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Digital Investor Relations and the Contribution to fair valuation

Communication Financière Digitale et sa contribution sur la juste valeur

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Abstract: Through history, crises and financial scandals occurred. The financial community stepped in to provide an explanation; the behavioral finance club always defends the idea that markets are not efficient. On the other side, another squad defends rigorously the theory that the price incorporates all the information, which means that the market is never wrong. Another club stepped in as well, to provide an illustration about the firm's theory and the relationship between the management and the investors. These theories could only lead the financial community to establish and adopt a communication channel known as the Investor Relations; the French refers to it as "Financial Communication", different names for one objective; to smooth the flow of information, which should eradicate the information asymmetry and resolve the agency problems. The quality of the information would make the Investor Relations program more effective, for that reason the call to integrate the digital technologies is an obligation. In this paper, we are going to expose first the efficient market hypothesis, the firm's theory and the emergence of the financial behavior, only to provide a definition of the concept "Digital Investor Relations", and how does it affect the stock price performance.

Keywords: Efficient market hypothesis, Investor Relations, digitalization, information asymmetry, agency relationship, theory of the firm, behavioral finance.

Résumé : Les théories se disputent quand les crises financières et les scandales se manifestent ; chacune cherche à les expliquer. Les financiers comportementalistes défendent toujours l'idée que le marché n'est pas efficient. Un camp opposant, défend férocement la théorie que le prix incorpore toute l'information, et qu'il est impossible de battre le marché. La théorie de la firme prend part dans l'ensemble des théories en exposant méticuleusement la relation entre le management et les actionnaires. Ces théories se rassemblent pour élaborer un canal de rapprochement et de raccordement entre le management et les actionnaires ; ce canal est évolué pour devenir une « Communication Financière » ; les anglophones adoptent une autre appellation « Relations Investisseurs », ces deux concepts tendent vers un seul objectif est celui de faciliter les flux d'information, ce qui pourrait réduire l'asymétrie de l'information et résoudre le problème d'agence. La qualité de la publication des informations est une question primordiale pour le bon fonctionnement de ce programme de rapprochement, c'est dans ce contexte qu'il est indispensable pour intégrer la digitalisation afin de disposer d'une « communication financière » effective. Dans ce papier, nous allons exposer l'émergence et le développement de la théorie de l'efficience des marchés, la théorie de la firme, et la transition vers la finance comportementale, pour arriver à fournir une définition sur la « Communication Financière Digitale ».

Mots clés : Communication Financière, digitalisation, asymétrie de l'information, relation d'agence, théorie de l'efficience des marchés, théorie de la firme, finance comportementale.

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1. Introduction

Financial markets, are they efficient? That question has imposed itself when crises occur, starting from the first known crisis; the tulip mania that crippled the Netherlands on the 17th century, the 2008 housing crisis, and nowadays the cryptocurrency bubble.

Eugene Fama does not appreciate the use of the word bubble, and repeatedly expresses his discontent on the usage of the notion bubble. He rejects bubbles because of the absence of evidence that proves prices predictably decline. In his oral Nobel Price lecture, he says: "When people use the word "bubble" they never tell you what they mean." (www.nobelprice.org).

(J.Shiller, 2000), who has predicted the tech bubble burst on 2000 in his book titled *"Irrational Exuberance"*, and the housing bubble that occurred on 2008, does not believe the markets are efficient, he has always been part of the behavioral finance side. His bursts predictions are the main reasons for which he has been the laureate 2013 Nobel Price alongside his opponent **E.Fama**.

Investors, with their diversity, institutional as they are or individual, are set to be considered the center of the financial system. Another reason for which regulation has grown in the capital markets and Investor Relations industry has taken place in order to be part of the solution to the problem of information asymmetry **(Seldon, 1988)**.

Investor Relations, additional costs, viewed as agency costs since it serves the purpose of meeting the management and the investors, in order to attract and retain institutional investors **(Craven and Marston, 1997)**.

In the following paper, we are delighted to answer the tailing question: could it be any correlation between digital Investor Relations and stock market performance?

Thus, to answer these questions, we are dividing our research to present, first the efficient market hypothesis, the firm's theory and the emergence of the financial behavior, in order to present a definition of the concept "digital Investor Relations", and the relationship between digital Investor Relations and stock prices performance.

2. Origin and Evolution of the Efficient Market Hypothesis

2.1. The theory before asset pricing

The efficient market hypothesis started on the **19th century** when the French **(Jules Renault, 1863)** who suggests a model **"random walk"** compared to the fact of flipping a coin; suggesting that the future stock price is independent of the current one.

The French mathematician, (**Louis Bachelier, 1900)**, admits the incorporation of the future, the current and the past events in the price without showing any correlation with the fluctuations of the price. He suggests that, if the market cannot predict these fluctuations, it means that they are not certain, which makes it possible to evaluate mathematically the uncertainty.

Thus, (**L.Bachelier, 1900)**, starts implementing the normal distribution, the Gaussian distribution of Laplace-Gauss, into finance, he started working on this in his thesis "Theory of Speculation". The normal distribution involves the symmetric and continuous distribution of the stock price, which wraps around the existence of an efficient market.

The finance community has ignored his works, until the Great Depression on 1929 when Wall Street had crippled, Alfred Cowles wondered about the portfolios managers and their ability to predict and counsel investors. He thought if the professionals of the financial markets could predict the fluctuations then they would be making higher performance than the market. He includes that the best performance would be merely with a random buy and sell.

2.2. The evolution of the theory after asset pricing

It is until the 1952, when **Harry Markowitz** observed the uncertainty characterizing the stock prices; this uncertainty makes them risky. At this point (**Harry Markowitz, 1952)** brings the concept of the efficient portfolio with the greatest return for a given risk. Before Markowitz, the finance community never knew the concept of "asset pricing". (**Miller and Modigliani, 1958)** paper shows the usage of the perfect substitutes in the process of securities evaluation and the struggle with such process. The works of (**Harry Markowitz, 1952)** encouraged **(Sharpe, 1964)** to suggest the "**CAPM Capital Asset Pricing Model**", which can calculate the expected rate of return that is correlated with the "**Beta**"; the reaction of the stock when the market is fluctuating.

(S.Ross, 1976) disapproved the use of merely one Beta, suggesting that many factors besides the market's fluctuations can influence the expected return.

The 1960s witnessed the discovery and the use of the computer in the finance sector, and the establishment of the Center for Research in Security Prices CRSP. The people inside the CRSP, particularly the famous **Eugene Fama,** defended the random walk model. On the other side, the **MIT** opposed the **CRSP** and always defended the idea that the markets are not perfect and they do not follow a random walk. They relied on the "normal backwardation" Keynesian Hypothesis of commodity prices.

(Eugene Fama, 1965) brings up to life the informational efficiency theory that revolves around the idea that the prices have all the information. However, it has been until the 1970, when he proposed the three forms of market efficiency: the weak form, the semi-strong and the strong form.

- **Weak Form :** The price reflects all information of past prices**;** investors rely only on the past data of the price to make their decisions. Several tests has been conducted in order to validate the weak form of the market efficiency; (**Eugene Fama,1965)** came across a significant autocorrelation different from zero between the future rate of return and the past

returns, when he tried to test the possibility of determining the future rate of return by observing the past returns.

- **Semi-strong form :** Anything that is known to the public is already incorporated in the price. (**Fama, Fischer, Jensen and Roll, 1969)** used the event study methodology in order to ascertain how prices behave when stock splits are announced. The study proved the none-existence of any effect. (**Ball and Brown, 1968)** validated the semi strong form when they noticed that the market has anticipated the event when they tried to conduct a study to test the effect of annual earnings announcement event of 261 American companies.
- **Strong form :** Prices reflect all the information there is no private information. It all goes into the price even if you dispose of all the information; you still cannot beat the market. (**Jaffe, 1974)** to study market efficiency found that the market's reaction is slow considering insiders information.

(Stanford J. Grossman and Joseph Stiglitz, 1980) admit the existence of two categories of agents, the informed who pay for the information and the uninformed agents who observe only the price.

In a market with non-existence of noise, the price transmits all the information to the uninformed agents. In an efficient market, prices reflect all the information and, consequently, the informed agents will start considering to stop paying for information.

On the other hand, if all the informed agents follows the path of abandoning and giving up information payment, they will tend to interfere information through the price, which will not be incorporating any information any longer.

The results show that uncompensated information is not a condition to validate the informational efficiency but a necessary condition.

2.3. Capital Structure theory

2.3.1. Miller and Modigliani 1958

(Miller and Modigliani, 1958) suggest that, in the existence of a perfect market whereas taxes and transaction costs are absent, the capital structure of a company does not affect the value of the firm. They have set two propositions, which the first articulates around the idea that the value of the firm

is independent of the percentage of debt and equity, the second proposition shows that the cost of equity increases when the percentage of the debt gets higher.

However, on the existence of taxes deductibility, a leveraged firm can profit from the deductibility and witness a higher value than the unleveraged one, and on the other hand, the cost of equity increases but slower than the case of no taxes.

2.3.2. The trade-off theory

If deductibility is an advantage to exploit that makes the use of debt an opportunity, then a question is imposing itself; how far a company can go with financial leverage as a source to finance the assets? This question pushed **(Robichek and Myers, 1966), (Stiglitz, 1972), (Kraus and Litzenberger , 1973) (Scott Jr, 1976)**, to introduce bankruptcy costs. With the trade-off theory, a firm cannot leverage without neglecting the following formula:

Leveraged company = Unleveraged company + Present Value tax shields - Present Value Bankruptcy Costs

2.3.3. The pecking order theory and the Signaling theory

Whilst I am writing this paper, the news is talking about the Silicon Valley Bank (SVB), and the impact that the capital raise announced by the firm has stroke the public and thus, gave a signal, which led to the collapse of one of the biggest banks in the US.

The pecking order theory, could explain this collapse, the theory developed by (**Myers 1984)**, (**Myers and Majluf, 1984)**, is a theory, which evolves around financing following certain hierarchy. The information asymmetry developed by (**Akerlof, 1970)** is the pillar of the pecking order theory. It says that manages should prioritize internal financing by retained earnings which gives a solid reputation about the firm's financial situation, then, they can switch to debt financing which gives a signal that the firm's management is confident about the ability to pay the debts, if not, then capital raise by equity is the last resort.

(S.Ross, 1977), signaling theory contradicts with the pecking order theory concerning the relationship between the managers and the investors. The signaling theory suggests that managers signal optimistic and great future in case of higher debts, and high quality firms use high debts.

(Becker and Wurgler, 2002) suggests the market timing theory that evolves around the idea that firms should consider the financial climate before deciding the nature of the capital structure.

3. The theory of the firm: From Agency theory to Stewardship theory to Corporate Governance

3.1. The agency theory

The paper of (**Jensen and Meckling, 1976)**, defined the agency relationship, as a contract that involves two parts, the principals and the agent; the principals engage the agent in order to perform one service on their behalf, which implicates the delegation of certain authority to the agent.

3.2. The stewardship theory

The stewardship theory contradicts with the agency theory when the stewardship is based on psychology and focuses on the behavior of managers. Managers are considered stewards who work to achieve what is best for the shareholders **(Donaldson and Davis, 1991)**. The stewards are concerned always to achieve organizational objectives collectively **(Davis, Shoorman, Donaldson 1997, Qiao et al 2017)**. Unlike the agency theory's basics about control and delegation, the stewardship theory columns are understanding and trust between the owner and the manager, which leads the firm to innovation **(Zhang et al, 2017)**. This trust, empower and understanding is supported by facilitating the idea of appointing the CEO position and the Chairman position to one person, and rather have more executive directors than non-executive directors **(Clarke, 2004)**.

3.3. The corporate Governance theory

The early works on corporate governance theory by (**Berle and Meanson, 1932)** about the accumulation of control and ownership, suggest that managers might use the firm's asset for their interests. (**Jensen and Meckling, 1976)** affirm the existence of a linear relationship between managerial ownership and performance of the firm, and managerial ownership could reduce agency problems. (**Fama and Jensen, 1983)** found that the ownership of managers could influence negatively the agency relationship.

4. The blossoming of the Behavioral Finance

4.1. Richard Thaler and the limits of the efficient market hypothesis

The efficient markets hypothesis adopts one very important aspect; investors are rational and cannot make errors. **Richard Thaler** presented the CUBA Fund example, while confronting **E.Fama** in *The Big Question,* the monthly series in *The Chicago Booth Review. The CUBA Fund* is not a Cuban fund because securities are not traded in Cuba and US Funds cannot legally invest in Cuba, so the holdings of the fund is zero in Cuba. The figure he has presented to the audience, it showed that the **NAV (NET ASSET VALUE)** always been superior to the price. In other words, 75 dollars can buy you 100 dollars' worth of securities. This has always been the case until 18 December 2014, when Barack Obama the President of the United States at the time, announced to be relaxing diplomatic relations with Cuba. The day after, the price of the CUBA Fund rose terribly, which pushed Richard Thaler to call it a bubble, because any rational individual would not be willing to buy a 75 dollars' worth of securities at a 170 dollars price.

4.2. Excess Volatility

The efficient markets hypothesis backs the assumption that prices reflect the fundamental value of the securities, in other words, prices are the discounted futures dividends. From this assumption, (**J.Shiller, 1981)** has made his paper so he could study the volatility of the asset prices. He found that the real market volatility is higher than the bounds of the real discounted future dividends. Contradicting with the efficient market hypothesis.

4.3. Feedback Model and the smart money Model

4.3.1. Feedback Model

The 1990s witnessed the transition from the econometrics analysis to study the human psychology, in the article of (**J.Shiller, 2003)** *« From Efficient Markets Theory to Behavioral Finance »*, he proposed two models, the first "Feedback Model" consists on the idea that the moment prices go up making profits for some investors. This feedback attracts the public, which boosts their enthusiasm and the increase of the prices leading to a speculative bubble.

The book *«Irrational Exuberance»* published by **(J.Shiller, 2000)** exhibits the feedback transmitted by the media and the investors, which created the 2000 bubble. He says that the investors influenced by the increase of prices, have been taken by the enthusiasm spreading and

producing stories and reasons to justify the increase. New investors started to join neglecting the real value of the assets and focusing only on the success of the other investors or by the gambler's excitement.

He says that, **(Tversky and Kahneman, 1979)** support this model; and they say that judgments are driven by certain heuristics, which can be summarized as availability, representativeness, and anchoring and adjustment.

They developed a theory, prospect theory, which articulates around the value function instead of the utility function, they admit the existence of a reference point called a "kink" that is the current wealth. It explains how people form decisions about prospects (gambles). The function shows that individuals feel the losses more than the gains.

The weighting function, part of the prospect theory, suggest that people overweight certain outcomes, discard small probability outcomes and overweight small probability outcomes that they do not discard.

4.3.2. Smart Money Model

The smart money model speaks about the behavior of feedback traders and the smart money traders, (**Barberis and Shleifer, 2002)** say that the feedback traders are attracted by investments, which have interesting past returns, on the other side, the smart money are rational, they seek to maximize their utility.

(Goetzman and Massa, 1999) suggest that the behavior of feedback traders toward prices increase is different than the smart money behavior, they seek to buy more when prices go high when smart money tend to sell their assets when prices go up.

5. The birth and development of Investor Relations

5.1. Investor Relations through history

We could argue that the history of IR started on 1950s when the post war prosperity and stock market boom attracted large numbers of individual shareholders; Americans owning stocks directly rose from 4 percent to 15 percent. This period witnessed the relative inactivity of institutional investors and the rapid rising of individual owners. General Electric Co was the first company to create a specific department in charge of Investor Relations. The monstrous growth that happened

in investments analysts' profession plus their demand for increasingly detailed financial information exceeded the capabilities of the traditional public relations firms. The 1958 has been a historic event, when the American Management Association conferences on Investor Relations pushed to the birth of IR Association, which on 1969 changed to the National Investor Relations Institute **(NIRI).** In London, the Investor Relations Society has been created due to the increasing importance for Investor Relations, particularly on a takeover base; companies might lose shareholders' loyalty when the firm is not communicating the strategy and vision.

However, (**James Van Horne, 1971)** in his second edition of the book ***"Financial Management and Policy"***, states that before 1920 accounting and financial records were nonexistent, it is during the 1920s with the technological innovation and the emergence of new industries that made companies to seek for more funds and thus, the widespread in securities particularly common stocks. In his briefly historic, he presents the Great Depression as the primarily reason that pushed to protect lenders and investors, consequently, regulation impose to increase the amount of financial data disclosed by companies.

Those momentous events present some real proof that investors concede a great importance to the company. Nowadays, the digital technologies, Internet as the primarily component, would be having great impact on investors' decisions making. (**Barber and Odean, 2001)** said that website could help investors to learn about new methods of quick trading at reduced costs. Studies led by (**Oskamp 1965, Hoge 1970, Slovic 1973, Peterson and Pitz 1998),** has shown that abundant information increases investors' confidence level in the precision to forecast faster than the precision of that forecast. (**Siikanena et al. 2018)** has shown that when information is shared via social media platforms such as Facebook, the likelihood to affect trading behavior of individuals increases.

Consequently, digital Investor Relations are a necessity in a world of digital technologies, but how can we define "Digital Investor Relations"?

5.2. Digital Investor Relations Definition

In order to give an integral definition of the concept, it is an obligation to start first by defining the concept of "digitalization". (**Gebre-Mariam and Bygstad, 2019)** defines digitalization as the development and implementation of ICT systems accompanying organizational change. (**Clerck,**

2017) refers to digitalization as the use of digital technologies in order to create revenue, improve business replace or transform business process.

NIRI National Investor Relations Institute (Board of Directors, 2003) defines Investor Relations as a strategic management responsibility that integrates finance, communication, marketing and securities law compliance to enable the most effective two-way communication between a company, the financial community and other constituencies, which ultimately contributes to a company's securities achieving fair valuation.

IRS (Investor Relations Society) defines the Investor Relations as the communication of information an insight between the company and the investment community. The IR process enables a full appreciation of the company's business activities strategy and prospects and allows the market to make an informed judgment about the fair value and appropriate ownership of a company.

Digital Investor Relations could be defined as the implementation of digital technologies, Internet as the core, into the management, in order to improve the two-way communication between the company, the financial community and investment community. It allows reduced costs of seeking information about the firm's strategic business activities and increases abundant information in order to achieve the fair valuation objective.

5.3. Investor Relations and stock market performance

Whilst taking a close look at the definition of IR, we could argue that the main and core objective of the Investor Relations Industry is to achieve and maintain a fair valuation. The question to be asked is how can digital Investor Relations influence the stock market performance?

A study conducted by (**Lang and Lundholm, 1996)** proved that when the quality of information provided to analysts is at its best, the earnings forecasts are more accurate, and larger is the number of analysts following the firm, which can impact the liquidity of the security. To provce that, (**Michael J. Brennan & Claudia Tamarowski, 2020)** in their paper**,** showed that the increased quality of Investor Relations surges the analysts' coverage by gaining information at a lower cost, which has an impact on the liquidity of the stock by reducing the information asymmetry. Thus, there is a relationship between the investor relations and the information asymmetry, for that, (**George F. Nel, Eon Smit & Leon M. Brummer, 2018)** tried to ascertain the capability of Internet

Investor Relations (IIR) to reduce information asymmetry. They used three proxies in order to measure it; analysts coverage, bid-ask spread and the price impact. They concluded that enhanced Internet Investor Relations reduces the level of bid-ask spread and therefore the information asymmetry. For the price impact proxy, the study proved that enhanced IIR improves the ability of investors to trade without affecting the price resulting in increased liquidity level and therefore decreased information asymmetry. Lastly, a positive correlation between IIR and analysts coverage, which supports the arguments of Merton 1987 that Investor Relations program increases the analysts' coverage.

Since the cost of capital is crucial to the valuation of companies, (**George F. Nel, Eon Smit & Leon M. Brummer, 2018)** had led a study that Internet Investor Relations has on the cost of capital for the JSE Listed companies. They ended up concluding that enhanced Internet Investor Relations is associated negatively with the cost of debt; the signaling theory might be explaining such association, since well-developed Internet Investor Relations is a signal of transparency and that the company can pay its debts. A negative correlation has been spotted between the Internet Investor Relations and the cost of equity. The results showed that well-developed and enhanced Internet Investor Relations decreases the cost of equity and the cost of debt and thus the cost of capital, which can be an opportunity for companies to benefit from when it comes to valuation using cash flows.

6. Discussion

If markets are efficient and investors are rational so as the efficient market hypothesis suggest, we should assume that the information provided, if we digitalize the investor relations, is already incorporated in the prices. Nevertheless, if we follow the Grossman-Stiglitz paradox we would be suggesting that digitalized Investor Relations is a necessity for the efficient market hypothesis.

Furthermore, implementing a digital investor relations would be an additional cost for the company, but it would be reducing information asymmetry, for such reason, we should assume that digitalizing investor relations would be considered as an agency cost.

The digital world has evolved perfectly; we witness the invasion of the Web 2.0 and social media, which cause considerable impact on the audience. Digitalizing the investor relations through these

channels would be having an impact on the investors' decisions, maybe would be creating bubbles, if we could place the cryptocurrency trend as a bubble that has been nourished by the social media.

Our paper presents the finance theories so we could be defining the digital investor relations, and the impact such industry could be inflicting on the prices. For that, we plan in our next future studies to establish a measurement of the digital investor relations as a first step, and as a follow-up step, to demonstrate a model to measure stock-price performance.

7. Conclusion

Due to the transition from the traditional Web characterized by reading's option only, to the Web 2.0, which provides the possibility to create websites and channels for the purpose to interact with the audience. Companies and the management are ought to use Web 2.0 in the Investor relations process, considering the social media impact we are witnessing in our era.

In this paper, we tried to combine all the finance theories that marked the history, starting from the efficient market hypothesis, the firm's theory and the behavioral finance. Only for the purpose to define digital investor relations, since it has been rare to come across an integral definition of the concept.

Implementing digital technologies and particularly the Web 2.0 in the investor relations would cause an abundance of information. Which should be considered as an agency cost, and consequently a tool to reduce information asymmetry. A question circulates a lot after making this paper, the abundance of information, would it enhance markets efficiency? Or the social media impact would cause a turbulence in the investor's behavior because of the rumors uncontrolled by the Web 2.0?

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