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MANAGEMENT OF COMPANIES PERFORMANCE: IMPACT OF IMMATERIAL CAPITAL

Abstract. *The authors present their arguments and counterarguments on the issue of Immaterial capital and its impact on companies' performance. The main purpose of the research is to assess companies' Immaterial Capital and to measure its impact on stock performance. The article has three main objectives: 1) to define immaterial capital and propose a methodology for its assessment; 2) to determine the proportion of Immaterial Capital created in Moroccan companies listed on the Casablanca stock exchange while using the retained measurement methodology; 3) to verify the impact of Immaterial Capital on stock performance. Systematisation literary sources and approaches for solving the problem of Immaterial Capital assessment indicates that there is no broad consensus on that issue. Indeed, given its multidimensional character, immaterial capital is difficult to measure. It is worth to note that several approaches to assessing that capital, which weighs very heavily on the enterprise's finances, have been developed. In this paper, the authors propose to measure immaterial capital in Moroccan companies listed on the Casablanca Stock exchange, while using two assessing methods, namely price-to-book and Enterprise Value-based approaches. The paper presents the results of an empirical analysis which showed that a lot of sectors create immaterial wealth, in particular telecommunication sector, cement manufacturer, electricity, hydrocarbon distribution, mining, port services, food and beverages, autos distribution and pharmaceutical sector. The research empirically confirmed that all sectors which have a price to book ratio above 3 generate a positive immaterial capital calculated by the second methodology used. The results of the research can be useful for all companies that want to measure their real wealth and consequently to manage their performance competently. It should be noted that the analyses performed in this article are preliminary only. An extension to unlisted companies is intended so that the generalisation of the results would be possible.*

Keywords: assessment, Casablanca stock exchange (CSE), enterprise value (EV), immaterial capital (IC), listed companies, Price-to-Book Ratio (PBR).

Introduction. In the context of the knowledge-based economy, digitalisation and new technologies, immaterial capital has become a fundamental concept in the global richness of the companies but also of the nations. It worth noting, as long as this capital represent nearly two-thirds of the firm's «richness» on average, no one can discuss the capital of a company without referring to its immaterial capital. Moreover, Melnyk (2013) suggests that intangible assets will play a crucial role in ensuring the long-term success of enterprises due to the current trends in the economic systems. According to OECD (2006), there is no definition and classification of immaterial capital that are generally accepted by all practitioners and

academics. Elarfaoui and Daanoune (2018) argue that intangible capital includes a lot of designations that some researchers consider they don't have the same meaning. Indeed, immaterial capital takes on several shapes and names, depending on the authors. Sometimes it is called intellectual capital or human capital, and sometimes it is called intangible capital or goodwill, etc.

However, according to Fustec and Marois (2006) «immaterial asset is a constituent of the enterprise which is separately identifiable. This capital is involved in current or future income-generating activities, but whose value does not appear on the balance sheet». In other words, immaterial capital is the hidden wealth of the company which weighs very heavily on its finances but had until that time been left out of the accounting system.

Because of the difficulty of defining and clarifying the contours of immaterial capital, its assessment is by no means a simple task. Indeed, given its multidimensional character, this capital is difficult to measure. However, it is worth to note that several approaches to assessing immaterial capital have been proposed.

In this paper, the authors propose to measure immaterial capital in Moroccan companies listed on the Casablanca Stock exchange, while using two assessing methods, namely price-to-book and Enterprise Value approaches. It should be noted that the focus of this work is on defining the contribution of immaterial capital to the global wealth of those enterprises, but also on comparing the results of calculations based on those two measurement methods. Furthermore, the estimation of immaterial capital impact on stock performance is also foreseen in this paper.

Lastly, this research paper is structured in three sections. The first part is an overview of the literature on immaterial capital, its definitions and components, but also its different valuation methodologies. In the second part, the authors explain the methodology and research methods used. Finally, the last part is devoted to results and discussion.

Literature Review.

1. Definition of Immaterial Capital.

The conventional view of the economy in general, the industry, the company and especially its capital had become irrelevant in the context of the digitalisation, information and new technologies era. Furthermore, production requires not only traditional factors such as capital and labour but also skills, organisational structures and processes (Stahle et al., 2015; Brynjolfsson et al., 2002). Given these factors, the concept of immaterial capital comes into its own. But, what is immaterial capital? Which definition should be retained for that hidden wealth of companies? What is certain is that intangible assets are considered by literature to be strategic keys to success and company competitiveness (Ruiz Rodríguez & Castilla Polo, 2019).

However, it should be noted that the definition of intangible capital is not an easy task because of its multidimensional character that uses various concepts. According to OECD (2006), there is no definition and classification of immaterial capital that are generally accepted by all practitioners and academics. Herewith, several authors gave their views and interpretations of immaterial capital. According to Smith and Parr (1989), the value of total intangible assets is determined by netting current and tangible assets, the latter valued at replacement cost, from its market value. Pierrat (2000) defines immaterial asset (or intangible asset) in more detail. According to this author, an intangible asset is part of the company's value that present simultaneously several characteristics, namely:

- absence of physical substance;
- indefinite useful life;
- uniqueness, or at least high specificity;
- considerable uncertainty as to future earnings;
- hardly severable from the other assets.

In other words, according to IAS 38, intangible assets are identifiable non-monetary assets without physical substance and toughly separable from other company's assets.

On the other hand, Fustec and Marois (2006) defined an immaterial asset as a constituent of the enterprise, which was separately identifiable and involved in current or future income-generating activities, but whose value did not appear on the balance sheet. More concisely, Lev (2001) considered that intangible resources were those that could generate future value without being physical or financial. According to Zeghal and Maaloul (2011), the definition of intangibles was synonymous with the term of intellectual capital, immaterial capital, knowledge capital, and goodwill. From an accounting point of view, intangible capital has long been considered an intermediate expenditure in the production process.

A more detailed definition of OECD (1998) and the International Federation of Accountants (1998) have distinguished three components of immaterial capital, namely:

· Human capital (or employee competence) referring to attributes of people, particularly their intelligence, know-how and creativity.

· Customer/relational capital (or external structures) referring to items held by the company, including its business capital and its positive relationship with customers. In addition to the external relationship with stakeholders, namely its suppliers, partners, networks and regulators.

· Organisational capital (internal structures) referring to different components owned by the company, in particular the intellectual property, databases, systems, processes and efficiency of the organisation that allows the company to accumulate, memorise and transmit its know-how.

Thus, intangible assets involve more than just research and development, patents and brands. Indeed, according to Dumay (2016), intangible capital is the collection of intangible resources, knowledge, experience, and intellectual property of an organisation, community, country, or society which one uses to create economic, utility, social, and environmental value. Later, Li and Wu (2018) divided knowledge capital into the three components: this capital in intangible products or processes (R & D, patents, licenses, artistic originals etc.); capital in the labour force (human capital); knowledge capital in the form of technological progress. To sum up, according to the IFRS definition, an intangible asset should be identifiable, could be controlled by the entity and could generate future economic benefits.

2. Assessment of Immaterial Capital.

Given that immaterial capital does not appear anywhere in the financial statements of the company, it is more than ever necessary to propose assessment methodologies but also to provide a regulatory framework. Therefore, it will allow taking into account this intangible capital which had until that time been left out of the accounting system.

Furthermore, there have been multiple methods proposed by researchers for measuring the company's immaterial capital. A synthesis work of those methods used has been performed by Ramanauskaite and Rudzioniene (2013). These two authors proposed to classify assessment approaches into four categories (Table 1).

Table 1. Classification of Immaterial Capital assessment methodologies according to general principles of valuation

N	Group of methods	Features
1.	Market Capitalisation Methods	They based on calculating the difference between the enterprise's market value and its assets, which is equated to the value of intellectual capital. They are not convenient to use in non-profit entities of the public sector.
2.	Return on Assets Methods	These methods are based on calculating the average pre-tax income compared to the average capital unit. One compares the result with the average value of the industry branch. In turn, the result interpreted as the average return on intellectual capital. Some of these methods are based on the discounted cash-flow calculation. The errors can occur using them.

3.	Direct Intellectual Capital Methods	The intellectual capital is evaluated by identifying the specific components or elements (e.g., technology broker – IC audit, total value creation, the value explorer, etc.)
4.	Scorecard Methods	This group identifies different components of intellectual capital. These type of methods does not evaluate indicators in monetary units as the previous group (e.g., Skandia navigator, IC index, Intangible assets monitor, etc.)

Sources: developed by Ramanauskaite and Rudzioniene (2013), according to Engstrom et al., (2003); Zambon et al., (2003); Müller (2004); Wall et al., (2004); Sitar et al., (2004); Westnes (2005); Kok (2007); Pukeliene et al., (2007); Vaškeliene (2007); Jurczak (2008); Kuzmina (2008); Sveiby (2010); Znakovaite et al., (2010); Salman et al., (2012).

Recently the study (Ewens et al., 2020) has utilised prices paid for intangible assets in acquisitions. For the authors, acquisitions provide an excellent framework to price intangibles. Indeed, the SEC and GAAP require the allocation of the purchase price paid for the target's net assets across tangible assets, liabilities, identifiable intangible assets and goodwill. Since tangible assets are marked to market in the purchase price allocation, the sum of identifiable intangible assets and goodwill represents the total price paid for intangible capital in an acquisition. The authors have presented multiple methodologies used for assessing immaterial capital. The next part will be dedicated to detailed explanations of the methods used in this research. This article has three main objectives. The first one is to define immaterial capital and propose a methodology for its assessment. Herewith, the second objective is to determine the proportion of immaterial capital created in the Moroccan companies listed on the Casablanca stock exchange while using the retained measurement methodology. The third purpose is to verify the impact of immaterial capital on stock performance.

Methodology and research methods. As mentioned above, several immaterial capital valuation methodologies have been proposed. However, it should be noted that each methodology focuses on one component of immaterial capital to the detriment of another. To overcome this weakness, the authors propose to measure the company's intangible capital by using two different methodologies.

1. Price to book a ratio-based approach. The first approach retained is based on the price-to-book ratio. This methodology rests on the calculation of the ratios of market capitalisation to the book value of shareholders' equity. It should be noted that the price-to-book ratio allows measurement of the difference between the return on equity and the return contemplated by shareholders. Furthermore, the evolution of the price-to-book ratio in all financial markets shows that a significant part of the enterprise value does not appear in its financial statements (Fustec & Marois, 2006; Lev, 2001).

The following graph, for example, shows the evolution of the S&P 500 price-to-book ratio over the last three years. It should be noticed that the PBR is trending upwards with a minimum at 2.58. It strongly suggests that the book value of shareholders' equity does not reflect the overall wealth of a business. Indeed, a price to book ratio which is equal to three means that the value of market capitalisation equals three times the book value of shareholders' equity.

However, it is worth noting that this measurement methodology includes the totality of intangible assets, registered or unregistered in the assets of the company.

2. Enterprise value-based approach. The second approach retained is based on enterprise value. Ernst and Young cabinet (2008) in its study used this methodology is used about the importance of immaterial capital in European listed companies.

The rationale of residual value is the base of this methodology. The immaterial capital of each company is indeed determined as the difference between the enterprise value and the carrying value of the assets on the balance sheet (excluding intangible assets on the balance sheet and goodwill).
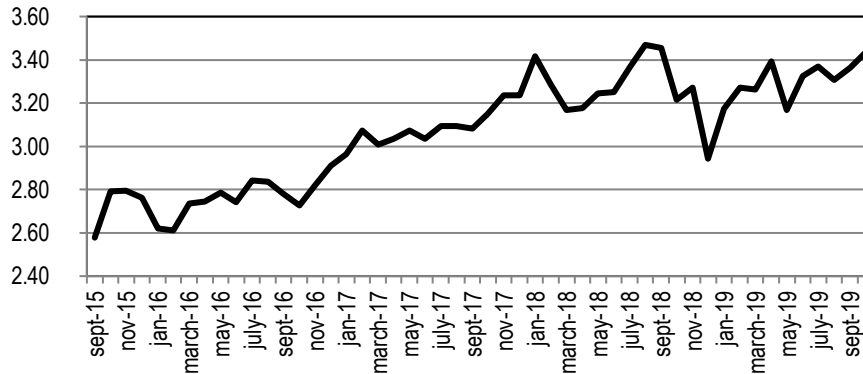
Figure 1. S&P 500 Price to Book Ratio between September 2015 and October 2019
Sources: developed by the authors based on Yahoo Finances

It also should be noted that the average market capitalisation calculates the enterprise value on 1 January of the year «n» and the financial debt of the company on the same date. More concisely, the average market capitalisation on 1 January of the year «n» corresponds to the average market capitalisation between December of the year «n-1» and January of the year «n». Figure 2 summarises the methodology explained above.

Immaterial Capital = Enterprise Value – Carrying value of the assets on the balance sheet (excluding intangible assets on the balance sheet and goodwill)
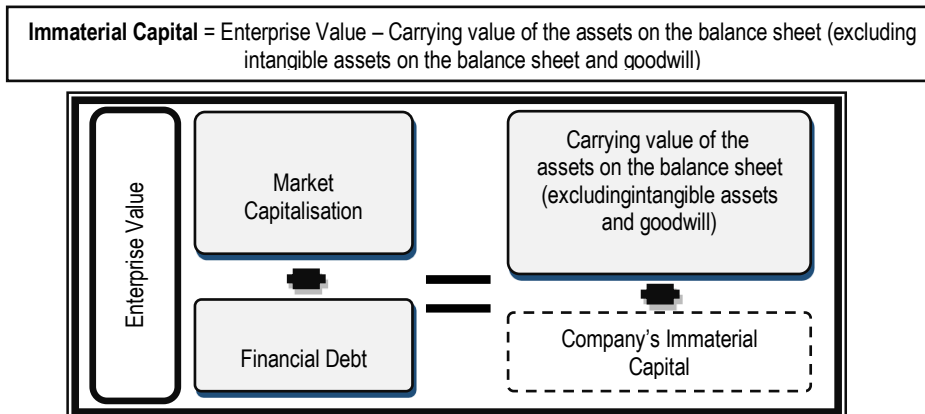
Figure 2. Representation of Immaterial Capital calculation methodology used by Ernst & Young cabinet
Sources: developed by the authors based on (Ernst & Young, 2008).

It should be noted that this approach provides only an approximation of intangible capital as all immaterial capital assessment methodologies. Indeed, this method based on the fact that any difference between the company's market value and the values of the accounting items corresponds to intangibles. It implies that items for revalorisation of the other types of assets, especially tangible assets, are insignificant. According to the promoter of this approach, this simplification is acceptable because it represents the best proxy of immaterial capital.

3. Impact of immaterial capital on stock performance. To measure the impact of immaterial capital, the authors have opted to compare values of price to book ratios and immaterial capital created over the

period studied with the stock's performance during that same period.

The intended objective of this comparison is to determine if the value of immaterial capital has any impact on the behaviour of stock on the stock market.

4. Sample and study period. Regarding the sample utilised for the study, the authors have considered all companies listed on the Casablanca Stock Exchange for at least three years, to be as exhaustive as possible. The authors used data from 2016 to 2018 to evaluate and discern the evolution of immaterial capital in those companies. Thus, the sample used is composed of 72 companies operating in different sectors.

In the following section, the authors are going to perform a study based on the two approaches described above. The main objective of this study is to illustrate and assess the magnitude of the immaterial value recognised by the financial market but not registered in the financial accounts.

Results.

1. Assessment of Immaterial Capital

The work performed from the price-to-book ratios of Morrocan listed companies, between 2016 and 2018, gives the following results.

Table 2. Price-to-Book ratios of Moroccan listed companies between 2016 and 2018

| Sector | Company | PBR Annual average | | | PBR Average 2016-2018 |
		2016	2017	2018	
Telecomunication sector	Maroc Telecom	7,17	7,74	8,10	7,67
Sector Average		**7,17**	**7,74**	**8,10**	**7,67**
Insurance sector	Wafa Assurance	2,39	3,00	2,75	2,72
	Atlanta	2,02	2,12	2,65	2,27
	AGMA	**5,33**	**5,96**	**6,35**	**5,88**
	Saham Assurance	1,15	1,31	1,45	1,30
	AFMA	**10,83**	**13,02**	**15,52**	**13,12**
Sector Average		**4,34**	**5,08**	**5,75**	**5,06**
Hydrocarbon Distribution sector	Afriquia Gaz	3,41	3,89	3,92	3,74
	Total Maroc	**5,28**	**7,13**	**5,74**	**6,05**
Sector Average		**4,35**	**5,51**	**4,83**	**4,89**
Cement sector	Ciments du Maroc	3,24	3,98	4,79	4,00
	Lafarge Holcim Maroc	3,97	5,19	4,29	4,49
Sector Average		**3,61**	**4,59**	**4,54**	**4,25**
Pharmaceutical industry	Sothema	3,56	3,48	3,61	3,55
	Promopharm	**3,68**	**6,11**	**4,85**	**4,88**
Sector Average		**3,62**	**4,79**	**4,23**	**4,21**
Food industry	**SBM**	**3,32**	**4,19**	**5,09**	**4,20**
	Centrale Danone	**7,53**	**7,61**	**13,78**	**9,64**
	Cosumar	**1,93**	**3,54**	**3,33**	**2,94**
	Lesieur Cristal	2,14	2,54	2,72	2,47

Continued Table 2

	Oulmes	**3,39**	**4,26**	**4,87**	**4,17**
	Unimer	1,57	1,47	1,46	1,50
	Dari Couspate	**2,34**	**3,30**	**5,25**	**3,63**
	Cartier Saada	1,01	1,23	1,24	1,16
	Mutandis SCA	-	-	0,06	0,02
Sector Average		**2,58**	**3,13**	**4,20**	**3,30**
Mining sector	Managem	2,11	2,74	2,72	2,52
	CMT	**3,08**	**3,62**	**3,85**	**3,52**
	SMI	**3,01**	**3,62**	**3,83**	**3,48**
Sector Average		**2,73**	**3,33**	**3,47**	**3,18**
Automotive industry	Auto Hall	2,84	3,12	2,54	2,84
	Auto Nejma	2,12	2,84	2,60	2,52
	Ennakl Automobiles	4,70	4,35	2,41	3,82
Sector Average		**3,22**	**3,44**	**2,52**	**3,06**
Other sectors	Risma	1,10	1,36	1,70	1,38
	Label Vie S.A.	**2,31**	**2,51**	**3,08**	**2,63**
	CTM	**2,18**	**3,01**	**3,29**	**2,83**
	Timar	1,00	0,65	0,59	0,74
	Lydec	**2,17**	**2,61**	**2,48**	**2,42**
	Taqa Morocco	**3,03**	**3,71**	**3,98**	**3,57**
	Marsa Maroc	**1,18**	**4,09**	**5,44**	**3,57**
	Nexans Maroc	0,47	0,51	0,43	0,47
	Stokvis Nord Afrique	**4,09**	**4,08**	**2,72**	**3,63**
	SRM SA	0,47	0,61	0,50	0,53
	Balima	1,64	1,55	1,56	1,58
	Zellidja	0,49	0,42	0,84	0,58
	DLM	0,96	0,91	1,97	1,28
	Afric Industries SA	**2,44**	**2,03**	**1,89**	**2,12**
	Rebab Company	0,54	0,54	0,79	0,62
Sector Average		**1,60**	**1,91**	**2,09**	**1,86**
Funding Sector	Eqdom	1,07	1,18	1,27	1,17
	Maghrebail	1,22	**1,51**	1,42	1,38
	Maroc Leasing SA	1,28	1,24	1,37	1,30
	Salafin	3,53	3,99	2,70	3,41
Sector Average		**1,77**	**1,98**	**1,69**	**1,82**
Technology sector	IB Maroc.com	0,65	3,88	- 0,86	1,22
	Involys	0,52	0,57	0,51	0,53
	HPS SA	**1,62**	**2,91**	**4,06**	**2,86**

Continued Table 2

	Disway	0,80	1,12	1,30	1,07
	M2M Group	1,37	1,49	1,78	1,55
	Microdata	**2,07**	**2,94**	**3,31**	**2,77**
	S2M	**2,21**	**2,41**	**2,48**	**2,37**
Sector Average		**1,32**	**2,19**	**1,80**	**1,77**
Banking sector	Attijariwafa bank	1,83	2,13	2,24	2,07
	BMCE Bank	2,10	2,02	2,07	2,06
	BMCI	0,91	1,08	1,55	1,18
	Banque Centrale Populai (BCP)	1,43	1,77	1,81	1,67
	Credit du Maroc (CDM)	1,05	1,16	1,20	1,14
	CIH Bank	1,47	1,64	1,70	1,60
Sector Average		**1,47**	**1,63**	**1,76**	**1,62**
Real Estate sector	Addoha	1,01	1,29	0,71	1,00
	Alliances Dev Immobilier	0,83	2,20	0,86	1,30
	Residences Dar Saada	1,19	1,18	0,73	1,03
	Immorente Invest	na	6,99	0,65	2,55
Sector Average		**0,76**	**2,92**	**0,74**	**1,47**
Industrial sector	Sonasid	0,80	1,10	1,23	1,04
	Aluminium du Maroc	1,38	1,57	1,80	1,58
	Delta Holding S.A	1,13	1,52	1,64	1,43
	Colorado SA	**1,96**	**2,39**	**3,02**	**2,46**
	Fenie Brossette	0,52	0,88	0,83	0,74
	Stroc	-0,51	2,44	-0,42	0,50
	Jet Contractors	1,17	1,27	1,72	1,39
Sector Average		**0,92**	**1,60**	**1,40**	**1,31**
Petrochemical industry	Maghreb Oxygene	0,35	0,44	0,51	0,43
	SNEP	0,45	2,13	2,69	1,76
Sector Average		**0,40**	**1,28**	**1,60**	**1,09**

Sources: developed by the authors based on the Casablanca Stock Exchange Data

According to Table 2, the telecommunication industry is the first sector which invests in immaterial capital. A price-to-book ratio equals to 7.67 means that the book value is eight times smaller than the market value of the stock. This difference is mainly due to the importance of the intangible assets that the company has developed over several years. Another finding that emerges in the analysis of the price-to-book ratio is that the trend is upwards between 2016 and 2018. Indeed, the ratio's value has risen from 7.17 to 8.10 over this period.

The insurance sector is the second most important in terms of price-to-book ratio. Its average value is about 5.06. This sector is closely followed by hydrocarbon distribution sector with an average ratio of 4.89 over the study period. Cement and pharmaceutical sectors show an interesting average ratio of around

4.25 and 4.21, respectively.

The average value of the price-to-book ratio of food, mining and automotive sectors is equal to 3.3, 3.18 and 3.06 respectively. It should be noted that within the same sector, values of the price-to-book ratio could be very different dependently of the stock. Indeed, for example, in the food sector, the stock Centrale Danone has an average PBR around 9.64 versus 1.16 for the stock Cartier Saada. Consequently, the value of the immaterial capital created depends on each company and its strategy. Funding, technological and banking sectors have an average value of PBR around 1.82, 1.77 and 1.62, respectively. These sectors presented values of PBR that are very low compared to other sectors above. Finally, real estate, industrial and petrochemical sectors have the lowest average PBR values, 1.47, 1.31 and 1.09 respectively.

The calculations performed from the difference between the enterprise value and the carrying value of the assets on the balance sheet of Morrocan listed companies, between 2016 and 2018, gives the following results:

Table 3. Immaterial capital computed in accordance with the Ernst & Young method of Moroccan listed companies between 2016 and 2018

Immaterial Capital (MMAD)						
Sector	Company	2016	2017	2018	IC Average (MMAD) 2016-2018	IC sector average/Global positive IC
Telecomunication sector	Maroc Telecom	61929,2	73035,1	78736,8	71233,7	
Sector Average		**61929,2**	**73035,1**	**78736,8**	**71233,7**	**62,9%**
Cement sector	Ciments du Maroc	9186,3	12211,5	14779,1	12059,0	
	Lafarge Holcim Maroc	29522,4	36853,0	28402,8	31592,7	
Sector Average		**19354,4**	**24532,2**	**21590,9**	**21825,8**	**19,3%**
Electricity sector	Taqa Morocco	4174,9	8563,9	10442,6	7727,1	
Sector Average		**4174,9**	**8563,9**	**10442,6**	**7727,1**	**6,8%**
Hydrocarbon Distribution sector	Afriquia Gaz	1904,1	2197,3	2152,9	2084,8	
	Total Maroc	2956,0	8041,4	5960,7	5652,7	
Sector Average		**2430,1**	**5119,3**	**4056,8**	**3868,7**	**3,4%**
Mining sector	Managem	249,8	4786,1	5855,3	3630,4	
	CMT	1071,2	1392,3	1550,1	1337,9	
	SMI	2607,6	3459,5	2861,7	2976,3	
Sector Average		**1309,5**	**3212,7**	**3422,4**	**2648,2**	**2,3%**
Port services sector	Marsa Maroc	-3583,6	4069,2	6611,9	2365,9	
Sector Average		**-3583,6**	**4069,2**	**6611,9**	**2365,9**	**2,1%**
Food industry	**SBM**	**2088,1**	**3578,8**	**4872,1**	**3513,0**	
	Centrale Danone	**4515,8**	**4808,0**	**4563,4**	**4629,1**	

Continued Table 3

	Cosumar	-2148,1	**5157,6**	**7673,1**	3560,9	
	Lesieur Cristal	-561,2	678,0	376,4	164,4	
	Oulmes	1084,7	1849,7	1812,9	1582,4	
	Unimer	-191,2	-143,0	-43,4	-125,8	
	Dari Couspate	49,1	285,2	872,5	402,3	
	Cartier Saada	-29,0	-10,4	-17,6	-19,0	
	Mutandis SCA	0,0	0,0	-1687,0	-562,3	
Sector Average		**534,2**	**1800,4**	**2046,9**	**1460,5**	**1,3%**
Automotive industry	Auto Hall	1946,4	2173,0	1488,2	1869,2	
	Auto Nejma	407,4	1009,2	929,5	782,0	
	Ennakl Automobiles	738,7	884,9	215,0	612,9	
Sector Average		**1030,8**	**1355,7**	**877,6**	**1088,0**	**1,0%**
Pharmaceutical industry	Sothema	1211,7	1271,9	1667,0	1383,5	
	Promopharm	625,9	1049,7	859,8	845,1	
Sector Average		**918,8**	**1160,8**	**1263,4**	**1114,3**	**1,0%**
Global positive immaterial capital						113 332,34

Sources: developed by the authors based on the Casablanca Stock Exchange Data

According to Table 3, only 9 out of 17 sectors represented in the Casablanca Stock Exchange, report a positive value of immaterial capital. Therefore, 25 companies represent these 9 sectors out of 73 listed companies. It also should be noted that the methodology proposed by Ernst & Young (2008) cabinet does not apply to the financial sector, namely banking, insurance and funding companies because of the specific nature of these activities. According to the calculations performed, the remaining stocks generate a negative value of immaterial capital. The authors have therefore chosen to present only sectors which generate a positive value of immaterial capital.

Consistent with the findings from the previous methodology, the telecommunication sector is the first contributor to the immaterial capital created by all listed companies. Indeed, Maroc Telecom contributes an average of 63% from the years 2016 to 2018. As for the cement sector, it generates nearly 20% of total immaterial capital created. The contribution of electricity sector represents almost 7% of the total. Hydrocarbon distribution sector accounted for close on 3.5% of total positive immaterial capital. The contribution of cement and port services sectors is around 2.3% and 2.1% respectively. Finally, the contribution of food, automotive and pharmaceutical sectors does not exceed 1% of the immaterial capital created. The figure below summarises the contribution of each sector to the average global positive immaterial capital created over the study period.

By comparing the two methodologies used, it should be noticed that the stocks which generate the highest immaterial capital value are the ones that have a price-to-book ratio above 3. It also should be noted that the order of the sectors is roughly identical when using the two methods. It shows obviously that sectors with the highest PBR values are the ones that generate the highest proportion of immaterial capital.
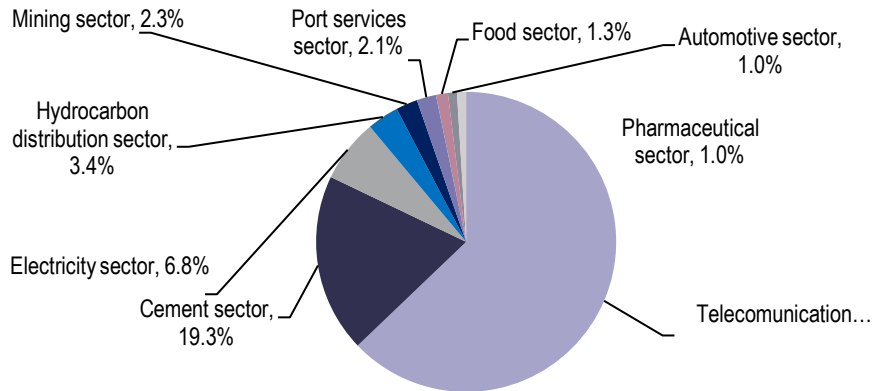
Figure 3. Sector's contribution to the global positive immaterial capital between 2016 & 2018
Sources: developed by the authors.

To summarise, telecommunication, cement, electricity, hydrocarbon distribution, mining, port services, food, automotive, and pharmaceutical sectors are the positive contributors to the immaterial capital created by all listed companies. In contrast, industry, real estate, computer equipment and petrochemical sectors destroy immaterial value.

Table 4. Comparison between Immaterial Capital, PBR and stock performance over the 2016-2018 period

Sector	Company	IC Average (MMAD) 2016-2018	IC sector average/Global positive IC	PBR Average 2016-2018	Stock Performance 2016-2018
Telecomunication sector	Maroc Telecom	71 233,7		7,67	26,74%
Sector Average		**71 233,7**	**62,85%**	**7,67**	
Cement sector	Ciments du Maroc	12 059,0	10,6%	4,00	61,0%
	LHM	31 592,7		4,49	10,6%
Sector Average		**21 825,8**	**19,26%**	**4,25**	
Electricity sector	Taqa Morocco	7 727,1	6,8%	3,57	55,9%
Sector Average		**7 727,1**	**6,82%**	**3,57**	
Hydrocarbon Distribution sector	Afriquia Gaz	2 084,8		3,74	28,5%
	Total Maroc	5 652,7		6,05	65,7%
Sector Average		**3 868,7**	**3,41%**	**4,89**	
Mining sector	Managem	3 630,4		2,52	32,3%
	CMT	1 337,9		3,52	32,3%
	SMI	2 976,3		3,48	-39,8%
Sector Average		**2 648,2**	**2,34%**	**3,18**	
Port services sector	Marsa Maroc	2 365,9		3,57	40,2%
Sector Average		**2 365,9**	**2,09%**	**3,57**	
Food industry	SBM	3 513,0		4,20	32,5%

<div align="right">**Continued Table 4**</div>

	Centrale Danone	4 629,1		9,64	-17,5%
	Cosumar	3 560,9	3,1%	2,94	130,3%
	Lesieur Cristal	164,4		2,47	18,9%
	Oulmes	1 582,4		4,17	13,0%
	Unimer	**-125,8**		**1,50**	**0,9%**
	Dari Couspate	402,3		3,63	293,1%
	Cartier Saada	**-19,0**		**1,16**	**62,2%**
	Mutandis SCA	**-562,3**		**0,02**	**na**
Sector Average		**1 460,5**	**1,29%**	**3,30**	
Automotive industry	Auto Hall	1 869,2		2,84	-14,0%
	Auto Nejma	782,0		2,52	62,3%
	Ennakl Automobiles	612,9		3,82	-3,3%
Sector Average		**1 088,0**	**0,96%**	**3,06**	
Pharmaceutical industry	Sothema	1 383,5		3,55	34,3%
	Promopharm	845,1		4,88	17,6%
Sector Average		**1 114,3**	**0,98%**	**4,21**	
Global positive Immaterial Capital			**113 332,34**		

Sources: developed by the authors based on the Casablanca Stock Exchange Data

2. Impact of Immaterial Capital on stock performance

According to Table 4, it is worth noting that the average value of the immaterial capital created over the period studied or the average value of the price-to-book ratio does not drive the behaviour of stocks in the stock market. Indeed, telecommunication sector, for example, which generates the highest value of immaterial capital (71 233,7 MMAD) and has the highest value of the price-to-book ratio (7,67), generated a return of 26.8% over the period. In contrast, some stocks with lower values of immaterial capital and lower values of price-to-book ratio achieved better performance. For example, Ciment du Maroc, Taqa Morocco and Cosumar. The price-to-book ratios of these three stocks are around 4, 3.57 and 2.94, respectively, which is very low compared to Maroc Telecom (7.67). Moreover, the contribution to the global immaterial capital does not exceed 10.6% for Ciment du Maroc, 6.8% for Taqa Morocco and 3.1% for Cosumar versus more than 62.5% for Maroc telecom. However, these three stocks generated a return of 61%, 55.9% and 130.3% over the period, respectively. These findings show clearly that the behaviour of listed companies in the stock market does not depend on the value of immaterial capital created. This variable might affect stock performance in some cases, but other parameters could drive the behaviour of stocks in the stock market.

Conclusions. Based on the considered scientific background, the authors have started their work by defining and determining the contours of the concept of immaterial capital. However, it worth noting that the main objective of this work was the assessment of that hidden wealth in the case of Moroccan listed companies. As foreseen by the literature, immaterial capital is difficult to measure given its multidimensional character. Therefore, a review of the main assessment methodologies was undertaken. Finally, the authors have retained two approaches, one based on the price-to-book ratio and the other one based on the difference between the enterprise value and the carrying value of the assets on the balance sheet (excluding intangible assets and goodwill). The results achieved by the two methods show that a lot of sectors create immaterial wealth, in particular telecommunication sector, cement manufacturer,

electricity, hydrocarbon distribution, mining, port services, food and beverages, autos distribution and pharmaceutical sector. Indeed, all sectors that have a price to book ratio above 3 generate a positive immaterial capital calculated by the second methodology used. Besides, some sectors destroy immaterial value, namely industrial sector, real estate, petrochemical industry. And against all expectations, the high-tech equipment sector destroys value. Moreover, the behaviour of listed companies in the stock market does not depend on the value of immaterial capital created. This variable might affect stock performance in some cases, but it is clear that there are undoubtedly other influencing factors that can drive the behaviour of stocks in the stock market. However, the outcome is suggestive of directions for further research, in particular, the modelling of the relationship between Immaterial Capital and stock performance. Finally, the analyses performed in this article are preliminary only. An extension to unlisted companies is intended so that the generalisation of the results would be possible.

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Управління прибутковістю компанії: вплив нематеріального капіталу

У статті систематизовано аргументи та контраргументи у рамках наукової дискусії щодо нематеріальних активів та їх впливу на результативність діяльності компанії. Головною метою дослідження є оцінювання нематеріальних активів компаній та визначення їх впливу на дохідність її цінних паперів. Для досягнення поставленої мети авторами проведено дослідження у декілька етапів, а саме: 1) проаналізовано сутність нематеріальних активів та запропоновано методологію їх оцінювання; 2) визначено частку нематеріального капіталу марокканських компаній, які котируються на фондовій біржі Касабланка, за наведеною методологією оцінюванн; 3) перевірено гіпотезу про вплив нематеріальних активів на дохідність цінних паперів компаній. Результати систематизації наукового доробку та підходів до розв'язання проблематики нематеріального капіталу свідчать про відсутність єдиної загальноприйнятої концепції його оцінювання. При цьому існує декілька підходів до оцінювання капіталу, який спричиняє значне навантаження на фінансові ресурси компанії. У рамках статті запропоновано використовувати методи балансової вартості та ринкової капіталізації для оцінювання нематеріального капіталу досліджуваних компаній. За результатами проведеного аналізу встановлено, що значна кількість секторів, зокрема, телекомунікаційний, електроенергетичний, гірничодобувний, портовий, фармацевтичний, харчовий, автомобільний та виробництва цементу створюють найбільшу питому вагу нематеріальне багатство у Марокко. У статті емпірично підтверджено, що в секторах економіки у яких коефіцієнт ціна/балансова вартість є вищим за три, створюють позитивний нематеріальний актив. Отримані результати можуть бути корисними компаніям, які впроваджують інноваційні підходу до управління нематеріальним капіталом компанії з метою підвищення її прибутковості. Авторами зазначено, що дане дослідження є підотовчим та потребує розширення вибірки дослідження шляхом залучення компаній, що не котируються на фондовій біржі Касабланка.

Ключові слова: оцінка майна, фондова біржа Касабланки, вартість підприємства, нематеріальний капітал, публічні компанії.