabilities to address customers' needs and also enables the organisation to develop relationships with customers. CC has been regarded as a major source of competitive advantage in the 'knowledge economy' (Chang & Tseng, 2005).

Customers change their characteristics, including their physical location, business processes, behaviour and preferences. As these

customer characteristics change, it may become necessary for the organisation serving these customers to revise the knowledge they hold about customers. Further, it is important for the organisation to revise the managers' basic beliefs and assumptions and any other explicit or explicit knowledge constituting 'customer capital' or knowledge, which facilitates the creation of value utilising 'customer capital' (Akgün et al., 2007). On this basis, Hernández-Mogollon et al. (2010) have argued that knowledge about customers is inevitably subject to change, while Duffy (2000) highlights the value of dynamic customer relationships and the contribution this value makes to future growth prospects.

Hence we propose the following hypothesis:

Hypothesis 4. National culture is positively associated with end-users' perceptions of an organisation's customer capital.

3 | METHODOLOGY

3.1 | Data collection

Apple is a leading innovation company in the U.S. and globally and one of the most important names in the technology industry. According to Statista (2019), – the leading provider of market and consumer data, in excess of 217 million iPhones and 163.8 million iPads were shipped in 2017 worldwide, to mention but two of Apple's most popular devices. Despite Apple's share of the global market of leading technology vendors, the company currently faces critical issues such as 'sustainable growth' and 'privacy concerns', according to Greenpeace (Mlot, 2012; Treacy, 2012). In response to such concerns, Apple is doing more than any other electronics manufacturer to address the negative effect it has on the environment (Ali & Ahmad, 2016). For example, Apple has taken the first steps with small solar installations and has banned the use of dangerous chemicals from its Chinese factories.

Apple's effort to sustain sustainable growth and its global nature led us to consider Apple as an appropriate setting for this investigation. Data were collected via an electronic survey using a 5-point Likert scale. A total of 285 valid responses were considered usable and therefore included in the study (104 from Italy and 181 from Brazil). Such responses came from 122 male and 162 female individuals. Two statistical tests were conducted to avoid the presence of response bias (Podsakoff et al., 2003). Firstly, a factor analysis of all the variables to ensure the absence of response bias showed four factors with eigenvalues greater than 1.0 with an explained variance of 77.64%. Secondly, we conducted Harman's single-factor test (Podsakoff et al., 2003). The results showed that the fit was considerably worse for the one-dimensional model than for the measurement model, while the one-factor model generated a Satorra-Bentler $\chi^2_{(54)} = 1124.097$; $\chi^2/d.f = 20.82$, the measurement model yielded a Satorra-Bentler ($\chi^2_{(48)} = 92.635$; $\chi^2/d.f = 1.93$). All these results suggest no substantial common method bias (Armstrong & Overton, 1977).

3.2 | Measures

Being a leading force in technological innovation means that awareness of Apple and/or its products is widely shared within students and professionals around the world. On this basis, throughout March and April 2019, end users from Italy and Brazil were selected randomly. They were initially asked to indicate whether they were aware of Apple as a company. Those end users who confirmed their knowledge of the company were then invited to participate in the research. This sample then included individuals from a variety of academic and cultural backgrounds, all of them residents of either Italy or Brazil at the time of this research. The questionnaire was aimed at measuring the extent to which those individuals perceived themselves as members of an open culture driven by Apple, felt that Apple's EF was of relevance for them as users, had evidence of the presence of CK of the level of relational capital created between them and the company.

1. Open-mindedness (OM): The measures related to the presence of a context of OM consisted of four items adapted from a scale originally designed by Baker and Sinkula (1999) to measure the construct. These items described the way management is perceived to deal with change, innovate in the business operation and learning from the users' experience in their interaction with the products.
2. Counter-knowledge (CK) has been measured using four items. This scale was constructed through a literature review. An expert panel

was also used to identify the correct items for this construct. Factors relating to the lack of congruity between the intended communication and its recipient (e.g., misunderstandings), exaggerations, and partial truths are included in the scale (Chapman & Ferfolja, 2001; Thompson, 2008).

3. Environmental product innovation (EF): The measures relating to environmental product innovation were informed by the work of Cleff and Rennings (1999) on integrated approaches to environmental protection by firms. In particular, we use customers' perspective of longevity and recyclability of Apple products as well as on Apple's use of harmful substances as measures of product-integrated innovations.
4. Customer Capital (CC): The relevance of the customer perspective for the value proposition provided by an organisation led us to measure CC based on customers' perceptions of Apple's products and services. In line with the work of Carmeli and Tishler (2004), and Kim Jean Lee and Yu (2004) the measures employed covered the value that customers perceive Apple to deliver quality and service.

The items in the proposed constructs were evaluated with exploratory techniques to assess the reliability and dimensionality of the measures. The reliability of the measures is calculated using Bagozzi and Yi's (1988) composite reliability index and with Fornell and Larcker's (1981) average variance extracted index. For all the measures, both indices are higher than the evaluation criteria of 0.7 for the composite reliability and 0.5 for the average variance extracted (Bagozzi &

TABLE 1 Factor loadings of the resulting items and scale reliability.

	Standardised loading	t-value	Reliability (SCR ^a , AVE ^b)
OM1: Apple seems to be open to new ideas	0.759		SCR = 0.870
OM2: Apple is able to identify problems (new ways of doing things) easily	0.909	14.610	AVE = 0.693
OM3: Apple is able to reflect and learn from their own mistakes	0.823	13.935	
CK1: There is gossip that thrives on lies, exaggerations and partial truths	0.787		SCR = 0.897
CK 2: There are malicious rumours which support mistrust	0.976	16.979	AVE = 0.748
CK 3: There are malicious stories about Apple staff that often lead to misunderstandings	0.819	15.648	
EF2: Apple do not use toxic substances in their products	0.717		SCR = 0.793
EF3: Apple make an efficient use of materials in their products (e.g., decompose and recycle materials)	0.896	10.597	AVE = 0.568
EF4: Apple's products do not affect my health (e.g., do not create electromagnetic fields)	0.622	9.534	
CC3: I would repeat buying again in Apple	0.838		SCR = 0.850
CC4: Apple has offered you products and services according to your needs	0.760	13.250	AVE = 0.655
CC5: The quality of the services	0.828	14.153	

Note: The fit statistics for the measurement model were: Satorra-Bentler $\chi^2_{(48)} = 92.635$; $\chi^2/\text{d.f} = 1.93$; TLI = 0.958; CFI = 0.974; IFI = 0.974; RMSEA = 0.057.

^aScale composite reliability (SCR) of $p_c = (\sum \lambda_i)^2 \text{var}(\xi) / [(\sum \lambda_i)^2 \text{var}(\xi) + \sum \theta_{ii}]$ (Bagozzi & Yi, 1988).

^bAverage variance extracted (AVE) of $p_c = (\sum \lambda_i^2 \text{var}(\xi)) / [(\sum \lambda_i^2 \text{var}(\xi) + \sum \theta_{ii})]$ (Fornell & Larcker, 1981).

TABLE 2 Descriptive statistics and construct correlation matrix.

	Mean	S.D.	1	2	3	4	5
1. Open-mindedness (OM)	3870	0.825	0.832				
2. Counter-knowledge (CK)	2861	0.940	-0.012	0.865			
3. Environmental innovation (EF)	3154	0.781	0.354**	0.072	0.754		
4. Customer capital (CC)	3993	0.861	0.381**	-0.099	0.316**	0.809	
5. Culture (1 = Brazil; 2 = Italy)	1.64	0.482	0.187**	-0.177**	-0.165**	0.307**	<i>n.a.</i>

Note: Mean = the average score for all of the items included in this measure; S.D. = Standard Deviation; *n.a.* = not applicable; The bold numbers on the diagonal are the square root of the Average Variance Extracted. Off-diagonal elements are correlations among constructs.

** $p < 0.01$.

TABLE 3 MANOVA nationality factor (individual variables).

Variable	Nationality (NC)	Mean	S.D.	N	F	Partial squared
Open-mindedness	Italy	3.667	1.073	104	10.278**	0.035
	Brazil	3.987	0.615	181		
	Total	3.870	0.826	285		
Counter-knowledge	Italy	3.080	1.123	104	9.160**	0.031
	Brazil	2.735	0.794	181		
	Total	2.861	0.940	285		
Environmental innovation	Italy	3.324	1.032	104	7.938**	0.027
	Brazil	3.056	0.572	181		
	Total	3.154	0.781	285		
Customer capital	Italy	3.644	0.975	104	29.552*	0.095
	Brazil	4.193	0.718	181		
	Total	3.993	0.861	285		
Pillai's trace (0.209)					18.488**	0.209

Abbreviation: SD, Standard deviation.

** $p < 0.01$. * $p < 0.05$.

Yi, 1988). Based on the results collected in Table 1, we conclude that the reliability and the convergent validity of our measurements are assured.

The asymptotic covariance matrices were generated to obtain the scaled chi-square (Satorra & Bentler, 1988) and robust estimation of standard errors.

The constructs correlation matrix, means and standard deviations are shown in Table 2. As shown in Table 2, each construct related more strongly to its own measures than to others', which confirms the discriminant validity between the factors (Fornell & Larcker, 1981).

4 | RESULTS

We used multivariate analysis of variance (MANOVA) to test whether OM, CK, EF and CC may vary depending on the national culture (NC). We used NC = 1 for the final user from Italy and NC = 2 for those from Brazil. The normality test of the data indicates that the variables under analysis have normal behaviour. For all variables in all groups, the values of Skewness are less than 2 and Kurtosis values less than 7. We check the multivariate test by Pillai's

Trace test, because of its robustness for possible departures from assumptions, like small sample sizes and homogeneity of variance-covariance violation.

There was a statistically significant difference in dependent variables based on the NC ($F_{(4,280)} = 18.49$, $p < 0.001$; Pillai's Trace = 0.209; partial $\eta^2 = 0.33$). Consequently, NC has an explicative power on. Follow-up univariate ANOVAs indicated that all dependent variables (OM, CK, EF and CC) were significantly different regarding the two national cultures ($F_{(1,283)} = 10.278$, $p < 0.01$, $\eta^2 = 0.035$; $F_{(1,283)} = 9.160$, $p < 0.01$, $\eta^2 = 0.031$; $F_{(1,283)} = 7.938$, $p < 0.01$, $\eta^2 = 0.027$; $F_{(1,283)} = 29.552$, $p < 0.01$, $\eta^2 = 0.095$; respectively). As shown in Table 3, CK and EF present higher levels in the Italian context compared to the Brazilian one ($p < 0.01$). Inversely, OM and CC are perceived as stronger in Brazil rather than in Italy ($p < 0.01$).

Figure 2 provides a visual summary of the effects of each of the factors relative to the response site (Italy and Brazil). The results support that Brazilian-NC had a positive influence on the perception of the end users about OM and CC related to the brand, and Italian-NC is more positively associated with the perception of higher levels of CK and EF by end users.

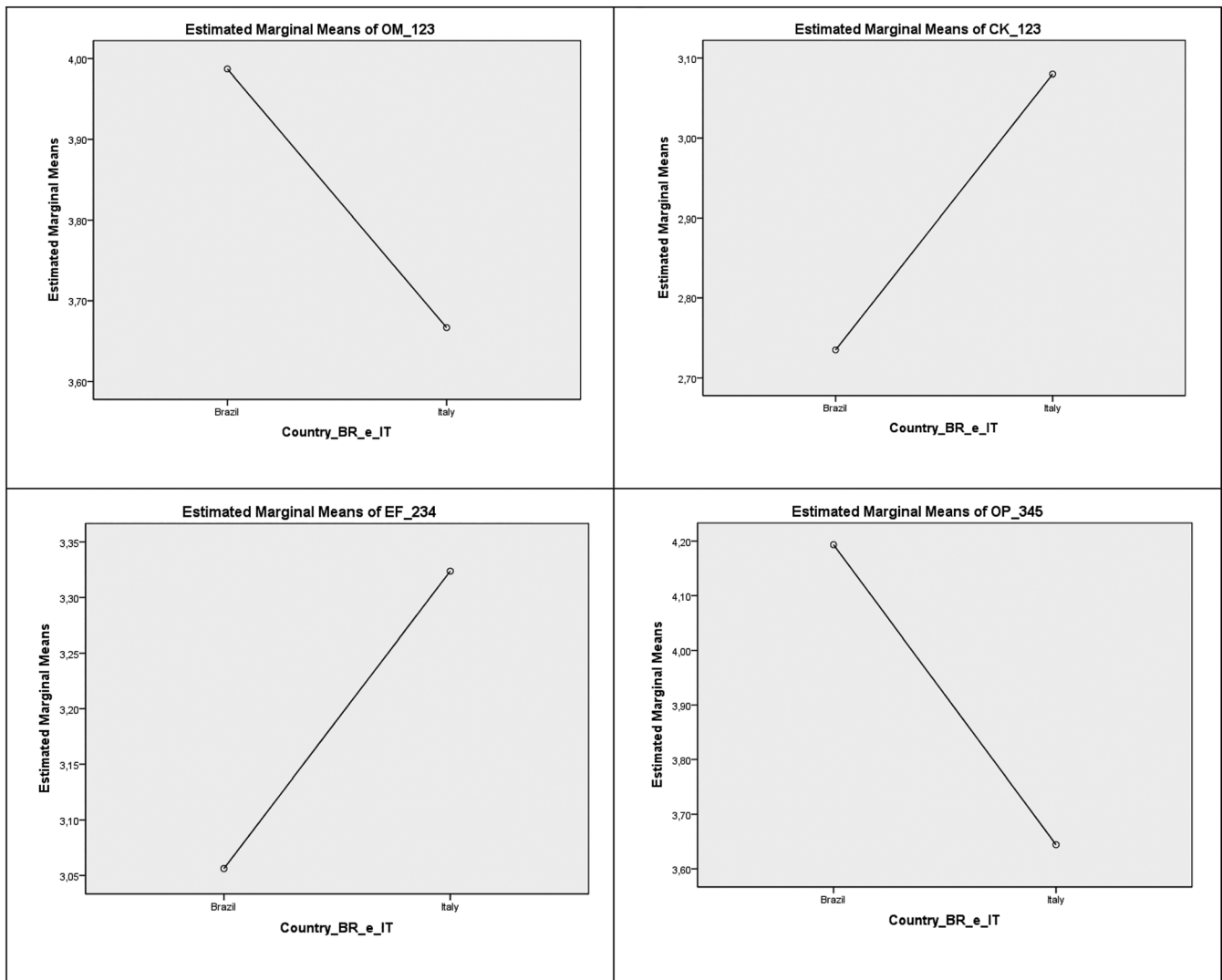


FIGURE 2 Summary of mean responses of the factors relative to the response site.

5 | DISCUSSION

The purpose of this paper is to demonstrate the role played by the national culture dimensions on four KMs namely OM, CK, EF and CC. We employed the 6-D model of national culture as described by Hofstede (1997), which are the basic issues that society needs to come to terms with, in order to organise itself. Each of the scale is scored from 0 to 100, defining the country in terms of its power indulgence, collectivism versus individualism, masculinity versus femininity, uncertainty avoidance and the latter two dimensions long-term orientation and indulgence. As global organisations are focused on transforming into knowledge-based organisations, we investigated the role national culture plays on KMs in Apple. Our study focused on end-users in Italy and Brazil who had knowledge of the company. The results indicated that Brazilian national culture had a positive influence on the perception of the end users about OM and CC related to the brand, and Italian national culture is more positively associated with the perception of higher levels of CK and EF by end users.

The possible differences in associations with the KMs of each country could be because of the cultural dimensions that shape people's perceptions of a society and subsequently the organisations operating in that society. People from a national culture share experiences, attitudes, knowledge base and behaviours thus forming a possible ecosystem in which they live and operate in, an economic community supported by a foundation of interacting organisations and individuals—the organisms of the business world (Moore, 1996).

The cultural dimensions as defined by Hofstede (1997) are then implicit or explicit views and values shared to a considerable extent by the members of a nation (Cegarra-Navarro et al., 2011). These factors, the authors further state, are transmitted not only through the formal structure and systems but also through informal processes and communication networks. Hence the differences in the associations between the two countries may have greatly been influenced by the differences in the national cultural dimensions.

Regarding hypotheses H1: National culture is positively associated with end-users' perceptions of an organisation's OM, and

hypothesis **H4**: National culture is positively associated with end-users' perceptions of an organisation's CC, the results support that Brazil had a positive association with OM and CC than Italy. This could be due to the varying score of Brazil on Power Distance, Collectivism, Masculinity and Indulgence.

OM attempts to re-orientate organisational values, providing an opportunity to challenge long-held beliefs and practices by changing cognitive structures (Nystrom & Starbuck, 1984). OM is the willingness to actively search for evidence against one's favoured beliefs, plans, or goals, and to weigh such evidence fairly when it is available.

CC may be measured in terms of the value of an enterprise's relationships with its customers. (Garcia-Perez et al., 2019) state that the influence of the existence of OM practices affects knowledge processes and that these processes have a positive impact on CC. Hernández-Mogollon et al. (2010) state that OM is one of the most difficult things to handle from an organisation's point of view and hence, management has a key role to play in creating and sustaining the OM. Management has to give due consideration to how existing rules, procedures and technologies can be modified and provide a culture of continuous learning and enhancement. OM then can prevent organisational learning contexts from becoming too rigid, which in turn has an impact on knowledge processes which, in turn, have an impact on the creation and nature of CC (Cegarra-Navarro et al., 2011).

National culture dimensions play a key role in the KMs, Brazil scored higher than Italy in Power Distance, demonstrating that Brazilians are more likely to respect hierarchy and accept that power is distributed unequally. They respect hierarchy and accept that power holders contribute beneficially to an organisation. This possibly could contribute to the OM practices as Brazilians are more receptive of the management's role in modifying practices and enhancement. In addition, Brazil scored 38 on Individualism making it a collectivist society integrating in strong, cohesive groups and hence valuing customer relationships. This contributes to the positive association with CC, the value it places on customer relationships and the contribution this value makes to future growth. Measuring CC—customers' contribution to current and future revenues—is fundamental to assessing how successful an organisation is in turning customer relationships into sustainable competitive advantage (Duffy, 2000). Also, Brazil scored low on the Masculinity dimension, classifying the society as Feminine demonstrating that the dominant values in society are caring for others and quality of life. Being a more feminist society, there is a large emphasis on the quality of interpersonal relations and the quality of working life. This may be an important attribute to how the country perceives customer relationships and values and hence contributing to CC. There is a positive association of OM practices that results in an impact on the perceptions and reception of CC.

With regard to the test of hypotheses **H2**: National culture is positively associated with end-users' perceptions of an organisation's CK and **H3**: National culture is positively associated with end-users' perceptions of an organisation's EF, the results support that Italian national culture is more positively associated with the perception of higher levels of CK and EF than in Brazil. EFs developed by Kemp and

Pearson (2008) define them as: 'the production, application or exploitation of a good, service, production process, organizational structure or management or business method that is novel to the firm or user and which results, throughout its life cycle, in a reduction of environmental risk, pollution and the negative impacts of resource use compared to relevant alternatives'.

Italy has a high score of 61 on long-term orientation, demonstrating that Italians have a pragmatic approach, indicating a positive attitude to change and transitioning traditions. This could be key in determining the positive impact on EF in Italy. In Brazil, which is an emerging society, as is with most developing countries are—there is a trade-off between development and attitudes towards sustainable productions.

CK is a new concept that emerged at the turn of this century that includes disinformation and misconceptions based on unverified information (e.g., hoaxes, exaggerations, or gossip) (Martelo-Landroguez et al., 2019). Although gossip and rumours are said to be especially useful in some contexts, it is not always the case. Besides, CK in itself can be a huge barrier to learning (e.g., misinformation or misconceptions).

Italy scored lower on the Indulgence dimension making it a more restrained society. Indulgent societies possess positive attitudes and are more optimistic, while restrained societies have a tendency to cynicism and pessimism. This could be a major factor in the way a society consumes CK and the challenges it may pose for organisations. Hence it is vital for organisations to be able to manage knowledge in order to have a competitive advantage (Moustaghfir, 2009). There is also a major difference in the individualism and masculinity indexes of the two countries surveyed. Italy has a more individualistic culture with personality traits that may depict a higher sense of internal control.

The results of this study have highlighted the differences in KMs from people of different national cultures. This provides organisations with a new interesting direction in which they may adopt the role of these cultures in the values and strategies of their organisations. Although many authors have highlighted the role of national cultures, no studies highlight the role of NC on KMs. Hence studying these might provide organisations with an insight on eliminating generalisability and identifying boundaries or cultural contexts.

6 | CONCLUSIONS

In this study, we collected data from 354 end users of Apple to establish a comparison between the National Cultures in Brazil and Italy and its subsequent impacts on the four KMs—OM, CK, EF and CC.

Our results established a difference in the perceptions of the two countries and their associations with the different KMs. National cultures as well specified by Hofstede (1997) are associated values with a nation and are possibly among the first things a person learns, not consciously but implicitly. Because they are acquired so early on in life, many values are inherent in people's sub-conscious and are inferred by the way people act under certain circumstances.

In our study, the Brazilian culture was positively associated with OM and CC while Italy was positively associated with EF and CK. We discuss the influence of the six dimensions of the national culture—Power Distance, Collectivism, Masculinity, Long-Term Orientation, Uncertainty Avoidance and Indulgence and the significant role they play in determining the country's attitudes towards the KMs.

While Italy has a smaller power distance, Brazil is characterised by a high-power distance highlighting that inequality, hierarchical structures and submission are widely accepted. Brazil is a more collectivist culture that is cohesive and integrated, in addition to nurturing, friendly and emphasising on interpersonal relations due to classifying as a predominantly feminist culture. Where Italy is individualistic, motivated by competition and personal success, largely masculine and high risk-takers as is suggested by the low score on Uncertainty avoidance. Italy is also largely constrained as they score low on the Indulgent index. All these factors play a significant role in the positive association of Italians with CK. Italy also has higher levels of long-term orientation creates which suggests that they are more open to EF than Brazil and are prepared for consideration of new and innovative ideas.

This paper makes a significant contribution that provides organisations with an awareness of the different national cultures and the role they play in the management of knowledge. Organisations may underestimate the power of national culture dimensions and the significant impact they have on KMs. Hence, organisations would have to consider appropriate modifications to strategies and KMs in different national contexts.

Although this study provides an interesting and relevant insight into the role of national cultures and their impact on the KMs, there are some limitations to the study. Although the results provide some positive associations, this may not be a causal relationship. A time-series database that enables the test of the KMs against the dimensions of national culture in a longitudinal framework in a future study would enable an understanding of any probable causation. This sample included only two countries—Italy and Brazil, although it provides an insight, wider studies that include more countries will enable the generalisability of the findings.

CONFLICT OF INTEREST STATEMENT

We have no known conflict of interest to disclose.

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