Contents

Adam Szyszka
Editorial — 281

Georg Stadtmann, Karl-Heinz Moritz, Kristin Berthold, Tobias Stadtmann
Passing on negative interest rates — 283

Magdalena Rosińska-Bukowska
The significance of intellectual capital in strategies of transnational corporations — 291

Patryk Dziurski, Agnieszka Sopińska
Does industry matter? Drivers and barriers for open innovation in high-tech and non-high tech industries—Evidence from Poland — 307

Rainer Busch, Karim Gassemi, Julie Papastamatelou, Alexander Unger, Christian May
Perception of formal and informal institutions by entrepreneurs in China, Morocco, and Germany – A cross-cultural pilot study — 324

Ladipo Patrick Kunle, Rahim Ajao Ganiyu, Peace Nkechi
An investigation of brand equity dimensions and customer retention: A perspective of postpaid telecom subscribers in Lagos State, Nigeria — 339

Jacek Gad
The association between disclosures on control system over financial reporting and mechanisms of corporate governance: Empirical evidence from Germany and Poland — 351

Mirosława Pluta-Olearnik

List of IJME reviewers in 2020 — 372
Welcome to the last issue of the *International Journal of Management and Economics* in 2020. This time we offer five papers in management and one paper in economics. Four of them include empirical research, and there are two original conceptual works. From the geographical perspective, articles in this issue cover China, Morocco, Germany, Poland, Nigeria, and, on a more general level, the Eurozone as a whole. Additionally, we publish one non-research paper that includes a book review.

In the first article, entitled “Passing on negative interest rates”, Kristin Berthold, Karl-Heinz Moritz, Georg Stadtmann, and Tobias Stadtmann focus on the current reality in Eurozone where the European Central Bank (ECB) lowered the interest rate on deposits to a negative level. They wonder under which conditions the commercial banking sector will be more or less reluctant to pass the negative deposit rate on its private customers. Using a game theoretical framework, they argue that the pressure to pass on the negative interest rate is particularly high if there are no switching costs to customers and the banking market follows a Bertrand model of competition.

Magdalena Bukowska-Rosińska, in her paper, “The Significance of Intellectual Capital in Strategies of Transnational Corporations” argues that there are three layers (organizational, innovative, and institutional) of intellectual capital that determine the international competitiveness of business leaders in the 21st century. Within each of the three layers, the author identifies key assets and requirements, which can be considered universal to all the leaders of transnational corporations in different industries. The paper is of conceptual character; however, it is based on an extensive survey of 252 transnational corporations conducted by the author.

The third paper, “Does industry matter? Drivers and barriers for open innovation in high-tech and non-high tech industries. Evidence from Poland”, is by Patryk Dziurski and Agnieszka Sopińska. Based on a survey of 122 Polish innovative firms, the study confirms that the concept of open innovation is adopted both in high-tech and non-high-tech industries, and there are no evident differences in drivers and barriers between these sectors. The study also reveals that the most important are market-driven motives, whereas the most important barriers are related to legal and financial aspects.

The fourth article presents an interesting cross-cultural pilot study about the perception of formal and informal institutions by entrepreneurs in geographically and culturally remote countries such as China, Morocco, and Germany. Rainer Busch, Karim Gassemi, Christian May, Julie Papastamatelou, and Alexander Unger interviewed 319 entrepreneurs and examined similarities and differences in the perception of informal and formal institutions and in their effects on self-efficacy and business strategy. They found that in all three cultural contexts, both formal and informal institutions play a significant role, however, because of different reasons and with different impacts on the actual views and actions of entrepreneurs.

The next paper, “An investigation of brand equity dimensions and customer retention: The perspective of postpaid telecom subscribers in Lagos State, Nigeria” is by Patrick Ladipo, Ganiyu Rahim, and Nkechi Peace. The authors conducted a survey among 368 postpaid telecom customers and found that four dimensions of brand equity (brand awareness, brand association, perceived quality, and brand loyalty) were correlated with one another and with overall brand equity. Similarly, the four dimensions significantly predict customer retention. Therefore, the authors argued that improvement in all the four dimensions of brand equity is crucial to customer retention in the mobile telecom industry.
The final article of this issue entitled “The association between disclosures on control system over financial reporting and mechanisms of corporate governance: Empirical evidence from Germany and Poland” was written by Jacek Gad. The author aims to determine the impact of selected corporate governance mechanisms on the scope of disclosures regarding control over financial reporting by publicly listed companies in Poland and Germany. He finds that the number of supervisory board committees and the number of meetings of the supervisory board have a significant positive impact on the scope of disclosures regarding control over financial reporting. On the contrary, the number of meetings of the audit committee has a significant negative impact on the scope of disclosures regarding control over financial reporting. The study also indicates the role of national factors in the scope of disclosures.


This is the last issue of the International Journal of Management and Economics in 2020. As usually on this occasion, we list the reviewers who helped us assess nearly 130 submissions considered for publication over the past year (vol. 56, issues 1–4). We would like to thank them cordially for their time and expertise in keeping our academic standards high. We also express our appreciation on behalf of the many authors who benefited from inspiring remarks and suggestions on how to improve their articles.

Traditionally, at the turn of the year, I would like to wish all readers, authors, and other members of our academic community a Happy New Year 2021. In the coming year, we wish you many intellectual challenges completed with a success and being a source of true satisfaction. Stay with us for more scientific reports and inspiring papers in further issues of the coming new volume.
Conceptual Paper

Georg Stadtmann*, Karl-Heinz Moritz, Kristin Berthold, Tobias Stadtmann

Passing on negative interest rates

https://doi.org/10.2478/ijme-2020-0022
Received: February 06, 2020; accepted: August 25, 2020

Abstract: Since the ECB has lowered the interest rate on deposits into negative territory, more and more commercial banks are also passing on this negative interest rate to their customers. The main aim of this paper is to answer the question under which conditions the commercial banking sector will be more or less reluctant to pass the negative deposit rate on to its private customers. We first clarify the circumstances under which demand deposits and excess liquidity arise, and what role quantitative easing plays in this context. Within a game-theoretical framework, it is derived that the pressure to pass on the negative interest rate is particularly high if there are no switching costs, and the banking market follows a Bertrand competition.

Keywords: excess liquidity, penalty interest, game theory, investor behavior

JEL Classification: G21, E43, E52

1 Introduction

"More and more banks and savings banks are also demanding negative interest rates from private customers. At most institutions there are allowances, at others, you pay from the first euro on top.” [Bakir, 2019]

In June 2014, the European Central Bank (ECB) lowered the deposit rate into negative territory for the first time. The deposit rate is the interest rate that commercial banks normally receive when they invest overnight – in the so-called deposit facility – liquidity with the central bank. The last time the deposit rate was cut was in September 2019 from – 0.4% to – 0.5% [Deutsche Bundesbank, 2019a]. This interest rate also applies to balances held by commercial banks on the central bank’s current accounts, i.e. the so-called “excess liquidity.”. Excess liquidity is the liquidity that commercial banks hold on accounts with the central bank above the minimum reserve requirement [ECB, 2017].

Before the outbreak of the financial market crisis, excess liquidity in the euro area played hardly any role. Only as the crisis unfolded, excess liquidity in the banking sector increased significantly, reaching around 1,800 billion Euro in the euro area in November 2019 [Deutsche Bundesbank, 2019b]. The following countries have mainly built up excess liquidity: Germany, France, the Netherlands, Finland, and Luxembourg [Baldo et al., 2017].

German banks in particular have a structural liquidity surplus of more than 600 billion Euro [Deutsche Bundesbank, 2020a]. Since commercial banks have to pay negative interest rates on surplus liquidity, this also affects their profitability.

The zero lower bound of the interest rate has received already much attention in the macroeconomic literature. For the euro area the term “zero lower bound” refers to the interest of the main refinancing operations. As already mentioned, the interest rate for the deposit is negative already for a longer period. Not too much literature focuses on the link between the negative rate on the deposit facility, the commercial...
banking sector, and its operations with the private sector. Especially, theoretical approaches are rare. We fill this gap in the literature by applying a game-theoretic framework to answer the question under which conditions the commercial banking sector will be more or less reluctant to pass the negative deposit rate on its private customers.

2 Creation of excess liquidity and demand deposits

First, however, it should be clarified which transactions give rise to demand deposits by private customers in the commercial banking sector, and which give rise to excess liquidity of commercial banks at the central bank. This analysis also highlights the link between excess liquidity (EL) and sight deposits.

First of all, the lending of 1,000 € by a commercial bank A to household 1 should be considered. In the amount of this sum, demand deposits (DD) of household 1 with Bank A are created. Furthermore, a cash ratio of 10% and a minimum reserve rate of 1% are assumed. Bank A must then pay out cash in the amount of 100 €. On the remaining 900 € demand deposits, a minimum reserve requirement of 9 € arises. Furthermore, it is assumed that Bank A does not have an EL in the initial situation. The commercial bank has a refinancing requirement, that is, revolving credit facility (RCF) of 109 € with the central bank. The effects of these transactions on Bank A’s balance sheet are shown in Account 1. It is clear from the balance sheet that this transaction does not generate excess liquidity.

Account 1: Balance sheet Bank A: Lending (figures in €)

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit (Household 1) 1,000</td>
<td>Demand Deposit (Household 1) 900</td>
</tr>
<tr>
<td>Minimum reserves 9</td>
<td>RCK 109</td>
</tr>
</tbody>
</table>

In the second example, the effects of the Quantitative Easing (QE) program is discussed. Household 2 sells a security in the amount of 1,000 € to the central bank (see Moritz and Berthold, 2019). However, the ECB does not buy the paper directly from the private household and does not provide it with cash. Instead, the transaction is settled via commercial Bank B. This has the following implications: The sale of the security of 1,000 € results in sight deposits of 1,000 € the resale of the security from Bank B to the central bank gives rise to a credit balance of Bank B with the central bank of 1,000 €. Thus, excess liquidity in the amount of 1,000 € initially arises.

Due to the cash withdrawal of household 2 and the minimum reserve requirement, Bank B has a liquidity requirement of 109 €, which it can cover by redeeming EL. EL remains in the amount of 891 €. The impact of these transactions on Bank B’s balance sheet is shown in Account 2:

Account 2: Balance sheet Bank B: Sale of securities (figures in €)

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit (Household 2) 1,000</td>
<td>Demand Deposit (Household 2) 900</td>
</tr>
<tr>
<td>Minimum Reserves 9</td>
<td>RCK 109</td>
</tr>
</tbody>
</table>

These considerations lead to the following conclusions:

- In the first example, lending by commercial Bank A to household 1 gives rise to demand deposits, but not excess liquidity. Thus the negative penalty interest rate has practically no impact on the commercial bank.

---

1 At the beginning of 2015 the ECB adopted the so-called “quantitative easing programme” [ECB, 2018]. The aim of the QE is to create monetary impulses for the economy through the purchase of securities and ultimately to defend deflation in the euro area [Deutsche Bundesbank, 2020b].
In the second example, the sale of securities by households to the central bank via commercial banks generates both excess liquidity and demand deposits. Demand deposits, however, increase more strongly than excess liquidity due to the minimum reserve.

How can commercial banks even react to negative interest rates from the central bank to avoid penalties?

- They could convert their excess liquidity into cash. However, this would entail considerable storage costs (storage in safes and insurance).
- You could make more loans. However, this requires a corresponding demand for credit, and the borrowers must be creditworthy. However, a minimum reserve ratio of 1% and a cash ratio of 10% results in a credit creation multiplier of 9.17. With excess liquidity of 1,800 billion €, the credit volume in the euro area would have to increase by about 16,500 billion € to reduce excess liquidity in the euro area through lending. Accordingly, additional lending by banks will not reduce the current excess liquidity in the euro area [ECB 2017].

The possibilities of avoiding penalty interest are therefore limited. To reduce the loss of profits due to the penalties, the only remaining possibility is to pass on the penalty interest to the bank customers. In addition to higher account management fees, negative interest on deposits ($i_c < 0$) would be an alternative. The following sections deal with this possibility.

### 3 Theoretical analysis based on game theory

#### 3.1 Symmetric scenario

The focus of the further explanations is exclusively on QE. Without any loss of quality of the model results, the following section abstracts from minimum reserve requirements and cash withdrawals. It is assumed that household 1 sells securities to the central bank via Bank A and household 2 via Bank B. Thus, both EL and DD incur exchange costs of 1,000 € each, which is assumed to be a perfect bank deposit market, and we neglect exchange costs incurred by a private household when changing commercial banks. Thus, two commercial banks are considered which, in their initial situation, set a deposit rate of, for example, zero for their customers. Both banks can charge negative deposit interest (active strategy) or leave the deposit interest at zero (passive strategy). If negative deposit interest is charged, it corresponds to the penalty interest rate of the central bank in the amount of $i_c = -0.5$.

It was also assumed that bank’s customers could not evade and had to leave their financial assets in the commercial banking sector. Thus, it is assumed that the costs of withdrawing and storing assets in the form of cash are prohibitively high. The amount of deposits held at Bank A or Bank B depends on the interest rate decision of both banks.

Tables 1 and 2 summarize the impact on the investment behavior of customers and the profits of the banks in each strategy combination:

- If both commercial banks adopt a passive strategy and leave the interest rate on deposits at 0%, there will be no reallocation of deposits. Both commercial banks pay a penalty interest of 5 € to the central bank.
- If both commercial banks charge a negative deposit rate, customers have no incentive to change their bank and will leave the money with their respective institutions. From the banks’ point of view, the penalty payments to the ECB correspond to the income from the customers’ negative deposit rates. The profits are then 0 €.
- If Bank A opts for an active strategy and passes on the negative interest rate, but Bank B opts for a passive strategy, household 1 will liquidate its deposits with Bank A and invest them with Bank B. Bank A loses its deposits, and Bank B holds 2,000 €. However, this restructuring of deposits is also associated with a change in excess liquidity. As a result of the restructuring of the deposits of the budget, commercial Bank A must transfer central bank money in the amount of 1,000 € to Bank B.
Bank A thus loses its excess liquidity and no longer has to pay penalty interest. Bank B now has excess liquidity of 2,000 € and has to pay a penalty interest of 10 €. Since Bank B does not pass on the penalty interest to its customers, its profit is $-10$ €.

Since the game is symmetrical, if Bank B charges a negative interest rate and Bank A leaves the interest rate at zero, the exact opposite happens.

Interestingly, the active bank can generate a negative external effect for the passive bank: The interest rate adjustment of the active bank decreases the profit for the passive bank! This effect will be discussed further below.

First, it should be examined whether there is a dominant strategy for Bank A:

- If Bank B chooses the active strategy, the best response from Bank A is to choose an active strategy as well.
- However, if Bank B chooses a passive strategy, the best response from Bank A is also to choose an active strategy.
- Regardless of which strategy Bank B chooses, the active strategy is always the best answer for Bank A. The active strategy is therefore a dominant strategy.

Since the game is symmetrical, the same considerations apply to Bank B. Bank B also has the dominant (active) strategy. This means that both banks choose an active strategy and pass on the negative interest to their customers. The strategy combination (active, active) therefore also represents the Nash equilibrium. No player has an incentive to rethink his strategy so that the opponent sticks to his strategy.

After several smaller cooperative banks such as Volks- und Raiffeisenbanken and savings banks had already implemented a negative interest rate, the decision of Comdirect Bank, which was the first major online bank to implement penalty interest rates, hit the headlines in December 2019 [Eßlinger, 2019]. In an interview, the managing director of Verivox – a major internet portal for comparing conditions – said: “The dam broke. At the latest when customers start to move deposits on a large scale, it will become more difficult for banks to escape the trend towards negative interest rates.” [Eßlinger, 2019]. This is the case because the negative external effect described above is generated by the shifting of funds.

### 3.2 Impact of the number of banks

In the theoretical case outlined above, only two banks operate. What would change if the number of banks was increased to $n = 100$, for example? The higher the number of banks, the lower the negative external

---

**Table 1.** Deposits with Bank A or Bank B (figures in €)

<table>
<thead>
<tr>
<th>Bank A</th>
<th>Bank B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>1,000/1,000</td>
</tr>
<tr>
<td>Passive</td>
<td>2,000/0</td>
</tr>
</tbody>
</table>

**Table 2.** Pay-off matrix for Bank A or Bank B (figures in €)

<table>
<thead>
<tr>
<th>Bank A</th>
<th>Bank B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>0/0</td>
</tr>
<tr>
<td>Passive</td>
<td>-10/0</td>
</tr>
</tbody>
</table>

---
effect that a bank that introduces the negative interest rate would have. If only one bank introduces a negative interest rate, the deposit volume for all 99 passive banks changes by only slightly more than ten monetary units, or 1000/99 monetary units to be precise. The larger the number of banks in the market the lower the negative externality that a bank can generate by changing its strategy. Thus the strategic effect is smaller, and the probability of a domino effect decreases.

3.3 Consideration of transaction costs

Of course, the relationships described above are only valid under the explicit and implicit assumptions made. An implicit assumption was, for example, that customers always switch completely to the bank that offers a higher interest rate. To be more precise, it was assumed that customers would immediately withdraw their money completely from a bank if the bank established a negative interest rate and there was another bank in the market that did not make this change of strategy.

We now assume that the exchange costs are greater than 5 € for a private bank customer. In this case, household 1 will not switch to Bank B if Bank A charges a negative deposit rate of –0.5%.

For the distribution of deposits and profits then follows:

As shown in Table 3, deposits with a bank always amount to 1,000 € regardless of the strategies. Table 4 shows that also follows that both banks have to pay 5 € penalty interest to the ECB in each scenario. If they do not charge negative deposit interest, their profits are always –5 €. If they charge a negative deposit rate, then their profits are zero.

We recognize that even taking into account switching costs, the active strategy combination represents the balance in dominant strategies.

However, it is also clear that the extent of the strategic effect is decisively influenced by the switching behavior of customers: If customers always stay with their traditional house bank because of excessively high switching costs, no negative externality occurs. For example, if Bank A introduces a negative interest rate, no customers migrate to Bank B, and Bank B’s profit does not fall.

3.4 Asymmetric scenario

In this section, the original base case scenario is used again. In the following, however, it was assumed that the two banks were of different sizes or that Bank A’s deposit surplus was higher than Bank B’s. In the scenario in which both banks chose a passive strategy, Bank A had 1,500 € and Bank B 500 € as deposit volumes. The corresponding payouts are also included in brackets in Table 5.

<table>
<thead>
<tr>
<th>Bank 3</th>
<th>Deposits with Bank A or Bank B (figures in €)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank A</td>
<td>Active 1,000/1,000 Passive 1,000/1,000</td>
</tr>
<tr>
<td>Bank B</td>
<td>Active 1,000/1,000 Passive 1,000/1,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bank 3</th>
<th>Pay-off matrix for Bank A or Bank B (figures in €)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank A</td>
<td>Active 0/0 Passive 0/–5</td>
</tr>
<tr>
<td>Bank B</td>
<td>Active 1/0 Passive 1/–5</td>
</tr>
</tbody>
</table>
Now two effects become clear:
- First, Bank A has greater pressure to change its passive strategy and adopt an active strategy.
- On the other hand, the asymmetric modeling of the banks also results in external effects of varying magnitude: If a large bank adapts its strategy and switches from passive to active, it generates a larger external effect than a small bank.

In practice, this means that the pressure is greatest at those institutions that have a relatively high liability overhang. In Germany, this generally applies to the Volks- and Raiffeisenbanks and the savings bank sector. On the other hand, it is clear that if a small institution adapts its strategy, the external effect is small. Even if already some smaller regional banks pass on the negative interest rate, this does not necessarily mean that all banks will change their strategy. This is the case because small institutions generate only a small negative external effect.

### 3.5 Sequential game

Until now, it has been implicitly assumed that the game is simultaneous and that both banks make their strategy choices at the same time. In reality, however, it is more likely that the interest rate decisions of banks will not be taken at the same time, but at different times.

Therefore, the theoretical analysis is now to be made somewhat more realistic. It is assumed that Bank A must first make an interest rate decision and that Bank B can then react to Bank A’s action. Otherwise, all assumptions of the base scenario remain valid. The question now is whether a different result results than with simultaneous decisions. It is known from game theory that equilibrium in dominant strategy with simultaneous decisions is also a subgame perfect equilibrium in sequential games. This is shown in the following.

The game is solved by the method of backward induction: Bank A must form expectations about how Bank B will behave in the future.

- If Bank A played the active strategy in the first turn, Bank B must decide between the payouts **active (0)** or **passive (−10)**. These payouts are highlighted in bold in the upper part of the game tree in Figure 1. This means that Bank B will choose an active strategy if Bank A would have chosen an active strategy before. Bank A takes this into account when making its decision.
- If, on the other hand, Bank A played the passive strategy in the first turn, Bank B must decide between the payouts **active (0)** or **passive (−5)**, which are shown in Fig. 1 in the lower part of the game tree. This means that Bank B will choose an active strategy if Bank A would have chosen an active strategy before. Bank A also takes this into account when making its decision.

These considerations make it clear once again: regardless of how Bank A decides on the first move, Bank B will always choose the active strategy.

- If Bank A chooses a passive strategy at the first level, Bank B chooses an active strategy and Bank A makes a loss of −10.
- However, if Bank A chooses an active strategy at the first level, Bank B also chooses an active strategy and Bank A makes a zero payout.

### Table 5. Asymmetry scenario (figures in €)

<table>
<thead>
<tr>
<th>Bank A</th>
<th>Bank B Active</th>
<th>Bank B Passive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>1,500/500</td>
<td>0/2,000</td>
</tr>
<tr>
<td>Passive</td>
<td>2,000/0</td>
<td>1,500/500</td>
</tr>
<tr>
<td></td>
<td>(0/0)</td>
<td>(0/−10)</td>
</tr>
<tr>
<td></td>
<td>(−10/0)</td>
<td>(−7.5/−2.5)</td>
</tr>
</tbody>
</table>
Bank A will therefore also choose an active strategy. It can be seen that the result from the base scenario is robust compared to the assumption of a simultaneous game and that the same outcome is achieved.

4 Conclusion and outlook

According to the monthly report of the Deutsche Bundesbank [2019c], 23% of banks are already charging negative interest on current or call money accounts. For September 2019, they reported a “negative volume-weighted average interest rate” on demand deposits. How will this trend develop in the future? An important aspect is of course the future interest rate policy of the central bank. If the central bank reduces the deposit rate of commercial banks for balances with the central bank even further into negative territory, the losses will increase if the banks stick to their passive strategy and do not pass on the negative interest rate to their customers. Thus, the further the central bank lowers the interest rate level the greater the incentive to change strategy.

In the examples above we have assumed that the commercial banks, as part of their active strategy, pass on the negative deposit rate to their customers at a ratio of 1:1 and thus implement an interest rate of \( i = -0.5\% \). This assumption can be justified if there are no switching costs and the banking market follows a Bertrand competition.

To protect themselves from the negative external effects outlined above, another strategy option for commercial banks is to demand the negative interest rate only from new customers. This does not scare off the existing customers, but it does create a barrier to deter customers who are willing to switch.

Another (creative) option that banks have come up with to avoid a negative interest rate is to introduce fees for overnight deposit accounts. The difference, in our opinion, is that a negative interest rate could continue to cause damage to the bank’s image. Due to the custodian fees, it is expected that this image damage will not occur.

Our paper contributes to the literature which analyzes the interrelationship between the banking and the private sector. We can identify factors that increase or decrease the incentives for the private banking sector to pass on the negative rates to its customers. Our paper has its limitations because it only analyzes this issue in a theoretical framework. Therefore, future research should focus on the hypotheses derived by this model and should try to test the implications empirically.

References


Eßlinger, L. (2019), Comdirect is following – the first major online bank is charging penalty interest, and the third is even charging it from the first cent, Picture online, retrieved from https://www.bild.de/geld/mein-geld/konto-und-bank/strafzinsen-naechste-bank-erhebt-strafzinsen-ab-dem-ersten-cent-66452050.bild.html [5th December 2019].

Conceptual Paper

Magdalena Rosińska-Bukowska*

The significance of intellectual capital in strategies of transnational corporations

https://doi.org/10.2478/ijme-2020-0025
Received: May 8, 2020; accepted: September 22, 2020

Abstract:

Objective: This study is an attempt to identify crucial assets of intellectual capital (IC) of transnational corporations (TNCs). The author identifies key assets each of the IC layers: organizational, innovative, and institutional. Examining these complex constructions of IC and its comprehensive influence on achieving competitive advantage is justified as the topic has been investigated rarely till now.

Methods: The paper presents literature review and the results of an authorial survey (252 corporations). The author used the following methodology concepts: the Grounded Theory Method, the Social Network Analysis, and the Multidimensional Statistical Analysis.

Findings: The results of the conducted analysis do sustain the postulated hypothesis that the main pillars constituting the intellectual capital of the most powerful transnational corporations (leaders) are the same in terms of the core irrespective of the type of industry. Based on the conducted research, the author points to the three key requirements for each of three IC layers (organizational, innovative, and institutional).

Practical implication: The proposed model of layers of intellectual capital may be used to identify the relationship in question, or its lack of relationship, in other types of international business. Furthermore, the study results provide guidelines for executives of corporations with respect to intellectual capital management.

Originality/value: It is a new, original proposal for measurement and presentation of the relationship between international competitiveness of transnational corporations and their intellectual capital efficiency (pillars of IC-layers).

Keywords: corporation, intellectual capital, competitiveness, knowledge management

JEL Classification: O34, J24, F23, O30, M16

1 Introduction

It is extremely important for the modern international business to recognizing the special role of intellectual capital (IC) in the process of creating international competitiveness in a dynamically changing environment. Moreover, the need for a constant exploration of all three IC layers should be emphasized. It is necessary to identify the elements constituting individual IC-layers and emphasize the need for system exploration. The author puts forward in this paper his claim that this is caused by the requirement to adapt to the three following fundamental principles and new basic challenges for a modern international business: networking, coopetition, and orchestration.

The purpose of the study is to identify methods that allow the most powerful transnational corporations (Top-TNCs) to effectively transform the existing exhaustible resources (tangible assets) into intellectual

*Corresponding author: Magdalena Rosińska-Bukowska, Department of International Business and Trade, University of Lodz, Lodz, Poland. E-mail: magdalena.rosinska@uni.lodz.pl

© 2020 Rosińska-Bukowska, published by Sciendo. This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 License.
capital so that it is capable of self-improvement and multiplying itself. The study attempted to identify those features typical of individual IC subsystems that can be considered universal and that fulfill the key requirements of a given IC subsystem.

The author puts forward the claim that the three intellectual capital layers (organizational, innovative, and institutional) are a key force in determining international competitiveness of business leaders in the 21st century. The author identifies the key assets of each of the three IC layers: organizational capital (ORGC), innovative capital (INNC), institutional capital (INSC). Based on the conducted research, the author identifies the three key requirements for each of the three IC layers, which can be considered the same or similar for all the leaders of transnational corporations in different industries (TNC leaders).

The study has been divided into the following parts: the introduction, the literature review, three sections (with subdivisions) explaining the procedure and analysis, and conclusions. The author discusses new global challenges and trends in the strategies of contemporary enterprises that have emerged as a consequence of the growing importance of intellectual capital in building international competitive advantage. The present study scrutinizes the modifications to the competitiveness concepts of the Top-TNCs, emerging due to the challenges issued by the growing significance of intellectual capital in modern international business. The key aim of the paper is to determine the main pillars/features determining each of the three IC subsystems—the identification of crucial assets of the organizational, innovative, and institutional IC layers.

2 Literature review

The issues presented in the study are interdisciplinary because the approach combines three research domains: international business, global economy, and international management [Mead and Andrews, 2009; Coviello et al., 2014; McDougall-Covin et al., 2014; Morschett et al., 2015; Massa et al., 2016; Yaraghi and Ravi, 2017; Fatehi and Choi, 2019].

The author refers primarily to the following concepts:

- the behavioral theory of the firm, the concept of knowledge management process [e.g., Bonache and Brewster, 2001; Brandenburger and Stuart, 2005; Reiche et al., 2008; Sekiguchi et al., 2016; Gonzalez and Maertins, 2017; Sobolewska, 2020];
- the intellectual capital, the sustainable development, the management theory, the interdisciplinary theory of the firm [e.g., Zott et al., 2011; Achtenhagen et al., 2013; Bankvall et al., 2016; Leminen et al., 2016; Atalay et al., 2018; Pike and Roos, 2018];
- the concept of international competitiveness, the theory of global economy—different aspects [e.g., Massey et al., 2005; Axford, 2013; Hagen et al., 2014; Rosińska-Bukowska, 2017].

The issue under scrutiny in the present study is to raise awareness of the role of intellectual capital as a key force determining the international competitiveness of modern enterprises. It is necessary to identify the elements constituting the individual IC-layers and emphasize the need for system exploration. This is due to the requirement to adapting the three following fundamental principles and new basic challenges of a modern international business:

- networking and glocalization [e.g., Reagans and Zuckerman, 2001; Wassmer and Dussauge, 2012; Roudometof, 2016; Nyström et al., 2017];
- coopetition [e.g., Lou, 2005; Ritala et al., 2014; Klimas, 2015; Rosińska-Bukowska, 2017];
- orchestration [e.g., Sirmon et al., 2011; Abbott and Hale, 2014; Pedersen et al., 2014; Hurmelinna-Laukkanen and Nätti, 2018].

Therefore, the most powerful transnational corporations (Top-TNCs) develop their global business networks (GBNs) to use the potential of IC-layers effectively. The business concepts are embedded in the extensive and comprehensive business environment. The current debate revolves around the new capabilities and resources that emerge from mutual dependencies between business actors. The foregoing discussion implies that the business model must be based on the “four Cs” (4C): comprehensiveness,
corporateness, congruence, and creativity. There is ample evidence for the claim that a successful strategy is based on the awareness of the merits of knowledge-sharing among the many actors in global business networks. This notion is opposite to the classical view in which enterprises create value on their own as separate entities. [Stahle et al., 2011; Amit and Han, 2017; Nyström and Mustonen, 2017].

Further, this paper makes an attempt to address the issue of the degree to which these challenges are contemplated in the business practices of the Top-TNCs (the leaders of their industry). The author puts forward the view that, in order to analyze this matter, the discussion must focus on the role of intellectual capital in the competitiveness strategies of modern enterprises (based on the 4C concept) and the key determinants of individual layers of intellectual capital. The author’s views rest on the assumption that the competitiveness strategies of all the Top-TNCs take into account the growing capacity of the knowledge capital of their own network. The author emphasizes that there is a growing support for the claim that the competitiveness strategies of leaders in international business are based on networking, orchestration, and coopetition. The author’s findings support the claim that the development of TNC-leaders in each sector of industry is based on the activation of the same requirements of individual IC-subsystems. The present study attempts to make generalizations beyond the gathered data regarding the Top-TNCs leaders. The aim of this study is to identify several incontrovertible general conclusions for modern enterprises.

The author primarily relies on the following methodology concepts:

• the concept of the Grounded Theory Method [e.g., Savin-Baden and Major, 2013; Ralph et al., 2015; Stol et al., 2016; Hoddy, 2018];
• the concept of the Multidimensional Statistical Analysis [e.g., Barnett, 1976; Gnanadesikan, 1997; Borg et al., 2013];
• the concept of Social Network Analysis [e.g., Mirc, 2015; Yang et al., 2017; De Brún and McAuliffe, 2018].

Here, the analytical model is established on the basis of the assumption that improving competitiveness in the 21st century is the effect of the ability to constantly create added value based on the exploration of the multi-layered intellectual capital. We consider and define that the intellectual capital is one through which an organization's knowledge is improved based on the organizational network, the innovation process, and the use of institutional knowledge.

3 The international competitiveness in the 21st century—new challenges for enterprises

3.1 Theoretical framework

The 21st century brought a radical change in the determinants of building international competitiveness. At present, its key challenge includes the exploration of the knowledge capital of the whole multi-layer structure of a given organization, or the use of the resources collected on various levels and their simultaneous development (exploration).

The analyses of the pillars of strategies of the corporations (leaders of their industry) indicate that the most dynamically developing agents exert greater pressure on the role of knowledge management process (competency based approach, behavioral concepts, theories of innovation). They also treat the diversity of the global surroundings and locality specifically as a source of possible advantages, making use of this potential through a systematic increase of internationalization when doing a business (the theory of international production, the foreign direct investment theory).

However, the most important factor is the introduction of the following qualities into the management model: the understanding of the essence of coopetition, networking and orchestration to create adequate connections on many levels (the theories of mergers and acquisitions, the concepts of economic agglomeration, and industry clustering, and the management theories). This signifies the necessity to abandon traditional competition based on market strength and dominance of a single agent. Instead, it requires the creation of connections that improve innovation, the refinement of learning procedures, the
search for new methods of implementing skills, and the adaptation of organization methods and forms as well as management structures to fit the dynamic changes happening within the corporation.

It may be concluded here that these requirements may serve to emphasize the role of intellectual capital as a force to activating accumulated resources.

3.2 Conceptual framework

Nowadays, the exploration of knowledge resources of an organization as a whole is primarily important for building a model for competitiveness of the Top-TNCs. In this model, the development potential is based on combining the opposite components—cooperation and competition; localization and globalness; and standardization and adaptation. Further, exerting pressure on qualitative changes associated to both processes and products, particularly the quality of interaction infrastructure, is indispensable. Moreover, regular modifications to the mechanism of system coordination and regulating the procedures to improve the transfer of knowledge from all types of stakeholders are necessary. Further, the system control mechanism must involve the participation of all stakeholders for maintaining a balanced, long-term development of a corporation.

These requirements demand a 4C systemic approach, based on comprehensiveness, corporateness, congruence, and creativity. Comprehensiveness is a holistic approach to fulfill tasks. Corporateness is the ability to build all-level, permanent coalitions, where immanent features must include the possibility to coexist. As a consequence, the system responsible for the effective building of international competitiveness in the 21st century must be based on congruence, thus ensuring a harmonious coexistence with a multicultural global environment and a multitude of stakeholder groups [Kostova and Roth, 2003; Löbbers et al., 2017].

Creativity is a paradigm pillar of the international competitiveness of corporations which can be defined as combining skills, key competences, innovativeness, social responsibility, diversity of organization forms, and cultural dissimilarities into a single change-inspiring system, whose aim is to maximize the effect of synergy. The measure of system effectiveness is the skillfulness to generate added value, understand the ideas of socio-economic values, and co-create values [Porter and Kramer, 2011; Andelin et al., 2015; Rusconi, 2019].

As the above-mentioned principles are considered fundamental in the 21st century, it is necessary to take another look at the capital of corporations as a system enabling continual adjustments. Meeting these requirements is possible because of the existing appropriate structure of the system of resources and the modifications applied to the concept of managing them. So, understanding the essence of the systemic model of corporation resources and the holistic concept of managing a corporation based on this aspect is crucial. It also means emphasizing that the requirement of long-term competitiveness in the 21st century is a skillful exploration of intellectual capital which, in turn, helps increase economic capital.

A corporation’s success is largely depends on identifying its own development concept on the basis of its attributes, and an effective composition of the necessary qualities in every layer of the accumulated capital (both economic and intellectual). In order to depict the methods of implementing the principles of building international competitiveness by the Top-TNCs and enabling the fulfillment of the 4C systemic approach, it is necessary to describe the layers of corporate capital. The corporate capital is described in five sub sections, with two describing economic capital and three presenting intellectual capital.

4 The competitiveness of enterprises—the theoretical considerations regarding the role of intellectual capital

4.1 Theoretical framework

The principle of development of TNCs in the 21st century constitutes their specific philosophies of expansion. The strength of the most powerful enterprises is the result of their ability to change in accordance with the
rhythm of the global economy because of an aptitude for the accomplishment of integration and coordination of diverse, globally dispersed activities, taking into account the knowledge capital of the system created. The nature of development potential at present does not merely signify the ability to transfer capital, but the diffusion of its resultant knowledge (technology, qualifications, organization, management, and marketing methods), according to Wilkins [1998]. Therefore, resource ownership is not important and the crucial aspect is the ability to act systemically, which is to organize, integrate, and efficiently coordinate actions of various units in the process of fulfilling the adopted development strategy, which aims to create added value [Dicken, 2007]. Modern enterprises start to abandon centralization, specialization, and standardization and they are replaced with diversity, flexibility, and a creative approach to challenges. As a result, the developed mechanism transmitting the impulses of the dynamically changing environment is primarily significant to the efficiency and long-term competitiveness. Much of the current debate revolves around the role of knowledge capital as a multiplier of resources. This requires a new look at the central components of the development concept of modern enterprises, including appreciation of the non-economic layers of an organization's capital (an impact of intellectual capital) as fundamental.

According to the author, intellectual capital plays a special role in modern organizations. IC fulfills the function of an activator of the competitive system. It is responsible for the uniqueness of the configurations of strategic resources and skills—without it, the accumulated economic capital quickly undergoes devaluation. In an organization, IC is based on innovations, structures, and relationships. A power of successful organization is determined by the unique features of intangible assets: knowledge, intellectual property, organizational culture, management system, and the style of involvement of an organization in the institutional structures of the environment.

Corporation capital is a specific economic category capable of increasing and relying on the collected resources, which is used not only to fulfill purposes as they arise, but also to develop a given agent’s business [Wall et al., 2004; Bernstein, 2007]. An immanent feature of the capital perceived as such is its systemic nature, which means that the layers of capital are a system of connected vessels; totally this system is responsible for increasing prosperity as well as a stable and long-term development of the corporation. The capital of modern enterprise can be divided into five subsystems (two economic and three intellectual) and are described as follows [Rosińska-Bukowska, 2017]:

- **economic layers of corporate capital (the accumulated economic capital):**
  - market capital—co-ordination and allocation of rare resources or skills; it reflects possible combinations of their most efficient use in a given moment—global production systems;
  - financial capital—streams of the flow of financial capital; responsible for maintaining the agent’s financial liquidity (both current and long-term);
- **non-economic layers of the corporate capital (the intellectual capital):**
  - innovation capital—source of modern solutions and innovative techniques in the organization of the production process; the analysis of the expenditure for research and development and the number of new projects generated; providing the possibility of improvement of individual offers (products and operations), especially regarding key competences;
  - organizational capital—systematic modifications of the global chain of the creation of added value, due to the creation of paths of structural adjustments; making use of the opportunities provided by the international environment; exchange of work resources (quantitative perspective) into human capital (HC) that generates added value (qualitative perspective);
  - the institutional capital—it includes norms, habits, institutions that determine the value systems of a given civilization circle, country, region, society, etc.; responsible for skillfully meeting the requirements of multi-institutional global environment and the ability to creatively utilize its potential.

### 4.2 Conceptual framework

This work focuses only on the non-economic layers of corporation capital. The focus of this study is the impact of intellectual capital on the co-creation of the added value of corporation. The presented model
deals with the challenge of holistically describing the departments of intellectual capital that determine the efficiency of TNC actions. The concept of IC presented in this paper purposefully does not consider human capital (HC) as one of the three layers of intellectual capital, but a factor that permeates and dynamizes the whole system. It is a kind of IC which acts as the integrating force that enables a company to permanently achieve added value, but only with the simultaneous use of all categories of IC-assets—creativity and innovation, management and the organization of the corporate network structure as well as the institutional relations with all types of stakeholders. Human capital is an indispensable factor that bonds the whole organization together. Further, the functioning of both the whole and every individual part would be impossible (systemic approach) without HC.

Human capital is the foundation of intellectual capital [e.g.: Klaila and Hall, 2000; Dowling et al., 2013] which, in turn, is a multiplier of the accumulated economic capital. The function of human capital is utilizing the potential of the three IC subsystems simultaneously—activation of a TNC through:

- structures for knowledge transfers;
- innovations successfully created in the system;
- institutions providing a network of relationships of various forms.

Therefore, the author emphasizes that IC must include three subsystems: organizational capital (ORGC), innovative capital (INNC), and institutional capital (INSC), which are linked through the activity and creativity of human capital.

The current debate revolves around the role of a corporation’s knowledge resources [Nielsen and Michailova, 2007; Dijk et al., 2016]; around the creation, accumulation, organization, dissemination, implementation, and exploration of knowledge [Skyrme, 1999; Choong, 2008; Rusly et al., 2015]; around the ability of coopetition (combining competition and cooperation). Generally, different researchers [e.g., Bounfour, 2003; McCutcheon, 2008; Lefebvre et al., 2016; Dane-Nielsen and Nielsen, 2017; Rosińska-Bukowska, 2019] focus on their preferred aspects of knowledge management and intellectual capital and their role on building the competitive advantage.

4.3 Research gap identification

According to the author of this article, the key guidelines for intellectual capital to improve the effectiveness of competitiveness strategies include [Rosinska-Bukowska, 2019]:

- networking— (ORGC) the full pro-development openness, also extra-sectoral, the ability to combine globalness with locality (glocalization); the development of owner links, strategic connections and cooperative relations; the issue under scrutiny is the implementation of the strategy of networking internationalization [Blankenburg, 1995] which takes into account the socio-economic context;
- orchestration— (INNC) the management of the knowledge capital accumulated in the network on many levels in order to successfully create solutions, including socially-useful innovative values; the replacement of hierarchic management with the regulatory model [Shleifer, 2005]; innovations as directions for strategy in order to explore all possible types of creating value [Gereffi et al., 2005];
- coopetition— (INSC) the ability to use competitive advantage based on the idea of sustainable development; a concept of establishing connections with a multi-cultural institutional environment by putting together cooperation with competition and benchmarking [Wireman, 2004], isomorphism [DiMaggio and Powell, 2000].

These valuable assets take the form of sub-systems of intellectual capital, providing access to the most valuable resources. Those resources create long-term competitiveness, because they allow us to permanently maintain the ability of a corporation (business system) to create added values.

In total, the assessment of the capital of modern organisations should be based on the assumption that all of resources of an organization are made up of tangible assets, the combination of market and financial capital (economic capital), and intangible assets (intellectual capital), which encompass innovation, organizational, and institutional capital, which determine the development potential. IC comprises not only
the intellectual property that can be evaluated but also a complicated series of processes and determinants, such as cultural or social ones, including organization and management.

To sum up, the competitive advantage of the Top-TNCs (constantly developing their GBNs) relies on understanding the essence of the systemic model of the intellectual capital (Figure 1) responsible for maintaining international competitiveness in a dynamic contemporary environment. Given the centrality of this issue and the fact that there is insufficient research on sub-systems of intellectual capital, the author presents the concept of the study on the key determinants of the three IC-subsystems which work as a system to create added or additional values.

5 The corporate systemic model of intellectual capital—the analysis of the three IC-subsystems based on empirical studies for the Top-TNCs

5.1 Research assumptions and development of hypotheses

The international competitiveness of the contemporary corporation is, to a greater degree, the contemplation of advantages of its intellectual capital. The changed business models of corporations in the 21st century are based on three IC subsystems: organizational, innovative, and institutional.

The key challenge is to identify the pillars of development of the strategy, which will help achieve unity in the goals of individual participants of a corporate network and fulfill the long-term aims of the whole organization. Choosing adequate ways of implementing a corporate strategy is highly significant, since it makes it possible to translate knowledge, skills and competences of individual participants of GBNs (built around the major corporation) into individual intellectual capital subsystems.

The strategy guidelines (formulated in the strategy and presented in the annual reports of TNCs) should be properly formulated and understandable for members of the corporate system to serve this purpose. The main challenge involves understanding the idea of the systemic operation of IC layers (ORGC, INNC, and INSC) simultaneously and clearly formulating the requirements for these components, i.e. networking, orchestration, and coopetition in relation to a particular entity.

It has been a long time that the researchers have called on others to include the influence of interpersonal and institutional relations on the organizations’ business processes in the studies of competitiveness concepts. These organizations could be internal (employees, managers), external (suppliers, subcontractors, clients, service providers) or institutional (education and administration units,
all types of stakeholders). The international competitiveness of enterprises in the 21st century is based on the deeply rooted organizational, innovation, and institutional network connections. This view is of essentially crucial when discussing intellectual capital and its layers.

This study is an attempt to address the issue of the degree to which these challenges are presented in the business strategies of the Top-TNCs and the leaders of their industry sectors. Further, attention should be paid to the role of intellectual capital in the competitiveness strategies of TNCs and the determinants of individual layers of IC to analyze this matter. Current research seems to validate the view that the role of intellectual capital in the competitiveness strategies of companies is huge. The debate about components of IC is still inconclusive. The author puts forward the claim that there is insufficient research to draw any firm conclusions about determinants of individual layers of IC. The research hypotheses of this paper are as follows:

H1: the Top-TNCs make intellectual capital the main/central point of their competitiveness strategies;
H2: the intellectual capital of the Top-TNCs is based on the three subsystems: organizational, innovative, and institutional;
H3: the development of the Top-TNCs (leaders in each sector of industry) is based on the activation of the same features/requirements of individual IC-subsystems.

5.2 Research methods, types, and sources of data

The main objective of the article is to emphasize the growing importance of intellectual capital in modern international business and its role as a potential key factor in determining international competitiveness. The author draws on the concept of the Grounded Theory Method (GTM) and indicates the main pillars constituting every one of the three IC subsystems in the strategies of the Top-TNCs. The analysis of corporate documents is aimed at identifying three basic values/requirements for each of the three layers of intellectual capital which are the same or almost the same for TNC-leaders.

The conducted research involves:
1. the selection of study subjects (the Top-TNCs); this study draws on the classification titled Top 100 non-financial TNCs;
2. the obtained research samples (252 TNCs) are divided into the following industry sectors: automotive—17, electronics—26, pharmaceutical—30, telecommunications and media—38, petroleum—25, industrial goods and services—40, consumer goods and services—36, public goods and services—29, multi-branch—11;
3. the ranking of corporations are in accordance with the constructed synthetic indicator of the creation of added value (SICAV), done on the basis of the method of linear ordering (Multidimensional Statistical Analysis);
4. the identification of three leaders in each sector; the leaders of individual sectors are chosen on the basis of the author’s own calculations using SICAV;
5. the analyses of the corporations’ complex annual reports for all three leaders in each sector in order to recognize the key factors of IC, included in the given corporations’ development strategies;
6. the identification of the three key assets for each IC-layer: organizational, innovative, and institutional ones, which can be considered the same for all TNC leaders; this research draws on conducted research in accordance with the principles of the GTM.

The measure (SICAV) that was calculated in step 4 encompassed the values of parameters including all layers of TNC capital—both economic and intellectual. The component reflecting the condition of the economic capital of a corporation is the return on equity which connects three important factors—operational effectiveness, the expressed return on sales as well as the effective use of purchased assets, and financial leverage—on profitability. After accepting the role of economic capital, it is necessary to focus on the key aspects of each IC layer. This should be ensured by building parameters that enable the assessment of varying methods for building a competitive position based on intellectual capital into the measure.
Issues such as how much they draw on the multicultural potential of human capital, arbitrage abilities that stem from investing assets in an international market, and the significance of intangible assets in the ability to create value-added are stressed. The following indexes reflect the state of intellectual capital: the percentage of non-material assets in creating sales value; the costs of research and development per single employee; the indexes of the internationalization of assets and employment [Rosinska-Bukowska, 2017].

The GTM is a permanent comparative method and its three main purposes are: (1) to reduce the gap between theory and empirical research; (2) to suggest the logic of the theoretical framework for the phenomenon being studied; and (3) to justify careful qualitative research as important and necessary for a comprehensive description of complex social phenomena as well as for structures and subjects which are difficult to identify.

The GTM provides practical and simple explanations about complex phenomena by converting them into constructs that include descriptions of elements and their relationships. Using the GTM often begins with the collection of qualitative data. The in-depth analyses of strategic concepts involved the study through the Social Network Analysis method (SNA). The most extensive stage of the research (step 5) involved the study of the SNA through the analysis of the annual reports of individual corporations.

It is worth mentioning that the GTM is a research methodology which operates inductively, which is in contrast to the hypothetico-deductive approach. The GTM is quite different from the traditional model of research because, with the GTM, we do not choose an existing theoretical framework and then collect data to show how the theory does or does not apply to the phenomenon under study. Here, the order of research is reversed: behavior patterns (data) are collected on the basis of observation. After processing and coding, new theoretical structures emerge. It is a step away from a repetitive and well-established practice toward theory.

Further, the objects (the Top-TNCs) are examined and based on this examination, regularities are identified. The author looked for patterns when exploring intellectual capital. As a last step, the author selected the approach of the companies when dealing against a given market situation, where the measure of success is becoming a leader. The author assumed that since the behaviors of the leaders of various sectors are the same, their patterns of behavior can be treated as a model. Then, on the basis of the data systematically repeated in different entities, the author developed a concept of categories of IC-layers. This concept is based on the presuppositions of the grounded theory.

In conclusion, the last step (6) of the research involved the identification of the three crucial assets of each IC-layer on the basis of the GTM namely organizational, innovative, and institutional, which can be perceived as the same for all TNC-leaders. The conducted research made it possible to determine that there is a remarkable comparability of development principles among the greatest TNCs. The expansion of the most powerful corporations was supported by the strength of economic capital (which is fundamental for sustainable development as a factor required, although not sufficient), however, the advancement of intellectual capital is decisively important in the strategies of leaders.

The author, when researching corporations (the leaders of individual industry sectors), used the key assumptions of the GTM based on Strauss’s procedures of analysis [Glaser and Strauss, 1967] to show how they can be combined with the case study. It can be said that the collected data (systematically repeated, the same in different entities) has been properly ordered (grouped, categorized, named) to show that the studied phenomena create a new system—a new filling/refinement for the existing theoretical framework.

Further, the author worked on the assumption that repeated behaviors, i.e. the same responses to market situations/challenges, shaping specific routines for specific opportunities or as responses to specific stimuli, indicate that different entities (enterprises) acting in different domains have the same priorities (in this study: leaders of various sectors). This indicates that there is a process of creating a new theory/concept/model that can be described by analyzing and conceptualizing repetitive practice.

Moreover GTM and the SNA helped to discovering the theory on the basis of the repeated practices of many corporations. The conducted research has provided ample evidence for the assertion that the Top-TNCs presented changes in their strategies that considered significantly the growing role of intellectual capital in the improvement of competitiveness. Development priorities were described by systematically identifying the crucial elements of the strategies of the studied Top-TNCs. The study puts forward the view that management models of the Top-TNCs are based on the development of the three IC subsystems.
5.3 Summary of the findings

It was possible to confirm that the development strategies of the studied TNC-leaders were based on three pillars in accordance with the intellectual capital subsystems:

- building a network of global structures, while taking into account local specifics (networking combined with the requirements of glocalization);
- creating a growth model using all possibilities of the innovative process to meet the requirements of sustainable development (orchestration);
- harnessing the potential of the entire diverse environment at all levels, including creatively drawing on from the competition and seeking consensus among all stakeholder groups (coopetition).

The research evaluated the selected attributes that are considered crucial for an organization’s knowledge capital, including the system of R&D, types of value creation chains, types of innovations, the organization of internationalization structures, brand portfolio, leadership style, partnership model, map of stakeholders, and competition model. The author assessed the importance of the indicated attributes for achieving development goals (three in each subsystem: INNC, ORGC, INSC), assigning them weights which indicated their role as factors in the strategic concept of a given corporation.

The three key assets that determine the development of the IC innovations layer are:

- multi-center R&D systems—skillful use of local specifics to create innovative solutions;
- models of creating value—market, modular, relational, captive, and hierarchy;
- management innovations —use of the full range of innovative possibilities, including product, process, and structure management.

The three key assets that determine the development of the IC organizational layer are:

- brand strategy—diversification of the brand portfolio;
- business network—reorganization of global business structures;
- types of business connections—diversity, stages of change.

The three key assets that determine the development of the IC institutional layer are:

- institutional relations—development of the institutional network (local, regional, global);
- coopetition—balance between cooperation and direct competition; the use of all possible types of benchmarking and isomorphism;
- stakeholders—the diversification of the environment of stakeholders (internal, external).

Table 1 presents a synthetic assessment of the scope of fulfilling general requirements based on individual concepts of implementing key assumptions for a given category by sector leaders. The research results for TNC-leaders in each sector were juxtaposed with the base categories of three layers of intellectual capital—INNC, ORGC, INSC. The research related to IC subsystems was qualitative in nature. The level of importance of a given category of relation was assessed on the following scale: irrelevant (–1), underlying (0), significant (+1), crucial (+2), of the utmost importance (+3).

It was confirmed that the studied group of TNC-leaders constructed their developmental strategies based on three pillars similar to the subsystems of intellectual capital. However, it should be emphasized that the degree to which the requirements of individual categories are met differs among the subjects of the study (in consequence, also the sectors). It is the result of, among other things, the diversity of the starting base—the economic capital and the fundamental principles of the formation of individual IC-subsystems.

The aspects associated with IC development and most frequently specified or found in corporation strategies are [Rosinska-Bukowska, 2019]: building an international system of development management (of high significance); creating a network of interpersonal connections and relations (of high significance); broadening the intercultural experience of the corporation (significant); creating a system of knowledge transfer between an organization and local operators and more efficient coordination in the global business network of a given corporation (more than crucial, in many cases of utmost importance); training the local
Table 1. The significance of the key factors of IC (included in the given corporations' development strategies)

<table>
<thead>
<tr>
<th>TNCs by sectors</th>
<th>Sector</th>
<th>Automotive</th>
<th>Electronics</th>
<th>Petroleum</th>
<th>Pharmaceutical</th>
<th>Media &amp; Telecommunications</th>
<th>Consumer goods &amp; services</th>
<th>Industry goods &amp; services</th>
<th>Public goods &amp; services</th>
<th>Multi-branch</th>
</tr>
</thead>
<tbody>
<tr>
<td>The most powerful transnational corporations (leaders of sectors)</td>
<td>Toyota Motor</td>
<td>Volkswagen Group; Honda Motor</td>
<td>General Electric; Siemens; Samsung Electronics</td>
<td>Royal Dutch Shell; British Petroleum; Exxon Mobil</td>
<td>Sanofi; Roche Group; Pfizer</td>
<td>Vodafone Group; Telefónica; France Telecom</td>
<td>Procter&amp;Gamble; Nestle; Kraft</td>
<td>Arcelor Mittal; Rio Tinto; Lafarge</td>
<td>Electricité de France; E.On; GDF</td>
<td>Vivendi Universal; Hutchison Whampha; Manubeni Corporation</td>
</tr>
<tr>
<td>Value of the average Leaders of different sectors (27 Top-TNCs)</td>
<td>Toyota Motor</td>
<td>Volkswagen Group; Honda Motor</td>
<td>General Electric; Siemens; Samsung Electronics</td>
<td>Royal Dutch Shell; British Petroleum; Exxon Mobil</td>
<td>Sanofi; Roche Group; Pfizer</td>
<td>Vodafone Group; Telefónica; France Telecom</td>
<td>Procter&amp;Gamble; Nestle; Kraft</td>
<td>Arcelor Mittal; Rio Tinto; Lafarge</td>
<td>Electricité de France; E.On; GDF</td>
<td>Vivendi Universal; Hutchison Whampha; Manubeni Corporation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Layers of intellectual capital (IC)</th>
<th>INNC</th>
<th>Cumulative rating for three industry leaders</th>
<th>ORGC</th>
<th>Cumulative rating for three industry leaders</th>
<th>INSC</th>
<th>Cumulative rating for three industry leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D systems</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Models of created value</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Management innovations</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significance (weight in the strategic concept): irrelevant (−1), underlying (0), significant (+1), crucial (+2), of the utmost importance (+3).

Source: personal elaboration based on the author’s own study with the GTM and the SNA.
personnel in order to adapt to the corporation's business model by transferring knowledge, technological, and organizational skills (of utmost importance); including the shaping of attitudes in conformity with the model of the corporation's organizational culture (significant); building a corporate identity (more than crucial).

The most important common aspect related to this context emerged from research is the systematic approach to intellectual capital management composed of three interpenetrating layers. The most significant conclusion of the conducted research is that three requirements, similar or the same in all Top-TNCs can be presented for each of the three IC layers. On the basis of the research, it can be stated with absolute certainty that (regardless of the sector) the intellectual capital (comprising three subsystems) is indeed seen as an accelerator of improving competitiveness and a basis for long-term development for the Top-TNCs.

The research has provided ample support to the claim that although individual corporations portray the principles of their developmental concepts in various ways in accordance with the specificity of their work, the nature of these descriptions is similar. The analysis of TNC-leaders' strategies has shown that corporations perceive and interpret the importance of individual layers homogeneously. Three factors for each subsystem of intellectual capital (ORGC, INNC, and INSC) are identified and described, which are found to be almost the same.

It should be emphasized that the weight of individual subsystems varies depending on the industry. For the Top-TNCs in the five sectors such as pharmaceutical, automotive, consumer goods, media & telecommunication, electronics, the innovative IC subsystem is of the utmost importance (more than crucial). The last conducted research has provided ample support for the claim that leaders of automotive and telecommunications & media sectors highlighted the significance of the organizational IC subsystem. This IC-layer is most appreciated in sectors such as petroleum; consumer goods & services, and public goods & services. Evidence for the growing significance of the institutional IC subsystem is provided by the latest in-depth studies. The institutional IC subsystem is most highly regarded by leaders from four industries (automotive, telecommunications & media, the public goods & services as well as the consumer goods & services sectors) [Rosinska-Bukowska, 2019].

Based on the research, the data collected in the study suggested that corporations (in all sectors) highlighted the growing role of intellectual capital and claimed that creative thinking about the exploration of knowledge resources at all levels of an organization’s relations is the catalyst for creating international competitiveness. There is an overwhelming evidence for the notion that the TNC-leaders of their sectors establish pillars of their developmental concepts based on the three IC-subsystems. Because of the importance of these issues, when preparing the principles of fulfilling strategic guidelines, essential instructions regarding baseline requirements/recommendations should be reflecting: network creation (networking), the orchestration model, and the appreciation of the benefits of coopetition.

6 Conclusions

The most powerful transnational corporations which are leaders in modern business, irrespective of the industry, implemented the business model that fulfilled base management strategy, the dominant type of organizational structures, the adopted board structure etc., refer to the three IC-subsystems as new pillars of their development strategies. In order to achieve long-term international competitiveness, they rely on the system model of intellectual capital in which three subsystems (organizational, innovative, and institutional) can be clearly described.

The GTM-based study of the development strategies of the Top-TNCs can be advanced to support that the skillful use of IC leads to the creation of prosperous pillars of competitiveness strategies which are almost the same for all TNC-leaders. Finally, the conducted study made it possible to determine three assets/requirements for each of the three IC layers: organizational, innovative, and institutional, which are either similar or the same in all Top-TNCs. Ultimately, the emerging modern model of strategic management in international business is based on the values and principles showing the huge importance of the multi-layer intellectual capital in the successful development of companies.
A closer look at the gathered data made it possible to notice the similarities of developmental concepts of the Top-TNCs, and allowed to identify key assets that make up the IC-layers, which are commonly recognized (in the assigned group) as the foundation of their dynamic development. This can be considered as the effect of the Top-TNCs adopting a systemic-situational approach, in which intellectual capital takes over the growing role of the accelerator of all accumulated assets.

Referring to hypotheses, the author puts forward the following conclusions:

H1: The author's findings support the claim that, in spite of the fact that individual corporations describe the fundamental pillars of their business strategies in various ways, the essence of the elaborations always focuses on the growing, major role of intellectual capital.

H2: The closer look at data (e.g. Annual Reports with using the SNA) indicates that all of the most powerful corporations highlight the validity of IC subsystems. Corporations refer to parameters of organizational, innovation, and institutional capital.

H3: The development of the Top-TNCs (leaders in each sector of industry) is based on the activation of the same necessary conditions of individual IC-subsystems. These subsystems are described with an emphasis on slightly different aspects, because companies take advantage of parameters individually selected for the specifics of the entity. There are compelling arguments for the notion that corporations always describe three leading areas: organizational, innovative, and institutional. This study seems to validate the view that identification of the three universal requirements per each of the three IC layers is in line with corporate practice.

So, we can conclude that the hypotheses under discussion can be considered confirmed. There are arguments that can be used to support the claim that the international competitiveness strategies of transnational corporations (and, to generalize beyond the data, of other modern enterprises) highlight the major role of intellectual capital in their business concepts. It was fully confirmed for all Top-TNCs studied. The conducted study has shown that the competitiveness strategies of the Top-TNCs are based on the three subsystems of intellectual capital: organizational, innovative, and institutional. These results proved that the three key assets of each IC-layer point to the implementation of universal values in corporate strategies.

Evidence for this claim comes from the foregoing research that identifies the key assets that determine the development of IC-subsystems:

- organizational: brand strategy, business network, and types of connections;
- innovative: R&D system, models of creating value, and management innovations;
- institutional: coopetition, groups of stakeholders, and long-term institutional relations.

It should be emphasized that the development of the Top-TNCs (leaders in each sector of industry) is based on the activation of the same features of individual IC-subsystems. The identification of the three key assets of each IC-layer, which is presumed as the same for all TNC-leaders, based on the GTM theory, has been successful. However, to fully verify the hypotheses and clarify the essence of each of the three requirements for the three IC layers, it is necessary to continue the study on a larger group of entities, and in accordance with the more in-depth sophisticated research. Therefore, based on the evidence currently available, it seems reasonable to suggest that the next stage of research should be planned to draw clear-cut conclusions.

The author ponders over specific guidelines for future studies based on the conceptual model developed (Figure 2). The author plans to conduct a study of at least six to ten corporations representing the same sector/industry in the following sequence—automotive, electronics, media & telecommunication, pharmaceutical, petroleum, consumer goods & services, industry goods & services, and public goods & services sectors. The study will be based on the selection of facilities from the annual list of the most admired companies (MAC) prepared by Fortune (since 2005) and then, the obtained results will be compared with the previous ones.

However, it should be emphasized that the degree to which the requirements of individual categories of IC are met differs among the subjects of the study (also within sectors, i.e. in corporations in the same industry). It is the result of, among other things, the diversity of the starting base—the economic capital and the time needed to shape individual IC subsystems.
Generally, the research which explored the data regarding TNC-leaders using the GTM and the SNA methodology represents a sectoral approach. It can be used to indicate trends—repeated ideas—in changes in the strategies of corporations that operate in a given industry market that are considered crucial and significant for successful development. By comparing the results of observations in different sectors, an attempt can be made to generalize and give general recommendations for improving international competitiveness in the 21st century. The proposed model of layers of intellectual capital may be used to identify the relationship in question, or its lacking, in other types of international business. Furthermore, the study results provide important practical guidelines for executives of corporations with respect to intellectual capital management.

References


Empirical Paper

Patryk Dziurski*, Agnieszka Sopińska

Does industry matter? Drivers and barriers for open innovation in high-tech and non-high-tech industries—Evidence from Poland

https://doi.org/10.2478/ijme-2020-0024
Received: February 22, 2020; accepted: September 22, 2020

Abstract: Firms adopt open innovation for different reasons, and they experience various barriers for open innovation. Thus, the paper aims to answer two questions: (1) what type of drivers and barriers for open innovation that are to be identified among innovative firms in Poland and (2) what kind of differences in motives and barriers between high-tech and non-high-tech industries can be identified. The authors analyzed drivers and barriers for open innovation drawn from a survey database of on 122 innovative firms in Poland by means of the CATI method. The study confirms that the concept of open innovation is adopted in high-tech as well as non-high-tech industries. The study also shows that the most important drivers in high-tech and non-high-tech industries are market-driven motives, whereas the most important barriers are related to legal and financial factors. Moreover, the research does not confirm that there are different drivers and barriers between in high-tech and non-high-tech industries.

Keywords: open innovation, drivers for open innovation, barriers for open innovation, high-tech industries, non-high-tech industries

JEL Classification: O31, O32, O36

1 Introduction

Nowadays, many firms search for external partners for their R&D and innovation activities to utilize multiple knowledge sources. The concept of closed innovation is increasingly waning [Hossain, 2016], and the concept of open innovation as a new paradigm for the management of innovation has emerged [Chesbrough, 2003]. Open innovation is defined as “a distributed innovation process based on purposively managed knowledge flows across organizational boundaries” [Chesbrough and Bogers, 2014, p. 17]. It can impact firms positively, as open innovation can enable them to survive in the fast-changing environment by increasing innovation capabilities [Cheng and Chen, 2013]. It can improve the innovation success of many firms [Chesbrough, 2003; Laursen and Salter, 2006; Zobel, 2017] by sharing risk and resources, reducing cost of R&D and product development time, improving competitive advantages and employees’ participation, increasing access to new knowledge, technologies, markets and complementary resources, competences and capabilities [Chesbrough and Crowther, 2006; Chesbrough and Crowther, 2006; Enkel et al., 2009; Krapež et al., 2012]. Open innovation creates new opportunities to growth leading to higher revenues and consequently impacting organizational performance positively [Lindegaard, 2010; Krapež et al., 2012;}

*Corresponding author: Patryk Dziurski, Collegium of Management and Finance, SGH Warsaw School of Economics, Warsaw, Poland. E-mail: patryk.dziurski@sgh.waw.pl

Agnieszka Sopińska, Collegium of Management and Finance, SGH Warsaw School of Economics, Warsaw, Poland.


This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 License.
Thus, it is not surprising that open innovation has received considerable greater attention from both academic research and industries [Dahlander and Gann, 2010; Huizingh, 2011; Chesbrough and Bogers, 2014; West et al., 2014].

Managers may choose open innovation for different reasons, but the most one of the important motives are acquiring new technological skills or capabilities from partners [Xia and Roper, 2016] and they believe that open innovation is critical to maintain growth [Chesbrough and Crowther, 2006]. Hence, market-driven as well as knowledge-driven motives are ones for open innovation [van de Vrande et al., 2009; Fernandez and Svensson, 2017]. Moreover, firms may not only engage in open innovation to improve organizational performance, but also to overcome various impediments that they are facing [Keupp and Gassmann, 2009; Fu et al., 2014]. However, especially from the practitioners’ context, it is shown that the implementation of open innovation is not easy and there are many challenges and constraints that limit organization’s ability to use them effectively [Chesbrough and Brunswicker, 2014; Chesbrough, 2020]. Literature identifies various barriers for open innovation indicating that the greatest are internal ones [Enkel et al., 2009; van de Vrande et al., 2009; Bigliardi and Galati, 2016].

The concept of open innovation is widely used in many industries, both high-tech and non-high-tech industries [see e.g. Chesbrough and Crowther, 2006; Martinez et al., 2014; Galati et al., 2016]. Because industries follow different paths to innovation [Lundvall, 1988; Olk and West, 2019], it may be stated that drivers and barriers for open innovation may differ between them. Therefore, drivers and barriers for open innovation may depend on the type of industry [Gassmann and Enkel, 2004; Lichtenhaler, 2008; Keupp and Gassmann, 2009] as well as the state of the industry technology (intensity, turbulence and convergence) [Gassmann and Enkel, 2004; Fortuin and Omta, 2008]. Moreover, it is observed that there may be differences in drivers and barriers between high-tech and non-high-tech industries. However, past studies provided only ambiguous results. On one hand, researchers show that different drivers and barriers for open innovation can be identified for high-tech and non-high-tech industries [Hagedoorn, 1993; Schmidt, 2007; van de Vrande et al., 2009; Garriga et al., 2013; Fu et al., 2014; Verbano et al., 2015; Bigliardi and Galati, 2016; Grimsdottir and Edvardsson, 2018], but on the other hand the study of Chesbrough and Crowther [2006] and Leckel et al. [2020] found out that firms in various industries do not innovate differently. Hence, the mixed results of previous studies indicate that the relationships between the type of industry and drivers as well as barriers for open innovation are understood only partially.

Studies on firms in Poland are rare in the worldwide open innovation literature. However, exploring open innovation in Poland is especially interesting as it is one of the biggest countries in the European Union (EU), but its innovativeness is one of the lowest in the EU [see e.g. European Commission, 2019]. The Statistical Office in Poland showed that innovation active industrial and service firms in 2015 and 2017 accounted to 20.2% and 11.9%, respectively of the total number of such kind of entities. Unfortunately, it seems that open innovation occurs rarely in Poland. Only 28.7% of innovation active industrial firms and 23.6% of service firms applied open innovation between 2015 and 2017 [Statistics Poland, 2018]. It is a poor result, especially when compared to the study of Chesbrough and Brunswicker [2014] that shows that nearly 80 percent of large companies in North America and Europe were engaged in at least some elements of open innovation. Nevertheless, it is in line with the study of Sopińska and Dziurski [2018], which shows that more than 75 percent of innovative firms in Poland implemented at least one open innovation between 2015 and 2017 (it is worth to note that most of them implemented limited number of open innovations). Thus, it seems that Poland is at a transitional phase of catch-up, and innovation capability building and open innovation should be a natural choice for firms therein. Literature suggests that open innovation is used by firms in newcomer countries to overcome internal rigidities and strengthen their innovation capabilities [Fu et al., 2014; Bogers et al., 2019]. But, firms in Poland do not open up their innovation processes widely as a knowledge-poor environment inhibit firms’ ability to innovate [van de Vrande et al., 2009; Garriga et al., 2013; Verbano et al., 2015]. Therefore, exploration of drivers and barriers for open innovation in the context of the moderate innovation country (Poland) is interesting as it can allow to better understand.

1 It is worth to note that Sopińska and Dziurski studied only innovative firms in Poland (entities that are active in innovation activities) and study of the Statistical Office focused on all entities in Poland (different sample), thus results are different.
open innovation practices (it follows the most recent call of Chesbrough [2020] for more studies that help to overcome so called the exponential paradox).

The paper aims to answer two important research questions: (1) what type of drivers and barriers for open innovation can be identified among innovative firms in Poland and (2) what type of differences in motives and barriers between high-tech and non-high-tech industries can be identified. According to our knowledge, our study is the first one to investigate drivers and barriers for open innovation in Poland with a broad sample of different industries. On the whole, distinguishing various drivers and barriers for open innovation in different industries appears to be fruitful because it allows more differentiated insights with respect to the importance of factors that remain hidden behind the overall variable “open innovation yes/no”.

2 Literature review

2.1 Drivers for open innovation

The literature has identified various drivers for open innovation. The first distinction is for internal and external ones [Sag et al., 2019; Schroll and Mild, 2011]. Internal motives refer to all factors within the firm, whereas external drivers are those outside the business. External forces are beyond the control of individual company, but they still affect the company directly or indirectly. Similar approach was adopted by Fu et al. [2014] who proposed the “push-pull” framework to analyze drivers for open innovation. They pointed out that pull factors are external to firms and they motivate managers to open up innovation processes. But push factors refer to internal constrains, which encourage companies to adopt open innovation. Another distinction is for offensive (e.g. increasing revenues) and defensive (e.g. decreasing risk) drivers of the open innovation [Huizingh, 2011]. Researchers found that offensive motives are more important than defensive ones [Chesbrough and Crowther, 2006; van de Vrande et al., 2009]. Drivers for open innovation can be also divided into market-driven and knowledge-driven factors [van de Vrande et al., 2009] and Hagedoorn [1993] identified three types of motives for inter-firm technology cooperation: motives related to basic and applied research, motives related to concrete innovation processes, and motives related to market access and search for opportunities.

Different authors have applied various approaches to differentiate drivers for open innovation. In the paper, it is proposed to divide drivers into internal and external ones in which internal motives are further categorized into drivers related to innovation processes and market-driven motives. Factors related to innovation processes aim to improve effectiveness of innovation processes within the firm, and market-driven motives focus on attaining better market position (see Table 1).

The first group of internal drivers for open innovation is related to innovation processes. Firms engage in open innovation to reduce the new product development time as well as the time to market [Jacobs and Waalkens, 2001; Chesbrough and Crowther, 2006; Schmidt, 2007; Krapež et al., 2012]. Another potential driver for open innovation is reducing the cost of innovation processes [Hagedoorn, 1993; Mohr and Spekman, 1994; Hoffmann and Schlosser, 2001; Gassmann and Enkel, 2004; Chesbrough and Crowther, 2006; Huurinainen et al., 2006; Schmidt, 2007; Loren, 2011; Krapež et al., 2012; Martinez, et al., 2014]. The increased complexity and the inter-sectoral nature of new technologies have made projects more expensive resulting in higher risk for firms undertaking them [Sakakibara, 1997], hence cost as well as risk sharing motives are important for open innovation [Hagedoorn, 1993; Mohr and Spekman, 1994; Hoffmann and Schlosser, 2001; Gassmann, 2006; Schmidt, 2007; Martinez, et al., 2014; Oduro, 2020].

Resource based view on the R&D cooperation suggests that firms may use open innovation to better utilize their own internally held immobile resources. Firms identify and select partners with complementary resources that can be combined with their internal resources for innovation processes [Hagedoorn et al., 2000; Tsang, 2000] enabling them to profit and increase number of innovations. Some firms engage in open innovation to better utilize an internal creativity [Jacobs and Waalkens, 2001] and extend skills and competences [Tether, 2002; Miotti and Sachwald, 2003; Huang et al., 2009] as human capabilities
P. Dziurski and A. Sopińska

Table 1. Drivers for open innovation

<table>
<thead>
<tr>
<th>Internal drivers related to innovation processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortening the innovation processes</td>
</tr>
<tr>
<td>Reducing costs of innovation</td>
</tr>
<tr>
<td>Increasing number if innovations</td>
</tr>
<tr>
<td>Reducing risk of innovations</td>
</tr>
<tr>
<td>Improving research potential</td>
</tr>
<tr>
<td>Earnings from unused inventions</td>
</tr>
<tr>
<td>Acquiring new knowledge and technology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Internal market-driven motives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possibility to gain new clients</td>
</tr>
<tr>
<td>Improving competitiveness of a firm</td>
</tr>
<tr>
<td>Improving loyalty of existing buyers</td>
</tr>
<tr>
<td>Increasing revenues from innovations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>External drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly turbulent external environment</td>
</tr>
<tr>
<td>Competitive pressure</td>
</tr>
<tr>
<td>Pressure exert by business partners</td>
</tr>
<tr>
<td>Possibility to gain financial support for the open innovation</td>
</tr>
</tbody>
</table>

Source: Own elaboration.

Influence the adoption of open innovation [Schroll and Mild, 2011]. Open innovation exposes staff to a new knowledge, a technology, and organizational development processes [Linder, 2004; Calantone and Stanko, 2007] and thus improving the research potential of the firm. Studies show that the firms implement open innovation to acquire a new and missing knowledge, a complementary resources and a finance [Hagedoorn, 1993; Mohr and Spekman, 1994; Hoffmann and Schlosser, 2001; EIRMA, 2003; Koruna, 2004; Gassmann, 2006; Schmidt, 2007; Krapež et al., 2012; Fu et al., 2014; Oduro, 2020] and it enables them to utilize the technological convergence and realize the resource synergy effectively [Loren, 2011]. Firms can benefit from open innovation especially when they experience the high cohesion of skills, experiences, facilities and equipment [Krapež et al., 2012].

Some firms may also engage in open innovation in order to increase the number of innovations and earnings from own unused inventions leading to higher overall revenues [Koruna, 2004]. Thus, the sale of intellectual property and leveraging are seen as important drivers for open innovation [Mohr and Spekman, 1994; Hoffmann and Schlosser, 2001].

The open innovation literature also points out that inherent weaknesses of firms may motivate managers to externalize the innovation processes [Fu et al., 2014]. Studies show that obstacles to innovation increase the breadth and depth of open innovation, whereas firms that do not experience such impediments are more likely to pursue innovation processes alone. Here, open innovation is seen as “an active response to overcome internal rigidities caused by impediments to innovation” [Keupp and Gassmann, 2009, p. 332].

The second group of internal drivers for open innovation is termed as market-driven motives. Chesbrough and Crowther [2006] pointed out that firms implement the open approach to their innovation processes as they believe that it is critical for the profitable growth. Open innovation can help firms to meet customer demands [EIRMA, 2003; Zhao et al., 2016], gain a competitive advantage, and improve a loyalty of existing customers. Innovators are also more likely to cooperate to gain access to new (also foreign) markets [Miotti and Sachwald, 2003; Schmidt, 2007]; motives related to a commercialization of product and process innovations are also important [Schmidt, 2007]. Moreover, managers are interested in open innovation to launch brand-new products and conduct market developments [Hagedoorn, 1993; Zhao et al., 2016], enter new markets, and extend the product range [Hagedoorn, 1993]. All these enable firms to increase revenues from innovations and maintain or increase profit margins [Chesbrough and Crowther, 2006].
Drivers for open innovation can also be externally driven [Radnejad et al., 2017; Sag et al., 2019]. The open innovation literature states that market dynamics as an important external motive for open innovation [Fernandez et al., 2010]. The nature of market environment and competition can motivate managers to implement open innovation as it allows firms to adapt to its local markets and competition [Pervan et al., 2015]. Adoption of open innovation also depends on the level of technology and the level of hostility in an industry [Fernandez et al., 2010; Schroll and Mild, 2011]; shortening product life cycles and the time reduction between innovation and market introduction are also important factors [Hagedoorn, 1993; Gassmann and Enkel, 2004; Huurinainen et al., 2006]. All these mean the environmental change and pressure [Chesbrough, 2003; Belderbos et al., 2004; Radnejad et al., 2017] and the more intense competition from rivals, suppliers. and new entrants [Chesbrough, 2003] drive the externalization of innovation processes. Firms use the open innovation approach to keep up with an increasing technology intensity and fusion [Gassmann, 2006] as well as with competitors [van de Vrande et al., 2009]. The literature on open innovation further suggests that firms open up innovation processes to meet specific industry standards, attempt profit from infringements, realize learning effects and guarantee freedom to operate by establishing cross-licensing agreements with other organizations [Koruna, 2004]. Prior studies point out that a partner advantage may be an important driver for open innovation [Hagedoorn, 2002] as well as availability of external knowledge sources [Garriga et al., 2013]. Thus, firms may be eager to implement open innovation as a response to pressure exerted by business partners.

Past researches emphasized also the importance of government supported developments [Hadjimanolis, 1999] and financial resources in opening up innovation processes [Chesbrough, 2003; Schmidt, 2007; Zhu et al., 2011]. Governments often devote resources not only to encourage firms to conduct open innovation, but they also financially support those processes. The study of Schmidt [2007] shows that innovators are more likely to externalize innovation processes if they receive the public funding than if they do not get it. Thus, possibility to receive the financial support for open innovation is an important motive.

### 2.2 Barriers for open innovation

Barriers for open innovation are factors that discourage firms from opening innovation processes [Galia et al., 2012; Hjalmarrson et al., 2014; Radziwon and Bogers, 2019]. It is important to differentiate innovation barriers and barriers for open innovation; some types of barriers may overlap, while some may be specific. Innovation barriers inhibit firms from innovation activities, whereas barriers for open innovation are obstacles in opening up those processes.

The literature very often divides barriers into internal and external ones [Savitskaya et al., 2010; de Faria et al., 2020]. Internal barriers refer to factors within the firm, whereas external barriers to factors outside the company. Barriers for open innovation can be also grouped to specific sets: finance- and risk-related obstacles, market- and institution-related obstacles as well as information- and skill-related obstacles [Baldwin and Lin, 2002; Keupp and Gassmann, 2009].

Different authors have applied various approaches to distinct barriers for open innovation. In the paper, we break down barriers into internal and external ones (see Table 2). The most important internal barriers for open innovation are related to economic and financial issues [Enkel et al., 2009; van de Vrande et al., 2009; Bigliardi and Galati, 2016; Piwowar-Sulej et al., 2019; Oduro, 2020]. Performing innovation processes openly may be very costly [Galia and Legros, 2004; Knudsen and Mortensen, 2011; D’Este et al., 2012; Teirlinck and Spithoven, 2013; Fu et al., 2014] and firms may lack an internal financial resources [Galia and Legros, 2004; Enkel et al., 2009; D’Este et al., 2012; Galia et al., 2012; Fu et al., 2014; Monteiro et al., 2017]. Some firms may additionally experience administrative and legal barriers [van de Vrande et al., 2009; Bigliardi & Galati, 2016].

The literature on open innovation presents the difficulties addressed by the network theory [Holzmann et al., 2014; Bigliardi and Galati, 2016]. One of the most common barriers is difficulty in finding right partners [Enkel et al., 2009; van de Vrande et al., 2009; Lee et al., 2010; Galia et al., 2012; Holzmann et al., 2014; Fernandez and Svensson, 2017; Oduro, 2020]. Some companies search for partners with complementary resources to have fast access to the new leading knowledge and benefit from learning by networking.
Thus, barriers may arise due to the insufficient knowledge of partners [van de Vrande et al., 2009] or the lack of resource fit between entities [Oduro, 2020]. Open innovation may be also inhibited due to cultural differences between partners [van de Vrande et al., 2009; Teirlinck and Spithoven, 2013; Holzmann et al., 2014]; firms with various corporate cultures may not be able to cooperate in innovation together, because they apply different modes of organization, or bureaucratic elements [Leckel et al., 2020; Oduro, 2020]. Besides cultural differences, the lack of strategic fit [Hjalmarsson et al., 2014; Oduro, 2020] and the misalignment of aims [Krapež et al., 2012] are seen as important barriers for open innovation. Some barriers can also be related to the previous negative experience with open innovation [Hoffmann and Schlosser, 2001] and the lack of trust between partners [Krapež et al., 2012]. Opening innovation processes may be associated with the loss or theft of a know-how and ideas [Enkel et al., 2005, 2009; Krapež et al., 2012; Teirlinck and Spithoven, 2013; Leckel et al., 2020], including intended as well as unintended knowledge spillovers, opportunistic behaviors of partners [Enkel et al., 2009; Oduro, 2020], a free-riding behavior [Hjalmarsson et al., 2014], an unclear task distribution, misunderstandings between partners, and an unfair income distribution [Krapež et al., 2012]. Intellectual property rights are perceived as an important obstacle in open innovation, including among others: ineffectve or inappropriate legal protection of innovations [Krapež et al., 2012; Fu et al., 2014; Leckel et al., 2020] and problems related to imitation [Lee et al., 2010; Verbano et al., 2015]. Conducting innovation processes with partners is also associated with the threat of emergence of a new competitor.

Adoption of open innovation may be also hindered by human capital; the lack of qualified personnel [D’Este et al., 2012; Galia et al., 2012; Fu et al., 2014; Monteiro et al., 2017; Piwowar-Sulej et al., 2019; Leckel et al., 2020] and the lack of adequate managerial competences [van de Vrande et al., 2009; Lee et al., 2010; Teirlinck and Spithoven, 2013; Verbano et al., 2015; Leckel et al., 2020] are one of the most important barriers for open innovation. Adaption of the open innovation concept is inhibited also by a not-invented-here syndrome [Katz and Allen, 1982; Chesbrough and Crowther, 2006; Burchart et al., 2014; Aquilani et al., 2017], a lack of internal commitment to open innovation [Chesbrough and Crowther, 2006] and an only-used-here syndrome [Lichtenhaller and Ernst, 2006; Aquilani et al., 2017].

The second group of barriers for open innovation is externally driven. Industry-specific characteristics influence the adoption of open innovation significantly. Moreover, firms may not be interested in opening innovation processes due to an uncertain product demand [Lee et al., 2010; Fu et al., 2014] and a lack of

<table>
<thead>
<tr>
<th>Internal barriers</th>
<th>External drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative experience from past cooperation</td>
<td>Market maturity</td>
</tr>
<tr>
<td>Risk of creating new competitor</td>
<td>Lack of competitive pressure</td>
</tr>
<tr>
<td>Lack of trust</td>
<td>Lack of pressure exert by business partners</td>
</tr>
<tr>
<td>Legal barriers</td>
<td>Lack of external financial support</td>
</tr>
<tr>
<td>Financial barriers</td>
<td></td>
</tr>
<tr>
<td>Risk of unequal distribution of income from innovation</td>
<td></td>
</tr>
<tr>
<td>Lack of aim alignment</td>
<td></td>
</tr>
<tr>
<td>Cultural differences</td>
<td></td>
</tr>
<tr>
<td>Resources misfit</td>
<td></td>
</tr>
<tr>
<td>Difficulties in finding right partners</td>
<td></td>
</tr>
<tr>
<td>Employees’ resistance</td>
<td></td>
</tr>
</tbody>
</table>

Source: Own elaboration.
Drivers and barriers for open innovation [Galia and Legros, 2004]. A high market competition and saturation [Lee et al., 2010; D’Este et al., 2012], a low profit rate, a dominance of one competitor on the market, and a low innovativeness of competitors are perceived as important barriers for open innovation as well [Fu et al., 2014]. Some barriers are also related to financial constraints. The literature indicates that the low availability of finance and a high cost of external source of finance are the main factors inhibiting open innovation [D’Este et al., 2012; Galia et al., 2012; Fu et al., 2014].

2.3 Drivers and barriers for open innovation in different industries

The critical external factor that impacts open innovation is the industry background as various industries provide relatively more ample opportunities for a competitive advantage [Gassmann, 2006; Sisodiya et al., 2016]. Initially, the concept of open innovation was analyzed based on the context of high-tech industries and industries that focus on emerging technologies [Chesbrough, 2003; Chesbrough and Crowther, 2006; Henkel, 2006; Laursen and Salter, 2006; van de Vrande et al., 2009; Drechsler and Natter, 2012; Sisodiya et al., 2016; Martinez et al., 2014; Galati et al., 2016], where technology pressure is perceived as a key driver for greater openness [Martinez et al., 2014]. Such industries are characterized by a knowledge-rich environment [Porter, 1980] with network spillovers [Meagher and Rogers, 2004] that involve “the leakage or transmission of knowledge from firms such that it can be accessed by other firms in the network” [Sisodiya et al., 2016, p. 837]. High-tech industries highly depend on the science and the technology [Zakrzewska-Bielawska, 2016] and they are characterized by a short product life cycle, a rapid diffusion of innovation, a rising demand for highly qualified staff as well as a close cooperation among firms [NewCronos, 2009]. Thus, firms in high-tech industries need a great deal of relevant knowledge, which they try to find outside their boundaries [Laursen and Salter, 2006]. A high level of R&D intensity and uncertainty, industry modularity, and a wide flow of knowledge motivate firms in high-tech industries to adopt open innovation [Bogers et al., 2017].

Studies show that in-house R&D in a high-technology industry increases the firm’s propensity to open innovation [Bayona et al., 2001; Miotti and Sachwald, 2003]. However, the concept of open innovation is adopted by firms operating both in high-tech and non-high-tech industries [Chesbrough, 2003; Chesbrough and Crowther, 2006; Henkel, 2006; Laursen and Salter, 2006; Lecocq and Demil, 2006; van de Vrande et al., 2009; Drechsler and Natter, 2012; Bayona-Sáez et al., 2013; Garriga et al., 2013; Sisodiya et al., 2016; Martinez et al., 2014; Galati et al., 2016] in spite of various differences between them.

Chesbrough and Crowther [2006] found out that firms in non-high-tech industries are not innovating differently from firms in high-tech industries as the main driver for open innovation is to obtaining growth in revenues and in number of new products. However, prior study of Hagedoorn [1993] showed that motives for the R&D cooperation differ significantly across industries. This result was confirmed by Schmidt [2007], who stated that main drivers for the innovation partnership between the firms across science industries are: sharing of costs, an access external knowledge, and commercialization of product innovation, whereas a commercialization motive is crucial for firms of high-intensity industries as they are focused on expending markets in order to benefit from economies of scale. Commercialization motive along with knowledge acquisition, financial and strategic motives were also found to be significant for SMEs of low-tech industries in Ghana [Oduro, 2019]. Different practices are observed between two businesses in open innovation, one in software products (high-tech industry) and the other in agribusiness (non-high-tech industry) according to Grimsdottir and Edvardsson [2018]. The literature on open innovation also indicates that a knowledge-poor environment, which is a characteristic of non-high-tech industries does not motivate, but can inhibit the adoption of open innovation [van de Vrande et al., 2009; Garriga et al., 2013; Verbano et al., 2015].

When analyzed, ambiguous research results are also found in the context of barriers for open innovation. Bigliardi and Galati [2016] found out that there are differences in barriers for open innovation between industries. Knowledge-intense firms indicated that knowledge barriers are the most important ones, while firms from medium-innovative industries pointed out to financial economic and strategic risks and the least innovative industries indicated collaboration and organizational barriers. Fu et al. [2014] showed that firms in high-tech industries adopt open innovation due to constrains in finance and skills, whereas firms in medium- and low-tech industries are more likely to use open innovation to overcome institutional
constrains. However, recent researches among SMEs provides evidence that firms in high-tech industries and traditional manufacturing companies indicate that the main barriers preventing them from adopting open innovation are similar and same [Leckel et al., 2020].

The literature provides more evidences that firms from high-tech and non-high-tech industries may indicate different drivers and barriers for open innovation; however previous studies are not conclusive. Thus, we hypothesize that drivers and barriers for open innovation differ between high-tech and non-high-tech industries:

H1a. Firms operating in high-tech industries point out different drivers for the open innovation than firms operating in non-high-tech industries.

H1b. Firms operating in high-tech industries point out different barriers for the open innovation than firms operating in non-high-tech industries.

3 Methods

3.1 Sample

For analyzing drivers and barriers for open innovation in Poland, we used a survey database of 122 innovative firms in Poland that was drawn from databases of the most innovative firms in Poland according to Gazeta Prawna and Kamerton. The survey targeted innovative firms in Poland, and it was implemented by means of the computer-assisted telephone interviewing (CATI method). Data collection was done between 12 and 30 January 2019. It was random sampling and the response rate was 69%. The minimum size of the sample for the population was 115 firms. Further, 122 interviews were conducted in the study that ensured the statistical significance of results at the level 0.05.

Moreover, only respondents holding higher managerial positions and representing firms that systematically innovate were selected in the process of identifying drivers and barriers reliably for open innovation. The survey started by asking the screening question. Respondents were asked whether their firm had developed at least one open innovation between 2016 and 2018. The 3-year time perspective was adopted as an innovation is a process and it is important to take into account of time that has lapsed between the moments when an innovation is conceived, implemented, and commercialized.

Firms included in the study were moderately differentiated. Based on the size class, the sample was dominated by large firms (40.2%) and medium-sized entities (32.8%). Small-sized firms accounted to 24.6% and micro firms accounted to 2.5%. In the sample, firms from high-tech industries accounted to 63.1% and 36.9% entities accounted for non-high-tech industries. Table 3 shows how respondents are distributed across size classes and industries. It seems that firms from high-tech industries are more likely to adopt open innovation compared to entities from non-high-tech industries.

3.2 Variables

The survey proceeded with questions about drivers and barriers for open innovation. After the screening question about implementation of at least one open innovation between 2016 and 2018, respondents were requested to provide drivers as well as barriers for open innovation. Also, a list of drivers and barriers for open innovation is provided to them to choose the factors (respondents may choose more than one factor); respondents had also possibility to add own drivers and barriers, but no one added anything. Respondents were also requested to choose the main area of operations from manufacturing high-tech industries, knowledge-intense services industries, and non-high-tech industries (definitions of the type of industry were provided on the request).

3.3 Methods

The study performed the critical analysis of academic literature as well as documents analysis (desk research). We conducted the survey among innovative firms in Poland to gather information about drivers
and barriers for open innovation, and it was implemented by means of the computer-assisted telephone interviewing (CATI method).

Then, statistical inference is also applied, which is the process of drawing conclusions about populations or scientific truths from data. Further, the Pearson’s chi-squared test ($\chi^2$) is applied to identify whether there are differences in drivers and barriers for open innovation between high-tech and non-high-tech industries. Pearson’s chi-squared test is a statistical test applied to sets of categorical data to evaluate probability and possibility of occurring of any observed difference between the sets by any chance. We used the following formula:

$$\chi^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E}$$

where $O$ is the value observed and $E$ is the value expected.

In the study, we selected a desired level of confidence (significance level) for the results of the test of $\text{sig} = 0.05$. Statistical analyses were conducted by using SPSS Statistical software.

4 Results and discussions

The most important drivers for open innovation in high-tech and non-high-tech industries in Poland are market-driven motives (to improving competitiveness of a firm, increasing the possibility to gain new clients, increasing revenues from innovations, and improving loyalty of existing buyers). The most important driver for high-tech industries is improving competitiveness, and for non-high-tech industries increasing revenues from innovations. This finding are in agreement with the literature that points that open innovation is mainly motivated by market-driven factors [Gans and Stern, 2003; van de Vrande et al., 2009; Fernandez and Svensson, 2017]. It also supports the studies of Chesbrough and Crowther [2006] as well as van de Vrande et al. [2009] which state that offensive drivers are more important than defensive drivers for open innovation. Besides market-driven motives, respondents often pointed to drivers related to innovation processes with two exceptions: an improving research potential and earnings from unused inventions. Our findings partially supported the results of Bayona et al. [2001], Sakakibara [1997] and Schmidt [2007] who found that a cost-sharing and an uncertainty are motivations for the R&D cooperation.

In our study, respondents pointed to those drivers, but they were not the most important. Surprisingly, respondents from Poland did not indicate acquiring new knowledge and technology as important driver for open innovation, which is contrary to conclusions from the literature. Schmidt [2007] stated that access to an external knowledge is the important driver for open innovation in industries related to science. But, in our study, acquiring new knowledge and technology was pointed out more often by firms by non-high-tech rather than high-tech industries. The less indicated driver was related to earnings from unused inventions suggesting that innovative firms from high-tech and non-high-tech industries adopt mainly in-bound, not out-bound open innovation. Interestingly, externally driven motives were the least important for respondents. Respondents from the non-high-tech industries did not point to the competitive pressure

<table>
<thead>
<tr>
<th>Parameter</th>
<th>No. of firms</th>
<th>Share%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–9 employees (micro firm)</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>10–49 employees (small-sized firm)</td>
<td>30</td>
<td>24.6</td>
</tr>
<tr>
<td>50–249 employees (medium-sized firm)</td>
<td>40</td>
<td>32.8</td>
</tr>
<tr>
<td>More than 250 employees (large firm)</td>
<td>49</td>
<td>40.2</td>
</tr>
<tr>
<td>Industry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-tech industries</td>
<td>77</td>
<td>63.1</td>
</tr>
<tr>
<td>Non-high-tech industries</td>
<td>45</td>
<td>36.9</td>
</tr>
</tbody>
</table>

Source: Own elaboration.
and the pressure exerted by business partners at all, but they were more inclined to adopt open innovation to receive the financial support compared to firms from high-tech industries. Thus, internal drivers for open innovation were more important than external ones in high-tech and non-high-tech industries.

In order to test if there are statistically significant differences between drivers for open innovation in high-tech and non-high-tech industries, the Pearson’s chi-squared test is applied. The statistically significant difference was accounted only for the one driver. Respondents from non-high-tech industries more often indicated the raising of revenues from innovation than respondents from high-tech industries (\( \text{sig} = 0.020 \)). It is observed that the significant level is above 0.05 for other drivers. Thus, the hypothesis 1a should be rejected as it cannot be asserted that there is difference in drivers for open innovation between high-tech and non-high-tech industries. These results are opposite to those of Hagedoorn [1993], Schmidt [2007], Oduro [2019] as well as Grimsdottir and Edvardsson [2018], who found that driver for open innovation differ significantly across industries, but it supports the study of Chesbrough and Crowther [2006] who found out no difference in drivers for open innovation between high-tech and non-high-tech industries. Primary driver leading to the adoption of open innovation is a search for growth opportunities.

Table 4 presents comparison of drivers for open innovation between firms from high-tech industries and non-high-tech industries.

Internal barriers were more important for both high-tech and non-high-tech industries compared to external ones. Further, it is observed that legal and financial factors were the most important barriers for all firms. It is in line with the literature which states that barriers related to economic and financial issues are the greatest ones [Enkel et al., 2009; van de Vrande et al., 2009; McCormack et al., 2015; Bigliardi and Galati, 2016], and this is observed in Poland [Piwowar-Sulej et al., 2019]; the rest of barriers were not pointed regularly. One exception is difficulties in finding right partners. However, this barrier was pointed out more often by respondents from non-high-tech industries than by ones from high-tech industries. The employee’s resistance was pointed very rarely and it does not support conclusions derived from the literature that open innovation is hindered by human capital. We also do not find support for the conclusion

### Table 4. Comparison of drivers for open innovation between high-tech industries and non-high-tech-industries

<table>
<thead>
<tr>
<th>Drivers for the open innovation</th>
<th>Industry</th>
<th>Pearson’s chi-squared; sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal drivers related to innovation processes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shortening the innovation processes</td>
<td>24.7%</td>
<td>28.9%</td>
</tr>
<tr>
<td>Reducing costs of innovation</td>
<td>36.4%</td>
<td>46.7%</td>
</tr>
<tr>
<td>Increasing number if innovations</td>
<td>26.0%</td>
<td>28.9%</td>
</tr>
<tr>
<td>Reducing risk of innovations</td>
<td>15.6%</td>
<td>11.1%</td>
</tr>
<tr>
<td>Improving research potential</td>
<td>5.2%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Earnings from unused inventions</td>
<td>3.9%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Acquiring new knowledge and technology</td>
<td>13.0%</td>
<td>24.4%</td>
</tr>
<tr>
<td>Internal market-driven motives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possibility to gain new clients</td>
<td>55.8%</td>
<td>53.3%</td>
</tr>
<tr>
<td>Improving competitiveness of a firm</td>
<td>70.1%</td>
<td>71.1%</td>
</tr>
<tr>
<td>Improving loyalty of existing buyers</td>
<td>48.1%</td>
<td>57.8%</td>
</tr>
<tr>
<td>Increasing revenues from innovations</td>
<td>51.9%</td>
<td>73.3%</td>
</tr>
<tr>
<td>External drivers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highly turbulent external environment</td>
<td>6.5%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Competitive pressure</td>
<td>7.8%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Pressure exert by business partners</td>
<td>5.2%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Possibility to gain financial support for the open innovation</td>
<td>5.2%</td>
<td>8.9%</td>
</tr>
</tbody>
</table>

**Source:** Own elaboration.
that cultural issues are key barriers for open innovation [Chesbrough and Crowther, 2006; van de Vrande et al., 2009]. The insignificant important barrier among internal ones is a negative experience from the past cooperation. It may be explained by limited experience from open innovation as firms in Poland innovative mainly in isolation; however they may have only positive experiences. Findings are also not in line with Fu et al. [2014], who stated that firms from high-tech are more affected by constraints in finance and skills than entities from medium- and low-tech industries (they are more affected by institutional constraints). Surprisingly, external barriers were the least important for innovative firms in Poland. The market maturity and the lack of competitive pressure were selected by single respondent (no one from high-tech industries pointed to the former one) and the lack of pressure exerted by business partners as well as the lack of external financial support was not chosen at all. The last one is interesting as the literature suggests that the low availability of finance and the high cost of external source of finance are the main factors responsible for preventing open innovation [D’Este et al., 2012; Galia et al., 2012; Fu et al., 2014].

Further to test whether there is the statistically significant difference between barriers for open innovation in high-tech and non-high-tech industries, we applied the Pearson’s chi-squared test. The statistically significant difference was accounted only for the one barrier. Respondents from non-high-tech industries more often pointed out to the lack of aim alignment than respondents from high-tech industries (sig = 0.034). The significant level is above 0.05 for other barriers. Thus, the hypothesis 1b should be rejected as it cannot be asserted that there is difference in barriers for open innovation between high-tech industries and non-high-tech industries. This result is opposite to those of Bigliardi and Galati [2016] as well as Fu et al. [2014], who found out that firms from different industries experience different barriers for open innovation, but it confirms finding of Leckel et al. [2020] that firms in high-tech industries and traditional manufacturing companies report similar barriers for open innovation.

Table 5 presents comparison of barriers for open innovation between firms from high-tech and non-high-tech industries.

This study brings new insights to our understanding of drivers and barriers for open innovation in different industries in the context of the moderate innovation country (Poland). We believe that a better understanding of drivers and barriers for open innovation provides insights for a better understanding of current business environment and open innovation paradigm. Considering that fact that firms in the moderate innovation country are falling behind their counterparts in countries classified as innovation leaders and strong innovators (in the European Innovation Scoreboard), also in terms of open innovation, and findings of this study provide valuable insight for managers and policymakers in moderate innovation countries.

Many firms adopt open innovation, but without asking themselves what kind of reasons push them to do so and what kind of barriers are associated with it. The study provides the empirical evidence for the most important drivers and barriers for open innovation. Managers therefore can be aware of reasons to adopt open innovation and barrier that they need to overcome to fully benefit from open innovation. Findings of the study can help managers to understand drivers and barriers for open innovation and allow them to develop measurements to fully utilize benefits of open innovation.

The study confirms that firms pursue different motives and experience different barriers when getting engaged in open innovation, which may be more than one driver as well as one barrier at the same time [Arvanitis, 2012]. Initially, open innovation (or broader collaboration in innovation) was adopted mainly by firms in high-tech industries, but more recently it has utility as a paradigm for innovation to non-high-tech industries [Chesbrough and Crowther, 2006]. More and more firms apply the concept of open innovation in various industries, hence drivers and barriers for open innovation homogenize. Firms in various industries are not innovating differently for innovation’s sake; the main drivers for open innovation are market-driven motives and the main barriers are legal and financial ones, which can be easily overcome. Manager should remember that advantages related to open innovation processes should be considered as well in order to capture all benefits of open innovation.

The study shows that internal drivers as well as barriers are more important than external ones (they are not significant for respondents in the study). This result is partially surprising for us. As we expected, internal drivers for open innovation are more significant than externals ones; the research sample consisted
of innovative firms in Poland, thus offensive factors are important as they allow to maintain growth [Chesbrough and Crowther, 2006; van de Vrande et al., 2009]. Because we researched only innovative firms in Poland, we expected that external barriers would be more important that internal ones—firms are actively engaged in innovation activities, hence internal barriers should be limited in order to run smoothly innovation processes and external barriers should be more important. However, our expectation has not found confirmation in the study. Nevertheless, firms in the study implemented only limited number of open innovations; hence they experience internal barriers that constrain their innovation activities.

We believe also that the study provides fresh insights for policymakers as it shows that there is no difference in drivers and barriers between high-tech and non-high-tech industries in moderately innovator country. Findings can be used by policymakers to effectively increase collaboration for innovation among different entities by stimulating open innovation activities and limiting barriers therein. While open innovation has been a great success for at least a few firms, it requires public policy to sustain that success over time, and to drive it throughout the majority of businesses [Chesbrough, 2020]. Therefore, considering the results of the study, policymakers need to refine strategic plans in a way that encourage and facilitate the use of open innovation. On one hand, public policy goals should be stronger oriented toward innovation performance and economic performance of firms as market-driven motives are the most important for innovative firms in Poland. It should facilitate innovation and growth of firms by encouraging them to collaborate with external partners across industries and organizational boundaries. On the other hand, public policy should be also aimed at reducing financial and legal barriers as they are the main obstacles reported by firms in the study. It is worth to highlight that drivers and barriers for innovation differs from drivers and barriers for open innovation, thus there is a need for special-designed programs for open innovation. However, policymakers should remember that a locally bound approach [Leckel et al., 2020] that takes firm- as well as environment-specific factors can offer more advantages than the implementation of “one size fits all” open innovation strategies [Kim and Ahn, 2020].

Table 5. Comparison of barriers for open innovation between high-tech industries and non-high-tech-industries

<table>
<thead>
<tr>
<th>Barriers for the open innovation</th>
<th>Industry</th>
<th>Pearson’s chi-squared; sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>High-tech</td>
</tr>
<tr>
<td>Internal barriers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative experience from past cooperation</td>
<td>1.3%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Risk of creating new competitor</td>
<td>28.6%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Lack of trust</td>
<td>26.0%</td>
<td>17.8%</td>
</tr>
<tr>
<td>Legal barriers</td>
<td>83.1%</td>
<td>91.1%</td>
</tr>
<tr>
<td>Financial barriers</td>
<td>75.3%</td>
<td>80.0%</td>
</tr>
<tr>
<td>Risk of unequal distribution of income from innovation</td>
<td>13.0%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Lack of aim alignment</td>
<td>11.7%</td>
<td>26.7%</td>
</tr>
<tr>
<td>Cultural differences</td>
<td>7.8%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Resources misfit</td>
<td>18.2%</td>
<td>17.8%</td>
</tr>
<tr>
<td>Difficulties in finding right partners</td>
<td>28.6%</td>
<td>40.0%</td>
</tr>
<tr>
<td>Employees’ resistance</td>
<td>6.5%</td>
<td>11.1%</td>
</tr>
<tr>
<td>External drivers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market maturity</td>
<td>1.3%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Lack of competitive pressure</td>
<td>0.0%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Lack of pressure exert by business partners</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Lack of external financial support</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Source: Own elaboration.
Totally, we believe that this paper has moved the discussion further and provides a good basis for scholars to advance knowledge on drivers and barriers for open innovation in the moderately innovator country.

5 Conclusions

The paper attempts to answer the demand of van de Vrande et al. [2009] and more recently Salter et al. [2014] to study motives and challenges related to open innovation in a detailed manner using quantitative research methods. The literature review reveals that various drivers as well as barriers for open innovation can be identified. Drivers can be divided into internal and external factors, wherein the former one can be further divided into market-driven motives and drivers related to innovation processes. Barriers can be divided into internal and external factors. The study shows that internal drivers and barriers are more important than external ones for innovative firms in Poland. Firms engage in open innovation mainly due to market-driven motives and the main barriers are related to legal and financial constraints. The literature also suggests that different industries may adopt open innovation for different reasons and there may be differences in barriers for open innovation. Our study does not support this conclusion as for most of drivers and barriers we did not find statistically significant differences between high-tech and non-high-tech industries. The statistically significant difference was accounted only for the one driver and one barrier, respectively: increasing revenues from innovation and a lack of aim alignment; selected driver and barrier were pointed more often by respondents from non-high-tech than high-tech industries.

Although the research has reached its aims, there are some unavoidable limitations. First, conducted research referred only to open innovation in Poland, and thus the generalizability of results to other countries cannot be done as national idiosyncrasies may influence open innovation [Keupp and Gassmann, 2009; Galia et al., 2012; Garriga et al., 2013; Klimas, 2015; Pervan et al., 2015]. Therefore, more cross-national research on open innovation would be desirable. Second, the study compares only high-tech and non-high-tech industries, while it may be interesting to explore differences between manufacturing and services industries as well, especially that manufacturing industries should explored more widely than the service industries [Hossain, 2016; Chesbrough, 2020]. Third, the list of drivers and barriers is probably not complete as the other factors proposed by past studies were not included in the survey. The fourth point is that there are statistical and data limitations. Although our sample is extensive (it ensures the statistical significance of results at the level 0.05), there is a chance that number of micro firms is not sufficient, especially that they are considered as a source of breakthrough innovations. Comparing start-ups to older established SMEs may be also interesting, especially that the most recent study of Gimenez-Fernandez et al. [2020] found that external knowledge sourcing makes a higher contribution to the innovation performance of new compared to older small firms, but only in high-tech settings. Thus, future studies should also include and start-ups at different phases in the life cycle. In addition, our data are subjective in nature as we asked opinions from single representative of a firm. So, in future research data should be obtained from different respondents from a firm.

References


Empirical Paper

Rainer Busch, Karim Gassemi, Julie Papastamatelou*, Alexander Unger, Christian May

Perception of formal and informal institutions by entrepreneurs in China, Morocco, and Germany – A cross-cultural pilot study

https://doi.org/10.2478/ijme-2020-0026
Received: January 4, 2020; accepted: September 24, 2020

Abstract:
Introduction and Aims: Entrepreneurship and the business environment, in general, are being influenced by the existence of formal and informal institutions. This study focuses on the negative versus positive perceptions of Moroccan, Chinese, and German entrepreneurs to formal and informal institutions, and the associations of these perceptions with self-efficacy and market versus network orientation of the business environment.

Methods: In a sample of $n = 319$ female and male entrepreneurs, we have examined similarities and differences in the perception of informal and formal institutions and their effects on self-efficacy and business strategy, while conducting t-tests and linear regressions.

Results: In all three cultural contexts, both formal and informal institutions play a significant role because of different reasons.

Conclusion: The nature of entrepreneurship is complex as both formal and informal institutional factors are differently associated with businesses. The results could enhance the understanding regarding the coexistence of formal or informal institutions within the business environments of different countries and the connections between business orientation and self-efficacy.

Keywords: formal institutions, informal institutions, self-efficacy, network orientation, market orientation

JEL Classification: D02, D23

1 Introduction

When we refer to institutions, there is a need for clarification whether we use the term to describe norms or institutional bodies. In this paper, we consider institutions as frameworks consisting of norms, rules, and mechanisms, which enforce the given rules. Thus, institutions guide social relationships and limit the possibilities of exploitations in interactions. Through institutions, we increase the predictability and continuity in our personal and business relations. Their essentiality lies in their role as frameworks for social interactions. Depending on their nature and the reasons for their establishment, they can hinder or foster the activity of economic actors [Leković, 2011: 361].

Entrepreneurship and the business environment in general, are being influenced by the existence of formal and informal institutions. Formal institutions are linked to rules implemented by laws, regulations,
and market transaction rules and sanctions, which follow their non-implementation [Leković, 2011: 358]. Governments are responsible for the enforcement of formal rules. However, besides the existence of formal institutions, there are institutions, including unwritten norms, values, attitudes, traditions, and behaviors, which are acceptable in a given society. These informal institutions can affect the business environment through an influence on people’s behavior. Informal institutions are implicit, based on social constructs, and transmitted through culture [Stephan et al., 2014]. They reflect common understandings within a cultural setting and enhance cooperation and coordination [North, 1991].

Thus, culture is a key factor enhancing mutual rules, which are being introduced outside official channels. In case of a favorable country’s framework regarding entrepreneurial activity, the tendency will be toward more productive ways of wealth generation. On the other hand, in the case of a non-favorable environment, the tendency will be toward informal institutions. Research has demonstrated that formal institutions are dominating and being perceived as more efficient in democratic countries [Bratton, 2007], whereas countries with a lower level of democracy are usually related to informal institutions [Bratton, 2007].

According to Aidis and Mickiewicz [2006], formal institutions such as strong property and intellectual rights for inventors of products and processes are key elements for the flow of innovation. Estrin et al. [2011: 27] state that for projects to reach growth, formal, impersonal institutions, and the stability, which is associated with them, are essential. Thus, any weakness in property rights can hinder the development of growth, since entrepreneurs will probably not take the risk of investing in large-scale projects.

This view though ignores that businesses are reacting within the structure of the given framework involving incentives and results from a combination of both, formal and informal institutions. Even in less democratic contexts, there is an implementation of formal rules, which have to be followed. However, we can assume that in less democratic contexts the informal institutions are being perceived more positively. Since the business environment of a country is being influenced by the country’s cultural context, in many cases formal and informal institutions coexist in a complementary way [Leković, 2011: 361]. The importance of informal institutions for daily, as well as for business life, has been identified by the new institutional approach [Bukowski et al., 2014: 478].

Therefore, although previous literature has frequently addressed formal and informal institutions separately, we suggest that their coexistence should be considered to better understand their connections with entrepreneurship.

According to Getz [2008] who conducted a study in El Pozo, of Mexico, formal and informal institutions coexist and support farmers in gaining access to their products in the market.

Whenever formal institutions do not diverge to informal institutions, the conditions for the efficient operation of both types are being fulfilled [Leković, 2011: 361]. Winiecki [2000] argues that the harmonic coexistence of both institutional types can lead to long-term economic success [Winiecki, 1998: 21]. A similar stance is taken by the World Bank Development Report [2002] which states: “Where informal institutions operate effectively, and when formal institutions require supporting institutions, building new formal institutions may not be a priority for policymakers.” It suggests, “accepting informal institutions when formal institutions would not have their desired impact.” Nevertheless, that does not mean that formal and informal institutions supplement always one another. In contrast, they can also be conflicting. In the case of a conflicting coexistence of formal and informal institutions, the arrangements are inefficient (Table 1).

Table 1. Types of the relationship between formal and informal institutions

<table>
<thead>
<tr>
<th>Ineffective formal institutions</th>
<th>Effective formal institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substitutive</td>
<td>Complementary</td>
</tr>
<tr>
<td>Competing</td>
<td>Accommodating</td>
</tr>
</tbody>
</table>

market or network orientation. Self-efficacy has been defined by Bandura [1982] as the belief that success is based on the desired behavior as a precondition for the production of an outcome. Therefore, self-efficacy is the confidence-building measure of an entrepreneur in his ability to mobilize his cognitive, motivational, and behavioral resources, to be successful in the performance of a task.

In a study by Zhao et al. [2005] on self-efficacy, it was shown that this factor affects the choices to activities, goals, persistence, and performance.

The study of Al-Awbathani et al. [2019] provided evidence on informal institutions as a moderator of self-efficacy and outcome expectations.

Narver and Slater (1990) have defined market orientation as a business strategy that mostly creates added value for consumers, and therefore, beneficial long-term results for corporations can be reached. According to these authors, market orientation is based on a focus toward the customers, the competitors, and inter-functional coordination, whereas network orientation relies on relations between individuals, groups, or organizations [Rasmussen et al., 2015]; informal collaboration [Kreiner and Schultz, 1993]. Here relationships are based on mutual benefit, trust, and reciprocity [Mitchell et al., 2016].

Because of the complex relationship between formal and informal institutions, in the current study, we examine an assumed coexistence in two emerging economies, namely, China and Morocco, and Germany as an example of a developed economy.

2 Examples of the importance of informal institutions in China, Germany, and Morocco

Formal and informal institutions do not have the same importance in all countries. According to Roche [2005], informal networks and family traditions are essential in the business environment of Asia. Formal institutions do seem to play a greater role in Western European countries such as the UK and Germany. One has to consider the fact that the corporate environment in transition economies such as China or Morocco is changing and so are the rules of the game. Therefore, during the last decades, these economies have been influenced by Western societies and the formal institutions are playing an increasing role [Högberg, 2009: 2].

China is a collectivist society scoring only 20 on the Hofstede dimension of individualism. In societies that have high scores in collectivism, group interests are more important than individual interests [Hofstede, 2001]. Since government rules and regulations primarily aim to serve the public interest [Bozeman, 2000], we expect that collectivist societies favor formal institutions. On the other hand, one of the key elements of the Chinese society on which in many cases business activity is based is family. The family environment and personal relationships, which are in general (“Guanxi”) important for China, are based on mutual trust [Gong Suzuki, 2013: 376]. In emerging economies, such as China and Morocco, social networks can compensate for institutional drawbacks [Estrin et al., 2006]. Thus, the family structures and the strong personal relationships that are more essential in collectivist societies [Triandis, 2001] allow the emergence of informal institutions. The informal rules and values can in turn enable the collection of information [Coulthard and Loos, 2007: 7] since trust eases information sharing. Empirical findings show that informal interactions can minimize transaction costs [Gulati et al., 2000: 209-210], improve decision-making, and decrease risk because of information sharing [Bulkley and Van Alstyne, 2004: 152], thus enhancing firm performance. Closely related to trust is the concept of social capital, another vital informal institution. Bourdieu [1986: 248] defines social capital as “the aggregate of the actual or potential resources that are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition.”

In particular, in societies, which are based on hierarchical structures such as China, the extent of trust within a group is increased. In contrast, outside the group, trust decreases drastically. The findings of La Porta et al. [1997] support the notion that trust increases judicial efficiency, bureaucratic quality, and tax compliance. As trust increases, corruption decreases. People in societies with a high level of trust, identify more with their government and other official agencies with the consequence of higher credibility which
in turn, enhances innovation and investment [Putnam, 1993; Knack and Keefer, 1997]. One should though consider the ambiguous character of institutional relations, since transparent and non-corrupt societal structures increase the trust level, as in the German case. Even though the focus in developed economies is more on formal business relationships [Zhou et al., 2007] since corruption in these countries is not being tolerated, entrepreneurship is promoted, power distance is less important, and therefore equality between managers and employees is enhanced, and trust as an informal institution is fostered. At the same time, research has demonstrated that societies that score high in uncertainty avoidance favor formal rules and specific regulations to overcome uncertain situations [e.g., House et al. 2004].

Whether trust improves formal institutions (China) or formal institutions improve trust (Germany), according to Papastamatelou et al. [2016: 85, 88, 90] trust increases firm performance in both societies. Thus, informal institutions are assumed to play a key role in China and Germany. Since Morocco is an emerging economy with high levels of corruption, we additionally assume that informal institutions will be perceived as more positive than the formal ones. Whereas the business environment is being promoted and investments are made by foreign investors around the globe, we further hypothesize that formal institutions will also be perceived positively.

In the current study, we focus on the negative versus positive perceptions of the Moroccan, Chinese, and German entrepreneurs to formal and informal institutions and on the associations of these perceptions with self-efficacy, as well as with market versus network orientation of the business environment. To our knowledge, it is the first study, which examines the associations between the perception of formal and informal institutions, self-efficacy, and market orientation. We assume that in all three cultural contexts, formal and informal institutions are of great importance and are perceived positively since they fulfill specific functions. In Germany, although formal institutions are generally prevalent, the informal institutions, which play lesser roles when compared to the emerging economies are still significant. Several studies have shown that in practice entrepreneurs operate somewhere in between the formality and informality continuum [e.g. De Mel et al., 2013; De Castro et al., 2014].

While most studies focus on the examination of formal institutions, this study additionally deals with the impact of informal institutions, since positive influences of synergetic effects of formal and informal institutions are being assumed.

2.1 Hypotheses

H1: Formal and informal institutions will be perceived positively in Morocco, China, and Germany.

H2: In Germany, informal institutions will be perceived as less positive than in the two emerging economies.

H3: In all three countries, the positive perception of formal rules and the negative perception of informal rules will be associated with market orientation.

H4: In all three countries, the positive perception of informal rules and the negative perception of formal rules will be associated with network orientation and increased self-efficacy.

3 Methods

3.1 Participants

The data collection took place in Morocco, China, and Germany. Participants were recruited from MBA courses of the involved institutions. The sample consisted of entrepreneurs working in the middle management of companies of the respective countries, and they were primarily responsible for reaching the goals set by the top management. They were involved in the day-to-day business operations of the
companies and possessed the necessary insights. All subjects signed the informed consent forms and filled in the questionnaires in paper-pencil request forms.

The sample was made up of \( n = 83 \) Moroccan, \( n = 153 \) Chinese and \( n = 83 \) German entrepreneurs (\( M_{\text{age}} = 33.0 \) years, \( SD = 8.5 \)). 58.0% were males, 41.2% females and 0.8% did not indicate their gender.

The participants were working in the following sectors: manufacturing, electricity, gas and water supply, construction industry, logistics, wholesales/retail, business sector, hotels/restaurants financial services, real estate, entertainment, sports, social services, pharmaceuticals, the chemical industry, and other sectors.

### 3.2 Measures

We have defined formal institutions as “written rules,” such as government regulations, political rights, market restrictions, and informal institutions as “unwritten rules” such as traditions and codes of conduct.

The independent variables: *formal rules positive perception*, *formal rules negative perception*, *informal rules positive perception*, *informal rules negative perception*, and *property and intellectual rights* have been created by indices of two variables respectively, which were taken from the World Economic Forum. Besides, the independent variables: *judicial system efficacy perception*, *corporate governance efficacy perception*, and *ethics and behavioral firm perception* were also taken from the World Economic Forum (see Table 2).

The dependent variables *market and network orientation* have been formed by one item respectively. The items are based on the literature, and have been pre-tested (see Table 2).

Self-Efficacy, as the third dependent variable, has been formed by an index of the 10-item Likert-type (see Table 2). The German version of this scale was validated by Jerusalem and Schwarzer [1999]. For the analyses, the scale was reversed so that a high value represents a high level of self-efficacy.

#### Table 2. Questionnaire items

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type</th>
<th>Source</th>
<th>Items</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal rules positive</td>
<td>Independent</td>
<td>WEF pillar</td>
<td>Average calculation index of the following items:</td>
<td>Not at all – Very much (7 point scale)</td>
</tr>
<tr>
<td>perception</td>
<td></td>
<td></td>
<td>– To what extent do you evaluate the formal institutions (“written rules”) in your country as a chance for the success of your company?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>– In the context of competing with your most relevant competitors do you think you benefit from formal institutions at the expense of these competitors?</td>
<td></td>
</tr>
<tr>
<td>Formal rules negative</td>
<td>Independent</td>
<td>WEF pillar</td>
<td>Average calculation index of the following items:</td>
<td>Not at all – Very much (7 point scale)</td>
</tr>
<tr>
<td>perception</td>
<td></td>
<td></td>
<td>– To what extent do you evaluate formal institutions (“written rules”) as an inhibiting factor for the success of your company?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>– In the context of competing with your most relevant competitors do you think formal institutions will discriminate you in favour of these competitors?</td>
<td></td>
</tr>
<tr>
<td>Informal rules positive</td>
<td>Independent</td>
<td>WEF pillar</td>
<td>Average calculation index of the following items:</td>
<td>Not at all – Very much (7 point scale)</td>
</tr>
<tr>
<td>perception</td>
<td></td>
<td></td>
<td>– To what extent do you evaluate informal institutions (“unwritten rules”) as a chance for the success of your company?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>– In the context of competing with your most relevant competitors do you think you benefit from informal institutions at the expense of these competitors?</td>
<td></td>
</tr>
<tr>
<td>Informal rules negative</td>
<td>Independent</td>
<td>WEF pillar</td>
<td>Average calculation index of the following items:</td>
<td>Not at all – Very much (7 point scale)</td>
</tr>
<tr>
<td>perception</td>
<td></td>
<td></td>
<td>– To what extent do you evaluate informal institutions (“unwritten rules”) as an inhibiting factor for the success of your company?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>– In the context of competing with your most relevant competitors do you think informal institutions will discriminate you in favor of these competitors?</td>
<td></td>
</tr>
</tbody>
</table>

(continued)
### Table 2. Continued.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type</th>
<th>Source</th>
<th>Items</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Judicial system</td>
<td>Independent</td>
<td>WEF pillar</td>
<td>– In your country, to what extent is the judiciary independent from the influences of members of government, citizens, or firms?</td>
<td>Heavily influenced – Entirely independent (7 point scale)</td>
</tr>
<tr>
<td>efficacy perception</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporate governance</td>
<td>Independent</td>
<td>WEF pillar</td>
<td>– In your country, how would you characterize corporate governance (the relationships) by investors and boards of directors?</td>
<td>Management has little accountability to investors and board – Management is highly accountable to investors and boards (7 point scale)</td>
</tr>
<tr>
<td>efficacy perception</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ethics and behavioral</td>
<td>Independent</td>
<td>WEF pillar</td>
<td>– In your country, how would you rate the corporate ethics of companies (ethical behavior in interactions with public officials, politicians, and other firms)?</td>
<td>Extremely poor – among the worst in the world – Excellent - among the best in the world (7 point scale)</td>
</tr>
<tr>
<td>firm perception</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Property and intellectual</td>
<td>Independent</td>
<td>WEF pillar</td>
<td>Average calculation index of the following items: – In your country, how strong is the protection of property rights, including financial assets? – In your country, how strong is the protection of intellectual property, including anti-counterfeiting measures?</td>
<td>Extremely weak – Extremely strong (7 point scale)</td>
</tr>
<tr>
<td>rights</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market orientation</td>
<td>Dependent</td>
<td></td>
<td>– Market-based strategies (formal and impersonal, rule-based, more calculative)</td>
<td>Not at all – Very much (7 point scale)</td>
</tr>
<tr>
<td>Network orientation</td>
<td>Dependent</td>
<td></td>
<td>– Relationship-based strategies (informal and interpersonal)</td>
<td>Not at all – Very much (7 point scale)</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Dependent</td>
<td>Jerusalem and</td>
<td>Average calculation index of the following items: – I can always manage to solve difficult problems if I try hard enough. – If someone opposes me, I can find the means and ways to get what I want. – It is easy for me to stick to my aims and accomplish my goals. – I am confident that I could deal efficiently with unexpected events. – Thanks to my resourcefulness, I know how to handle the unforeseen situation. – I can solve most problems if I invest the necessary effort. – I can remain calm when facing difficulties because I can rely on my coping abilities. – If I am in trouble, I can usually think of a solution. – When I am confronted with a problem, I can usually find several solutions. – I can usually handle whatever comes my way.</td>
<td>Exactly true (4 point scale)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Schwarzer [1999]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3.3 Statistical analysis

For the data analysis, SPSS, version 19 was used. We have used an alpha level of 0.05 for all statistical tests. We have conducted t-tests to compare the perception of the variables by the participants in the three cultural contexts. Moreover, we have conducted regression analyses to conclude whether the positive and negative perception of formal and informal institutions indicates differences concerning self-efficacy, market, and network orientation.
4 Results

Different aspects of (formal and informal) institutions were considered: The perception of the judicial system efficacy was significantly higher in Germany compared to Morocco \((p < 0.001)\) and China \((p < 0.001)\). No differences were observed between Morocco and China \((p = 0.136)\) (Table 3 and Figure 1).

The same pattern of higher values in Germany \((all \ p < 0.001)\) and no differences between Morocco and China \((all \ p > 0.281)\) were also observed for the perception of property and intellectual rights protection (Table 4 and Figure 2).

Table 3. Differences in the perception of the judicial system efficacy

<table>
<thead>
<tr>
<th></th>
<th>Morocco</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(M)</td>
<td>(SD)</td>
</tr>
<tr>
<td>Germany</td>
<td>3.29</td>
<td>1.69</td>
</tr>
<tr>
<td>China</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Morocco</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(M)</td>
<td>(SD)</td>
</tr>
<tr>
<td>Germany</td>
<td>4.84</td>
<td>1.40</td>
</tr>
<tr>
<td>China</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Morocco</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.29</td>
<td>1.69</td>
</tr>
</tbody>
</table>

Note: Values are reported for two-tailed tests.

Table 4. Perception of property and intellectual rights protection

<table>
<thead>
<tr>
<th></th>
<th>Morocco</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(M)</td>
<td>(SD)</td>
</tr>
<tr>
<td>Germany</td>
<td>3.77</td>
<td>1.39</td>
</tr>
<tr>
<td>China</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Morocco</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(M)</td>
<td>(SD)</td>
</tr>
<tr>
<td>Germany</td>
<td>5.75</td>
<td>582</td>
</tr>
<tr>
<td>China</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Morocco</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.77</td>
<td>1.38</td>
</tr>
</tbody>
</table>

Note: Values are reported for two-tailed tests.
The same holds true for corporate governance efficacy perception (Table 5 and Figure 3). In the case of the perception of ethics and firm behavior, we have observed higher values in Germany compared to Morocco ($p = 0.008$) and no significant differences between Germany and China ($p = 0.131$), as well as between Morocco and China ($p = 0.157$) (Table 6 and Figure 4).

**Figure 2.** Perception of property and intellectual rights protection.

**Table 5.** Perception of corporate governance efficacy

<table>
<thead>
<tr>
<th></th>
<th>Morocco</th>
<th>Germany</th>
<th>t (175)</th>
<th>p</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Morocco</strong></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>t (175)</td>
</tr>
<tr>
<td>4.97</td>
<td>1.50</td>
<td>5.58</td>
<td>1.23</td>
<td>-12.30</td>
<td>$p = 0.003$</td>
</tr>
</tbody>
</table>

**Germany**

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>t (244)</th>
<th>p</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.58</td>
<td>1.23</td>
<td>4.66</td>
<td>1.56</td>
<td>4.75</td>
<td>$p &lt; 0.001$</td>
<td>0.64</td>
<td></td>
</tr>
</tbody>
</table>

**Morocco**

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>t (245)</th>
<th>p</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.97</td>
<td>1.50</td>
<td>4.66</td>
<td>1.56</td>
<td>1.48</td>
<td>$p = 0.140$</td>
<td>0.19</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Values are reported for two-tailed tests.
German entrepreneurs evaluate the above-mentioned independent variables, which are facets of formal institutions as more positive and more efficient.

In the second step, participants were asked to which extent they perceive formal and informal institutions as a chance and/or as an inhibiting factor.

Significant differences were only found between Morocco and China \( (p = 0.003) \). In the latter, formal institutions were perceived more as a chance. (Table 7 and Figure 5).

**Table 6.** Perception of ethics and firm behavior

<table>
<thead>
<tr>
<th></th>
<th>Morocco</th>
<th>Germany</th>
<th></th>
<th></th>
<th>t (175)</th>
<th>p</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morocco</td>
<td>3.59</td>
<td>1.40</td>
<td>6.48</td>
<td>10.04</td>
<td>−2.69</td>
<td>0.008</td>
<td>0.50</td>
</tr>
<tr>
<td>Germany</td>
<td>6.48</td>
<td>10.04</td>
<td>4.75</td>
<td>7.66</td>
<td>1.51</td>
<td>0.131</td>
<td>0.19</td>
</tr>
<tr>
<td>Morocco</td>
<td>3.59</td>
<td>1.40</td>
<td>4.75</td>
<td>7.66</td>
<td>−1.41</td>
<td>0.157</td>
<td>0.26</td>
</tr>
</tbody>
</table>

**Note:** Values are reported for two-tailed tests.

**Table 7.** Perception of formal institutions as a chance

<table>
<thead>
<tr>
<th></th>
<th>Morocco</th>
<th>Germany</th>
<th></th>
<th></th>
<th>t (175)</th>
<th>p</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morocco</td>
<td>4.40</td>
<td>1.61</td>
<td>4.81</td>
<td>1.25</td>
<td>−1.92</td>
<td>0.055</td>
<td>0.29</td>
</tr>
<tr>
<td>Germany</td>
<td>4.81</td>
<td>1.25</td>
<td>5.02</td>
<td>1.56</td>
<td>−1.06</td>
<td>0.290</td>
<td>0.15</td>
</tr>
<tr>
<td>Morocco</td>
<td>4.40</td>
<td>1.61</td>
<td>5.02</td>
<td>1.56</td>
<td>−2.98</td>
<td>0.003</td>
<td>0.39</td>
</tr>
</tbody>
</table>

**Note:** Values are reported for two-tailed tests.
Regarding formal institutions as an inhibiting factor, differences were found between Germany and China ($p < 0.001$), as well as between Morocco and China ($p < 0.001$). In both cases, in China, formal institutions were perceived more as an inhibiting factor (Table 8 and Figure 6).

![Figure 5. Perception of formal institutions as a chance.](image1)

![Figure 6. Perception of formal institutions as an inhibiting factor.](image2)

<table>
<thead>
<tr>
<th>Morocco</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>3.97</td>
<td>1.56</td>
</tr>
<tr>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>4.03</td>
<td>1.35</td>
</tr>
<tr>
<td>$t$ (175)</td>
<td>$p$</td>
</tr>
<tr>
<td>−0.310</td>
<td>$p = 0.757$</td>
</tr>
<tr>
<td>Cohen’s $d$</td>
<td></td>
</tr>
<tr>
<td>0.04</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Morocco</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>3.97</td>
<td>1.56</td>
</tr>
<tr>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>5.04</td>
<td>1.38</td>
</tr>
<tr>
<td>$t$ (245)</td>
<td>$p$</td>
</tr>
<tr>
<td>−5.59</td>
<td>$p &lt; 0.001$</td>
</tr>
<tr>
<td>Cohen’s $d$</td>
<td></td>
</tr>
<tr>
<td>0.72</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Germany</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>4.03</td>
<td>1.35</td>
</tr>
<tr>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>1.38</td>
<td>1.38</td>
</tr>
<tr>
<td>$t$ (244)</td>
<td>$p$</td>
</tr>
<tr>
<td>−5.50</td>
<td>$p &lt; 0.001$</td>
</tr>
<tr>
<td>Cohen’s $d$</td>
<td></td>
</tr>
<tr>
<td>0.74</td>
<td></td>
</tr>
</tbody>
</table>

Note: Values are reported for two-tailed tests.
As for the perception of informal institutions as a chance, differences were found between Morocco and China ($p = 0.013$). In China, they were perceived more as a chance than in Morocco (Table 9 and Figure 7).

Regarding the perception of informal institutions as an inhibiting factor, differences were found between Morocco ($p < 0.001$) and Germany and Germany and China ($p < 0.001$). In Morocco and China, informal institutions were perceived as inhibiting factors (Table 10 and Figure 8).

Regarding the association of positive and negative perception of formal and informal institutions with self-efficacy, market orientation, and network orientation, Table 11 shows the results of linear regressions.

**Table 9. Perception of informal institutions as a chance**

<table>
<thead>
<tr>
<th></th>
<th>Morocco</th>
<th>SD</th>
<th>Germany</th>
<th>SD</th>
<th>t (175)</th>
<th>p</th>
<th>Cohen's d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td></td>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morocco</td>
<td>4.08</td>
<td>1.74</td>
<td>4.50</td>
<td>1.25</td>
<td>-1.72</td>
<td>0.086</td>
<td>0.28</td>
</tr>
<tr>
<td>Germany</td>
<td>4.50</td>
<td>1.25</td>
<td>4.60</td>
<td>1.47</td>
<td>-0.541</td>
<td>0.589</td>
<td>0.07</td>
</tr>
<tr>
<td>China</td>
<td>4.08</td>
<td>1.74</td>
<td>4.60</td>
<td>1.47</td>
<td>-2.50</td>
<td>0.013</td>
<td>0.32</td>
</tr>
</tbody>
</table>

**Note:** Values are reported for two-tailed tests.

**Figure 7.** Perception of informal institutions as a chance.

**Table 10. Perception of informal institutions as an inhibiting factor**

<table>
<thead>
<tr>
<th></th>
<th>Morocco</th>
<th>SD</th>
<th>Germany</th>
<th>SD</th>
<th>t (175)</th>
<th>P</th>
<th>Cohen's d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td></td>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morocco</td>
<td>4.40</td>
<td>1.58</td>
<td>3.34</td>
<td>1.27</td>
<td>4.89</td>
<td>&lt; 0.001</td>
<td>0.75</td>
</tr>
<tr>
<td>Germany</td>
<td>3.34</td>
<td>1.27</td>
<td>4.52</td>
<td>1.58</td>
<td>-6.03</td>
<td>&lt; 0.001</td>
<td>0.83</td>
</tr>
<tr>
<td>China</td>
<td>4.40</td>
<td>1.58</td>
<td>4.52</td>
<td>1.58</td>
<td>-0.615</td>
<td>0.539</td>
<td>0.08</td>
</tr>
</tbody>
</table>

**Note:** Values are reported for two-tailed tests.
In Morocco, the positive perception of formal institutions is associated with market orientation ($\beta = 0.371$, $SE = 0.153$, $t = 2.429$, $p = 0.017$ for two-tailed tests), and the negative perception of formal institutions with self-efficacy ($\beta = 0.147$, $SE = 0.059$, $t = 2.488$, $p = 0.015$ for two-tailed tests). The negative perception of informal institutions is associated with market orientation ($\beta = 0.444$, $SE = 0.172$, $t = 2.587$, $p = 0.011$ for two-tailed tests).

In China, no associations were found for formal and informal institutions (see Table 11).

In Germany, the positive perception of formal institutions is associated with self-efficacy ($\beta = 0.103$, $SE = 0.043$, $t = 2.387$, $p = 0.019$ for two-tailed tests). The negative perception of formal institutions is associated with network orientation ($\beta = 0.578$, $SE = 0.234$, $t = 2.475$, $p = 0.015$ for two-tailed tests).

### 5 Discussion

In Morocco, informal institutions were perceived more as inhibiting factors. This could be a result of a biased approach of the participants who tried to avoid stating the existence of large-scale corruption in their country.

In China, ambiguity is the core element since both institutional types were perceived as a chance and as an inhibiting factor to the same extent. This may indicate that the perception is affected by the individual...
access to “Guanxi”. According to Zhang and Zhang [2006: 376] “Guanxi” affects both inter-organizational and interpersonal factors and sometimes the lines between the two types become blurred as e.g., inter-organizational networks often behave as interpersonal ones [Zhang and Zhang, 2006: 385]. It could also reflect the change in China's corporate culture as managers become more individualistic and independent in their decision-making. Chinese entrepreneurs hold on to their traditional values while trying to simultaneously incorporate Western values in their organizational cultures [Allik and Realo, 2004]. Thus, our first hypothesis was only partly confirmed.

In Germany, the view of both types of institutions is more positive. Therefore, our second hypothesis was falsified.

This finding could reflect the perception of the coexistence of formal and informal institutions as efficient. Besides, another reason could be that when an increased incongruence between formal and informal institutions exists, it is more likely for entrepreneurs to operate informally. Moreover, it could be the case that the majority of German survey participants work for firms in the early stage of development. In this stage of entrepreneurship, relationships often consist of social bonds, i.e., informal contacts, and as a firm reaches the next stage of development, entrepreneurs have to transform loose informal contacts into business relationships [Mitrega et al., 2011: 11].

Our results further indicate that, in Morocco, there is an association between positive perception of formal institutions, negative perception of informal institutions, and market orientation. This could go hand in hand with an orientation toward networks. In China, no such association was found.

Therefore, our third hypothesis was only confirmed in the case of Morocco.

There is an association between the negative perception of formal institutions in Morocco and self-efficacy. This result indicates that the ones who don’t prefer formal institutions could provide effective outcomes on some occasions.

In Germany, the positive perception of formal rules is associated with self-efficacy and the negative perception of formal institutions is associated with network orientation.

Thus, our fourth hypothesis could only partly be confirmed in the case of Germany, where the negative perception of formal institutions is associated with network orientation.

One limitation of this study is its reliance on the perception of participants, which could be biased by overoptimistic factors or the effects of social desirability. An additional drawback is that the answers of the participants could reflect differences in response styles. Moreover, because of the “bounded rationality” of the participants who only possess incomplete and asymmetrical information and exchange of information performed between actors who do not share the same values or cognitive frameworks, it is difficult to rely on the perception of institutions. Furthermore, the problem with the use of variables of the WEF is that they could be based on a misconception directed toward the ineffectiveness of formal institutions, manifested by poor implementation of formal rules. However, the weak application of the formal institutional framework does not necessarily mean that there is an informal institutional framework in place. Moreover, it can be the case that the negative perception of formal rules acts like an indicator for informal institutions because the drawbacks of the formal institutions are indicated.

Future studies could examine whether these results reflect real perceptions or rather differences in response styles. Moreover, future research could investigate the influence of formal and informal institutions on the strategic orientation of entrepreneurs by taking into account psychological and cultural factors as moderators of the potential influence.

Nevertheless, contrary to the logic, which states that informal institutions exist to fill the gaps of formal institutions, our research could demonstrate that economic actors involved in economic activities are embedded within a social context. This fact makes informal rules inevitable as they do not disappear with the introduction of formal institutions.

Similarly, Charles et al. [2018: 397] state that since informal institutions are being constructed over time through social interactions, their effects are difficult to change.

Informal institutions can only be limited to some extent. This could also be understood positively since excessive regulation or even rigid conformity to formal rules is considered to be bureaucratic and often hinders or prevents fast action and decision-making processes.
References


Mitchell, V.W., Schlegelmilch, B.B., Mone, S.D. (2016), Why should I attend? The value of business networking events,


Narver, J.C., Slater, S.F. (1990), The effect of a market orientation on business profitability, The Journal of Marketing, Vol. 54,
pp. 20–35.


pp. 275–296.


Rasmussen, E., Mosey, S., Wright, M. (2015), The transformation of network ties to develop entrepreneurial competencies for

Roche, J. (2005), Corporate governance in Asia, Routledge, New York.


Wright, P.M., Gardiner, T.M., Moyihan, L.M., Allen, M.R. (2005), The relationship between hr practices and firm performance:

Zhang, Y., Zhang, Z. (2006), Guanxi and organizational dynamics in China: a link between individual and organizational levels,

Zhao, H., Seibert, S.E., Hills, G.E. (2005), The mediating role of self-efficacy in the development of entrepreneurial intentions,

Empirical Paper

Ladipo Patrick Kunle, Rahim Ajao Ganiyu*, Peace Nkechi

An investigation of brand equity dimensions and customer retention: A perspective of postpaid telecom subscribers in Lagos State, Nigeria

https://doi.org/10.2478/ijme-2020-0029
Received: April 18, 2019; accepted: October 2, 2020

Abstract: This study investigates brand equity dimensions and customer retention of the Nigerian telecommunications industry. Cross-sectional research design was adopted to survey 368 postpaid subscribers. The respondents were selected through multistage sampling techniques. The four dimensions of brand equity (brand awareness, brand association, perceived quality, and brand loyalty) were found to be correlated with one another and with overall brand equity. Similarly, the four dimensions were correlated to and significantly predicted customer retention. The study concluded that improvement of all the four dimensions of brand equity is indispensably vital to customer retention in the mobile telecom industry. The study recommended that telecom operator that is desirous of sustaining high brand notch in the marketplace should intensify their effort to improve on all the four dimensions of brand equity to enhance subscribers’ retention. Findings of this study fill important gaps and contribute to the body of literature related to brand equity dimensions and customer retention from customers’ perspective.

Keywords: brand awareness, brand association, perceived quality, brand loyalty, customer retention

JEL Classification: J11, M10, M31

1 Introduction

Increasing competition has motivated and compelled businesses across industries to develop strategies aiming at retaining customers for profitable growth. Brand played a significant role in enhancing the competitive position of firms, because consumers confer an added value to products or service with high brand value [Pappu and Quester, 2008; Alkhawaldeh and Eneizan, 2018]. Business organizations across all sectors are desirous of offering a strong brand that will create a long lasting impression in the minds of their customers and because of that they may enjoy sustainable competitive advantage. Aaker [1991] argued in favor of a consumer-based approach of brand equity and maintained that only if there is value for the customer, will there be value to the organization. The notion of brand equity is progressively widespread and has given credence to the position advocated by researchers and practitioners that brands are one of the most treasured assets that a business has. The value of a brand is deeply-rooted in the hearts and minds of customers and is therefore, a fundamental factor in the study of consumer buying behavior [Jing et al., 2015; Switała et al., 2018].

According to Keller [2003], brand equity is the differential effect of brand knowledge on consumer response to the marketing of the firm product or service. Elangeswaran and Rigel [2014] emphasized that...
brand equity is the benefit related to brand’s or the degree to which the brand acquired greater brand loyalty, deeper brand association, perceived brand quality, brand awareness and other intangible assets consisting of patents, trademarks, and channel relationships. Given the substantial cost difference between recruiting a new customer and retaining an existing one, marketing strategies and activities have shifted toward customer retention. Customer retention is firm’s effort to sustain continuous business relationship with customers over a long period of time. Customer retention is a strategy through which business organizations build mutual relationship with customers in order to reduce the number of customers it loses over time. Dawkins and Reichheld [1990] suggested that improvement of customer retention by 5% will create expansion on the net present value of the customer at a rate of 25% to 95% in a number of businesses.

Africa countries are becoming the fastest growing mobile market in the world with mobile penetration rate in the region ranging from 30% to 100% [Ghirmai and Kefela, 2011]. Nigeria, South Africa, and Egypt are the fastest growing telecom markets with progressive growth that is not only exceeding the expected growth, but creating a radical shift in the telecom industry [Ghirmai and Kefela, 2011]. The telecommunication sector in Nigeria is a foremost contributor to the nation’s Gross Domestic Products (GDP) accounting for 10.11% in the first quarters of 2019 which is slightly higher than 9.85% recorded in first quarter of 2018 [National Bureau of Statistics-NBS, 2019]. According to NBS [2019] reports, Nigeria teledensity as on April, 2019 stood at 90.97%, with broad band penetration of roughly 33.70%. A total of 470 MHz spectrum is allocated to mobile sector in Nigeria which is far ahead among the Sub-Saharan African countries which stood at an average of 268 MHz, but due to some inefficiency, the telecom operators jointly account for less than 2% of the mobile market spectrum in Nigeria [GSMA Intelligence, 2018].

Telecom services presently available in Nigeria comprised of fixed telephony, mobile communications, VSAT satellite transmission, microwave, and fiber optic backhaul, and internet services among others. Contrary to what is obtainable in most developed nations, mobile subscriptions in Africa countries is largely on prepaid, because of the fact that pre-paid subscription platform is more open to people who do not have the prerequisite bank account and self-identity documentation mandatory to enter into a contract billing arrangement [Ghirmai and Kefela, 2011]. As reported by Statista [2011], roughly 95.7% of telecom subscribers in Africa are on prepaid platform. According to [Juha, 2015], the popularity of prepaid subscription platform is a usual evolutionary market development that permits the telecom operators to satisfy the needs of the lucrative segment of the telecom market.

Due to the growing and hyper-intensive competitive cellular market in Nigeria, the notion of customer retention has become a veritable tool to enhance firm’s competitive advantage and business performance [Ukpabi et al., 2017]. The liberalization of the Nigerian telecom sector and its phenomenal growth since the introduction of mobile telephony in 2001 has created a highly competitive environment, hence, the need for the operators to strive toward enhancing their brand equity. According to Nicholas et al. [2018], the degree of customer attrition is growing in the Nigerian telecom industry due to a number of reasons such as mobile number portability-MNP which enable subscribers to change networks without changing their numbers and the growing proportion of new mobile telephone devices that have multi-subscriber identification module-SIMs. In the opinion of Michael [2015], the Nigerian telecom industry is confronted by changing market dynamics in term of greater choice for subscribers and intense market competition which erode value to the operators. Because of the aforementioned trend, there is a clear threat to future capital investment in the telecom sector, which requires the operators to strive for customer retention to sustain performance improvement [Michael, 2015].

The Nigerian mobile telecom industry is undergoing intense competition, caused by high degree of product or service similarity. As expressed by Aurelian et al. [2007], numerous business models set up when providing cellular services are vertically combined to offer generic content to subscribers’ mass markets, which do not satisfy the needs of the postpaid customers. Also, as the telecom markets evolve and mature, subscribers’ expectations are harder and tougher to shift and this creates serious challenges for contract subscribers, because postpaid customers have no credit risk and so customer allegiance is difficult to maintain [Ghirmai and Kefela, 2011]. According to the Nigerian Communications Commission [2013], the mobile telecom subsector is considerably in a maturity stage in Nigeria, and the sector therefore, requires the need for detailed and comprehensive strategies to manage all the product/service elements efficiently.
to build strong brand. Despite some empirical evidence on the positive association of brand equity on a number firm’s performance criteria such as market performance, consumer preference, repeat purchase intention, and customer retention among others, the outcomes of these studies showed considerable heterogeneity across industries [Mizik and Pavlov, 2017; Olaleke et al., 2017; Anne and Nieves, 2018; Nguyen et al., 2018]. The primary objective of this study is to examine brand equity dimensions and customer retention among postpaid telecom subscribers in Lagos State, Nigeria. Specific objectives of this study are to: (i) investigate the relationship between brand equity dimensions (consisting of brand awareness, brand association, perceived quality, and brand loyalty) and customer retention among postpaid telecom subscribers in Lagos State, Nigeria; and (ii) examine the influence of brand equity dimensions (comprising brand awareness, brand association, perceived quality, and brand loyalty) on customer retention among postpaid telecom subscribers in Lagos State, Nigeria.

2 Theoretical framework and literature review

2.1 Aaker brand equity theory

The concept of brand equity was promoted by David Aaker in the 1980s [Keller, 2003]. Brand equity refers to the value of having a well-known brand name, founded on the belief that the owner of a well-known brand name will be able to generate more revenue stream through brand recognition. There is also a shared idea which describes brand equity in terms of marketing effects distinctively attributable to the brand [Keller, 2003]. Brand equity has been defined as assets and liabilities connected to a name or a symbol [Aaker, 1991]. Marketing literature views the relationship between customers and brands as “brand equity” [Wood, 2000]. According to Aaker [1991], brand equity can be classified into five elements consisting of brand association, perceived quality, brand awareness, brand loyalty, and other proprietary assets (such as patent right and trade mark among others). Brand awareness is related to brand recognition, degree of brand recall, and the probability that a given brand name will come to consumer’s mind rapidly than competing brands [Zavattaro et al., 2015]. Brand association relates to the informational nodes connected to the brand and the sense consumers made of the brand [Henry, 2004]. According to Aaker [1991], if these associations are added so that they result in some significance, then the impression created would become a source of brand image. Perceived quality is viewed as consumer’s decision about brand’s overall superiority or dominance with respect to its anticipated purposes and possibility of substitutes [Aaker and Jacobson, 1994]. Perceived quality is believed to be a form of association necessitating progression towards the prominence or popularity of a distinct aspect of brand’s equity [Pappu and Quester, 2008]. The notion of brand loyalty is viewed from wide-ranging facets: behavioral (or purchase) loyalty [Chaudhuri and Holbrook, 2001] and attitudinal loyalty [Moreau et al., 2001]. Other proprietary brand assets related to patents right, trademarks, and channel relationships offer strong competitive advantages to a firm [Aaker, 1991].

2.2 Brand equity—dimensions and measures

Pride and Ferrell [2003] viewed brand equity as a tool resulting in the marketing and financial benefits associated with the brands in the marketplace. According to Simon and Sullivan [1993], brand equity refers to the incremental cash flows attributed to branded products over and above the cash flows that unbranded products will be able to generate. As mentioned earlier, Aaker [1991] delineated brand equity into five elements consisting of brand awareness, perceived quality, brand association, and other proprietary assets. Aaker and Joachimsthaler [2000] highlighted brand loyalty, brand awareness, brand association, and perceived quality as dimensions of brand equity. Keller [2003] categorized brand equity dimensions into: brand knowledge, perceived quality, brand loyalty, and brand image. Dib and Alhaddad [2014] suggested a brand equity framework consist of four elements: brand awareness, brand trust, perceived quality, and brand loyalty. According to Baalbaki [2012], attempts have been made to measure brand equity using two contrasting measurement methodologies: (i) the direct method, which evaluates customer-based brand
equity by measuring the real influence of brand knowledge on customer response to diverse marketing influences' and (ii) the indirect methodology, which evaluates possible sources of customer-based brand equity through customers’ brand knowledge.

2.3 Customer retention—definition and importance

Retention of customer is a core issue for business organization that wants to sustain performance and build competitive advantage. Usman and Mahmood [2014] reported that customer retention is a vital factor in firm's marketing activities and a means of sustaining competitive advantage. The process of sustaining business relationship between organization and customer over a long term is labeled as customer retention. Customer retention, according to Payne [2000] can be improved through three approaches: retention rate of customer, customer defection causes, and advancement of customer retention through corrective measures. Petzer et al. [2009] claimed that it is essential for service industry to capture the reasons behind retained customer whether through satisfaction or other indirect approaches for the purposes of resource allocation and strategy development. High brand equity (BE) results in number of benefits such as greater consumer preference and purchase intentions [Kotler and Keller, 2012], higher stock returns [Evelin, 2017], conveys an opportunity for successful brand extensions, resilience against market turbulence, and formation of strong barriers to competitive rivalry [Sasirekha and Sathish, 2017].

In most industries, customers are retained only after the first stage of transactions; consequently, customer retention provides a clue of customers switching and other forms of behavioral tendency towards a brand [Srinivasana et al., 2002]. Customer retention strategy aims to maintain a reasonable percentage of valuable customers by decreasing customer defections (churn) and foster repeat patronage over a long period of time [Keller and Lehmann, 2006]. The rationale for striving towards customer retention, according to Aspinall et al. [2001], is the degree of dissimilarity of customer retention degree among industries and businesses. According to Motshedisi and Geoffrey [2011], customer retention within the service industry revealed that service industries adopt diverse customer retention tactics [Motshedisi and Geoffrey, 2011]. According to Fluss [2010], yearly customer attrition rates range from 7% in businesses that have high exit barriers for example banking and insurance, to roughly 40% in the mobile telecom industry. Some academics have contended that customer attrition is indirectly observed in some companies such as Pay-television subscription, as customers do not totally withdraw from their relationship with the enterprise but rather become inactive or display inconsistent purchasing behavior [Karamura et al., 2005].

Everyone agrees that focusing on customer retention can produce numerous economic benefits [Reichheld, 1996]. For instance, as customer period of relationship with firm extends, the volume of purchases increases and customer referrals rate grow [Keller, 2003]. Also, relationship maintenance costs decrease as both customer and business learn more about each other due to declining customers churn tendency and customer replacement costs [Aaker, 1991]. The benefits of customer retention are well recognized, Healy [1999] reported that long-term customers are more inclined to buy more, offer positive word of mouth communication and are less sensitive to price increment. Also, there is a common belief that customer retention brings more revenue and cheaper to maintain [Keller, 2003].

2.4 Hypotheses development

Research findings concerning the role of a brand in firm’s marketing effort endorse the prominence, as well as the existence of strong association between brand awareness, perceived quality, brand association, brand loyalty, and brand equity [Dlacic and Kezman, 2014; Nguyen et al., 2018]. It has also been documented that consumers are favorably disposed to product and service with a strong brand [Aaker, 1991]. Consumer attitude towards a product depends on the capability of the product or service to meet and exceed buyer’s expectations, because consumers comprehend product through brand name, brand experience, and benefit embedded in the brand. Hence, customer purchase and usage of any product or service are largely depend on their perception of the product, which is cultivated through the way and manner a product or service has been effectively marketed to create stronger preference for the brand [Rahim, 2016]. Brand perception is affected by the degree of marketing exposure, individual interpretation of the brand and how it impacts on
consumer purchase intention [Aaker, 1991]. Researchers maintained that brand choice can be explained by what is known as “the expectancy valued model” in which consumers assign scores on the basis of pleasurable outcome of using or consuming a product or service [Schiffman and Kanuk, 1997]. Therefore, when faced with competing brands, consumers assign scores to these expectancy value parameters to make a choice decision. Shieh and Lai [2017] alluded that it is important for business organizations to comprehend how the brand value is generated in the mind of the customer and how this value transformed into customer loyalty formation. As expressed by Keller and Lehmann [2006], brands streamline choice decision, serve as cues to customer’s previous consumption experience and engender trust. Strong brands are also cherished because they decrease the risks for the consumers and leads to cost saving in decision-making [Aghdaie and Honari, 2014]. Building and sustaining brand is also vital to firm marketing strategy, because resilient brands create strong awareness, brand association, perceived quality, and contribute to the formation of loyalty towards the brand [Kotler and Keller, 2012]. On the basis of the above statement, this study proposes the following hypotheses:

Hypothesis 1: There is no significant relationship between brand equity dimensions (consisting of brand awareness, brand association, perceived quality, and brand loyalty) and customer retention among postpaid telecom subscribers in Lagos State, Nigeria.

Hypothesis 2: Brand equity dimensions (comprising brand awareness, brand association, perceived quality, and brand loyalty) will not significantly influence customer retention among postpaid telecom subscribers in Lagos State, Nigeria.

3 Research methods

3.1 Research design

This study employed cross sectional survey research design and used empirical analytical approach. The survey approach was adopted because a large number of academics have suggested that it is the most efficient and appropriate approach for conducting behavior, attitude and perception related research [Saunders et al., 2011].

3.2 Population of the study

The population of this study consisted of 3,626,649 postpaid subscribers on the network of the four GSM operators in Nigeria (MTN Telecommunications Limited, Airtel Nigeria, Glo Mobile Telecommunication, and 9Mobile—formerly Etisalat). The choice of postpaid subscribers as the focus of attention in this study is justified because of the fact that the postpaid subscribers are willing to make an upfront investment for mobile telecom services and thus, their retention is very fundamental to the profitability and survival of the telecom operators. Statistics on telecom sector report by Nigerian Communications Commission-NCC [2018] revealed that since the introduction of mobile telephone in Nigeria, Lagos state has consistently led the pack in both active voice subscriptions and internet connectivity, which substantiates the choice of Lagos state for our the study.

3.3 Sample size and sampling technique

Sample size formula developed by Cochran 1963 [cited in Abubakari, 2019] was used to compute the sample size. The formula is:

\[ n = \frac{z^2 \cdot p \cdot q \cdot N}{(N-1) \cdot \text{error}^2 + p \cdot q} \]

Where:
- \( z \) = 1.96 (for 95% confidence level)
- \( p \) = 0.05 (estimated proportion)
- \( q \) = 0.95 (1 - \( p \))
- \( N \) = population size

\[ n = \frac{1.96^2 \times 0.05 \times 0.95 \times 3626649}{3626649 - 1} \cdot 0.02^2 + 0.07 \times 0.93 = 672 \]
where
\[ P = \text{Sample proportion}, \quad q-1 = p, \]
\[ N = 3626649 \text{ refer to a number of subscribers on postpaid platform}, \]
\[ n = 607 \text{ represent number of sampled subscribers}, \]
\[ \text{err} = 0.02 \text{ is an acceptable margin of error}, \]
\[ z = \text{standard variation at a given confidence level}. \]

Using, the formula, a sample size of 672 was arrived at for this study. Although the targeted sample size was 672, a total 376 responses was collected and 368 were valid for data analysis. Three stage sampling approaches were adopted. Purposive sampling approach was adopted in the first stage to identify those subscribers on postpaid payment plan. In the second phase, volunteer sampling procedure was used to ascertain those that are willing to participate in the survey. In the third stage, convenience sampling approach was used to survey respondents that are accessible and favorably disposed to participate in the survey. Participants were enrolled at the sales outlet through referrals and at service center of the four telecom operators within Lagos state, Nigeria for a period of three months.

3.4 Measure and instrumentation

Based on the documented literature evidence related to the recognition and adoption of the first four elements of Aaker [1991] brand equity dimensions, this study used brand awareness, brand association, perceived quality, and brand loyalty as a measure of brand equity [Brody et al., 2010]. Measures were adapted from previous validated studies. Data for this study were gathered using self-completed structured questionnaire to obtain response from the respondents. Likert scale consisting of five (5) point classification; strongly disagree (1), disagree (2), neutral (3), agree (4), strongly agree (5) was used. To accomplish content validity and reliability, the instrument was given to marketing experts to peruse and their comments were combined to produce the final draft of the questionnaire. Afterwards, the researchers carried out pilot study to further discover ambiguities in the questionnaire. The study variables and sub-dimensions have Cronbach alpha (measure of scale reliability) scores that exceeded \( \alpha = .7 \), and so it can be deduced that the survey instrument (questionnaire) has acceptable reliability value [Cooper and Schindler, 2011].

3.5 Analytical procedure

The completed copies of the questionnaire were collated, coded, and analyzed. Hypotheses were tested using Pearson correlation and multiple regression statistical analysis.

4 Results and discussion

4.1 Hypothesis one

There is no significant relationship between brand equity dimensions (consisting of brand awareness, brand association, perceived quality, and brand loyalty) and customer retention among postpaid telecom subscribers in Lagos State, Nigeria.

As shown in Table 1, the descriptive statistics (mean and standard deviation) of brand equity/its dimensions, and customer retention ranged from 3.36 to 3.52 and standard deviations ranged from .655 to .967. As shown in Table 1, inter-correlations among brand equity/dimensions exhibit low, to moderate, and high positive significant correlations among themselves (the correlation ranged from .224 to .746 and \( p < 0.01 \)). Similarly, there exists a moderate to high positive significant correlation between brand equity/ dimensions and customer retention. Specifically, brand awareness and customer retention (\( r = .554, \ p < 0.01 \)), perceived quality and customer retention (\( r = .812, \ p < 0.01 \)), brand association and customer retention (\( r = .717, \ p < 0.01 \)), and brand loyalty and customer retention (\( r = .603, \ p < 0.01 \)). Over all, brand
equity exhibits high positive correlation with customer retention ($r = .887, p < 0.01$). The result of hypothesis one corroborates the finding of the study carried out by Dlacic and Kezman [2014], and Mohsan and Nighat [2017] that reported brand awareness, brand association, brand loyalty, and perceived quality as the underlying dimensions of brand equity. Studies carried out by Muhammad et al. [2015], and Nguyen et al. [2018] also documented significant correlation among the four dimensions of brand equity and overall brand equity.

In contemporary turbulent business environment, customer retention presents a major challenge for many companies including telecommunication service companies. Based on this recognition and the implications, it is inevitable that the mobile telecom operators need to think about retention in a more strategic way than simply focusing on subscription renewals rate [Eva et al., 2016]. To build a robust brand, brand awareness is essential in shaping the strength of brand relationships in the mind of the customer to prompts brand choice [Valavi, 2014]. As expressed by Tong and Hawley [2009], brand equity is one of the elements through which firm’s shows a strategy of differentiation from competitors and so strong brand equity implies that customers will have high brand-name awareness, uphold a favorable brand image, recognize that the brand is of high quality, and display loyalty towards the brand. As a result of the benefits associated with brand equity, such as improve quality perception, and brand awareness, there is need for telecom operators to leverage on the value of their brands as a customer retention strategy to discern customers, influence brand acuities and promotes risk minimization approach.

### 4.2 Hypothesis two

Brand equity dimensions (comprising brand awareness, brand association, perceived quality, and brand loyalty) will not significantly influence customer retention among postpaid telecom subscribers in Lagos State, Nigeria.

As shown in Table 2, the regression model reveals the following statistics, $F = 661.016, p = .000, R = .938, R^2 = .880$, and adjusted $R^2 = .878$. The ANOVA section in Table 2 also shows that brand equity and its dimensions significantly predicted customer retention, with 88% prediction of customer retention accounted for by brand equity in the Nigerian telecommunications industry. The Coefficient row in Table 2, displayed that all the brand equity dimensions significantly predicted the model’s: brand awareness ($\beta = .077, t = 3.502, p = .001$), perceived quality ($\beta = .521, t = 22.663, p = .000$), brand association ($\beta = .303, t = 13.412, p = .000$), and brand loyalty ($\beta = .327, t = 16.607, p = .000$). The dimension that contributed most to the model is perceived quality (52%) and the lowest is brand awareness (7.7%).

Valavi [2014] claimed that brand awareness is the most important driver of brand choice and consumer purchase decision. Therefore, the observation that brand awareness contributes the least to the prediction of customer retention may be due to the fact that the four telecom firms selected for this study are the top mobile operators in the Nigerian telecommunications industry and have been in operation for almost two decades. So, they are well-established and known among subscribers. The result of hypothesis two endorses the view advocated by Shadi et al. [2016] that brand equity is connected to some aspects of consumer behavior comprising readiness to pay additional price, brand fondness, and choice decision.
Similarly, it corroborates the view expressed by Anaraki [2013] and Zavattaro et al., [2015] that brand equity dimensions exert influence on the reaction of customers towards a brand; one of which is the tendency to patronize a particular business consistently over a long period of time.

In terms of business, the most valuable customers are the repeated ones. If a company successfully wins the hearts of their customer by adopting effective brand strategies through improved brand awareness, perceived quality, brand association, and loyalty among others, such company will find it easier to retain customers [Peppers and Rogers, 2004]. The notion of customer retention enlarged when most businesses experienced remarkable loss of customers, along with the difficulty and high costs of acquiring new customers [Bird, 2005]. According to the opinion of Athanasopoulou [2009] and Nicholas et al. [2018], nowadays customers have more options to choose from, and so the basis of rivalry has shifted from acquiring new customers to retention. Brand equity through brand awareness, perceived quality, brand association, and brand loyalty give self-confidence to customer when taking an informed choice decision [Valavi, 2014]. High brand equity also offers the product or service hidden worth in term of satisfactory trustworthiness particularly in a situation where it is not feasible for consumers to check or infer quality of a product/service at the point of purchase [Chen and Hsieh, 2011]. As expressed by Keller et al. [1998], brand equity is not managed in the short run but over time, by ensuring brand consistency, shielding the foundations of brand equity, taking an effective suitable decision on how to leverage the brand, and changing or modifying the supporting marketing initiatives such as product features, price, place, and promotion among others.

According to Yoo et al. [2000], brand equity can be created, preserved, and extended by strengthening the dimensions of brand equity, which consist of brand awareness, perceived quality, brand loyalty, and brand association; thus marketing effort will be positively related to strong brand equity if it results in a more favorable behavioral tendency towards firm’s product and service.

5 Conclusion

This study investigated and analyzed brand equity dimensions and customer retention among postpaid subscribers in Lagos state, Nigeria. Results of this study showed that all the four elements of brand equity consisting of brand awareness, brand association, perceived quality, and brand loyalty are connected to one another and collectively contribute to overall brand equity. Brand equity can be established, managed, and extended by improving various factors, and hence, to build a successful brand, business organization should leverage on brand awareness, brand association, perceived quality, and brand loyalty. Strong brands built on strong brand awareness, perceived quality, brand association, and brand loyalty are easily recognized equally and provide basis for customer retention [Dlacic and Kezman, 2014].

Table 2. Multiple regression of brand equity/dimensions and customer retention

<table>
<thead>
<tr>
<th>Model Summary</th>
<th>R</th>
<th>R²</th>
<th>Adjusted R²</th>
<th>Std. error of the estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.938</td>
<td>0.880</td>
<td>0.878</td>
<td>0.228</td>
</tr>
<tr>
<td>Anova</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum of Square</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regression</td>
<td>137.984</td>
<td>4</td>
<td>34.496</td>
<td>661.016</td>
</tr>
<tr>
<td>Residual</td>
<td>18.891</td>
<td>362</td>
<td>0.052</td>
<td>0.000</td>
</tr>
<tr>
<td>Total</td>
<td>156.876</td>
<td>366</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Unstandardized coefficient</th>
<th>Standardized coefficient</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.063</td>
<td>0.071</td>
<td>0.888</td>
<td>0.375</td>
</tr>
<tr>
<td>Brand awareness</td>
<td>0.068</td>
<td>0.020</td>
<td>0.077</td>
<td>3.502</td>
</tr>
<tr>
<td>Perceived quality</td>
<td>0.496</td>
<td>0.022</td>
<td>0.521</td>
<td>22.663</td>
</tr>
<tr>
<td>Brand Association</td>
<td>0.246</td>
<td>0.018</td>
<td>0.303</td>
<td>13.412</td>
</tr>
<tr>
<td>Brand loyalty</td>
<td>0.162</td>
<td>0.010</td>
<td>0.327</td>
<td>16.607</td>
</tr>
</tbody>
</table>

Analysis of brand equity dimensions and customer retention

of brand equity, from marketing viewpoint, give both marketers and consumers the opportunity to analyze consumer attitudes, evaluate their behavioral disposition, and preference formation, which are based on brand awareness, perceived quality, brand association, and brand loyalty [Aaker, 1991]. The importance of having a strong brand cannot be over emphasized because the business landscape in a number of industries is getting tougher. In particular, the upsurge of telecommunications brands in Nigeria has led to cut-throat competition and growing desire to jostle for market share. As a result, telecom operators must realize that in order to remain competitive, they need to develop innovative techniques such as customer analysis, competitors mapping, and brand equity formation through improving brand awareness, perceived quality, brand association, and brand loyalty to retain subscribers. Further, the rising tendency of subscribers to port has also called for more radical and innovative tactics such as quality improvement and enhancing brand awareness to secure increased market share through customer retention.

This study has contributed the knowledge along the number of important scopes. First, it offers empirical evidence on the relevance of brand equity in the Nigerian telecommunications industry by showing that brand equity is connected to customer retention. Second, the study documented that brand equity dimensions individually and collectively predicted customer retention in the telecom industry, and as such provide basis for broader understanding of the relative importance of BE dimensions. Findings of this study can assist in prioritizing and allocating resources across the brand equity dimensions for optimal balance. Findings of this study also offer empirical evidence on how telecom operators can strengthen their brand equity valuation and further increase the postpaid subscribers’ cluster, which is smaller compared to prepaid segment in most Africa countries including Nigeria.

Since all the elements of brand equity are inter-correlated, organizations should be aware of the relative importance of each dimension of brand equity to develop effective brand management. Telecom operators should equally develop an understanding that managing a brand would be a long-term perspective; therefore, the operators should adopt holistic approach to manage their brand by considering brand as assets whose value should increase over time. Also, with the rising cost of acquiring a new customer, the prominence of customer retention is becoming paramount and the operators should develop effective marketing strategy that will capture and address marketing challenges associated with managing customer lifelong. Although the connection of brand equity to customer retention is crucial, it does not operate in a vacuum, and therefore, innovative marketing initiatives such as–product innovations, promotion campaign, competitive pricing, and relationship marketing among others should be developed by telecom operators to enhance their competitiveness.

5.1 Implications of the study

Some years ago, product of high quality reigned, particularly, when demand level surpassed supply [Kotler, 2010]. Contemporary marketplace is ruled by high notch brand; therefore, organization needs to develop superior strategies through branding to sustain performance [Chaudhuri and Holbrook, 2001]. According to the opinion of Aaker [1991], effective brand management is a potent strategy to compete successfully in any form of industry, because without branding, most organizations product and services will be undifferentiated and are likely to trade solely on price. Ojeyinka and Ajayi [2014] maintained that marketing managers can analyze market situation through effective brand management and determine the viability of the target market as a guide towards customer retention [Adjei and Denanyoh, 2014]. To build relationships with subscribers, telecom operators need to develop retention strategies instead of attempting to acquire a new customer which has been found to be costlier [Dawkins and Reichheld, 1990]. Accordingly, measurement of brand equity will continue to be very vital because they echo the strength of the brand and indicate whether the company’s brand management is effective or not [Shabbir and Rehman, 2013].

5.2 Research limitations and suggestion for further studies

This study contributes to knowledge and business practice; however, it is not free from some limitations. The sample size of this study is relatively small and should be considered when evaluating the results.
Therefore, larger sample size is required to enhance the generalization of this study. Another limitation connected to the sample size is the potential presence of biases of the notion of “brand awareness,” and this is because the telecom operators selected are the top players in the mobile telecom industry, which are well-established and known. As a result, the use of negatively worded items is suggested to really test the degree of subscriber’s awareness of the telecom brands. Also, since the limited geographical area is covered by this research, this study should be replicated in other areas outside Lagos state. It is envisaged that telecom operator’s capability, brand visibility, and subscribers’ habits in each state of the federation may be different and exert influence on consumer perceptions of the telecom brand.

References

Anaraki, H. (2013), Investigating the impact of brand equity on consumer response in mobile shopping centers, Master’s thesis, MBA Management, Faculty of Humanities, University of Knowledge and Culture.
Dawkins, P.M., Reichheld, F.F. (1990), Customer retention as a competitive weapon, Directors & Board, Summer, 42–47.
Eva, A., Scott, A.N., Oded, N., Zachery, A., Peter, S.F. (2016), In pursuit of enhanced customer retention management: review, key issues, and future directions, This paper is the outcome of a workshop on Customer Retention as part of the 10th Triennial Invitational Choice Symposium, University of Alberta, 2016.


Juha, K. (2015), Mobile internet charging: prepaid vs. postpaid, Networking Laboratory HUT, retrieved from https://www.netlab.tkk.fi/opetus/s38042/k03/topics/preandpostpaidslides.pdf


Nigerian Communications Commission. (2013), Telecom sector report in Nigeria, retrieved from https://www.ncc.gov.ng

Nigerian Communications Commission. (2018), Determination of dominance in selected communications markets in Nigeria, retrieved from https://www.ncc.gov.ng


Empirical Paper

Jacek Gad*

The association between disclosures on control system over financial reporting and mechanisms of corporate governance: Empirical evidence from Germany and Poland

https://doi.org/10.2478/ijme-2020-0028
Received: September 17, 2019; accepted: September 24, 2020

Abstract: The aim of the research was to determine the impact of selected corporate governance mechanisms on the scope of disclosures related to control system over financial reporting in Poland and Germany. The research group comprised of companies from the Warsaw WIG 30 index and the German DAX index in 2013. The disclosures were measured by the number of detailed disclosures about control system over financial reporting presented by the surveyed companies. The research results indicate that selected corporate governance mechanisms affect the scope of disclosures regarding the system of control over financial reporting. It was found that the number of supervisory board committees and the number of meetings of the supervisory board have a significant positive influence on the scope of disclosures regarding control over financial reporting. But, the increase in number of meetings of the audit committee has a significant negative impact on the scope of disclosures regarding control over financial reporting. The results of the research also indicate the role of national determinants of the scope of disclosures. The study was a comparative one nature and was conducted among companies from developed and developing capital markets.

Keywords: corporate governance, control system, voluntary disclosure, financial statements

JEL Classification: M41, G34

1 Introduction

Control over financial reporting has gained a new dimension after the unpleasant experience of financial scandals in the United States and Europe. It became apparent that the mechanisms of corporate governance functioning have failed at the beginning of the twenty-first century. As a response to financial scandals, new regulations were introduced in both the United States and Europe, under which public companies were required to present additional disclosures in the area of corporate governance. These disclosures include, among others, information on the system of control over financial reporting. This information seems particularly relevant as the control system over financial reporting integrates selected internal and external corporate governance mechanisms around the accounting information system [Gad, 2016]. The system of control over financial reporting is considered as a type of defense against irregularities in financial reporting.

*Corresponding author: Jacek Gad, Faculty of Management, University of Lodz, Lodz, Poland.
E-mail: jacek.gad@uni.lodz.pl

This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 License.
Disclosures about the system of control over financial reporting are important for investors who can use this information to control the activities of management [Hermanson, 2000].

Hooghiemstra et al. [2015] pointed out that the approach adopted in the United States to the control system is extremely narrow and is related primarily with the reliability of financial reporting. A wider approach is presented in the COSO Framework [Committee of Sponsoring Organizations of the Treadway Commission, 1992]. At the same time, the authors noticed that outside the United States the law does not require managers to disclose information regarding control over financial reporting, and in most cases, the guidelines in this respect emerge from national corporate governance codes and are voluntary. Meanwhile, in Poland and Germany, public companies are obliged by virtue of the “hard” law to present these disclosures in their annual reports [Gad, 2016]. The managers of companies may only decide on the scope of these disclosures. Contrast to the United States, the regulations in force in Poland and Germany do not require public companies to present material weaknesses in the system of control over financial reporting.

Research on disclosures about control over financial reporting has great potential. These disclosures are freely shaped by the persons managing the companies; therefore it could be used to eliminate the agency conflict [Fama and Jensen, 1983]. The results of the research would also be important from the point of view of signaling theory [Spence, 1976]. The scope of disclosures can be used to get the impression that the reliability of financial reporting is ensured by means of a professional, comprehensive control system. Disclosures about control over financial reporting reflect a kind of corporate governance architecture and, in particular, the mechanisms responsible for the supervision of financial reporting. As indicated in the literature, the disclosures about control over financial reporting are not only a good area for comparing the enterprises operating in a given country, but also for comparing enterprises operating in different countries [Hooghiemstra et al., 2015].

The aim of the research was to determine the impact of selected corporate governance mechanisms on the scope of disclosures related to control system over financial reporting in Poland and Germany.

The research results confirm that corporate governance mechanisms influence the scope of disclosures regarding control system over financial reporting. It was found that the number of supervisory board committees and the number of meetings of the supervisory board have a significant positive influence on the scope of disclosures regarding control system over financial reporting. But, the increase in number of meetings of the audit committee, i.e., the unit which in particular should be involved in monitoring financial reporting, has a significant negative impact on the scope of disclosures regarding control system over financial reporting. The audit committee should also be involved in monitoring the effectiveness of the system of control over financial reporting. Hence, it seems that the meetings of the audit committee are a substitute for disclosures regarding control system over financial reporting. In Poland and Germany, the research results indicate that various corporate governance mechanisms affect the scope of disclosures regarding control system over financial reporting. In Polish companies the number of meetings of supervisory boards and the concentration of ownership affected the scope of disclosures, while in German companies the scope of disclosures was affected by the number of committees of supervisory boards, the number of meetings of the audit committee, and the share of independent members among the total number in supervisory boards.

Because of the existing concerns about the quality of the control system over financial reporting, it seems that the research results presented in this article are important for both researchers and practitioners, since they provide new knowledge regarding the factors affecting disclosures about control system over financial reporting. They also provide new knowledge about national corporate governance systems. The article presents the original research methodology used to determine the scope of disclosures about the system of control over financial reporting. A catalog of detailed disclosures regarding control over financial reporting has been created and based on the catalog the scope of disclosures of the examined entities was estimated.

The first part of the article deals with the characteristics of the corporate governance systems in Poland and Germany. The second part presents literature studies on the impact of various factors on the scope of disclosures about the system of control over financial reporting. Part three provides information on the organization of the research. The fourth part analyses the results of regression analysis. The fifth part of the article presents the conclusions and research limitations.
2 Background of the study

Corporate governance solutions in Poland and Germany are similar in nature. A two-tier corporate governance model is mandatory in both countries. In both Germany and Poland the responsibility for monitoring management activities rests primarily with the supervisory board, with shareholders playing a relatively minor role in the supervision process [Hopt, 2015; Jeżak, 2014]. In recent years, the level of ownership concentration has decreased on the Polish capital market, but it is still at a relatively high level [Adamska, 2013; Urbanek, 2009]. In the case of companies from the DAX index and other large corporations listed in Germany, the concentration of ownership has decreased significantly in recent years, and now there are companies with dispersed shareholding. While the share of international investors in ownership has increased, at the same time there are fewer domestic banks in the structure of large corporations, i.e., these banks cease to play a key role in the ownership structure of large corporations [Hopt, 2015]. The management board is elected by the supervisory board in both Poland and Germany, while the supervisory board is elected by the shareholders. The “comply or explain” principle introduced for the first time in 2002 in Poland and Germany is applied in the area of “soft” corporate governance law. Until the 1990s, enacted legal acts in Europe were mainly derived from German law. But, in the last two decades, due to the development of international capital markets and the globalization process, Anglo-Saxon standards have gained importance [Opalski, 2010]. The concept of control systems over financial reporting appeared due to the financial scandals that took place at the beginning of the 21st century in the United States. One of the key provisions of the Sarbanes-Oxley Act (SOX), which was a direct reaction to these financial scandals, was the mandatory requirement of enterprises to publish information on control over their accounting system [Clarke, 2004]. In Europe, guidelines on publishing information on control over financial reporting are included in Directive 2006/46/EC of the European Parliament and of the Council of June 14, 2006. Pursuant to paragraph 10 of Directive 2006/46/EC, companies whose securities are allowed to participate in trading on a regulated market and whose registered office is located within the European Community are required to produce an annual statement on the application of corporate governance principles, constituting a separate and easily identifiable part of the management report. This statement should provide shareholders information on the actual corporate governance practices in the company, including a description of the main features of any existing risk management and internal control systems associated to the financial reporting process. The guidelines of the above directive were implemented by national regulations in Poland (the Regulation of the Minister of Finance dated 19 February 2009 on current and periodic information in reports on the activities of all issuers of securities) and Germany (the German Commercial Code). Both Polish and German regulations indicate that disclosures about the system of control over financial reporting must form part of the management report. It should be emphasized that neither Polish nor German regulations contain any guidelines related to the scope of disclosures about control systems over financial reporting, whereas companies listed in the United States are required by the Sarbanes-Oxley Act to disclose any material weakness of the control system over financial reporting.

The qualitative research conducted so far indicates that the disclosures about control over financial reporting presented by companies listed on the Polish and German capital markets are in the 11 main information areas, i.e.: main principles of control systems over financial reporting, IT tools, internal and external regulations, external audit, internal audit, organization of the accounting system, data security and protection, the process of preparing financial statements, supervisory board (audit committee), management accounting, and risk [Gad, 2016].

3 Literature review and hypotheses development

The signaling theory [Spence, 1976] and the agency theory [Fama and Jensen, 1983] are the basic theories used for the analysis of disclosures regarding the system of control over financial reporting. The scope of disclosures may be used by managers to signal that the reliability of financial reporting is ensured by means of a comprehensive control system. Disclosures about control over financial reporting mitigate the problem of information asymmetry between the principal and the agent. The agent (manager) has full information
about the system of control over financial reporting, whereas the principal (owner) has only information on control over financial reporting as presented in the company’s annual report.

The literature indicates that a higher quality of corporate governance is directly related to the effective system of control over financial reporting [Hoitash et al., 2009]. The system of control over financial reporting prevents the manipulation of results by managers, acts toward the benefit of shareholders, and thus mitigates the problem of agency.

The effectiveness of corporate governance depends largely on the activity of supervisory boards (boards of directors) [Hoitash et al., 2009] and task groups operating within them, i.e., committees.

Based on a survey conducted among 46 banks listed on the London Stock Exchange in 2011, it was established that the level of disclosures about corporate governance is positively correlated with the existence of committees within the board of directors [Stefanescu, 2012]. Particularly, it is observed that the activities of the audit committee have a positive impact on the quality of financial reporting [Bedard et al., 2004]. The presence of this committee also affects the level of voluntary disclosures and it has been confirmed by studies carried out among companies listed in the United States [Krishnan, 2005].

The establishment of the board committees strengthens the control function of corporate governance [Stefanescu, 2012]. It is expected that better supervised companies will have a better system of control over financial reporting, and these companies will be disclosing more information as part of disclosures about the control system [Bronson et al., 2006].

As part of the study, it is expected that:

**H1**: The number of supervisory board committees is positively correlated with the scope of disclosures about the system of control over financial reporting.

Karamanou and Vafaes [2005] showed in research conducted among public companies listed in the United States that effective corporate governance is positively related to the scope of financial disclosures. Moreover, Lang and Lundholm [1993] confirmed the positive impact of effective corporate governance on the scope of corporate disclosures (both financial and non-financial) presented by enterprises [Lang and Lundholm, 1993].

The frequency of meetings of the board of directors can be considered as the time they spend on monitoring management activities [Vefeas, 1999], and thus increasing the effectiveness of corporate governance. The results of research conducted among companies listed in the United States indicate that in the case of more active boards of directors, the managers of companies present more precise forecasts in their reports [Karamanou and Vafaes, 2005].

As part of the study it is expected that:

**H2**: The number of meetings of supervisory boards is positively correlated with the scope of disclosures about the system of control over financial reporting.

The literature indicates that, from the point of view of the agency theory, the audit committee serves as a means of contributing to reducing the information asymmetry, reducing the manager opportunism, and increasing the improvement of the quality of disclosures [Cheung et al., 2010]. It is expected that audit committees which meet more often exercise effective control over the quality of financial information to a larger extent [Menon and Williams, 1994]. The literature shows a positive correlation between the frequency of meetings of the audit committee and the scope of disclosures on corporate community involvement presented by British companies [Yekini et al., 2015].

When analyzing companies listed in the United States in 1998, it was found that the number of meetings of audit committees was positively correlated with the occurrence of voluntary disclosures regarding control over financial reporting. The disclosures were examined using the dichotomous variable and concerned the period when disclosures about control over financial reporting were not mandatory in the United States [Bronson et al., 2006]. The situation seems to be more complex for the case of disclosures where the the system of control over financial reporting must be presented along with the annual report and whose scope
Control system over financial reporting and mechanisms of corporate governance

is arbitrary. The literature indicates that for the companies listed in the United States (drawing up disclosures according to the SOX Act) frequent meetings of the audit committee may be a reaction to identified problems related to control over financial reporting and may not always result from increased involvement resulting in better control [Hoitash et al., 2009]. The literature also indicates that the audit committee assesses the effectiveness of the control system and plays a key role in it. The involvement of the audit committee in the functioning of the control system over financial reporting may encourage the management board to reduce disclosures in this area, because the risk of possible irregularities is reduced [Hoitash et al., 2009].

As part of the study, it is expected that:

H3: The number of meetings of audit committees is negatively correlated with the scope of disclosures about the system of control over financial reporting.

Fama and Jensen [1983] pointed out that the greater share of independent directors in the board of directors will raise the effectiveness of the process of monitoring the board and limiting the opportunism of managers.

The numerous studies conducted so far in Europe, the United States, and Australia regarding the relationship between the independence of the board and the scope of the disclosures do not provide unambiguous results. The results of research on disclosures regarding control over financial reporting carried out among 160 companies listed on European stock exchanges in the years 2003–2005 indicate that this relationship is negative. The authors explain that a high proportion of independent board members increases the board’s ability to control the actions of managers and increases the effectiveness of monitoring their activities. At the same time, a strong board means that managers are less prone to voluntary disclosures. It should be emphasized that the research was conducted among companies listed on the capital markets of European countries with a different supervision model (one-tier/two-tier) [Michelon et al., 2009]. More importantly, it is observed that the share of independent directors in the board of directors is negatively related to the scope of disclosures about the control over financial reporting (measured by the matrix of disclosures created by its authors) when the ownership is dispersed. At the same time, this dependence is positive when ownership is dominated by a largest shareholder [Michelon et al., 2009].

Research conducted among 181 companies in Australia indicates that the higher the share of independent directors in the board, the more voluntary disclosures about the strategy are presented, as well as more quantitative forecasting information [Lim et al., 2007]. What is more, the survey conducted among 350 companies listed in the United Kingdom allows us to conclude that the share of independent directors in the board of directors is positively linked to the scope of corporate community involvement [Yekini et al., 2015].

The results of research conducted among 87 companies (data from the years 1993-94) listed in Hong Kong confirm the existence of a positive relationship between the share of independent directors on the board of directors and the scope of mandatory financial disclosures [Chen and Jaggi, 2000]. Research conducted among banks listed on the London Stock Exchange indicated that the share of independent members in the committees of the board of directors is positively correlated with the level of disclosures about corporate governance (measured by the index of disclosures constructed by its author) [Stefanescu, 2012].

A study conducted among companies listed in the 1990s in the Netherlands found that voluntary disclosures about internal control and risk management systems (measured by the index of disclosures created by its authors) are positively related to the share of independent directors in the board of directors [Deumes and Knechel, 2008].

Further, the literature indicates that the existing positive relationship between the independence of the board and the scope of disclosures may be related to the fact that shareholders appointing independent board members consider that the company should have a transparent financial data reporting system. It is also highlighted that independent board members agree to sit on the board when they receive assurance regarding transparent financial reporting [Armstrong et al., 2016]. Shareholders are aware of the difficulties involved in monitoring the financial reporting process and therefore grant greater remuneration to members of the audit committee in a situation when the expectations regarding this monitoring are greater [Engel et al., 2003].
As part of the study, it is expected that:

H4: The share of independent members of supervisory boards in their total number is positively correlated with the scope of disclosures regarding the system of control over financial reporting.

The results of research on the relationship between the scope of disclosures and the concentration of ownership are not conclusive. This may be due to the method of measuring the concentration of ownership and the type of disclosures, as well as the method of measuring them.

Based on the research on disclosures regarding control over financial reporting (measured by the disclosure index created by its authors) of companies listed on European stock exchanges during the years 2003–2005, it was determined that they are negatively related to the concentration of ownership [Michelon et al., 2009]. Moreover, it was found based on the research carried out among 397 companies listed in the United States that in companies having concentrated shareholding, the level of disclosure on corporate governance was smaller [Bauwhede and Willekens, 2008]. Similar results were obtained by Hadro et al. [2017], who examined the scope of disclosures included in the letters to the shareholders of the 60 largest companies listed on the Polish capital market.

The research results presented in the literature also indicate a different relationship. Majority shareholders who play an important role in corporate governance are more motivated to monitor the activities of managers because of their large investment [Shleifer and Vishny, 1986, 1997]. By monitoring the activities of managers, pressure is exerted on them, which means that they are encouraged to reveal the quality of financial reporting and of the entire accounting system by disclosing voluntary information on control over financial reporting [Bronson et al., 2006].

As part of the study, it is expected that:

H5: The concentration of ownership is positively correlated with the scope of disclosures about the system of control over financial reporting.

4 Organization of the study

4.1 Research group

The research group comprised of companies from the Warsaw WIG 30 index and the German DAX index in 2013, which included the largest public companies listed on the Warsaw Stock Exchange and on the Frankfurt Stock Exchange. It was assumed that companies belonging to the WIG 30 and DAX indexes constitute a kind of “litmus test” for both stock exchanges, in the area of reporting practice and corporate governance standards apart from other areas. The number of companies included from both indexes is 30, which facilitates the comparability of results. One company belonging to the WIG 30 index was excluded from the survey as it did not disclose information on the system of control over financial reporting in 2013. The data were obtained from both the consolidated annual reports presented in 2013 and websites, and were manually collected.

4.2 Model specification and measurement of variables

Measuring the scope of non-financial disclosures is one of the key problems that researchers encounter when constructing research tools. Various measures of the scope of disclosures can be found in the literature, such as words, sentences, pages [Gray et al., 1995; Schroeder and Gibson, 1990; Marston and Shives, 1991]. Disclosure indexes are also used to measure non-financial disclosures. Bauwhede and Willekens [2008] measured corporate governance disclosures using the Deminor Rating of disclosure on corporate governance. The Internal Control Disclosure Index was used in the research on the scope of disclosures in the area of control over financial reporting conducted by Deumes and Knechel [2008]. Michelon et al. [2009] used the elaborated
Total Internal Control System Disclosure Score to measure disclosures on control over financial reporting. It should be noted that the above mentioned disclosure indexes cover differentiated corporate governance issues which are not always directly related to the control system over financial reporting. Importantly, these indexes are tailored to the corporate governance model operating in a given country to some extent.

In our present study, the disclosures are measured by the number of detailed disclosures about control over financial reporting presented by the surveyed companies. A detailed list of the above disclosures was developed as part of qualitative research conducted among the companies of the WIG 30 and DAX index. The data was obtained from the annual reports of the surveyed companies. First, the areas of disclosures regarding the control system over financial reporting were identified in the reports of the examined companies and then a detailed analysis of these disclosures was made. Nearly 152 detailed disclosures regarding control over financial reporting have been identified (cf. Appendix).

The explanatory variable reflects the total number of detailed disclosures regarding the control system over financial reporting presented by a given company (cf. Appendix).

During the research process, five explanatory variables and one control variable regarding the value of assets were identified (cf. Table 1). The article assumes, similarly to the research conducted in the United States by Bronson et al. [2006], that there is a positive relationship between the scope of disclosures about the system of control over financial reporting and the size of the company measured by the value of assets.

### Table 1. Definitions of variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Meaning</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>Scope of disclosures</td>
<td>Number of detailed disclosures regarding the system of control over financial reporting presented in the annual report</td>
</tr>
<tr>
<td><strong>Independent variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSB</td>
<td>Supervisory board committees</td>
<td>Number of supervisory board committees</td>
</tr>
<tr>
<td>MSB</td>
<td>Meetings of the supervisory board</td>
<td>Number of meetings of the supervisory board in a year</td>
</tr>
<tr>
<td>MC</td>
<td>Meetings of the audit committee</td>
<td>Number of meetings of the audit committee in a year</td>
</tr>
<tr>
<td>IMSB</td>
<td>Independent members of the supervisory board</td>
<td>In the case of companies listed in Poland, this variable was measured by the share of independent members of the supervisory board in the total of all members. In the case of companies listed in Germany, this variable was measured by the share of independent members of the supervisory board in the total number of supervisory board members who are shareholders’ representatives. When measuring the variable, employees’ representatives on the supervisory board were not taken into account. In most companies they make up half of the board’s composition, and the surveyed companies indicated that these members always have the status of independent members.</td>
</tr>
<tr>
<td>LBS</td>
<td>The largest block of shares</td>
<td>The size of the largest block of shares</td>
</tr>
<tr>
<td><strong>Control variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Assets</td>
<td>Value of the total assets in thousand euro</td>
</tr>
</tbody>
</table>

*Source: Author’s own compilation.*

### 5 Results

#### 5.1 Descriptive statistics

The research results indicate that, on average, companies presented about 14 detailed disclosures regarding control over financial reporting. The median number of supervisory board committees is
three. Importantly, there are companies in which there are eight supervisory board committees. Members of the supervisory board meet more often than members of audit committees. The maximum number of meetings of supervisory boards was 22, while of the audit committee 11. The share of independent members in the total number of members of the supervisory board was on average 0.51. The average value of assets in the surveyed companies was 87,213,343.39 thousand euro (cf. Table 2).

Normally, the companies listed in Poland presented more than 12 detailed disclosures in the system of control over financial reporting. The minimum number of detailed disclosures was 3, while the maximum number was 25. The median number of committees of the supervisory board was found to be 3. The most important point is that there were companies without any supervisory board committees among the companies listed in Poland. The average share of independent members of the supervisory board among the entire board was 0.36. For Polish listed companies, the average size of the largest block of shares was 0.44. The average Asset value was at 9,560,322.77 thousand euro (cf. Table 2.).

Companies listed in Germany presented almost 16 detailed disclosures on average associated to control over financial reporting. The median number of committees of supervisory boards was 4. The median number of meetings of supervisory boards was 5. The average of the share of independent members of the supervisory board among the total number of members representing shareholders was 0.65. It should be noted that in Germany that the supervisory board consists of employee representatives in addition to representatives of shareholders. The average share of the largest shareholder was found to be 0.18. Moreover,

Table 2. Descriptive statistics

<table>
<thead>
<tr>
<th>Statistics</th>
<th>SD</th>
<th>CSB</th>
<th>MSB</th>
<th>MC</th>
<th>IMSB</th>
<th>LBS</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Companies from the WIG 30 and DAX index</td>
<td>N</td>
<td>59</td>
<td>59</td>
<td>56</td>
<td>50</td>
<td>59</td>
<td>59</td>
</tr>
<tr>
<td>Mean</td>
<td>14.05</td>
<td>3.49</td>
<td>7.41</td>
<td>5.62</td>
<td>.51</td>
<td>.31</td>
<td>87,213,243.39</td>
</tr>
<tr>
<td>Median</td>
<td>14.00</td>
<td>3.00</td>
<td>6.00</td>
<td>5.00</td>
<td>.50</td>
<td>.29</td>
<td>16,778,500.00</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>5.68</td>
<td>1.78</td>
<td>3.60</td>
<td>2.28</td>
<td>.28</td>
<td>.21</td>
<td>238,287,779.20</td>
</tr>
<tr>
<td>Minimum</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
<td>269,996.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>25</td>
<td>8</td>
<td>22</td>
<td>11</td>
<td>1.00</td>
<td>.75</td>
<td>1,611,400,000.00</td>
</tr>
<tr>
<td>Companies from the WIG 30 index</td>
<td>N</td>
<td>29</td>
<td>29</td>
<td>26</td>
<td>20</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>Mean</td>
<td>12.21</td>
<td>2.31</td>
<td>9.15</td>
<td>6.35</td>
<td>.36</td>
<td>.44</td>
<td>9,560,322.77</td>
</tr>
<tr>
<td>Median</td>
<td>12.00</td>
<td>3.00</td>
<td>8.00</td>
<td>6.00</td>
<td>.36</td>
<td>.44</td>
<td>4,894,776.00</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>6.07</td>
<td>1.20</td>
<td>4.50</td>
<td>2.323</td>
<td>.21</td>
<td>.18</td>
<td>12,093,603.20</td>
</tr>
<tr>
<td>Minimum</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>0.00</td>
<td>.13</td>
<td>269,996.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>25</td>
<td>4</td>
<td>22</td>
<td>11</td>
<td>1.00</td>
<td>.75</td>
<td>48,039,909.00</td>
</tr>
<tr>
<td>Companies from the DAX index</td>
<td>N</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Mean</td>
<td>15.83</td>
<td>4.63</td>
<td>5.90</td>
<td>5.13</td>
<td>.65</td>
<td>.18</td>
<td>162,277,733.30</td>
</tr>
<tr>
<td>Median</td>
<td>14.00</td>
<td>4.00</td>
<td>5.00</td>
<td>5.00</td>
<td>.61</td>
<td>.10</td>
<td>35,391,000.00</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>4.71</td>
<td>1.50</td>
<td>1.56</td>
<td>2.14</td>
<td>.28</td>
<td>.16</td>
<td>318,687,882.50</td>
</tr>
<tr>
<td>Minimum</td>
<td>8</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
<td>5,798,000.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>25</td>
<td>8</td>
<td>10</td>
<td>11</td>
<td>1.00</td>
<td>.59</td>
<td>1,611,400,000.00</td>
</tr>
</tbody>
</table>

SD, Scope of disclosures; CSB, Number of supervisory board committees; MSB, Number of meetings of the supervisory board; MC, Number of meetings of the audit committee; IMSB, Independent members of the supervisory board; LBS, the largest block of shares; A, Assets.

Source: Author’s own compilation.
the average value of assets was estimated as 162,277,733.30 thousand euro when all the companies listed in Germany were considered (cf. Table 2).

The existing key differences are identified between companies belonging to both the WIG 30 and DAX indexes. Generally, the companies in the DAX index presented more detailed disclosures related to the control system over financial reporting than the companies in the WIG 30 index. Further, more committees of supervisory boards were appointed in companies listed in the DAX index rather than companies in the WIG 30 index. The average share of independent members in the supervisory board was higher in companies of the DAX index when compared to companies of the WIG 30 index. On the other hand, the concentration of ownership was definitely lower in companies listed in the DAX index than the companies of the WIG 30 index.

The scope of disclosures variable (SD) was significantly (at $p < 0.01$), positively related to the number of supervisory board committees (CSB).

Correlation analysis indicates that the number of supervisory board committees (CSB) was also significantly (at $p < 0.01$), positively correlated with the share of independent members of the supervisory board in the total number of members (IMSB). At the same time, the number of supervisory board committees was correlated negatively in a significant manner (at $p < 0.01$) to ownership concentration (LBS). The higher the concentration of ownership the smaller the number of committees of the supervisory board (cf. Table 3). The correlation analysis includes variables which were used in the regression model.

### Table 3. Correlations between variables (Pearson’s coefficient)—companies from the WIG 30 and DAX indexes

<table>
<thead>
<tr>
<th></th>
<th>SD</th>
<th>CSB</th>
<th>MSB</th>
<th>MC</th>
<th>IMSB</th>
<th>LBS</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSB</td>
<td>.496**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSB</td>
<td>.203</td>
<td>−.115</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MC</td>
<td>−.145</td>
<td>.135</td>
<td>.328*</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMSB</td>
<td>.248</td>
<td>.399**</td>
<td>−.297*</td>
<td>.031</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBS</td>
<td>−.119</td>
<td>−.509**</td>
<td>.262</td>
<td>−.023</td>
<td>−.516**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>.115</td>
<td>.362**</td>
<td>−.052</td>
<td>.340*</td>
<td>.233</td>
<td>−.319*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* $p < 0.05$; ** $p < 0.01$

SD, Scope of disclosures; CSB, Number of supervisory board committees; MSB, Meetings of the supervisory board; MC, Number of meetings of the audit committee; IMSB, Independent members of the supervisory board; LBS, the largest block of shares; A, Assets.

**Source:** Author’s own compilation.

### 5.2 Regression results

A linear regression model was built in our work to indicate the importance of the impact of individual corporate governance mechanisms on the scope of disclosures related to the control system over financial reporting.

The best model which was constructed based on the companies from both indexes explains the scope of disclosures in approx. 23%. On the basis of the data set obtained, no better explanation could be found, and the proposed one confirms most of the results of previous research. The dependent variable has the features of normal distribution (statistics; 967, df 59, $p > 0.05$ in the Shapiro-Wilk test). The residuals have a normal distribution (statistics; 983, df 50, $p > 0.05$ in the Shapiro-Wilk test). The modeling results indicate that the following explanatory variables are significant: Supervisory board committees (CSB at significance level $p < 0.01$), Supervisory board meetings (MSB at significance level $p < 0.01$), and Audit committee meetings (MC at level $p < 0.05$). The number of meetings of the supervisory board affects the scope of disclosures to the greatest extent. None of the model parameters introduces the collinearity into the model (cf. Table 4).

The research results confirm hypothesis No. 1 ($p < 0.01$), i.e., with the increase in the number of supervisory board committees (CSB), the scope of disclosures about the control system over financial reporting (SD)
increases. This is confirmed by the conclusions presented in the literature that better controlled companies will have a better control system, and these companies will reveal more information about this system [Bronson et al., 2006]. The obtained research results complement other studies which showed a positive impact of the supervisory board committees on disclosures in the area of corporate governance [Stefanescu, 2012]. Moreover, the literature draws attention of the influence of one of the committees, i.e., the effect of audit committee on the scope of financial disclosures [Bedard et al., 2004] and voluntary non-financial disclosures [Krishnan, 2005]. The study proved that other committees also have a positive influence on the scope of disclosures regarding control over financial reporting.

The obtained results of the research confirmed hypothesis No. 2 ($p < 0.01$). This means, when the number of meetings of supervisory boards (MSB) is greater, then the scope of disclosures about the control system over financial reporting (SD) will be higher. The research results supplement the current knowledge on the impact of the activity (manifested by the number of meetings) of supervisory boards on the scope of non-financial disclosures regarding the system of control over financial reporting. According to the literature, the influence of active board on the precision of forecasts presented in the companies’ reports and on the scope of financial disclosures can be determined [Karamanou and Vafaes, 2005].

The results of the research confirmed hypothesis No. 3 ($p < 0.05$), according to which the number of meetings of audit committees (MC) is negatively related to the scope of disclosures about the control system over financial reporting (SD). The research results indicate that the more active the audit committees, the smaller the scope of disclosures about the control system over financial reporting. These results differ from the results of surveys conducted on the companies listed in the United States in the year 1998 [Bronson et al., 2006]. At the same time, the obtained results are consistent with the opinions presented in the literature that the involvement of the audit committee in the functioning of the control system over financial reporting encourages management to reduce disclosures in this area [Hoitash et al., 2009]. The conducted study complements the research results presented so far and it indicates that an active audit committee is a substitute for the system of control over financial reporting in today’s corporate governance.

Hypothesis No. 4, that there is a relationship between the share of independent members of supervisory boards in the total number of board members (IMSB) and the scope of disclosures about the system of control over financial reporting (SD) has not been confirmed. The impact of IMSB on the variable SD is statistically insignificant in the constructed model.

### Table 4. Regression analysis (Model 1). Dependent variable: Scope of disclosures

<table>
<thead>
<tr>
<th>Type of model</th>
<th>Expected direction</th>
<th>Model 1. Companies from the WIG 30 and DAX index</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td>59</td>
</tr>
<tr>
<td>Beta coefficients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSB</td>
<td>+</td>
<td>.457**</td>
</tr>
<tr>
<td>MSB</td>
<td>+</td>
<td>.452**</td>
</tr>
<tr>
<td>MC</td>
<td>-</td>
<td>-.371*</td>
</tr>
<tr>
<td>IMBS</td>
<td>+</td>
<td>.218</td>
</tr>
<tr>
<td>LBS</td>
<td>+</td>
<td>.147</td>
</tr>
<tr>
<td>A</td>
<td>+</td>
<td>.037</td>
</tr>
<tr>
<td>Models</td>
<td>Values</td>
<td></td>
</tr>
<tr>
<td>Adj. $R^2$</td>
<td></td>
<td>0.230</td>
</tr>
<tr>
<td>$F$</td>
<td></td>
<td>3.440**</td>
</tr>
</tbody>
</table>

*p < 0.1; *$p < 0.05; **$p < 0.01

Predictors: (Constant); CSB, Number of supervisory board committees; MSB, Number of meetings of the supervisory board; MC, Number of meetings of the audit committee; IMSB, Independent members of the supervisory board; LBS, the largest block of shares; A, Assets.

Source: Author’s own compilation.
Hypothesis No. 5, according to which the concentration of ownership (LBS) is correlated with the scope of disclosures about the system of control over financial reporting (SD) is not confirmed. When analyzed the companies included in the survey, it was found that the concentration of ownership did not affect the scope of disclosures (it was statistically insignificant). It should be noted that there is no unambiguity as to the direction of the impact of this variable on the scope of disclosures according to the literature [Bronson et al., 2006; Bauwhede and Willekens, 2008].

The estimated descriptive statistics indicate a number of differences between the corporate governance practice in Poland and Germany. Therefore, it was decided to construct two consecutive linear regression models taking into account data for only one of the stock exchanges (estimates were made in groups). These models explain to a greater extent the impact of selected variables on the scope of disclosures about the system of control over financial reporting. The first model uses data on companies listed in Poland, while the second uses data on companies listed in Germany.

The best of the prepared models explains the changes in the scope of disclosures presented by companies listed in Poland in approx. 27%. The dependent variable has a normal distribution (statistics; 963, df 29, p > 0.05 in the Shapiro-Wilk test). Moreover, the residuals of the model have a normal distribution (statistics; 981, df 26, p > 0.05 in the Shapiro-Wilk test). The modeling results indicate that the following independent variables are significant: Supervisory board committees (CSB at p < 0.05) and Supervisory board meetings (MSB at p < 0.05) (cf. Table 5). None of the model parameters introduces collinearity into the model.

The model for companies listed in Germany explains changes in the scope of disclosures presented by companies in approx. 25%. The dependent variable has no normal distribution characteristics (statistics; 901, df 30, p < 0.05 in the Shapiro-Wilk test). The model residuals have a normal distribution (statistics; 972, df 30, p > 0.05 in the Shapiro-Wilk test). Modeling results indicate that the following independent variables are significant: Supervisory board committees (CSB at p < 0.01), Audit committee meetings (MC at p < 0.05) and Independent supervisory board members (IMSB at p < 0.05) (cf. Table 5). None of the model parameters introduces collinearity into the model.

When the models estimated separately for companies listed in Poland and Germany are compared, it indicated different variables affect the scope of disclosures about the system of control over financial reporting (SD) in these two groups of companies. The strength of the influence of individual variables is also different. For both constructed models for particular groups of companies, the number of supervisory board

Table 5. Regression analysis (Model 2 and 3). Dependent variable: Scope of disclosures

<table>
<thead>
<tr>
<th>Type of model</th>
<th>Expected direction</th>
<th>Model 2. Companies from the WIG 30 index</th>
<th>Model 3. Companies from the DAX index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>Beta coefficients</td>
<td></td>
<td>Beta coefficients</td>
<td></td>
</tr>
<tr>
<td>CSB</td>
<td>+</td>
<td>.384'</td>
<td>.530''</td>
</tr>
<tr>
<td>MSB</td>
<td>+</td>
<td>.363'</td>
<td></td>
</tr>
<tr>
<td>MC</td>
<td>-</td>
<td>- .515'</td>
<td></td>
</tr>
<tr>
<td>IMBS</td>
<td>+</td>
<td>.381'</td>
<td></td>
</tr>
<tr>
<td>LBS</td>
<td>+</td>
<td>.310'</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>+</td>
<td>-.137</td>
<td>.144</td>
</tr>
<tr>
<td>Models</td>
<td>Values</td>
<td>Values</td>
<td></td>
</tr>
<tr>
<td>Adj. R²</td>
<td>.271</td>
<td>.253</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>3.328'</td>
<td>3.460'</td>
<td></td>
</tr>
</tbody>
</table>

'? p < 0.1; * p < 0.05; ** p < 0.01

Predictors: (Constant); CSB, Number of supervisory board committees; MSB, Number of meetings of the supervisory board; MC, Number of meetings of the audit committee; IMSB, Independent members of the supervisory board; LBS, the largest block of shares; A, Assets.

Source: Author's own compilation.
committees (CSB) affected the scope of disclosures related to the system of control over financial reporting (SD). In the case of German companies this influence was definitely stronger. Analysis of descriptive statistics indicates that committees of supervisory boards are more often appointed in German companies than in Polish companies. In German companies the maximum number of committees was 8, while in Poland only 4.

The supervisory board meetings variable (MSB) significantly \((p < 0.05)\) and positively affected the scope of disclosures (SD) of companies listed in Poland. But, in the case of companies listed in Germany, this variable was excluded from the model because it was irrelevant and caused a significant deterioration of the model. Descriptive statistics indicate that in companies listed in Germany, supervisory boards met much less frequently than the companies listed in Poland.

The audit committee meetings variable (MC) had a significant \((p < 0.05)\) and negative impact on the scope of disclosures presented by companies listed in Germany. But for the companies listed in Poland, this variable was excluded from the model because it was irrelevant and caused a significant deterioration of the model. This may be due to a small number of observations—only 20 companies from the WIG 30 index disclosed information on the frequency of meetings of the audit committee for the year 2013.

The independent members of the supervisory board variable (IMBS) significantly \((p < 0.05)\) and positively affected the scope of disclosures presented by companies listed in Germany. But for the companies listed in Poland, this variable was excluded from the model because it was irrelevant and caused a significant deterioration of the model. It should be noted that in the case of German companies the share of independent members among the total number of members was definitely higher than in companies listed in Poland.

The largest block of shares variable (LBS) significantly \((p < 0.1)\) and positively affected the scope of disclosures regarding control over financial reporting (SD) presented by companies listed in Poland. For the companies listed in Germany, this variable was excluded from the model because it was irrelevant and caused a significant deterioration of the model.

6 Conclusions

The content presented in the article complements research results presented in the literature. The study was a comparative one in nature and was conducted among companies from developed and developing capital markets. As part of the study, the number of detailed disclosures regarding the system of control over financial reporting was used as a dependent variable.

The research results indicate that selected corporate governance mechanisms affect the scope of disclosures regarding the system of control over financial reporting. It was established that the quality of corporate governance, manifested in the number of supervisory committees and the number of meetings of the supervisory board influenced the scope of disclosures positively.

The study found that meetings of the audit committee are negatively correlated with the scope of disclosures about the control system. This may be due to the specifics of these disclosures. Further, the issues may be of particular interest to audit committees. This committee is tasked, inter alia, with assessing the effectiveness of this system. The research results indicate that an active audit committee can be treated as an alternative monitoring mechanism to the scope of disclosures on the system of control over financial reporting.

The results of the research also indicate the role of national determinants of the scope of disclosures. When German and Polish companies are considered, the number of supervisory board committees had a significant impact on the scope of disclosures, although the impact varied. It seems, therefore, that the institution of the supervisory board committees transferred from the Anglo-Saxon system to continental Europe plays an important role in corporate governance.

The number of meetings of supervisory boards and the concentration of ownership had a positive impact on the scope of disclosures in Polish companies. It should be noted that in the case of Polish companies, unlike in German companies, the concentration of ownership was high.
When German companies are considered, the scope of disclosures was affected by variables indicating high-quality corporate governance, i.e., the number of supervisory committees, the number of meetings of audit committees, and the share of independent members among the total number of supervisory board members. It was also shown that the number of meetings of audit committees adversely affects the scope of disclosures.

The nature of disclosures about the system of control over financial reporting provides them a good tool for examining the level of transparency of companies. The scope of disclosures depends on the managers, who may treat these disclosures as inside information. Because of these high disclosures, the management board of the companies' signals to capital market participants that the reliability of financial statements is highly ensured.

One of the basic limitations of the research is the relatively small number of companies that were analyzed. Another limitation is related to the fact that the survey was conducted among companies representing a similar model of corporate governance, which may make it difficult to translate the research results to, e.g., Anglo-Saxon countries.

References


Committee of Sponsoring Organizations of the Treadway Commission (1992), Internal control – Integrated framework, New York: AICPA.


Schoeder, N., Gibson, Ch. (1990), Readability of management’s discussion and analysis, Accounting Horizons, Vol. 4, pp. 78–89.


Urbanek, P. (2009), Struktura własności i kontroli w polskich spółkach publicznych w warunkach kryzysu gospodarczego [Structure of ownership and control in Polish public companies in the conditions of economic crisis], Prace i Materiały Wydziału Zarządzania Uniwersytetu Gdańskiego, Vol. 1, pp. 381–398.


Appendix

Detailed disclosure items regarding control over financial reporting.

A.1 Disclosure category

Internal control system and risk management—general information.

**Detailed disclosures:** (1) Principles of risk management associated with preparing financial statements; (2) The benefits resulting from internal control and risk management (principles of an effective system). E.g., the system ensures the effectiveness, reliability, completeness, and timeliness of financial and management information and involves supervision and monitoring of a company’s liabilities, costs, and results on a day-to-day basis; (3) The unit (units) responsible for internal control (companies indicated the management board or chief accountant or accounting department); (4) The tasks of individual units operating within a company related to the functioning of internal control and risk management; (5) Elements of internal control and risk management; (6) The concept of the three lines of defense related to internal control and risk management systems; (7) Self-control of the accuracy of one’s own work, including the quarterly self-assessment process; (8) Substantive and formal-accounting control/functional and institutional control; (9) Use of the COSO model for the construction and development of internal control; (10) Links of the internal control and risk management chain; (11) The management board has the company periodically assessed by an external entity for the operation of internal control and the risk of fraud; (12) Functional control tasks (checking that processes are running correctly, analyzing whether the procedures are performed by employees, whether there is a conflict of interest, monitoring financial reporting, checking if the regulations are observed); (13) Functional control is performed in the form of self-control, vertical and horizontal functional control and automation of processes performed by IT systems; (14) Application of internal controls (segregation of duties, data authorization, verification of the accuracy of received data, independent checks); (15) Checks on data integrity, hardware controls, operational controls and authorization checks; (16) A general financial security management system consisting of: liquidity, exchange rate risk and budget development and control; (17) At the end of the year, the management board reviews the effectiveness of the control system (e.g., management self-audit, internal audit findings); (18) The company regularly assesses the quality of the internal control system and risk management in relation to the process of preparing financial statements; (19) Quarterly self-assessment of the effectiveness of control processes; (20) The system’s effectiveness may be limited by discretionary decisions, offenses, defective elements of the control system and other events; (21) The control system integrated with the financial reporting system; (22) The control system ensures compliance of the entity’s accounting with IFRS/German GAAP; (23) The control system ensures compliance of the entity’s accounting with stock exchange regulations, including the regulation on current and periodic information; (24) The effectiveness of the system is assessed sequentially on a self-assessment basis. First, the system is assessed by the person involved in the system, followed by the manager and then the management board.

A2. Disclosure category: Organization of the accounting system

**Detailed disclosures:** (1) The principle of separation of functions (accounting, supervision, approval) (administration, implementation, implementation, authorization); (2) Tasks and responsibilities are precisely defined; (3) The principle of double control (dual-control principle), (four-eyes principle); (4) The established disclosure committee, which controls individual financial and non-financial information prior to its publication; (5) At the beginning of the year, accounting items and fragments of processes exposed to risk are selected and evaluated by external auditors for the effectiveness of the system; (6) An independent department is set up in the company to ensure that the financial statements comply with the law and internal regulations; (7) Controlling Department exercises control over current processes and financial and operational plans as well as over preparation of financial reports; (8) A separate department which deals with the control of separate financial statements before consolidation; (9) All companies of the group must
use the same company [corporate] chart of accounts; (10) Regularity and reliability of financial reports is
checked by a special accounting and control group; (11) The use of independent advisors specializing in
post-employment benefits by the management board. Outsourcing some work, such as valuing projected
obligations and share-based payment obligations as well as purchase price allocations in the context of asset
acquisitions and business combinations; (12) A special internal group of experts dealing with the valuation
of balance sheet items; (13) Separating the accounts of individual group companies and incorporating
them into one entity dealing with accountancy; (14) The system of circulation of financial and accounting
documents.

A3. Disclosure category: IT tools

**Detailed disclosures:** (1) Information on the use of IT tools for the needs of the system; (2) Segment
reporting is carried out on a separate IT system; (3) The Central Documentation System for documenting
key controls.

A4. Disclosure category: Risk

**Detailed disclosures:** (1) Units responsible for risk management associated with the preparation of
financial statements; (2) Types of risks associated with the preparation of financial statements; (3) Risks
associated with the operation of the entity; (4) Information on the creation of risk maps; (5) Information
on (risk management) tools; (6) So-called owners of risks are responsible for the management of identified
risks; (7) Information on the implementation of the risk management process in relation to financial
reporting (identification and assessment of risk areas and determination of any actions necessary to reduce
or eliminate risks); (8) Market, exchange rate and financial risk management policy; (9) The company
monitors important risk factors (tax and legal, economic and operational) on an ongoing basis; (10)
Solutions used to avoid the risk of erroneous estimates; (11) Group-wide risk and control matrix; (12) To
minimize the risk, transactions above a certain amount must pass the authorization process; (13) A central
catalog of various types of risks is created in the company.

A5. Disclosure category: The process of preparing financial statements

**Detailed disclosures:** (1) The entities responsible for the preparation of financial statements and supervision
over these statements; (2) General information on the preparation of financial statements; (3) Information
on the compliance of financial statements with accounting policy; (4) Indication that the process of the
preparation of financial statements is described in the internal regulations and by the order of the chairman
of the management board; (5) Information about the responsibility of the disclosure committee for the
accuracy of the data contained in financial statements and their compliance with laws and regulations;
(6) Information about the solutions, compliant with the IFRS, adopted to avoid incorrect estimates; (7)
Internal division of responsibilities for preparing financial statements; (8) Supervision of the application
of a uniform accounting policy; (9) Uniform rules and procedures for the consolidation of financial data
ensured by unified reports; (10) The formal process of preparing financial statements; (11) A multi-stage
process of reviewing and authorizing statements; (12) Manual adjustments are subject to a special control;
(13) Unified patterns of financial statements; (14) In order to eliminate various risks associated with
financial statements, the structure of the process of preparing financial statements is defined in two layers,
i.e., applicative and substantive; (15) Control related to the preparation of financial statements includes:
control of the input data quality, control of data mapping from source operating systems to financial
statements, an analytical review based on the knowledge of specialists; (16) Shared service centers support
local units in the preparation of financial statements; (17) Automated and non-automated reconciliations;
(18) Accounting is carried out in subsidiaries. The mother company performs selected activities such as:
consolidation, estimation of retirement benefits, impairment tests; (19) Confirmation of account balances
for the entire group takes place via an internet-based platform; (20) Consultations with other departments
Control system over financial reporting and mechanisms of corporate governance

(Controlling, taxes, IT) during the preparation of financial statements; (21) A four-tier reporting process (local entity, region, business segment, group); (22) Two types of risk related to financial reporting: no true and fair view principle and timely preparation of financial statements; (23) The company checks whether the risk can be assigned to three categories: Statement on the types of business transactions, Statement on account balances at the reporting date; Statement on presentation in the financial statements and on the notes; (24) After preparation, the financial statements are subject to trend analysis and analysis of deviations; (25) Financial statements are approved by the general meeting of shareholders; (26) The financial directors of subsidiaries must annually confirm the compliance of their statements with corporate accounting standards; (27) The management signs a statement that the statement complies with the regulations and is true and fair.

A6. Disclosure category: Internal and external regulations

Detailed disclosures: (1) Information on internal regulations regarding the process of preparing financial statements (procedures, directives, inventory instructions, job cards - rules of material liability, code of ethics, regulations, accounting policy documentation, instructions, procedures) and procedures regarding incurring liabilities; (2) Information on the procedures of internal control and risk management; (3) Information on external regulations on financial reporting (The Accounting Act, International Accounting Standards, stock exchange regulations, etc.); (4) Information about tracking legislative amendments to financial statements and periodical reports; (5) The main principles of the control system result from the regulations and instructions; (6) Unified accounting policy for the whole group; (7) The accounting manual (guide) developed by the company applied throughout the group; (8) The entity follows the recommendations of the International Standards of Auditing and Quality Control, NO 315, 2009 edition; (9) Guide to internal control over financial reporting; (10) Fair Play Code of Conduct; (11) The control system is based on an internal directive regarding financial policy principles; (12) Each unit involved in the preparation of financial statements is subject to the rules and regulations of the Corporate Information Security Guide; (13) Employee responsibilities related to the control system; (14) Procedures to monitor compliance with obligations related to inside information about the company; (15) Code of Ethics for Financial Matters; (16) Management Control Catalog used to identify risks in such areas as financial reporting, CSR, offenses, communication, planning and budgeting, investment control and internal audit.

A7. Disclosure category: External audit

Detailed disclosures: (1) Information on auditing (reviewing) financial statements by an external auditor; (2) The auditor selection process; (3) Information on the use of the auditor’s recommendations for improving internal control and risk management; (4) The conclusions of the external audit are submitted to the supervisory board (the audit committee); (5) Remuneration of an external auditor; (6) The method of recognizing and presenting unusual events in financial statements is consulted on a continuous basis with an auditor; (7) The auditor reviews the adequacy and effectiveness of the internal control system; (8) Duration of the contract with the external auditor; (9) Rules for changing the external auditor; (10) The auditor shall audit the risk early warning system and the risk monitoring system.

A8. Disclosure category: The supervisory board

Detailed disclosures: (1) Information related to the implementation by the board of directors of the obligations arising from responsibility for financial statements; (2) The tasks of the audit committee (the supervisory board) related to internal control and risk management, e.g., monitoring the financial reporting process and the independence of the auditor, supervisory board recommends adopting or rejecting financial statements; (3) Information on the evaluation of financial statements conducted by the supervisory board, in regard of their compliance with ledgers and documents, as well as with the true situation; (4) Assessment of the financial statement by the supervisory board; (5) Assessment of the management board’s report on the
activity by the supervisory board; (6) After completion of the audit of financial statements they are forwarded to the supervisory board; (7) Indications that financial statements are examined by the supervisory board during regular meetings; (8) Pre-approved financial reports are made available to the audit committee; (9) The supervisory board (including the audit committee) supervises the financial reporting process; (10) The supervisory board and the audit committee receive regular reports on the effectiveness of control systems; (11) The key types of risks are sent quarterly to the chairman of the supervisory board and to the audit committee; (12) Once a year, the types of risk related to financial reporting are presented to the supervisory board by the management board; (13) The audit committee monitors the effectiveness of the internal control system and risk management; (14) The management board submits the reports [financial statements] to the audit committee as soon as they have been prepared; (15) The management board provides the supervisory board with a report on activities and a financial statement for approval; (16) The audit committee reports to the supervisory board and other committees during the year on the activities of the committee; (17) The budget for the following year and the business plan is approved by the supervisory board; (18) The supervisory board includes two members who meet the independence criteria; (19) Preparation and distribution of periodic reports - financial statements to the management board and supervisory board.

**A9. Disclosure category: Data security and protection**

**Detailed disclosures:**
1. Information on the safety and security of financial reporting data;
2. Control of access to financial data;
3. In the event of a system failure, unfinished transactions are withdrawn.

**A10. Disclosure category: Internal audit**

**Detailed disclosures:**
1. Operations of the internal audit which are involved in risk identification and evaluation of control mechanisms (institutional internal controls performed by the internal auditor);
2. Information on the subjection of the internal audit; (3) The audit department provides the supervisory board and the audit committee with information on possible irregularities in the operation of the system; (4) Annual audit plans (programs) (in accordance with International Standards for the Professional Practice of Internal Auditing); (5) The internal audit may perform ad hoc audits commissioned by the management board or the supervisory board; (6) The internal audit makes an independent assessment of the adequacy, correctness and effectiveness of the existing systems of internal control and risk management; (7) The results of the internal audit work are forwarded to the board of directors and the supervisory board or to the audit committee; (8) The internal audit is independent of and functionally subordinate to the audit committee; (9) Internal audits of financial statements in subsidiaries; (10) Internal audits of financial statements in subsidiaries when the statements are not required to be audited by an external auditor; (11) Twice a year a report is prepared summarizing the conclusions of the audit tasks carried out and the implementation of the auditor’s financial statement recommendations are monitored; (12) The internal audit conducts a risk self-assessment process on an annual basis and carries out tests of control mechanisms; (13) The internal audit director is present at the meetings of the management board and the supervisory board concerning controls.

**A11. Group of disclosures: Managerial accounting**

**Detailed disclosures:**
1. The budgetary control system (including compliance with the strategic plan) as part of the control system over financial reporting;
2. Information on the periodic review of the financial results, implementation of the strategy and operational plans (including economic and financial plans); (3) Information on the use (also for the preparation of financial statements) of periodic reports with management information on key financial and operational indicators of business segments; (4) Accounting policy applied both in financial reporting and management reporting.
A12. Disclosure category: Other disclosures

Detailed disclosures: (1) Information regarding the first place in the competition for the best annual report; (2) The consolidated report of the management board is prepared in consultation with subsidiaries; (3) Regular training for employees involved in financial reporting; (4) Skills of employees of accounting departments are verified in the recruitment process; (5) Employees have appropriate qualifications in the area of accounting; (6) Information on the implemented ISO systems.
Review

Mirosława Pluta-Olearnik*

International Brand Strategies. The Perspective of the Companies from Emerging Markets

https://doi.org/10.2478/ijme-2020-0027

Warsaw School of Economics Press

The monograph by Marzanna Witek-Hajduk touches upon issues important for the contemporary development of knowledge about international brand strategies implemented by companies from the so-called emerging economies and markets (Latin America, Asia, Africa, China, and Eastern Europe). The author concentrates on the so-called “brand orientation of a company” and its significance for the strategy of creating a strong brand with an international outreach, especially in the context of shaping the international competitiveness of entities representing an emerging economy.

In general, International Brand Strategies. The Emerging Markets Perspective is an extensive study of a total of 355 pages, including an Introduction, five chapters, a Conclusion, and the corresponding tables. The layout of the publication is neat – the chapters have a clearly defined subject matter and an intelligible internal structure. Certainly, the rich bibliography is worth highlighting as in large part it contains publications by foreign authors and documents the author’s excellent knowledge of the international achievements in the examined area.

With regard to the content of the individual parts of this extensive monograph, one needs to emphasize the logic and legibility of the argumentation noticeable in the internal layout of the publication. First, in the introduction to the book, the author formulates an ambitious set of research goals (theoretical, empirical, methodical, and practical), a list of research questions, and a group of research hypotheses concerning the realization of the empirical goal. There is also a diagram showing the subsequent stages of research carried out by the author, which is a good preparation for the further reading of this original work.

The first three chapters of Marzanna Witek-Hajduk’s monograph are of a theoretical and cognitive nature and contain a full identification of the challenges for companies representing Eastern markets, in terms of creating international product brand strategies. The author directs the reader’s attention to the new problem of brand management on the international market in the context of the resource management concept and the concept of a company’s dynamic capabilities. It should be agreed that the main challenge for companies from the emerging markets is to adapt their internationalization strategies to their resources and competitive advantages, and to create or acquire key resources and capabilities, including brand management in foreign markets.

In Chapter 1, Brand and Enterprise Competitiveness, the author discusses, among other things, the potential of the brand as a source of competitive advantage in foreign markets, the elements of the brand orientation model and their relation to the performance of the brand and the organization, as well as the problem of international brand management in the context of the resource management concept and the dynamic capabilities concept of the enterprise.

Chapter 2, entitled International Expansion of Brands in the Light of Theoretical Concepts for the Internationalization of Companies, is entirely based on a detailed review of the literature on foreign business, trade, and international marketing and facilitates identifying possible strategies for the expansion of brands into foreign markets. There appears an important thread suggesting that the

*Corresponding author: Mirosława Pluta-Olearnik, Faculty of Business and Management, Wroclaw University of Economics and Business, Wroclaw, Poland. E-mail: Miroslawa.Pluta-Olearnik@ue.wroc.pl
internationalization of specific brands of manufacturers or products and their portfolios is often a consequence of an increase in the company’s involvement in foreign markets, and a consequence of the adopted competitive strategy, for example, in the case of small- and medium-sized enterprises.

Chapter 3 of the book, *International Brand Strategies: Essence, Content, and Context*, contains, among other things, a useful discussion of many, often ambiguous, terms encountered in brand research to date. The author also points out some specific internal and external conditions of the international brand strategy and discusses the contemporary understanding of the country of origin effect in the context of brand strength and awareness.

Chapter 4, *International Brand Strategies of Enterprises from the Emerging Markets*, is one of the most important in the monograph. The author identifies here the rationale for internationalization and the specifics of the strategy of competing companies from the emerging markets and economies from various regions of the world, that is Latin America, Asia, Africa, China, and Eastern Europe. In addition, she addresses the poor image of the country of origin of the product which companies from the emerging markets struggle with. She also analyzes options for international brand portfolio strategies and positioning their image.

Chapter 5, the final chapter of the monograph, entitled *International Brand Strategies of Polish Companies – The Concept and Results of Empirical Research*, contains a description of the procedure and results of the quantitative research carried out within a group of 142 Polish companies (managers of exported brands and consumer goods). The results of this research enabled the author to verify her conceptual model, which shows the impact of the indicated determinants (internal and external) on the international brand strategy, and then the impact of this strategy on the results of the leading brand on the foreign market and the results of the company (with the moderating variable of the company size). Next, the author presents the structural model of the examined relations and evaluates the quality of the measuring model and structural model in order to obtain confirmation, or lack thereof, for the accepted research hypotheses.

To sum up, thanks to extensive and in-depth research into the world’s achievements to date and methodically advanced procedure of empirical research, the author has fully achieved the ambitious goals of the monograph. I am convinced that the conceptualization of knowledge and the multidimensional analyses and their results reliably document the nature of brand influence on the international competitiveness of the enterprises from the emerging markets, including Polish enterprises. The author has successfully identified and filled the existing gaps in the existing knowledge of business management and its particular resource – the brand on foreign markets – in conditions of growing competitiveness. Moreover, she has indicated specific practical recommendations for Polish enterprises in the area of internationalization of brand strategy and the so-called limitations of research and directions of further research.

Bearing in mind the numerous commendable qualities of Marzanna Witek-Hajduk’s monograph, *International Brand Strategies. The Perspective of the Companies from the Emerging Markets*, I can confidently recommend it to potential customers, especially to representatives of the scientific and business community and students, interested in building strong product brands on international markets and in creating their positive image. The publication provides comprehensive, up-to-date, and modern knowledge in this area.
# List of *IJME* reviewers in 2020

https://doi.org/10.2478/ijme-2020-0033

<table>
<thead>
<tr>
<th>Reviewer</th>
<th>Location</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alam, Muhammad Zubair</td>
<td>Lahore, Pakistan</td>
<td>Superior University</td>
</tr>
<tr>
<td>Ayodele, Oniku</td>
<td>Akoka Yaba, Nigeria</td>
<td>University of Lagos</td>
</tr>
<tr>
<td>Baranowska-Prokop, Ewa</td>
<td>Warsaw, Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Bartosik-Purgat, Małgorzata</td>
<td>Poznan, Poland</td>
<td>Poznan University of Economics and Business</td>
</tr>
<tr>
<td>Berent, Tomasz</td>
<td>Warsaw, Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Bilan, Irina</td>
<td>Iasi, Romania</td>
<td>Alexandru Ioan Cuza University</td>
</tr>
<tr>
<td>Borowski, Jakub</td>
<td>Warsaw, Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Cicea, Claudiu</td>
<td>Bucuresti, Romania</td>
<td>Bucharest University of Economic Studies</td>
</tr>
<tr>
<td>Cieček, Serkan</td>
<td>Fethiye, Turkey</td>
<td>Mugla Sitki Kocman University</td>
</tr>
<tr>
<td>Cieśliukowski, Maciej</td>
<td>Poznań, Poland</td>
<td>Poznan University of Economics and Business</td>
</tr>
<tr>
<td>Danik, Lidia</td>
<td>Warsaw, Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Demir, Volkan</td>
<td>İstanbul, Turkey</td>
<td>Galatasaray University</td>
</tr>
<tr>
<td>Dzienis, Anna</td>
<td>Warsaw, Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Dzikowska, Marlena</td>
<td>Poznan, Poland</td>
<td>Poznan University of Economics and Business</td>
</tr>
<tr>
<td>Falkowski, Krzysztof</td>
<td>Warsaw, Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>First-Komen, Ivana</td>
<td>Rijeka, Croatia</td>
<td>University of Rijeka</td>
</tr>
<tr>
<td>Fratocchi, Luciano</td>
<td>L’Aquila, Italy</td>
<td>University of L’Aquila</td>
</tr>
<tr>
<td>Grudecka, Anna</td>
<td>Warsaw, Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Haldia, Ashok</td>
<td>Ghaziabad, India</td>
<td>Institute of Management Technology</td>
</tr>
<tr>
<td>Hillemane, Bala</td>
<td>Bangalore, India</td>
<td>Indian Institute of Science (IISC)</td>
</tr>
<tr>
<td>Subrahmanyana Mungila</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hkiri, Besma</td>
<td>Jeddah, Saudi Arabia</td>
<td>University of Jeddah</td>
</tr>
<tr>
<td>Holscer, Jens</td>
<td>Bournemouth, United Kingdom</td>
<td>Bournemouth University</td>
</tr>
<tr>
<td>Hoque, Mohammad Enamul</td>
<td>Bangi, Malaysia</td>
<td>National University of Malaysia</td>
</tr>
<tr>
<td>Hsieh, Wen-Jen</td>
<td>Tainan City, Taiwan</td>
<td>National Cheng Kung University</td>
</tr>
<tr>
<td>Kachniewska, Magdalena</td>
<td>Warsaw, Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Karbowski, Adam</td>
<td>Warsaw, Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Kaya, Ayše</td>
<td>Izmir, Turkey</td>
<td>Izmir Katip Celebi University</td>
</tr>
<tr>
<td>Kijek, Arkadiusz</td>
<td>Lublin, Poland</td>
<td>Maria Curie-Skłodowska University</td>
</tr>
<tr>
<td>Kowalski, Arkadiusz</td>
<td>Warsaw, Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Kuźnar, Andżelika</td>
<td>Warsaw, Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Lechman, Ewa</td>
<td>Gdansk, Poland</td>
<td>Gdańsk University of Technology</td>
</tr>
<tr>
<td>Liew, Venus Khim-Sen</td>
<td>Sarawak, Malaysia</td>
<td>University of Malaysia, Sarawak</td>
</tr>
<tr>
<td>Liu, Weidong</td>
<td>Beijing, China</td>
<td>Chinese Academy of Sciences</td>
</tr>
<tr>
<td>Majercakova, Daniela</td>
<td>Bratislava, Slovakia</td>
<td>Comenius University Bratislava</td>
</tr>
<tr>
<td>Masili, Giorgia</td>
<td>Roma, Italy</td>
<td>University of Rome Tor Vergata</td>
</tr>
<tr>
<td>Masuravvili, Ioseb</td>
<td>Tbilisi, Georgia</td>
<td>New Vision University</td>
</tr>
<tr>
<td>Matejun, Marek</td>
<td>Lodz, Poland</td>
<td>University of Lodz</td>
</tr>
<tr>
<td>McCaleb, Agnieszka</td>
<td>Warsaw, Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Ripollés Meliá, María</td>
<td>Castelló, Spain</td>
<td>Jaume I University</td>
</tr>
</tbody>
</table>

(Continued)
<table>
<thead>
<tr>
<th>Name</th>
<th>City</th>
<th>Country</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mesa, Juan Carlos Perez</td>
<td>Almería</td>
<td>Spain</td>
<td>University of Almería</td>
</tr>
<tr>
<td>Milewicz, Waldemar</td>
<td>Warsaw</td>
<td>Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Miłska-Struzik, Ewa</td>
<td>Poznan</td>
<td>Poland</td>
<td>Poznan University of Economics and Business</td>
</tr>
<tr>
<td>Mirońcki, Jacek</td>
<td>Warsaw</td>
<td>Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Moisescu, Ovidiu I.</td>
<td>Cluj-Napoca</td>
<td>Romania</td>
<td>Babes-Bolyai University</td>
</tr>
<tr>
<td>Napiorkowski, Tomasz</td>
<td>Warsaw</td>
<td>Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Naeqi, Syed Waqar Azeem</td>
<td>Montreal</td>
<td>Canada</td>
<td>McGill University</td>
</tr>
<tr>
<td>Nasir, Nadia</td>
<td>Lahore</td>
<td>Pakistan</td>
<td>Superior University</td>
</tr>
<tr>
<td>Naumovska, Ljupka</td>
<td>Skopje</td>
<td>North Macedonia</td>
<td>University of Tourism &amp; Management</td>
</tr>
<tr>
<td>Nowak, Wioletta</td>
<td>Wrocław</td>
<td>Poland</td>
<td>University of Wrocław</td>
</tr>
<tr>
<td>Nyga-Łukaszewska, Honorata</td>
<td>Warsaw</td>
<td>Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Oleksiuk, Adam</td>
<td>Warsaw</td>
<td>Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Olejnik, Leokadia</td>
<td>Warsaw</td>
<td>Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Ostapenko, Natalia</td>
<td>Tartu</td>
<td>Estonia</td>
<td>Tartu Ulikool</td>
</tr>
<tr>
<td>Ozolina, Velga</td>
<td>Riga</td>
<td>Latvia</td>
<td>Riga Technical University</td>
</tr>
<tr>
<td>Pasamehmetoglu, Aysin</td>
<td>Istanbul</td>
<td>Turkey</td>
<td>Özyeğin University</td>
</tr>
<tr>
<td>Patel, Ritesh</td>
<td>Ahmedabad</td>
<td>India</td>
<td>Nirma University</td>
</tr>
<tr>
<td>Pawęta, Elena</td>
<td>Warsaw</td>
<td>Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Pelle, Anita</td>
<td>Szeged</td>
<td>Hungary</td>
<td>University of Szeged</td>
</tr>
<tr>
<td>Plesniak, Agnieszka</td>
<td>Warsaw</td>
<td>Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Próchniak, Mariusz</td>
<td>Warsaw</td>
<td>Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Prokop, Viktor</td>
<td>Pardubice</td>
<td>Chech Republic</td>
<td>University of Pardubice</td>
</tr>
<tr>
<td>Radlo, Mariusz Jan</td>
<td>Warsaw</td>
<td>Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Rzepka, Agnieszka</td>
<td>Lublin</td>
<td>Poland</td>
<td>Lublin University of Technology</td>
</tr>
<tr>
<td>Salehi, Mahdi</td>
<td>Mashhad</td>
<td>Iran (the Islamic Republic of)</td>
<td>Ferdowsi University of Mashhad</td>
</tr>
<tr>
<td>Sass, Magdalina</td>
<td>Budapest</td>
<td>Hungary</td>
<td>Hungarian Academy of Sciences Centre of Excellence</td>
</tr>
<tr>
<td>Serwa, Dobromil</td>
<td>Warsaw</td>
<td>Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Sethibe, Tebogo Gilbert</td>
<td>Johannesburg</td>
<td>South Africa</td>
<td>University of South Africa</td>
</tr>
<tr>
<td>Shukla, Smita</td>
<td>Mumbai</td>
<td>India</td>
<td>University of Mumbai</td>
</tr>
<tr>
<td>Solangi, Yasir Ahmed</td>
<td>Nanjing</td>
<td>China</td>
<td>Nanjing University of Aeronautics and Astronautics</td>
</tr>
<tr>
<td>Svetlicini, Alexandr</td>
<td>Taipa</td>
<td>Macao</td>
<td>University of Macau</td>
</tr>
<tr>
<td>Szczepaniak, Iwona</td>
<td>Warsaw</td>
<td>Poland</td>
<td>National Research Institute</td>
</tr>
<tr>
<td>Sznejderska, Anna</td>
<td>Warsaw</td>
<td>Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Szomko, Natalia</td>
<td>Warsaw</td>
<td>Poland</td>
<td>SGH Warsaw School of Economics</td>
</tr>
<tr>
<td>Töngür, Ünal</td>
<td>Antalya</td>
<td>Turkey</td>
<td>Akdeniz University</td>
</tr>
<tr>
<td>Tanna, Sailesh</td>
<td>Coventry</td>
<td>United Kingdom</td>
<td>Coventry University</td>
</tr>
<tr>
<td>Tarczyński, Waldemar</td>
<td>Szczecin</td>
<td>Poland</td>
<td>University of Szczecin</td>
</tr>
<tr>
<td>Trapczyński, Piotr</td>
<td>Poznan</td>
<td>Poland</td>
<td>Poznan University of Economics and Business</td>
</tr>
<tr>
<td>Tusek, Boris</td>
<td>Zagreb</td>
<td>Croatia</td>
<td>University of Zagreb</td>
</tr>
<tr>
<td>Urbaniak, Maciej</td>
<td>Łódz</td>
<td>Poland</td>
<td>University of Łódz</td>
</tr>
<tr>
<td>Wyszowska-Kuna, Joanna</td>
<td>Łódz</td>
<td>Poland</td>
<td>University of Łódz</td>
</tr>
<tr>
<td>Yilanci, Veli</td>
<td>Sakarya</td>
<td>Turkey</td>
<td>Sakarya University</td>
</tr>
<tr>
<td>Zhou, Peng</td>
<td>Qingdao</td>
<td>China</td>
<td>China University of Petroleum</td>
</tr>
<tr>
<td>Zmuk, Berislav</td>
<td>Zagreb</td>
<td>Croatia</td>
<td>University of Zagreb</td>
</tr>
</tbody>
</table>