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Research Paper

The operational risk disclosure practices of banks: evidence from India and Romania

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ABSTRACT

The disclosure of information by banks is beneficial to several categories of the public as well as to the stability of the financial system. Operational risk disclosures are particularly important, since operational losses may impact both the financial condition and the reputation of banks. This paper compares the levels of operational risk disclosure in the banking industries of India and Romania. We develop an unweighted disclosure index with forty-three items, with data collected from the 2015 annual reports of all commercial banks in India and Romania. We then perform a regression analysis to investigate the extent to which banks' characteristics impact the level of operational risk disclosure in these two countries. First, our results reveal a similarly low level of disclosure, namely an overall index average of 27% in the case of India and of 29% in the case of Romania. These results are surprising, as India's culture appears to be more inclined toward transparency than Romania's. Second, our results point toward a positive association between bank size and the level of operational risk disclosure. This paper contributes to the existing body of research, which comprises few empirical studies on the particular topic of operational risk disclosure in banks.

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1 INTRODUCTION

Operational risk is a measure of a bank's internal efficiency (Wahlström 2006); thus, disclosure of operational risk can be useful both for managers and for creditors/ investors. Generally, there are multiple benefits for banks when disclosing useful and relevant information (Linsley and Shrives 2005). First of all, a high level of disclosure will assist the providers of funds in judging a bank's financial condition and risk profile, so they will be less likely to include a risk premium within the cost of capital. In addition, the need to disclose more risk information stimulates banks to improve their risk management practices, as they want to compare favorably Changes to sentence OK? with competitor banking institutions in this respect. Increased risk disclosure is also beneficial to bank supervisors, who will be able to conduct more effective monitoring since they have more of the knowledge needed to anticipate potential problems and thus take action earlier.

Operational risk disclosure holds a special and important place in the transparency debates currently besetting the banking industry. Most operational losses attract the Change OK? attention of the public, although the financial losses may be relatively small. Sometimes the reputational impact (such as the loss of customers or executive employees) is much more significant than the direct effect of the loss itself (Sturm 2013; Ţurlea and Mocanu 2016). In no other sector are the interdependencies and the potential consequences of individual corporate collapses as far-reaching and unforeseeable as in the banking sector (Ţurlea *et al* 2010; Mocanu and Stanciu 2015). In addition, operational risk is pervasive, complex and dynamic. Unlike market and credit risk, which tend to be in specific areas of business, operational risk is inherent to all business processes. The multifaceted nature of operational losses makes it difficult to define operational risk, and in some cases it is hard to draw the line between operational risk and other types of risk (Sturm 2013). Unlike credit and market risk, the Change OK? definition of operational risk explicitly takes into account external as well as internal events; therefore, it is broader and more complex (Wahlström 2006).

Given their complex and pervasive nature, as well as their potential reputational impact, operational risks have recently attracted increased attention from academics, professionals and regulators. The Romanian literature regarding operational risk management (ORM) comprises some theoretical studies (Anghelache *et al* 2016; Stanciu 2010), articles focused on the procedural aspects of ORM (see, for example, Dănescu and Muntean 2008; Socol *et al* 2006) and a few empirical papers (Herghiligiu 2013b; Matiş 2007; Dima 2009). Similarly, Indian academics have rec- Changes to sentence OK? ognized the importance of ORM and have analyzed the preparedness of Indian banks to manage operational risk and the challenges of effectively implementing the ORM framework (Rao and Ghosh 2008; Janakiramani 2008; Tandon and Mehra 2017).

However, the academic literature dealing specifically with India and Romania is comprised of only a few studies that are similar in topic and approach to the present research (see Hergheligiu (2013b) for Romania and Hossain (2008) for India). At the Not in References! international level, hardly any authors have undertaken comparisons of operational risk disclosure practices in multiple geographical settings. Most of the studies center on the banking system of one country only (De Melo and Leitão 2018; Nahar *et al* 2016; Alves and Matias 2014; Gomes *et al* 2012; Alves and Cherobim 2009; Avram and Skully 2007; Cherobim and Alves 2006). Only Carvalho *et al* (2004) and Helbok and Wagner (2006) had a heterogeneous sample of banks from around the globe, while Willesson (2014) focused his research on a rather homogeneous group of countries: the Nordic countries. However, none of these studies took cultural differences as a determinant of operational risk disclosure into consideration, which increases the originality of the present study. Given the scarcity of research on operational risk Changes to sentence OK? disclosure by banks and the growing importance of this area, the contribution of the present study is to fill this gap in the academic literature and offer new insights on the topic.

The objective of our research is to perform a comparative analysis of the extent of operational risk disclosure by banks in two countries: India and Romania. From a methodological point of view, this research is empirical in nature. We collected data Changes to sentence OK? from the annual reports of 2015 from twenty-eight Romanian and forty-five Indian commercial banks, a sample which represents about 100% of the population. The Change OK? data collection framework is an unweighted disclosure index with forty-three items grouped into nine categories, which we developed based on an extensive review of existing studies, regulatory frameworks and selected disclosures. This methodological approach is supported by numerous other authors who have employed the same instrument in data collection and analysis (De Melo and Leitão 2018; Nobanee and Ellili 2017; Herghiligiu 2013a,b; Gomes *et al* 2012; Hemrit and Arab 2011; Alves and Cherobim 2009; Helbok and Wagner 2006; Carvalho *et al* 2004). In interpreting the results, we draw upon the cultural differences and resemblances between India and Romania, as highlighted by the cultural models developed by Hofstede (1980) and Gray (1988). In addition, we test, by means of a multivariate regression analysis, whether a bank's characteristics (such as size, age or profitability) explain the extent of disclosure on operational risk matters.

This paper is structured as follows. In Section 2, we review the international academic literature related to operational risk in the banking sector, focusing on studies that analyze the two countries. In Section 3, we substantiate the formulation of our research hypotheses. The research design is described in Section 4, and the research results are presented in Section 5. Last but not least, we highlight the main conclusions of the research in Section 6.

2 LITERATURE REVIEW

An extensive review of the international academic literature relating to ORM in financial institutions reveals that researchers have given only sparse attention to operational risk disclosure requirements (Pakhchanyan 2016; Zengin and Yuksel 2016). Table 1 offers an overview of prior literature on the specific topic of banks' operational risk disclosures. From a methodological point of view, most of the authors investigating this topic have chosen to apply an unweighted disclosure index comprising several items that vary in number from ten to twenty-seven (ten items: Gomes *et al* (2012); eleven items: De Melo and Leitão (2018) and Carvalho *et al* (2004); fourteen items: Nobanee and Ellili (2017) and Herghiligiu (2013a,b); eighteen items: Alves and Cherobim (2009); twenty-two items: Helbok and Wagner (2006); twenty-seven items: Hemrit and Arab (2011)). In all of these previous studies, data was hand-collected from annual reports, risk reports and other information publicly available on the banks' websites.

Please check the punctuation of the long entries in the table, as I have tried to standardise, which involved sometimes adding semicolons, for example. All OK? Also, in the Helbok and Wagner row, you had 'US$04 billion' and I deleted the zero, but maybe you mean 14, or 40?

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Some authors expand their research scope by performing regression analyses to identify potential determinants of the extent of operational risk disclosure by banks. Nahar *et al* (2016) include as explanatory variables the number of risk committees, the leverage (eg, the level of debt in the capital structure), the bank size and the existence of a risk management unit. Willesson (2014) takes into consideration both quantitative bank characteristics (eg, bank size, leverage, profitability) and qualitative characteristics (eg, a bank's listing status). Similarly, Hemrit and Arab (2011) choose to assess the influence of bank size, leverage and provision intensity upon the resulting disclosure index score, while Helbok and Wagner (2006) posit that banks' profitability and equity ratios have a significant effect on operational risk disclosure.

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The majority of studies on operational risk disclosure are limited to the analysis of one country, and mostly developed countries, such as Australia (Avram and Skully 2007), Brazil (De Melo and Leitão 2018; Gomes *et al* 2012; Alves and Cherobim 2009; Cherobim and Alves 2006), Portugal (Alves and Matias 2014) or Denmark, Finland, Norway and Sweden (Willesson 2014). Fewer studies have focused on developing countries such as Bangladesh (Nahar *et al* 2016), India (Hossain 2008), Tunisia (Hemrit and Arab 2011), Hungary (Herghiligiu 2013a) or Romania (Herghiligiu 2013b). Moreover, just a few authors have taken a comparative approach to studying operational risk disclosure practices in different countries. One example is the study of Carvalho *et al* (2004), which analyzed the annual reports of 115 financial institutions from Brazil, eighty-seven from the United States and sixty-five from Europe. Similarly, Helbok and Wagner (2006) investigated the disclosure of fifty-

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TABLE 1 Prior studies on operational risk disclosure in the banking system. [Table continues on next five pages.]

Author	Year	Country	Sample	Methodology	Findings
De Melo and Leitão	2018	Brazil	26 Brazilian commercial banks listed on the BM and FBovespa; annual reports of 2014	Disclosure index with 11 items and a score between 0 and 100 for each item; descriptive statistics; Mann–Whitney test	The banks generally have good compliance with the standards proposed by the BCBS on best practices for operational risk disclosure. No difference in disclosure level is found between banks listed on the traditional market and those listed in levels differentiated by corporate governance.
Nobanee and Ellili	2017	United Arab Emirates	All banks listed on both the Dubai financial market and Abu Dhabi securities market; annual reports in 2003–16	Disclosure index with 14 items; Mann–Whitney test; generalized method of moment system estimation	Both Islamic and conventional UAE banks have a low level of disclosure on operational risk matters. Results show that no relationship exists between the level of operational risk disclosure and the operating cashflow generated by all UAE-listed banks.
Nahar *et al*	2016	Bangladesh	30 banks listed on the Dhaka Stock Exchange (DSE); annual reports in 2007–12	Disclosure index with 107 items for several types of risk, including operational risk regression	The highest level of risk disclosures takes place in the operational risk information category, whereas the lowest is in market risk information. The debt-to-equity ratio is highly significant in specifications of operational and equities risk disclosure; however, it is significantly negative for market risk. The asset size of banks is a significant determinant of all categories of risk disclosures.

TABLE 1 Continued.

Author	Year	Country	Sample	Methodology	Findings
Alves and Matias	2014	Portugal	5 largest Portuguese banks ranked according to total assets; annual reports of 2010	Content analysis; reports of each bank analyzed based on 8 questions	The five banks had already completed the process required for an adequate ORM. However, neither of them showed any particular concern for the compliance with Basel III.
Willesson	2014	Denmark, Finland, Norway, Sweden	27 banks from Denmark, 3 banks from Finland, 21 banks from Norway and 12 banks from Sweden with total assets equivalent to at least €500 million; annual reports of 2007–10	Quantitative disclosure variables (eg, the number of words to describe each bank's operational risks and their management); qualitative disclosure variables (eg, whether stakeholders are able to evaluate the bank's riskiness by reading the content); regression	Banks do disclose voluntarily on the topic of operational risk, thus Basel II encouraged the disclosure of operational risk. Nevertheless, quality of operational risk disclosure is poor. Regarding disclosure quantity, bank size alone determines over 40% of the volume of operational risk disclosure. Leverage is negatively related to the operational risk quantity. The cost of debt and the profitability measures are not significant variables. Regarding disclosure quality, authors obtain effects similar to those observed regarding disclosure quantity and find that volume and quality are linked.

TABLE 1 Continued.

Author	Year	Country	Sample	Methodology	Findings
Herghiligiu	2013	Romania	41 commercial banks operating in Romania (including subsidiaries of foreign banks)	Disclosure index with 14 items	There is very poor compliance in Romanian commercial banks with the requirements related to operational risk disclosure: 51.21% do not give any information on operational risk.
Herghiligiu	2013	Hungary	33 Hungarian commercial banks; annual reports of 2012	Disclosure index with 14 items	Both the quality and quantity of operational risk disclosures by Hungarian banks are very poor.
Gomes *et al*	2012	Brazil	22 Brazilian banks listed on the BM and FBovespa; annual reports of 2009 and other disclosures	Content analysis; 10 items grouped into 7 categories; for each item, the banks received a grade from 0 (no disclosure) to 10 (full disclosure); descriptive statistics; Mann–Whitney test	The analysis found great heterogeneity in the banks' disclosure practices. No significant difference in disclosure level was found between banks listed in the segment traditional market and those listed in levels differentiated by corporate governance. The disclosure was still at a low level in relation to the Basel II requirements.

TABLE 1 Continued.

Author	Year	Country	Sample	Methodology	Findings
Hemrit and Arab	2011	Tunisia	14 insurance companies; annual reports over a ten-year period (2000–2009)	Disclosure index with 27 items grouped into 4 categories and an unweighted score as binary variable (for each item, 1 in case of disclosure and 0 in case of nondisclosure); regression analysis	The disclosure index depends largely on the banks' size, the leverage and the provision intensity. Large companies that have high provisions and/or high debt levels choose to disclose more in order to assure the market that operational risk is well managed.
Alves and Cherobim	2009	Brazil	24 Brazilian banks and 9 foreign banks that control Brazilian banks; 2003 and 2004 annual reports	Disclosure index with 18 items grouped into 9 categories and an unweighted score	The levels of operational risk disclosure in 2003 were, respectively, 17.13% (domestic banks) and 77.78% (foreign banks), while in 2004 the disclosure levels increased to 24.31% and 81.48%, respectively. Nonparametric tests indicated that the group of overseas banks reported more subcategories than the group of banks in the country, and that the number of subitems released by the two groups increased in 2004.

TABLE 1 Continued.

Author	Year	Country	Sample	Methodology	Findings
Hossain	2008	India	38 commercial banks from India; annual reports for 2002–3	Disclosure index comprising both mandatory and voluntary items; descriptive statistics; regression	India achieved a high standard of disclosure practice, especially in mandatory disclosure, and made progress in voluntary disclosure. Size, profitability, board composition and market discipline are proven to be factors affecting the extent of operational risk disclosure. The variables age, complexity and board composition were insignificant.
Avram and Skully	2007	Australia	10 Australian banks; reports over a six-year time period (1998–2003)	Quantitative and qualitative disclosures	The Australian banking sector response has been to increase the quality of operational risk reporting. There has not been a significant increase in the quantity of reporting.
Cherobim and Alves	2006	Brazil	4 listed financial institutions from Brazil; annual reports and Form 20-F for 2003	Content analysis (presence or absence of terms related to ORM); disclosure index with subitems grouped into 4 categories	The banks disclosed their understanding of operational risk and aspects related to ORM, despite the fact that the disclosure was not mandatory in Brazil. Form 20-F also included disclosures on operational risk, but only qualitative and not quantitative information.

TABLE 1 Continued.

Author	Year	Country	Sample	Methodology	Findings
Helbok and Wagner	2006	Global	59 banks from North America, Asia and Europe with more than US$4 billion in total assets; annual reports for a four-year period (1998–2001)	Disclosure index with 22 subitems grouped into 4 categories; descriptive statistics; logistic regression	Both the extent and content of banks' disclosure on operational risk increased substantially over the years. The disclosure is inversely related to banks' profitability and equity ratio.
Carvalho *et al*	2004	Global	115 financial institutions from Brazil, 87 from the US and 65 from Europe; annual reports of 2002	Disclosure index with 11 items	The level of disclosure on operational risk matters was higher in Europe compared with the US and was still unsatisfactory for Brazil, which at that time only made a timid attempt to comply with the disclosure requirements.

Source: own design.

nine banks from North America, Asia and Europe, while Willesson (2014) focused his research on a relatively homogeneous group of Nordic European countries. However, unlike our research, none of these studies considered cultural differences as a potential determinant of operational risk disclosure.

Regarding the specific case of the two countries that are the focus of this study – India and Romania – the existing body of literature on operational risks in the banking sector is scarce. In India, the operational risk literature focuses on the preparedness of Indian banks to manage operational risk as well as on identifying the challenges faced in the effective implementation of the ORM framework. Rao and Ghosh (2008) conduct a survey to examine various matters related to ORM among Indian banks. Their findings indicate that most Indian banks are still in the preparatory stage of ORM and lack competitiveness. Janakiramani (2008) explores the significant impediments to the implementation of the ORM framework for banks in India. These impediments are considered to be: insufficient internal data collection, difficulties in the collection of external loss data, and modeling complexities. Tandon and Mehra (2017) explore the range of ORM practices followed by Indian banks and compare these with banks worldwide.

To the best of our knowledge, only one study looks into the overall risk disclosures (Change OK?) made by listed banks in India: Hossain (2008). This researcher evaluates the disclosure levels of thirty-eight Indian banks using a disclosure index consisting of both the mandatory and the voluntary risk disclosures contained in the annual reports. The findings indicate that Indian banks are very compliant regarding mandatory risk disclosures but far behind in terms of voluntary risk disclosures. Further, Hossain (2008) reveals that size, profitability, board composition and market discipline variables are significant, whereas age, complexity of business and asset-in-place variables are insignificant in explaining the level of overall risk disclosures in Indian banks. However, it seems there are hardly any studies on the Indian banking industry (Changes to sentence OK?) that examine the exact topic of the present research, ie, the operational risk disclosure levels for banks in India. Moreover, very limited empirical work on operational risk has been found in the context of the Indian banking industry.

Like that of India, the Romanian literature on operational risks in general, and (Changes to this sentence and the next OK?) on operational risk disclosure in the banking sector in particular, is scarce. There is, however, some research in the form of theoretical papers, for example, those of Anghelache *et al* (2016) and Stanciu (2010). Anghelache *et al* (2016) offer a mere (Delete ‘mere’? Clarify?) definition of operational risks, describe the steps for quantifying operational risk and give an overview of qualitative approaches for operational risk measurement, such as setting up a sound system of internal control. Similarly, Stanciu (2010) explores both the approaches to and the changes needed in risk management in general, and in ORM in particular. The author discusses in detail the ORM process, the definition (Changes to sentence OK?)

of operational risk and its content, the operational risk regulatory framework and the solutions for ORM.

Another category of studies (see, for example, Dănescu and Muntean 2008; Socol *et al* 2006) focuses on the procedural aspects of ORM. Dănescu and Muntean (2008) provide solutions for assisting companies in effective risk management and controlling operational risks, taking into consideration some particularities of the Romanian banking system. More precisely, the authors offer practical, procedural guidance on how a risk-based internal audit (RBIA) could be developed for supporting organizations in ORM. On the contrary, Socol *et al* (2006) focus strictly on the process of managing operational risks and offer concrete guidance regarding the procedures that could be implemented by banks in operational risk identification, valuation, monitoring and management.

The Romanian academic literature on operational risks also includes empirical papers. Dima (2009) assumes that operational risk is mainly driven by transactions, performing a regression analysis which proves that the probability of operational losses increases as the volume and complexity of transactions increase. A different empirical approach, namely a case study approach, is taken by Matiş (2007), who focuses on the process of ORM in a selected commercial bank from Romania: Banca Comercială Română (BCR). The author describes in detail each of the steps that are part of the process of ORM at that particular bank: risk identification, risk assessment, risk monitoring and risk management.

There is only one study in Romania that deals with the particular topic dealt with by the present research, ie, operational risk disclosures in banks, which is an empirical study by Herghiligiu (2013a). The researcher scrutinizes the quantity and quality of operational risk disclosures in Romanian banks' annual financial reports by applying the model created by Haija and Hayek (2012). The sample consists of all banks active in Romania at the time the research was undertaken. The study's main findings are that

- both the extent and the content of banks' disclosures on operational risk are limited, which emphasizes the lack of interest in disclosing such information;

- to a large extent, banks do not meet the requirements of the National Bank of Romania on operational risk disclosure (for instance, 51.21% of the banks in the sample do not give any information on operational risk); and

- credit institutions in Romania do not have similar ways of disclosing information on operational risk in their annual reports, which makes it difficult to find and collect data on their disclosures.

3 DEVELOPMENT OF RESEARCH HYPOTHESES

In developing the research hypotheses, two perspectives have been adopted in order to investigate operational risk disclosure: the role of differing cultural traits on the one hand, and the need for legitimacy due to institutional pressures on the other.

First, we consider the impact of culture on the level of operational risk disclosure in differing banking setups. Culture has been defined as "the collective programming of the mind which distinguishes the members of one human group from another" (Hofstede 1980). The role of culture in influencing and explaining behavior in social systems has been acknowledged and explored in various fields, especially in anthropology, sociology and psychology. A framework for the comparison of different cultures was developed by Geert Hofstede and his research team. The Hofstede cultural model originally consisted of the following four dimensions: (1) individualism versus collectivism, (2) power distance, (3) uncertainty avoidance and (4) masculinity versus femininity.

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In terms of individualism, India has an intermediate score of 48, while Romania scores a low 30. Thus, Indian society can be characterized as having both collectivistic and individualist traits, while Romania appears to be a collectivistic society that fosters close, long-term commitments to social groups (family, extended family or extended relationships). In terms of power distance, both countries score highly (India: 77; Romania: 90), which indicates that the two societies appreciate a hierarchy, with its inherent inequalities.

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A significant difference between India and Romania lies in uncertainty avoidance. Indian people willingly tolerate the unexpected and accept imperfection. There are rules in place, but people in India often rely on innovative ways to "bypass the system". On the contrary, Romania exhibits a very high preference for avoiding uncertainty, which means that rigid codes of belief and conduct are maintained while unorthodox ideas and behavior are barely tolerated. There is also a difference between the two countries in terms of masculinity versus femininity: with a score of 56, India can be considered a masculine society, while, with a score of 42, Romania can be seen as a relatively feminine society. In India, work is the center of one's life and people place great importance on visible symbols of success in the workplace. In contrast, the people of Romania focus on well-being in their work lives, and this status is not displayed.

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Gray (1988) expands Hofstede's model at the accounting subculture level and identifies four values, which he correlates with Hofstede's cultural dimensions: (1) professionalism versus statutory control, (2) uniformity versus flexibility, (3) conservatism versus optimism and (4) secrecy versus transparency. One of these value dimensions is particularly relevant in the context of the present research, namely secrecy. Considering Romania's scores for Hofstede's cultural dimensions, and in

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accordance with Gray's hypothesis, Romania seems to have a preference for secrecy. Generally, such a predilection is consistent with strong uncertainty avoidance, high power distance, collectivism and femininity, which appears to be the cultural profile of Romania. In comparison, India has lower scores than Romania in terms of power distance and uncertainty avoidance, and higher scores for individualism and masculinity. Consequently, compared with Romania, India is much more inclined toward transparency than secrecy. Therefore, we formulate the following hypothesis.

(H_1) The level of disclosure on operational risk issues is higher in India than in Romania.

Second, we view the process of risk-related disclosure in the larger context of legitimacy as part of institutional theory. Legitimacy is defined as "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman 1995). Within the framework of institutional theory, legitimacy stems from conformity with institutional pressures. The process through which a company seeks approval from groups in society is the fundament of legitimacy (Kaplan and Ruland 1991). As argued by Oliveira *et al* (2011), compliance with any minimum disclosure requirements promotes legitimacy. Stakeholders can assess this legitimacy through monitoring. Generally, the proxy for closer monitoring by relevant stakeholders is public visibility, which we intend to measure through the size, age and profitability of the selected banks. Not in References!

Larger companies are generally more complex, more exposed to inherent risk and more visible to relevant stakeholders (Brammer and Pavelin 2008). Due to their inability to participate in the management of a bank, such stakeholders place greater importance on information about risk exposures and risk management practices. Therefore, the bigger and more publicly visible a bank, the stronger the pressures that influence it to offer risk-related information in order to fulfill stakeholders' expectations (Oliviera *et al* 2011). In other words, from an institutional perspective, it should be expected that publicly visible banks (ie, bigger banks) enhance their legitimacy by conforming to institutional pressures associated with the requirements of the BCBS regarding operational risks. Changes to sentence OK?

Indeed, previous research suggests that bank size influences the extent of risk disclosure. Linsley *et al* (2006) analyzed the contents of annual reports of nine banks from the United Kingdom as well as nine banks from Canada in 2001. They found that the level of risk disclosure is positively associated with bank size (measured by total assets and market capitalization). By means of a multivariate regression analysis, Hossain and Reaz (2007) as well as Sanchez-Ballesta and Bernal Llorens (2010) discovered a positive and statistically significant relation between size as an explanatory variable (measured by total assets) and corporate disclosures as a dependent Changes to this sentence and the next OK? Change OK?

variable. Similarly, Oliveira *et al* (2011) found that risk-related disclosures are positively associated with bank size. This may be explained by the fact that the cost of collecting and disseminating information is lower for larger institutions, which are therefore able to provide greater disclosure. All things considered, our second hypothesis is as follows. Change OK?

(H_2) There is a positive association between a bank's size and its level of operational risk disclosure. Change OK?

Hossain (2008) indicated a positive association between profitability and corporate disclosure in the context of the Indian banking industry, while Willesson (2014) and Linsley *et al* (2006) could not find a relation between the two. However, Linsley *et al* (2006) suggest that profitability results from good risk management. They argue that one of the reasons for a bank to signal its risk management abilities through disclosure is because there is a positive relation between risk management abilities and profitability. A bank that displays excellent risk management capabilities might increase its financial performance. Consequently, banks with lower profitability could potentially be more willing to disclose further information regarding their risk management in order to demonstrate a good financial condition and thereby enhance their reputation. Moreover, Hemrit and Arab (2011) state that a company with high profitability may choose not to reveal information pertaining to risk in order to maintain a competitive advantage. Indeed, Helbok and Wagner (2006) found a negative relationship between operational risk disclosures and profitability. In line with these arguments, our third hypothesis is as follows.

(H_3) There is a negative association between a bank's profitability and its level of operational risk disclosure.

The potential impact of a bad reputation on a company's financial situation could be fatal, especially in the case of banks, whose activities are based on trust (Eckert and Gatzert 2017). Fombrun (1996) defines corporate reputation as "a perceptual representation of a company's past actions and future prospects that describes the firm's overall appeal to all of its key constituents when compared with other leading rivals". Building a reputation requires consistency in behavior within the bank as well as consistency in disclosure through time. Specific disclosure actions are taken by banks not because such disclosures directly communicate information to markets, but mostly because they may enhance or impair the banks' reputation (Gibbins *et al* 1990). In line with the legitimacy theory, the public reputation of a bank and depositors' level of confidence in it are determined by how long the bank has been operating. As Oliveira *et al* (2011) point out, it is expected that the longer a bank has been established, the higher its reputation level. In other words, higher levels of disclosure are expected to build and sustain reputation. Hence, we posit that older banks disclose more information on operational risk than recently established banks. Change OK?

(H_4) There is a positive association between a bank's age and its level of operational risk disclosure.

4 RESEARCH METHODOLOGY

The target population for this study consists of commercial banks that operated in India and Romania during the 2015 financial year. The unit of analysis is the individual commercial bank. The lists of banks published on the official websites of the Reserve Bank of India and the National Bank of Romania serve as our sampling frame. In order to highlight banks' disclosure related to operational risks, we have chosen to collect data for all twenty-eight commercial banks in Romania and for all forty-five public and private sector banks active in the banking sector of India. Hence, the actual sample represents approximately 100% of the population.

The sample of twenty-eight commercial banks in Romania is structured as follows: two are state owned, three have the majority of their capital held by Romanian private entities, and the remaining twenty-three commercial banks are privately owned by foreign entities. We have included in the sample strictly commercial banks, meaning that cooperative banks and branches of foreign credit institutions have been excluded. In the case of India, our sample of forty-five public and private sector banks is structured as follows: twenty-seven are nationalized banks, where the majority of stakes are held by the government, and eighteen are private sector banks.

The internet is our major tool for data collection. The main sources of data for this research were annual reports as well as other relevant pieces of information published on the official websites of the selected banks for the 2015 financial year. More precisely, we gathered data from publicly available reports as at December 31, 2015 (for Romanian banks) and March 31, 2015 (for Indian banks). The financial year in Romania overlaps with the calendar year and lasts from January 1 until December 31, while this one-year period in India starts from April 1, $N-1$, and ends on March 31, N. Since this study focuses on compliance and the data collected is mainly qualitative, this difference between the two countries regarding the financial year does not impact the relevance of the data collected, nor are adjustments of this data necessary. Changes to sentence OK?

In order to enable a meaningful analysis, we have developed an index, which we used as a collection data framework (see Appendix 1 online). This index is more comprehensive than the indexes applied by similar studies and comprises forty-three items grouped into nine categories. In accordance with methodology widespread in the extant body of research (see, for example, Nobanee and Ellili 2017; Gomes *et al* 2012; Hemrit and Arab 2011; Hossain 2008), the disclosure index is unweighted in

TABLE 2 Measurement of the explanatory variables.

Explanatory variable	Expected relation with the OR disclosure level	Measurement
Age	Positive association	Number of years since commencement of operations
Size	Positive association	Natural log of total assets
Profitability	Negative association	Net profit for the year/total assets

Source: own design.

order to limit subjectivity. We applied a dichotomous procedure in which an item scores 1 if disclosed and 0 if not disclosed. Thus, all items of the index are considered equally important to the average user. Based on the element-wise average of the disclosure index scores, we have split the disclosure levels of the analyzed banks into the following five categories: fairly disclosed (disclosure level 80% or above); disclosed to some extent (disclosure level 60–79%); low degree of disclosure (disclosure level 40–59%); very low degree of disclosure (disclosure level 30–39%); and extremely low degree of disclosure (disclosure level below 30%). This categorization has enabled a pertinent element-wise comparison of the two countries.

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In addition, we have performed a multivariate regression analysis for India (model A) and Romania (model B). The dependent variable of the econometric model is the disclosure index score, calculated for all the Indian (respectively, Romanian) banks selected in this study. In order to test for the factors affecting operational risk disclosure levels among Indian and Romanian banks, three explanatory variables were considered: a banking institution's age, size and profitability. The measurement of these independent variables in the multivariate regression analysis is presented in Table 2.

5 RESULTS

The extent of operational risk disclosure in India and Romania is presented in Table 3, which displays the average percentages of banks disclosing on each group of operational risk-related items. We have classified these average percentages into five categories for a better overview of the comparative disclosure levels within the Indian and Romanian banking sectors. The detailed research results, presented item-wise, are shown in Appendix 1 online.

'banks' removed many times in this table to save space, as I didn't think the word was needed to make sense of the table: OK?

Relevant for data interpretation are the specific regulations on ORM in the analyzed countries, namely Reserve Bank of India (2005) and Regulation 5/2013

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TABLE 3 Comparative analysis of operational risk disclosure by Indian and Romanian banks.

Disclosure index elements	Indian and Romanian banks	FD (above 80%)	DSE (60–80%)	L (40–60%)	VL (30–40%)	EL (below 30%)
Operational risk strategy	Indian			✓		
	Romanian			✓		
Operational risk organization structure	Indian			✓		
	Romanian				✓	
Operational risk identification tools	Indian					✓
	Romanian				✓	
Operational risk assessment and measurement	Indian				✓	
	Romanian				✓	
Operational risk monitoring tools	Indian					✓
	Romanian			✓		
Operational risk reporting	Indian				✓	
	Romanian				✓	
Operational risk mitigation/control	Indian			✓		
	Romanian					✓
Operational risk culture and awareness	Indian					✓
	Romanian					✓
Quantitative information on operational risk	Indian					✓
	Romanian					✓
Index average	Indian					✓
	Romanian					✓

FD, "fairly disclosed" category. DSE, "disclosed to some extent" category. L, "low level of disclosure" category. VL, "very low level of disclosure" category. EL, "extremely low level of disclosure" category. *Source*: own design.

(National Bank of Romania 2013). Overall, the Romanian regulations, though prescriptive, are rather general and imprecise, while the guidance offered to banks in India seems to be more extensive, more practice-oriented, and more focused. These attributes of the guidance might contribute to differences in disclosure levels between the two countries.

When comparing disclosure in the two banking systems at the groups of items level, we note that Indian banks disclose more than Romanian banks in two main categories: operational risk organization structure (43% in Indian versus 33% in Romanian annual reports) and operational risk mitigation/control (45% in Indian versus 29% in Romanian annual reports). However, Romanian banks have a higher level of disclosure than Indian ones with regard to three main aspects: operational risk monitoring tools (43% in Romania versus 13% in India), operational risk reporting (37% in Romania versus 32% in India) and operational risk identification (21% in Romania versus 0% in India).

Operational risk strategy is the most disclosed element of the index for both Indian and Romanian banks. Defining operational risk, setting its objectives and drafting an ORM policy statement are the basic steps of any ORM process. Moreover, both the Indian and the Romanian regulations accept the same understanding of operational risk as given by the BCBS. Hence, about half of the banks both in India and Romania offer information about these issues in their annual reports. Still, the average values (53% for India and 57% for Romania) indicate low levels of disclosure on operational risk strategy.

Our empirical results show that a greater number of Indian banks disclose information about their operational risk organization structure than Romanian banks. This may be attributable to the fact that the Reserve Bank of India (RBI) offers very specific recommendations with regard to the governance and organization structure needed for the ORM process. The legislators not only clearly state the organizational structure and responsibilities of those charged with governance but also include a typical organization chart for supporting the ORM function. By comparison, Regulation 5/2013 (see National Bank of Romania 2013) is very general and lacks any instructions. Given this background, the average value for this element of the index in Indian banks indicates low levels of disclosure, while for Romanian banks it indicates extremely low levels of disclosure. Changes to sentence OK?

Operational risk identification tools are barely discussed in Romanian regulations, while RBI guidance dedicates several paragraphs to the topic, the importance of which is explicitly stated. Surprisingly, none of the Indian banks mentions anything about operational risk identification tools in their annual reports. The level of disclosure in Romania is comparatively higher but still low if considered alone (only 21% of the banks in Romania disclose information on the tools applied to identify operational risk). Consequently, the disclosure levels with regard to operational risk identification tools remain very low in both Indian and Romanian banks.

Similarly low levels of disclosure for the item "operational risk assessment and measurement" are observed among the Indian and Romanian banks (34% and 31%, respectively). Related to this matter, most of the analyzed banks indicated they have built a comprehensive database of losses to effectively assess and measure operational risk. Other frequently mentioned tools are self-assessments and key risk indicators, which are equally essential for the effective assessment of operational risk in banks. Regarding the item "operational risk monitoring tools", a large variation in the disclosure levels of Indian and Romanian banks is observed. Low levels of disclosure (43%) are observed in the case of Romanian banks, whereas extremely low levels of disclosure (13%) are exhibited by Indian banks. A slightly greater number of banks in Romania compared with India (37% versus 32%) discuss “operational risk reporting” in their annual reports. Change OK?

With regard to one of the most important aspects of ORM, ie, “operational risk mitigation and control”, the extent of disclosure is greater for Indian banks (45%) than for Romanian banks (29%). This may again be explained by the extant guidance provided by regulators on operational risk mitigation and control. Thus, low levels of disclosure are exhibited by Indian banks, whereas extremely low levels of disclosure are exhibited by Romanian banks in this regard.

Moreover, extremely low disclosure levels for “operational risk culture and awareness” are found both for the Indian as well as Romanian banks. This indicates that both categories of banks fail to view culture as an important aspect of ORM. Disclosure levels concerning quantitative information on operational risk are found to be slightly higher for Indian banks (16%) compared with Romanian banks (7%). Hence, not only Indian but also Romanian banks exhibit extremely low levels of disclosure in this regard. This highlights the need for greater disclosure of quantitative information on operational risk.

It is important to note that the average value for each of the index elements is less than 60%, indicating rather low levels of disclosure being exhibited by banks in both India and Romania. The overall index average – 27% for the Indian banking industry and 29% for the Romanian banking industry – points toward extremely low levels of disclosure on operational risk. These averages are very similar for the two countries, and this seems to refute our first hypothesis, namely that “the level of disclosure on operational risk issues is higher in India than in Romania”.

In addition, the comparative analysis at a more granular level (ie, at the subitems level) reveals other differences between the analyzed banking sectors. In the Indian banking system, the extent of disclosure is very high with respect to the subitems (6) ORM committee (98% of Indian banks disclose on this) and (3) ORM policy (82%). Romanian banks have a very high level of disclosure regarding two subitems: (22) internal control system (96% of Romanian commercial banks disclose on this) and (23) internal audit function (93%). In other words, the vast majority of commercial banks in Romania offer information about their internal control systems and their internal audit functions. This can be explained by the fact that the Romanian regulator recognizes the high importance of these two functions. The regulations offer detailed recommendations on the setting up of a sound internal control system and emphasize the mandatory character of the internal audit function. However, in other specific risk matters, the extent of disclosure is higher in India than in Romania. More precisely, the two banking sectors differ widely with respect to several subitems: (6) ORM committee (98% India; 29% Romania), (29) anti-money laundering policy (53% India; 0% Romania) and (30) know-your-customer policy (53%

India; 0% Romania). Generally, the disclosure on these issues is extremely low in the Romanian banking sector compared with the Indian one, where they are disclosed by most of the banks.

One reason for this discrepancy lies in the differing levels of detail provided by the guidance in the analyzed countries. For instance, the RBI recommends that banks have risk management committees with specific responsibilities, whereas an ORM committee is clearly commended both in the text of Reserve Bank of India (2005) and in the detailed typical organization chart presented alongside it. Meanwhile, the National Bank of Romania recommends, in a general fashion, the setting-up of specialized committees (Paragraph 21 of Regulation 5/2013), without emphasizing the particular need for an ORM committee (see National Bank of Romania 2013). Changes to this sentence and the next OK?

Surprisingly, Romanian banks do not disclose any information concerning two crucial matters in ORM: the know-your-customer policy and the anti-money laundering policy. This lack of disclosure occurs despite the fact that all banks have strict responsibilities on these matters, set not only by the National Bank of Romania but also by the National Office for the Prevention and Control of Money Laundering, as well as European Union legislation. On the contrary, Indian banks do, to some extent, disclose issues about their policy on obtaining customer information and on preventing money laundering, even though the RBI does not openly request such disclosures in its guidance note on ORM (see Reserve Bank of India 2005). In our view, this might suggest that Indian financial institutions have a more in-depth understanding of the complex nature of ORM and its interconnections with all areas of business, an understanding that, on occasion, makes them go beyond the letter of the law.

In order to identify the potential factors affecting OR-related disclosures among Indian and Romanian banks, we have carried out a multivariate regression analysis that tests our hypotheses (see Tables 4 and 5). Having tested for all of the assumptions of a multivariate regression analysis, our results regarding the Indian banking sector indicate a significant positive association of bank size and level of operational risk disclosures (p-value 0.024). However, a significant negative association between bank age (p-value 0.0112) and profitability (p-value 0.0332) is observed. The adjusted R-squared (0.20153) indicates that 20% of the variation in the dependent variable is explained by the independent variables. In the case of the Romanian banking sector, only one of the variables, ie, bank size, indicates a significant positive association with the level of operational risk disclosures (p-value 0.0087). Age and profitability are found to be insignificant in explaining the level of operational risk disclosures made by Romanian banks. The adjusted R-squared (0.186468) indicates that approximately 19% of the variation in the dependent variable is explained by the independent variables.

Our second hypothesis, namely that "there is a positive association between a bank's size and its level of operational risk disclosure", is validated for both India Change OK?

TABLE 4 Regression models.

Model	R-squared	Adjusted R-squared	Standard error of estimate	Prob. (F-statistic)
A (India)	0.255971	0.20153	5.190832	0.006527***
B (Romania)	0.276861	0.186468	5.080591	0.047382**

*, ** and *** denote significance at 0.1, 0.05 and 0.01, respectively. *Source*: own design.

TABLE 5 Regression coefficients.

Model A (India)			Model B (Romania)		
Variables	Coefficients	Significance level	Variables	Coefficients	Significance level
Constant	–17.89514	0.3337	Constant	–33.51973	0.0446
Age	–0.078051	0.0112**	Age	–0.030065	0.6975
Size	1.503932	0.0240**	Size	2.233466	0.0087***
Profitability	–321.6594	0.0332**	Profitability	–45.10772	0.4410

*, ** and *** denote significance at 0.1, 0.05 and 0.01, respectively. *Source*: own design.

and Romania. The prior literature provides similar evidence of a significant positive relationship between size and level of risk disclosures (Oliveira *et al* 2011; Hemrit and Arab 2011; Sanchez-Ballesta and Bernal Llorens 2010; Hossain and Reaz 2007; Hossain 2008; Linsley *et al* 2006). Larger banks may feel more pressure to offer risk-related information, with the purpose of appropriately fulfilling their stakeholders' expectations. Moreover, larger banks usually have more internal resources for the collection and dissemination of information; therefore, greater disclosure is expected from them.

Our third assumption, according to which "there is a negative association between a bank's profitability and its level of operational risk disclosure", is rejected for the Romanian banks but confirmed for the Indian banks. This result is supported by the finding of Helbok and Wagner (2006), which establishes that less profitable institutions choose a higher level of disclosure with respect to operational risk in order to assure the market that this type of risk is well managed. Thus, it can be concluded that, in the case of the Indian banking sector, less profitable banks want to signal to the market about their better ORM practices. Changes to sentence OK?

Fourth, for both India and Romania, the results reject our hypothesis that "there is a positive association between a bank's age and its level of operational risk disclosure". The studies of Hossain (2008) and Oliveira *et al* (2011) indicate that age is an important determinant in the level of risk disclosures, as older banks are expected to disclose greater information compared with recently established financial institutions. The regression analysis shows a significant association between bank age and operational risk disclosure level in the case of the Indian banking sector, even though the sign is negative and not positive, as expected. One reason for this could be that newly set up banks are struggling to build trust and enhance their reputation, which makes them more willing to disclose information on their risk management

6 CONCLUSIONS

The main purpose of the present study was to assess the extent to which commercial banks from India and Romania disclose on various aspects related to operational risks, and whether factors such as cultural traits or bank characteristics influence the disclosure. We have collected data from the 2015 annual reports for all twenty-eight commercial banks in Romania and for all forty-five public and private sector banks in India. Hence, the actual sample represents about 100% of the population. For the purposes of this research, we developed an unweighted disclosure index with forty-three items grouped into nine categories. The level of operational risk disclosure for each bank in the sample was tested against this index, based on the information collected from the annual reports made publicly available by banks. Moreover, authors performed a multivariate regression analysis to investigate the extent to which banks' characteristics (such as size, profitability and age) affect the level of operational risk disclosure in the two countries.

To our knowledge, this is the second empirical study of Romania and the first of India to investigate operational risk disclosure levels in the banking industry. A review of the relevant international literature also shows that very few authors have undertaken comparisons of operational risk disclosure practices in several geographical settings. Our research goes beyond the existing data collection frameworks, designing and applying an improved comprehensive disclosure index. One of the main contributions of our research is the disclosure index itself, which could be applied in future studies for additional insights into the topic of operational risk disclosures. One limitation of the study lies in the potential subjectivity of the data-collecting process.

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The applied comprehensive disclosure index revealed that there are several differences between the two banking sectors – both at the groups of items level and at the subitems level. Romanian commercial banks have a higher level of disclosure than Indian ones regarding three groups of items: operational risk monitoring tools, operational risk reporting and operational risk identification. At the same time, Indian banks score better in two main categories of items: operational risk organization structure and operational risk mitigation/control. At the subitem level, our results show that almost all Romanian financial institutions disclose information about their internal control systems and their internal audit functions. Moreover, Indian banks are more transparent in three subitems: ORM committee, anti-money laundering policy and know-your-customer policy.

The general finding is that both countries are characterized by an inadequate level of disclosure with regard to operational risk. The overall index average exhibits extremely low levels of disclosure not only in the case of the Indian banking industry (27%) but also in the case of the Romanian banking industry (29%). Still, the level of disclosure is, on average, higher in Romania than in India. These findings are unexpected when comparing the cultural traits of the two countries, because Romania seems to have a culture that prefers secrecy, whereas India appears to have a culture that is much more inclined toward transparency. Nevertheless, the differences in disclosure highlighted at a more detailed level are congruent with the comparative analysis of the regulatory framework in the two countries, which revealed that the guidance offered by the RBI is much more explicit and detailed than the imprecise and general regulations of the National Bank of Romania.

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In addition to conducting a comparative analysis of the disclosure scores, we investigated whether certain characteristics of the bank influence the level of operational risk disclosure in the two banking systems. The results of the regression analysis are generally consistent with the findings of previous studies. We found that bank profitability and operational risk disclosures are inversely associated in the case of India. In other words, less profitable banks in India disclose more regarding operational risk in their annual reports. This conclusion contradicts Hossain (2008), who found a positive association between profitability and financial information disclosure, but agrees with the arguments brought forward by Hemrit and Arab (2011), Linsley *et al* (2006) and Helbok and Wagner (2006). Moreover, irrespective of country, our results indicate that the larger a bank is, the higher its operational risk disclosure level; this conclusion is consistent with findings in other cultural settings (Oliveira *et al* 2011; Sanchez-Ballesta and Bernal Llorens 2010; Hossain and Reaz 2007; Linsley *et al* 2006). In addition, bank age does not seem to affect the disclosure level in Romania (as found by Oliveria *et al* (2011) and Hossain (2008)), but it does impact the disclosure level in India. It appears that recently established Indian banks exhibit better disclosure levels compared with older ones.

Finally, our study provides strong empirical evidence that banks need to improve their ORM practices, so that, consequently, the quantity and quality of operational risk disclosure increases. This study is also useful to bank supervisors, who will be able to conduct more effective monitoring since they have more of the knowledge needed to anticipate potential problems and thus take action earlier.

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DECLARATION OF INTEREST

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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It wasn't clear what purpose all of the regulations, ordinances, etc., that appeared after this last reference were serving, and I couldn't see where they were mentioned in the text, so they have simply been deleted. If some or all of them need to appear, please explain their purpose and then we'll think about how they could be incorporated into the paper.