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Relationship Over Time Between Drug Price News and U.S. Pharmaceutical Companies' Financial Performance and Capitalization

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This is to certify that the doctoral dissertation by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Walden University
2024

Abstract

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by

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MPhil, Walden University, 2021

MA, Universidad del Turabo, 2008

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Management

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Abstract

High drug prices have been an issue for decades, but research is lacking on the relationship between drug price news and U.S. pharmaceutical companies' financial results. The research problem was whether mass media coverage of drug prices relates to U.S. pharmaceutical industry financial performance and capitalization that may affect decision making, strategy development, and investors and other stakeholders' interests. Grounded in stakeholder theory, agenda-setting theory, and the political economy of communications approach, the purpose of this quantitative descriptive correlational study was to examine the relationship over time between mass media coverage of drug prices and financial performance and capitalization of U.S. pharmaceutical companies. The research questions and hypotheses pertained to these relationships. The purposive sample consisted of 208 occurrences of news about 21 pharmaceutical companies whose drug prices caught media attention. Drug price news was collected from the top five U.S. newspapers, as measured by circulation, from 10/01 to 09/30 between 2014 and 2021. Financial and nonfinancial information was obtained from filed Forms 10-Ks, 10-Qs, NASDAQ stock exchange, and pharmaceutical websites. The results revealed significant bivariate relationships between drug price news and the net margin, return on research capital, return on equity, and market capitalization of U.S. pharmaceutical companies. The strength and direction of these relationships may be affected by drug price news frequency, elapsed time in the news, and intensity of political activity. The results might raise awareness of the role of drug price news in the financial outcome of pharmaceuticals, which may benefit stakeholders' interests and patients' well-being.

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Dedication

This dissertation is dedicated to the loving memory of my father, Miguel A. Mulero, CPA. With his example, Dad taught me the value of honesty, knowledge, hard work, faith and fear of God, and love. The lessons I received from him were essential to pursue and achieve my dreams.

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Chapter 1: Introduction to the Study

Media plays a critical role in shaping organizations' public opinion (Hamborg et al., 2019; Strycharz et al., 2018), especially within the context of corporate citizenship (Lee & Riffe, 2017). High drug prices controversy has been a constant topic of media coverage for 3 decades (Leopold et al., 2016; Reed, 2019). The Pharm Exec's 13th Annual Press Audit revealed a significant increase of media scrutiny on drug price rises (Sillup et al., 2017). The pharmaceutical industry has faced critics from various sectors such as the government, the health care community, and the public because of the skyrocketing price increases proliferation on medications that many patients cannot afford (Glabau, 2017; Hurst, 2017; Kantarjian & Rajkumar, 2015). Although financial stakeholders expect drug price increases to improve pharmaceutical companies' financial performance and value (Glabau, 2017), skepticism permeates potential financial outcomes because of the public backlash and media coverage of their drug price increases news (Gronde et al., 2017). The public perceives the media are associated with companies' performance (Yu et al., 2013). Simultaneously, no quantification of this possible association can mislead decision makers affecting investors, shareholders, and other stakeholders' interests. These study results might inform the media's role in pharmaceuticals' revenue and growth with news on drug prices. The research may raise awareness whether news on drug prices might affect pharmaceuticals' internal and external stakeholders' interests, leading to making reasoned decisions. This chapter contains the background of the study, followed by the problem statement, the purpose of the study, and the research questions and hypotheses sections. The theoretical foundation

section includes the theories that frame the research, followed by the nature of the study, definitions relevant to the research, assumptions, and scope and delimitations. Limitations are described along with the significance of the study within three dimensions.

Background of the Study

The drug pricing issue triggered a 34.6% increase in the spotlight of the top-five ranked U.S. newspapers (as determined by circulation) for the period from October 1, 2015, to September 30, 2016 (Sillup et al., 2017), reaching the pinnacle of pharm industry media coverage in the last ten years. The Pharm Exec's 14th and 15th Annual Press Audits that covered the periods between October 1, 2016, to September 30, 2017 (Sillup & Porth, 2018), and October 1, 2017, to September 30, 2018 (Porth & Sillup, 2019), claimed that high drug prices in the United States still is a subject of significant coverage in the mainstream news.

Drug price increases were considered a relevant factor in reducing the pharmaceutical industry's 2022 sales forecast (Evaluate Pharma, 2016). The increase in drug prices put some pharmaceuticals in the spotlight, facing public anger and government inquiries when the media coverage of the increases in drug prices raised awareness of the situation. Pharmaceuticals' leaders claim drug prices result from the high cost of research and development (R&D) necessary for innovation (Kesselheim et al., 2016). The R&D cost claim is based on DiMasi et al. (2016) who suggested that the estimated capitalized R&D cost of new drug development is $2.87b (2013 dollars). Pharmaceuticals' leadership confronted multisector criticism because of the sharp

increase in prices of old medicines of which R&D cost was recovered in the original price (Gronde et al., 2017), without apparent drug performance improvements (Glabau, 2017). The acute price increase of *Calcium EDTA*, *Daraprim*, and *EpiPen* without evident innovations by the pharmaceuticals Valeant, Turing, and Mylan, respectively, provoked a public uproar, high-profile media coverage, and the attention of the U.S. Congress (Glabau, 2017; Gronde et al., 2017; Hurst, 2017; Kesselheim et al., 2016).

Pharmaceuticals not only faced public criticism. Shanley (2016) suggested that pharmaceuticals such as Valeant, Turing, and Mylan saw their stock prices dropped along with their standing when the price increase on some of their drugs triggered public turmoil. In their World Preview 2016, Evaluate Pharma emphasized Valeant, Turing, and Mylan's misfortune for overpricing older drugs showing the sensitivity of drug price issues to political pressure. Although investors expect that drug price increases generate more revenues improving economic outcomes and value (Glabau, 2017), news on drug price rises produced public backlash and government concern with uncertain financial consequences in the long term. Shanley (2016) suggested pharmaceuticals with significant drug price increases suffered a reduction in their stock value during the controversy. To the best of my knowledge, as of 12/31/2022, there was no published study assessing the relationship of the media coverage on drug prices to the trend of these stocks that might have a short or long-term effect on the pharmaceuticals' financial performance and capitalization.

Price-setting decisions impact companies' profit margin and market share (Gousgounis & Neubert, 2020; Neubert, 2017). The market for pharmaceuticals differs

from the market of common goods (Morgan et al., 2020). Patients whose health conditions require branded or prescribed medicines usually cannot wait until prices decrease (Morgan et al., 2020). Health care products such as medicines are not considered luxury commodities (Kantarjian & Rajkumar, 2015). They become the difference between life or death and between wellness or sickness. Pharmaceutical companies' leaders claim that elevated drug prices mainly relate to the high cost of developing a new drug (Gronde, 2017; Hurst, 2017; Kesselheim et al., 2016; Manning, 2018). This claim has been questioned by Kantarjian and Rajkumar (2015), Manning (2018), and Morgan et al. (2020), who asserted there is no clear association between R&D cost and drug price.

To achieve the purpose of this study, I present the U.S. pharmaceutical companies 'stock behavior, which has been exposed to media coverage of their drug prices issue and might affect their financial performance and capitalization. The study findings might generate a better understanding of the relationship between the news of drug prices and pharmaceutical companies' performance, leading to better decision making. This study was necessary to determine the relationship over time between the media coverage of the drug prices issue to financial performance and capitalization of U.S. pharmaceutical companies, which might affect price setting and policies and the development of new products and accessibility to necessary drugs and treatments that enhance the quality of life of patients.

Problem Statement

Although there have been studies about the sources, repercussions, and possible solutions to the high-priced drugs issue, research about the association of media coverage of drug prices on the pharmaceutical industry's financial performance and capitalization has not been explored. The social problem is the media's influence on organizations' financial performance (Dong et al., 2022; Strycharz et al., 2018), which can be undetected by decision makers, affecting the analysis of the outcomes (Gowri & Seetha-Ram, 2019) and developing future strategies impacting internal and external stakeholders. Although the public perceives the media influences companies' performance, this perception can be misled without quantifying this possible association (Yu et al., 2013), in negative or positive terms (Dong et al., 2022). The specific research problem was the uncertainty of whether mass media coverage of the drug prices issue relates to the financial performance and capitalization of U.S. pharmaceutical companies that may affect decision making, strategy development, and investors and other stakeholders' interests. Regardless of this uncertainty, there is limited literature that has examined differences in U.S. pharmaceutical companies' financial performance and capitalization considering drug price news.

Purpose of the Study

The purpose of this quantitative descriptive-correlational study was to examine the relationship over time of mass media coverage of the drug prices issue to the financial performance and capitalization of U.S. pharmaceutical companies. The sample entailed 208 occurrences of news about U.S. pharmaceutical companies with drug price issues in

their products. The objective was to determine whether the drug price news relates to the financial performance and capitalization of U.S. pharmaceutical companies over time. The predictor variable consisted of the news on drug prices of U.S. pharmaceutical companies. The news occurrences were selected from the top-five ranked U.S. newspapers determined by circulation that represented the mainstream media. The U.S. top five-ranked newspapers as measured by circulation for 12-month period from 10/01 to 9/30 between 10/01/2014 to 09/30/2018 were *USA Today, The Wall Street Journal, The New York Times, Los Angeles Times,* and *The Washington Post* (Porth & Sillup, 2019; Sillup & Porth, 2016, 2017, 2018). These newspapers retained top-five status of the 12-month period ending on September 30, 2019, 2020, and 2021 (Turvill, 2022). Financial performance as a criterion variable comprised pharmaceutical company's financial results measured through different metrics related to the industry's nature. The capitalization criterion variable consisted of the pharmaceutical company value considering the price of the outstanding shares.

Research Questions and Hypotheses

The following research questions (RQs) and hypotheses guided me to collect data that helped to determine whether the mass media coverage of drug prices relates to U.S. pharmaceutical companies' financial performance and capitalization. The predictor variable is the news on drug prices of U.S. pharmaceutical companies. The criterion variables consist of financial performance and capitalization, represented by financial metrics essential for pharmaceutical companies.

RQ1. What is the relationship over time between drug price news and the financial performance of U.S. pharmaceutical companies?

RQ1a. What is the relationship over time between drug price news and the operating margin of U.S. pharmaceutical companies?

$H_0$1a: There is no relationship over time between drug price news and the operating margin of U.S. pharmaceutical companies.

H_a1a: There is a relationship over time between drug price news and the operating margin of U.S. pharmaceutical companies.

RQ1b. What is the relationship over time between drug price news and the net margin of U.S. pharmaceutical companies?

$H_0$1b: There is no relationship over time between drug price news and the net margin of U.S. pharmaceutical companies.

H_a1b: There is a relationship over time between drug price news and the net margin of U.S. pharmaceutical companies.

RQ1c. What is the relationship over time between drug price news and the quick ratio of U.S. pharmaceutical companies?

$H_0$1c: There is no relationship over time between drug prices new and the quick ratio of U.S. pharmaceutical companies.

H_a1c: There is a relationship over time between drug price news and the quick ratio of U.S. pharmaceutical companies.

RQ1d. What is the relationship over time between drug price news and the debt ratio of U.S. pharmaceutical companies?

$H_0$1d: There is no relationship over time between drug price news and the debt ratio of U.S. pharmaceutical companies.

H_a1d: There is a relationship over time between drug price news and the debt ratio of U.S. pharmaceutical companies.

RQ1e. What is the relationship over time between drug price news and the return on research capital ratio (RORC) of U.S. pharmaceutical companies?

$H_0$1e: There is no relationship over time between drug price news and the return on research capital ratio (RORC) of U.S. pharmaceutical companies.

H_a1e: There is a relationship over time between drug price news and the return on research capital ratio (RORC) of U.S. pharmaceutical companies.

RQ1f. What is the relationship over time between drug price news and the return on equity (ROE) of U.S. pharmaceutical companies?

$H_0$1f: There is no relationship over time between drug price news and the return on equity (ROE) of U.S. pharmaceutical companies.

H_a1f: There is a relationship over time between drug price news and the return on equity (ROE) of U.S. pharmaceutical companies.

RQ2. What is the relationship over time between drug price news and the market capitalization of U.S. pharmaceutical companies?

$H_0$2: There is no relationship over time between drug price news and the market capitalization of U.S. pharmaceutical companies.

H_a2: There is a relationship over time between drug price news and the market capitalization of U.S. pharmaceutical companies.

Drug price news was measured by the instances the mainstream media covered drug price-related news. Financial metrics key to the pharmaceutical industry such as (RORC), operating margin, net margin, liquidity and solvency ratios, ROE, outstanding shares, and stock prices measured the criterion variables, financial performance, and capitalization.

Theoretical Foundation

This study's theoretical framework includes the agenda-setting theory, the political economy of communication approach, and the stakeholder theory. The agenda-setting theory is based on McCombs and Shaw's (1972) assumption that media coverage's prominence affects people's perception of news' relevance. Agenda-setting's foundation rests on the basic premise of *issue salience* that refers to the prominence of a topic amid the news media characterized by the frequency of its coverage (McCombs et al., 2014). Although initially, agenda-setting theory was analyzed and researched within a political context, fundamental notions and expansions of this theory can be applied to other domains. The media makes people aware of what the press considers significant without forcing any feeling or judgment about it (DeSanto, 2005). The agenda-setting theory's core tenet establishes that the media determine the most significant issues and set the agenda according to its intentions. The agenda-setting theory has expanded to other concepts such as *media priming, framing*, and *agenda melding*. Their common denominator refers to the effect of news redundancy with implications of issue relevance. The controversial issue of high drug prices has been a constant subject for the media for

more than 3 decades (Leopold et al., 2016), but the public became more aware of the situation during 2015 (Gronde et al., 2017).

From its origins, the political economy of communications approach was related to the use of mass communications for the benefit of significant corporate interests, in contrast to its use within a social context (Smythe, 1960). Decades of research and evolution on the political-economic-communications relationship suggest that the political economy of communication serves as a point of reference to how the media can bring people issues to the attention of governmental spheres with the power of policymaking (Mosco, 2008). Weaver (2015) stated that some problems do not get the public or government officials' attention without media intervention. The people's upheaval for sky-rocketing drug price increases triggered the media coverage (Gronde et al., 2017), demanding action from politicians, which entails a threat of drug price regulation with financial consequences for the pharmaceutical industry.

The stakeholder theory presents a managerial approach that considers stakeholder issues during companies' strategic plan development (Freeman, 1984). According to Freeman (1984), business managers must deal with sociopolitical and economic aspects affecting their operations, whereby it is necessary to develop a scheme that integrates both elements. Isolating economics from socio politics seems unreasonable because economic forces have sociopolitical aspects, and sociopolitical elements entail economic consequences (Freeman, 1984). Assumptions, procedures, and methods that do not consider economic and socio-political factors are destined to fail. Even so, dealing with multiple and sometimes opposite stakeholders' issues within a corporate agenda is a

challenge that pharmaceuticals leadership faces when balancing their stakeholders' conflicting interests. Access to medicines and treatments relates to their affordability, which seems problematic because of the high drug prices, as claimed by patients, health care professionals, and other health-related sectors.

On the other hand, the pharmaceutical industry leadership maintained that high R&D costs require high drug prices to support innovation, leading to medical advances. As decision makers, politicians feel the pressure of the media that conveys the message of high drug prices and prices increase, which might mold the public opinion for governmental action and policymaking. For this study, these three theories converge in the power of mass media communication as a relevant stakeholder with the ability to raise public awareness and influence the political arena for the social issue of drug-pricing affordability. This situation represents a probable contingency of negative financial results for the pharmaceutical industries that can affect investors, patients, and other stakeholders. Chapter 2 includes a more comprehensive explanation of these theoretical frameworks.

Nature of the Study

The nature of this study was quantitative with a descriptive-correlational design. The research design aligned with the research questions that guided me in collecting and analyzing empirical data such as stock prices, drug price-related news, and financial information relevant to the pharmaceutical industry at different dates, which fits a quantitative research method. The hypotheses focused on determining whether the news about drug prices relates over time to U.S. pharmaceutical companies' financial

performance and capitalization. The predictor variable was the drug price-related news covered by the top-five ranked U.S. newspapers. The criterion variables consist of the U.S. pharmaceutical companies' financial performance and capitalization represented by key financial metrics for the pharmaceutical companies.

A descriptive-correlational design was used considering Frankfort-Nachmias and León-Guerrero (2018), who stated that correlation measures the presence and intensity of a relationship between variables. Curtis et al. (2016) highlighted the relevance of correlational research as a scientific inquiry tool. The study goal entails determining whether the mass media coverage of drug price news relates over time to U.S. pharmaceutical companies' financial performance and capitalization.

The collection of data entailed purposive sampling. According to Bryman (2008), purposive sampling is a strategy where the collected data are pertinent to the research questions. According to Trochim et al. (2016), the researcher's samples have specific characteristics in purposive sampling. The sampling was composed of 208 occurrences of news about pharmaceuticals with drug prices issues in their products. The mainstream media was represented by the top-five ranked U.S. newspapers as measured by circulation. The U.S. top-ranked newspapers as measured by circulation for 12-month period from 10/01 to 9/30 between 10/01/2014 to 09/30/2018 were *USA Today*, *The Wall Street Journal*, *The New York Times, Los Angeles Times,* and *The Washington Post* (Porth & Sillup, 2019; Sillup & Porth, 2016, 2017, 2018). These newspapers retained top-five status of the 12-month period ending on September 30, 2019, 2020, and 2021 (Turvill, 2022). I obtained the sample from the headlines and editorials concerning the

pharmaceutical industry drug pricing issue. This sampling technique follows the methodology used for the Pharm Exec annual press audit sponsored by the Arrupe Center for Business Ethics at Saint Joseph's University. According to Sillup et al. (2017), this yearly press audit monitors and analyzes pharmaceutical industry issues covered by the media.

Companies can be valued by various methods (Cohen & Neubert, 2019). Market capitalization is one of the approaches to value a company (Moreno & Epstein, 2019). According to Jambulingam et al. (2016), financial performance evaluation encompasses different dimensions. Cohen and Neubert (2019) suggested a correlation between companies' price-setting practices and valuations. Financial metrics relevant to the pharmaceutical industry were applied to archival financial data. The nature of pharmaceuticals entails elevated R&D expenditures, which require determining how much revenues generated the R&D activities through the RORC (Maverick, 2021). The RORC complements profitability ratios, such as operating margin and net margin, which are financial performance indicators. The return-on-equity ratio, a metric used in capital-intensive industries such as pharmaceuticals (Maverick, 2021), was used to calculate a company's return relative to equity. These pharmaceuticals' key financial ratios helped determine whether the media coverage of drug prices relates to U.S. pharmaceutical companies' financial performance and capitalization.

Definitions

Agendamelding: Agendamelding is the seventh level of the agenda-setting theory, whereby people combine and integrate information from diverse media sources with their

personal preferences tailored to their perspectives and environment (McCombs et al., 2014).

Civic agenda: The civic agenda constitutes the prime issues around which societal and political structures evolve (McCombs et al., 2014).

Essentially contested concepts: This term refers to debates involving concepts that have different interpretations for diverse users (Miles, 2012).

Financial performance: This concept entails assessing an organization's financial condition through financial metrics relevant to a particular industry (Kenton et al., 2023). As one of the criterion variables, the financial performance was measured by pharmaceutical companies' key financial ratios.

Framing: This extension of the agenda-setting theory posits organizations, through the media, can present problems or issues within specific structures to achieve a particular purpose. This process includes or excludes circumstances, events, or incidents to provoke or dissuade specific analyses, conjectures, or conclusions (DeSanto, 2005), influencing people's perception of its reality and relevance (Blumler, 2015).

Issue salience: This concept refers to the prominence of a topic amid the news media characterized by its coverage frequency (McCombs et al., 2014).

Mainstream media: This term pertains to the conventional form of mass media associated with traditional journalism through the principal broadcasting channels such as television news networks, newspapers, and radio in the United States (Shearer & Mitchell, 2021).

Market capitalization: This is the criterion variable that represents the pharmaceutical company's value measured as the outstanding shares times the current market value per share.

Media coverage of drug prices issue: Also known as *drug price news*, this is the predictor variable that represents mainstream media news on drug prices issue.

Media malaise: This term is a controversial theory that posits that the frequent negative coverage of politicians has created hostility towards governmental institutions and politics (Blumler, 2015).

Media network issue agenda: This term refers to notices and issues considered relevant among online media, ratio, television, and newspapers (Vu et al., 2014).

Media priming: This term refers to the process whereby the media selects and excludes subjects in the news affecting people's judgmental standards (Iyengar & Kinder, 1987).

Media storms: This term refers to an abrupt upsurge of media coverage of a particular issue (Walgrave et al., 2017).

Patent cliff: This term refers to reduction in revenues caused by the introduction of generic products because of a patent expiration (Engelberg, 2020).

Patent thickets: Patent thickets are overlapping of patents rights with the purpose of avoiding competition enter the market after the original expiration date of a patent (Deb & Curfman, 2020).

Pharmaceutical industry: This term refers to companies primarily dedicated to the manufacturing of diagnostic substances and pharmaceutical preparations with the purpose

of their external or internal consumption through different forms such as tablets, capsules, ointments, and ampoules, among others (North American Industry Classification System, n.d.).

Price gouging: This term refers to a business tactic where traders make exorbitant increases on price of essential products (Engelberg, 2020; Woodcock, 2018).

Product hopping: This term is a strategy used by brand-name drug companies to prevent generic competition through alteration of a drug (re- patent) before its expiration date, without any added improvement (First, 2019).

Public interest communication: This term refers to a novel academic discipline in the communications realm focused on moving forward social causes (Fessmann, 2017).

Public network issue agenda: This term refers to notices and issues considered significant among media channels (Vu et al., 2014) such as Facebook, Twitter, Instagram, blogs, and others.

Selective perception: This term refers to a process through which people select the news that advocate their ideas, beliefs, and opinions (Trigueros & Lacasa-Mas, 2018).

Specialty drug: This term refers to expensive prescription drugs used for treatment of chronic health conditions that usually are suffered by few patients (Schoen et al., 2019).

Stakeholders: This term refers to persons or group of persons that can impact or be impacted by the actions of an organization (Freeman, 1984)

Assumptions

Assumptions are beliefs considered trustworthy without corroboration of their accuracy, but without them, the research would become useless (Leedy & Ormrod, 2019; Simon & Goes, 2018). This study entails different assumptions. First, I assumed that significant increases in drug prices would lead to a rise in the pharmaceutical companies' revenues and growth. The second assumption was that the media coverage of high drug prices and price increases influence public opinion about the pharmaceutical industry. My third assumption was the media coverage of the high drug price issue and the general commotion for the situation can put political pressure on lawmakers to regulate drug prices. The fourth assumption was that the potential threat of drug price regulation might cause investors and managers to make decisions within an uncertain frame that might affect U.S. pharmaceutical companies' financial performance, impacting stakeholders. These assumptions were fundamental to explaining the correlational approach reasoning to examine whether the mass media coverage of drug price issues relates to the U.S. pharmaceutical companies' financial performance and capitalization over time.

Scope and Delimitations

Mass media denotes the means of communication that reaches a large audience. Media entails several mass communication mediums such as television, internet, radio, and magazines, which were not considered for this research. Perspectives outside of U.S. newspapers are out of the scope of this study. Traditionally, newspapers have been a source of reliable information for decision makers and the general public. Some of the studies related to the media effects involve newspaper editorials and headlines as relevant

data for the research. I followed the sampling technique used for the methodology for the Pharm Exec annual press audit sponsored by the Arrupe Center for Business Ethics at Saint Joseph's University. According to Sillup et al. (2017), the purpose of this annual press audit is to monitor and analyze pharmaceutical industry issues covered by the media. I used their methodology to highlight the media coverage of the high drug price and increases issue. The news data collected were limited to the editorials and headline news related to drug-pricing from the top U.S. newspapers as determined by circulation. Financial data were collected from Forms 10-K and 10-Q submitted by the pharmaceutical companies to the SEC and from NASDAQ stock exchange.

The news occurrences, the data of pharmaceutical companies whose products prices caught the media attention, the top U.S. newspapers, and the source of financial data were chosen to examine whether news on drug prices relates to the financial performance and capitalization of U.S. pharmaceutical companies over time. This demarcated scope is appropriate for the study purpose.

Internal validity pertains to causal relationships between variables. I did not include any intent to establish assumptions of cause-effect relationship outcomes in this study. Trochim et al. (2016) claimed that not all relationships are causal. Therefore, achieving internal validity within cause-effect considerations was not required. Internal validity refers to determining whether the procedures conducted in experimental design studies are relevant to the research and lead to the results with confidence that changes in the independent variable might induce changes in the dependent variables (Bryman,

2008). I did not entail an experimental design. Based on the inherent cause-effect attribute of internal validity, this study does not have strong internal validity.

Generalizing a study's results is the fundamental characteristic of external validity, which refers to the conclusions of a study that can apply to settings other than the context where the research was conducted (Bryman, 2008; Trochim et al., 2016). The purposive sampling technique applied in this study focused on the selection of occurrences of news about U.S. pharmaceutical companies whose drug prices attracted the media's attention. The sample's specific characteristics might limit the generalization of the results, which is a weakness in external validity.

Limitations

This study was based on archival data from the top five-ranked U.S. newspapers determined by circulation. The U.S. top-ranked newspapers as measured by circulation for 12-month period from 10/01 to 9/30 between 10/01/2014 to 09/30/2018 were *USA Today, The Wall Street Journal, The New York Times, Los Angeles Times,* and *The Washington Post* (Porth & Sillup, 2019; Sillup & Porth, 2016, 2017, 2018). These newspapers retained top-five status of the 12-month period ending on September 30, 2019, 2020, and 2021 (Turvill, 2022). Accessing drug price news and U.S. pharmaceutical companies' financial information was essential for accomplishing the study's purpose. I collected the media coverage of drug prices and financial data from communication, and financial databases. The operationalization of the variables depended on these sources of information. Therefore, the reliability of the results is limited by the trustworthiness of these resources.

According to Sillup et al. (2017), Sillup and Porth (2018), Porth and Sillup (2019), and Hurst (2017), the media is biased against the pharmaceutical industry. News of the drug prices issue or significant price increases are usually negative for multiple sectors of society that seem affected by this situation. I cannot change or even prove the perception of the media bias against the pharmaceutical industry. In contrast, I not only obtained data from newspapers about pharmaceutical companies. Following data collection procedures from Gronde et al. (2017), I used financial data and academic articles with a focus other than public opinion. The benefit of this approach consists in a better analysis of whether the mass media coverage of drug prices relates to U.S. pharmaceutical companies' financial performance and capitalization.

Limited occurrences of drug price news for the study period led to a reduced number of U.S. pharmaceutical companies that met the inclusion requirements of this study. The reliability of the results is limited by the small number of U.S. pharmaceuticals reported in the selected articles from which the financial information was obtained.

Significance of the Study

Significance to Theory

This study entails areas of the health, communications, and finance disciplines that affect the public's daily life concerning whether media influences the expected effect of drug price news on the pharmaceuticals' revenues and value. Business analysts, budget managers, and finance-related professionals can benefit from this study's results by

considering the media's roles as stakeholder and as a possible agent of change when developing their projections and financial and operational strategies.

Stock price prediction and the factors that can affect it have been a great study and debate subject. Vanstone et al. (2019) suggested that new information causes stock price changes, while Pérez-Rodríguez and Valcarcel (2012) asserted that stock price changes are more significant with negative than positive news. Although pharmaceutical investors foresee an improvement in financial performance and equity value through drug prices increment (Glabau, 2017), the public backlash against high drug prices and price increases (Hurst, 2017) can produce unintended government intervention (Kesselheim et al., 2016), affecting revenues. The results of this study could add to the literature on stock price prediction considering the effect of the media. Li et al. (2014) claimed that media impact on stock markets differs between companies and news content, implying that the results would not necessarily apply in the same way to all companies, while Dong et al. (2022) suggest that studies on impact of adverse media on companies show mixed results.

Significance to Practice

The results of this study might raise awareness that the media, as an indirect stakeholder, might influence pharmaceuticals' financial results and value through their communication access to other stakeholders such as clients (patients) and the government. With full knowledge of the media's possible influence on an operation's outcome, managers may be able to develop strategies considering the media factor to achieve their target. Accountants, auditors, and finance-related professionals in the pharmaceutical industry can use this study to monitor and analyze the media's influence

on their organizations' financial performance and capitalization. Recognition of trends may generate confident decisions leading to reassuring actions of positive results.

Significance to Social Change

The findings might lead to positive social change within different spectrums. One of this study's contributions may be the knowledge of the media's influence on the U.S. pharmaceutical industry's economic affairs in the short and long term. This research might indicate the media's role in U.S. pharmaceutical companies' revenue and growth when media underlines the drug prices issue or price increases announcements. Additionally, the results may raise awareness of whether the media coverage of the drug price issue affects the pharmaceutical industry's internal and external stakeholders' interests, leading to informed decisions. Research indicates that U.S. pharmaceutical companies have suffered a decrease in stock value when they make public drug price increases (Shanley, 2016). To the best of my knowledge, there was no published study as of 12/31/2022 assessing whether the media coverage of drug prices relate over time to U.S. pharmaceutical companies' financial performance. Because pharmaceutical companies are a capital-intensive-innovative industry, superior performance is essential for developing and manufacturing affordable drugs that contribute to people's health.

Leaders of organizations other than pharmaceuticals may benefit from the results of this study as well. Consumer advocate groups can evaluate whether their awareness campaigns, using the media as support to voice their claims, have the expected effect on their targeted companies. Managers in other industries may use this research to explore

whether the media might relate to their companies' financial performance and capitalization.

Summary and Transition

The significant price increases on some branded and prescribed drugs triggered public outcry and high-profile media coverage, attracting politicians' attention and threatening changes to policy regulations. People's perception of the media's influence on companies' performance might be misleading without adequate quantification of this possible association. The research problem was the uncertainty of whether mass media coverage of the drug price issue relates to U.S. pharmaceutical companies' financial performance and capitalization that may affect decision making, strategy development, and investors and other stakeholders' interests.

Through a quantitative design and correlational approach, I examined whether the mass media coverage of drug price issue (predictor variable) related to the U.S. pharmaceutical companies' financial performance and capitalization (criterion variables). This study was conducted within a theoretical framework, including the agenda-setting theory, the political economy of communication approach, and the stakeholder theory. These three theories converge in the power of mass media communication as a significant stakeholder with the capacity to raise public awareness and influence governmental policymakers on the social issue of drug-pricing access. In the following chapter I detail the literature that supports the significance of the problem and delves into the theoretical basis that frames the study.

Chapter 2: Literature Review

The media's influence on organizations' financial performance can affect the analysis of outcomes and future strategies that might impact internal and external stakeholders. The research problem was the uncertainty of whether mass media coverage of the drug prices issue relates to the U.S. pharmaceutical companies' financial performance and capitalization that may affect decision making, strategy development, and investors and other stakeholders' interests. Leopold et al. (2016), Reed (2019), and Sillup et al. (2017) asserted that the drug prices issue has been a constant in the media coverage for years.

Its drug pricing practices have adversely affected the pharmaceutical industry's reputation. The sharp increase in drug prices without apparent medical value advances (Glabau, 2017) affected pharmaceuticals' standing (Gronde et al., 2017). The media coverage and public turmoil lead to political pressure with threats of governmental policies of drug price control (Gronde et al., 2017). According to Evaluate Pharma (2016), the high drug price increase affected pharmaceutical companies' future earnings projections. In summary, the pharmaceutical industry faced public upheaval, media inquiry, and political strain because of its drug pricing policies.

The pharmaceutical industry leadership defended its pricing policy. Gronde et al. (2017) and Kesselheim et al. (2016) asserted that pharmaceutical companies' executives claim that drug prices reflect the high cost of R&D essential for innovation. This assertion supports Glabau (2017), suggesting investors expect increases in drug prices will result in better financial results, increasing the value of their investment, with

expectations of profit and capital inflows to developing new products. In other words, pharmaceutical companies' governance considers drug prices to reflect the cost of technological advances and incentives to keep and attract financial stakeholders.

Drug price increases can have unintended outcomes. Shanley (2016) maintained that pharmaceutical companies that significantly raised the price of their drugs suffered a decline in the value of their shares during the period of controversy. It is uncertain whether the broad coverage of the rise in drug prices was associated with the stock behavior of pharmaceutical companies in which drugs suffered price increases. The dilemma of whether mass media coverage of drug price increases and associated issues relates to the financial outcomes of pharmaceuticals may affect decision making, strategy development, and investors and other stakeholders' interest, with ultimate consequences on people's wellness. The purpose of this quantitative correlational study was to examine the relationship of mass media coverage of the drug prices issue to the financial performance and capitalization of pharmaceutical companies.

This chapter provides a description of the literature search approach followed by the theoretical foundation section, with a narrative of the theoretical framework and its application to this study. The literature review section focuses on the drug prices controversy, the possible impact of the media on the pharmaceutical industry, and the potential effects on financial performance. The conclusion involves a summary of the essential literature topics considering the unexplored areas of the relationship between the media coverage of drug price issues and the pharmaceutical companies' financial performance and capitalization.

Literature Search Strategy

Most of the literature review was conducted through Walden University Databases under a systematic method following Randolph's (2009) recommendations on the subject matter. Also, I used backward and forward-searching of the references of the chosen articles, aligned with Randolph and Xiao and Watson's (2019) suggestions. The selected databases relate to business, communications, and health; domains involved in this research. For the online literature review, I used ABI/Inform Collection, Academic Search Complete, Business Source Complete, CINAHL, Communication and Mass Media Complete, EBSCO, Google Scholar, Health & Medical Collection, Medline, ProQuest, Science Direct-Subject Collections-Health Sciences, and PubMed. These databases were essential for the searching for historical and updated information about the drug prices issue, pharmaceutical industry challenges, the potential media effect on organizations' financial performance, and the uncertain outcome prediction of the combination of these factors. The core search terms used were *agenda setting, Daraprim, drug pric*, drug price increases, drug cost, drug manufacturers, drug pricing, EpiPen, financial performance, framing, journalism, mainstream news, mass media, media, media effects, media impact, media influence, Mylan, news, pharma*, pharmaceutical industry, prescription drugs, prescription prices, press, price gouging, stakeholder theory, stock market, stock performance, stock price, stock valuation, Turing,* and *Valeant.*

The key terms and their derivatives were used individually and combined, increasing the likelihood of finding relevant and pertinent articles. Peer review journals, gray literature, reports from private and governmental, and nonprofit research

organizations' websites were considered reliable sources of information. The time frame for articles searching was between 2016 to 2022. The year 2016 is before the current literature search period. Primary searches included 2016 because of the proliferation of news related to increased drug prices, which constituted a campaign issue in an election year. Sources at older dates are seminal works and articles that were standard references in various studies denoting relevance or references related to trends or shifts of the theories that frame this study.

Theoretical Foundation

The theoretical framework of a study is the foundation that supports the reasoning of the study, including the problem statement, the purpose, the significance, and the research questions (Grant & Osanloo, 2014). The theoretical framework of this research was the convergence of the stakeholder theory, the agenda-setting theory, and the political economy of communications approach.

Stakeholder Theory

Changes over time have modified the way business is conducted. Freeman (1984) asserted that the previous business model, emphasizing shareholders' wealth maximization, is not valid because the decision-making process only considered owners, suppliers, and customers. Changes that have happened outside companies' boundaries have led corporations to consider people that impact or are impacted by business operations in strategic planning (Freeman, 1984). The business environment at the end of the 1970s and the beginning of the 1980s was conducive to developing a new

organizational model that could be flexible enough to consider people or groups of persons that had something *at stake* in organizations.

The stakeholder conception's origin has been controversial. Although struggling with researching the precise origin of this concept, Freeman (1984) stated that the Stanford Research Institute (SRI) coined and defined the term *stakeholder* in 1963 as "those groups without whose support the organizations would cease to exist" (p. 31). Shareholders, employees, clients, vendors, financiers, and society were the initial components of the list (Freeman, 1984; Freeman et al., 2010), considered the primary stakeholders (Freeman et al., 2007), while the secondary stakeholders were competitors, government, consumer advocate associations, special interest groups, and the media.

There are other perspectives on stakeholders' roles and classification. Harrison and St. John (1998) envisioned the stakeholder context in three territories: the broad environment, the operating environment, and the organization. With minimal influence over the broad environment, companies face technological, economic, sociocultural, political, legal, and foreign forces (Harrison & St. John, 1998). Considering these stakeholders is fundamental because of their impact on companies' operations. According to Harrison and St. John (1998), the stakeholders of the operating environment are those with whom organizations have consistent interaction. External stakeholders such as suppliers, customers, unions, financial intermediaries, local communities, activist groups, competitors, and government agencies and administrators affect and are affected by organizations (Freeman et al., 2010). The third stakeholder territory consists of the internal organization surrounded by the owners, board of directors, managers, and

employees, the stakeholders with the strongest bonds to the organization (Harrison & St. John, 1998). Internal stakeholders play a critical role in the strategic decision process of any organization. The diversity of interests and the complexity of business play a relevant role in the type and magnitude of stakeholders' influence in an organization. Regardless of the perspectives about stakeholders' classification, managers recognize the importance of considering stakeholders when making decisions.

The SRI's scholars were certain of the importance of the stakeholders within their corporate planning process. The SRI's researchers informed high-level officials that until managers understand and consider their stakeholder groups' issues, the researchers could not create corporate goals requiring those groups' support for the organization's continuity (Freeman et al., 2010). The initial vision of the SRI generated diverse managerial perspectives contained in the literature about strategy, systems theory, corporate social responsibility, and organization theories (Freeman et al., 2010), which departed from the traditional perspective of focusing on shareholders' wealth maximization. The stakeholder conceptualization was a process that considered all the previous trends to determine how managers could face the challenges of the outside environment (Freeman, 1984). Regardless of the consideration of diverse managerial methods within the stakeholder approach, the significance of nonfinancial stakeholders in companies' affairs has been challenged and questioned.

Recognition of stakeholders' characteristics is fundamental to implementing the stakeholder management approach. The stakeholder theory is based on assessing different perspectives on the nature of stakeholders (Freeman et al., 2010). The theory arose

because commonly used managerial styles only considered the stockholders, disregarding persons or specific groups that can impact or are impacted by business operations and managers' decisions (Freeman, 1984). The stakeholder theory consists of ideas centered on the stakeholder concept, leading to a management theory with potential application to different environments of diverse objectives (Freeman, 1984; Parmar et al., 2010). On the other hand, stakeholder theory is about the relationship between persons or groups who affect or might be affected by business operations (stakeholders), with managers of those enterprises generating value (Freeman et al., 2010). In short, this managerial approach revolves around the stakeholders of an organization and how incorporating their interests into the company's strategy adds value to the entity.

The stakeholder managerial approach entails positive aspects. The consideration of individuals and groups who can affect a company during the development of strategic plans (Freeman, 1984; Freeman et al., 2010) promotes organizations to plan and analyze their operations through awareness of their surrounding environment. This approach could prevent unsuccessful outcomes when organizations make decisions without considering different interests and perspectives of those who can impact and be affected by companies' operations. The stakeholder management approach might contribute to conscious planning for long-term growth and continual corporate existence.

Trustworthiness is a by-product of the stakeholder approach application. Parmar et al. (2010) claimed that dealing with stakeholders during strategic plan development encourages greater managerial accountability. According to Luhmann (1973/2017), trust must be built through effective communication leading to valuable interactions between

organizations and stakeholders. The perception of trustworthiness among firms and their stakeholders contributes to achieving companies' goals in harmony with their stakeholders' interests. Stakeholders' incorporation in the company strategy reduces the likelihood of managers' wrongdoing (Parmar et al., 2010), fostering transparency of economic representations. Financial accuracy represents the firm, shareholders, and nonfinancial stakeholders' best interests.

On the other hand, the stakeholder approach has its shortcomings. To transform a company's traditional managerial style of maximizing profits for its shareholders into a company that considers its stakeholders' interests for its strategic plan is a time-consuming, complex, and resource-consuming endeavor (Freeman, 1984). The processes involved in the design, implementation, and monitoring of the stakeholders' strategies take time, and, consequently, the benefits would be seen in the long term (Freeman, 1984; Freeman et al., 2010). In other words, from the managers' incentives standpoint, the stakeholder management approach does not entail a timely matching of effort and remuneration, which could discourage managers from committing to the stakeholder approach.

One of the strongest criticisms of the stakeholder theory relates to the managers dealing with multiple stakeholders. To consider diverse stakeholders entails strenuous duty for managers to develop corporate strategies that satisfy dissimilar stakeholders' claims within the corporate target framework (Freeman, 1984). Based on Freeman's recognition of the struggle to align different stakeholders' perspectives, Sundaram and Inkpen (2004) claimed that it is unlikely that managers can determine what companies

stand for considering the diversity of stakeholders' interests. Consequently, the variety of stakeholders and their different issues present a challenge of compatibility and alignment to corporate goals from a managerial viewpoint, a by-product of Freeman's (1984) stakeholder managerial conceptualization.

Nonfinancial stakeholders can impact companies' performance. In alignment with Freeman's (1984) stakeholder definition, Strycharz et al. (2018) asserted that although the media has no financial interests in a company, it can influence decision makers such as investors and other nonfinancial stakeholders, resulting in an economic impact on the organization. Voinea and van Kranenburg (2017) suggested that the media as a stakeholder can mold public opinion and acquaint other stakeholders who cannot access relevant information to make informed decisions that affect their interests. Different stakeholders can even join efforts when recognizing that common interests might be affected by companies' decisions.

Information is a powerful weapon. Stakeholders do not only pay attention to information that concerns their interests. According to Crane (2020), the abundance of information allows stakeholders to interconnect. The connection between diverse stakeholders' interests is correlated because no isolated stakeholder can create value (Freeman et al., 2010). Company actions that only impact a limited group of stakeholders can enhance or deteriorate confidence in the firm across a larger group of stakeholders (Crane, 2020). An example of this assertion is the alliance of insurance payers and workers' unions in a class-action lawsuit against AbbVie for its alleged *patent-thicket* and *pay-for-delay* practices concerning its product Humira (Deb & Curfman, 2020). The

alleged purpose of AbbVie's strategies is to prevent a biosimilar entry into the market that could affect their aggressive pricing methods (Deb & Curfman, 2020). As facts demonstrate, alliances between stakeholders can impact pharmaceutical companies' performance.

Some scholars speculate that there will always be arguments for and against the stakeholder theory. Miles (2012) suggested that the stakeholder theory is an "essentially contested concept" (p. 295) because the meaning of *stakeholder* is subject to different interpretations that affect the foundations of the theory. Freeman et al. (2020) claimed that being the stakeholder theory an *essentially contested concept* implies that there always will be advocates and critics of the factors, guidelines, and characteristics of the concept under consideration. According to Freeman et al., some concepts can be empirically tested, whereas other concepts will be perpetually disputed. In sum, the stakeholder theory controversy rests in the interpretation of the stakeholder concept.

Sundaram and Inkpen (2004) suggested that the stakeholder theory's argument of effective company performance through the stakeholder management approach lacks empirical evidence. In rebuff of this assertion, Freeman et al. (2020) claimed that the unit of analysis of the stakeholder theory is stakeholders' relationships. In contrast, the conventional business unit of analysis is economic transactions as the metric of financial performance (Freeman et al., 2020). Pharmaceutical companies are a capital-intensive industry of high risk (Blackstone & Fuhr, 2019). Shareholders and investors contribute capital and absorb risk with expectations of a return on investment commensurate with

their risk. Still, shareholders and investors are not the only stakeholders relevant to pharmaceuticals.

Diverse kinds of stakeholders have different and sometimes conflicting interests at stake. Investors and shareholders want optimal profits leading to investment growth. Managers look for profitable operations to be attractive to actual and new financial stakeholders willing to fund the cost of innovation. On the other hand, patients look for healing and wellness through affordable treatments that offer a better quality of life. The pharmaceutical companies' leadership consideration of drugs' affordability usually contrasts with patients' expectations, healthcare professionals, and public opinion.

Pharma's stakeholders who are relevant for this study are patients, media, investors, policymakers, and healthcare professionals. Trends point to healthcare providers becoming pro-patient activists as complaints surge because of the price of some treatments with no considerable guarantee of a better quality of life for the patients (Greene, 2017; Kantarjian & Rajkumar, 2015). Alliances between patients-advocate organizations and healthcare practitioners, and other health-related institutions have asked why some medicines or treatments prices are inaccessible to patients and do not present a possibility of a real improvement on their health. Pharmaceutical companies' leadership has mainly justified high drug prices by stating that expensive R&D is necessary for innovation (Kantarjian & Rajkumar, 2015). Regardless of this claim, Kesselheim et al. (2016) maintained that no clear evidence demonstrates the association between R&D and drug prices.

Agenda-Setting Theory

The origins of the agenda-setting theory date back to the 1920s. Lippmann (1921/2014) asserted that people make images in their minds and consider these pictures as reality based on the press statements. McCombs and Shaw (1972) used Lippmann's assertions as the premise to study the influence of the media in the 1968 presidential elections, based on a sample of voters of Chapel Hill, North Carolina. The results of McCombs and Shaw's study suggested a strong relationship between the issues that media and the public consider relevant. Although a political setting encircled McCombs and Shaw's exploratory study, the connection between news media and the public concerning significant issues might apply to other matters (Kim et al., 2017). The high drug prices issue and the nonstop increases have caused public turmoil and ample media coverage with consequent political pressure to solve this problem. It is uncertain whether the recurrent exposure of the drug price issue to the general public might relate to the financial performance of pharmaceutical companies under media scrutiny.

The core tenet of the agenda-setting theory establishes that the media determine the most significant issues and set the agenda according to its intentions. The foundation of agenda-setting rests on the basic premise of *issue salience*, which refers to the prominence of a topic amid the news media characterized by the frequency of its coverage (Mc Combs et al., 2014). The media raises issues it believes are important without forcing any feeling or judgment (DeSanto, 2005). McCombs and Shaw (1972) based their fundamental hypothesis on the notion that, although the media do not tell people what to believe, they can make people think about what the media expresses

(Lang & Lang, 1966, as cited in McCombs & Shaw, 1972). The agenda-setting theory has no effect if the audience does not consider news relevant (Trigueros & Lacasa-Mas, 2018). In other words, the agenda-setting theory is meaningful if there is an avid audience for the information.

The initial level of agenda-setting derived from the results of McCombs and Shaw (1972) showed a robust correlation between the issues that media gave more coverage to and the issues that participants considered more critical during the political campaign. In other words, the public will pay more attention to matters of prominent media coverage because of the perception that the issue is relevant (McCombs & Shaw, 1972). Within this context, agenda-setting theory can explain how the intensity of media coverage gives importance to corporations' issues that can affect their standing before the public (Strycharz et al., 2018) positively or negatively.

The high drugs price topic has been a constant issue covered by mass media for a long time. High-profile cases for skyrocketing price increases have given rise to public upheaval with a continuous inquiry by the mass media (Glabau, 2017; Leopold et al., 2016; Reed, 2019), which turned this situation into a salient issue following the main posit of the first level of agenda-setting. Although the drugs price issue has been a regular topic in the highest circulation U.S. newspapers (Leopold et al., 2016), according to Sillup et al. (2017), the year 2016 was distinguished by the prolific coverage of the drugs price issue within the context of an election year. The broad coverage of the increase in drug prices attracted the attention of the government sector to the pharmaceutical

industry. The U.S. Congress summoned some pharmaceuticals' CEOs to question the rise in prices of their drugs, which drew public criticism to the pharmaceutical industry.

Technological advances have impacted how the media convey news and the audience who receive the information, threatening the adaptability of the agenda-setting theory to this new high-tech era. After 50 years of the agenda-setting theory origin, with the emergence of the internet revolutionizing the news media, this theory has amplified its scope and transformed in several dimensions (McCombs et al., 2014).

Dimensions of the Agenda-Setting Theory

Second Dimension. The second dimension of agenda-setting is attribute agenda-setting. Kim et al. (2002) considered this dimension as an expansion of the basic agenda-setting. In contrast, McCombs et al. (2014) defined *attribute agenda-setting* as the influence of the media agenda (or plan) on the people agenda concerning the prominence of the attributes of salient topics. According to McCombs et al. (2014), the attribute agenda-setting influences the public perception of the characteristics that media has emphasized under coverage.

Attribute agenda-setting develops based on how the media's perspectives on an issue might influence public opinion. According to Ghanem (1997), framing rests on the different ways an issue is presented. *Framing* refers to the presentation or omission of information to produce in the audience particular reasoning or explanation of an issue or news (De Santo, 2015; Ghanem, 1997). Framing does not focus on the issues covered by the media, but on how these issues are brought to the public (Ghanem, 1997). Framing might be deemed as a biased process considering the practice of selecting information.

Other perspectives show a different angle of framing. According to Markovich (2021), in the public's interest, an issue such as the medications' high prices should be covered by the media and framed for the better understanding of the public on who is responsible for the situation. The health of individuals and society, in general, depends on the accessibility and availability of medications. If medications are unaffordable, public health will be negatively affected (Markovich, 2021), creating a social issue that requires attention. In alignment with Markovich, Fessmann (2017) claimed that new trends in the communications domain entail strategic campaigns based on research to get relevant positive social change on a public interest issue. From Markovich's perspective, the lack of media coverage of the high drug prices reinforces the pharmaceuticals' publicity. In other words, when the focus is the public interest, framing can be considered an approach to advance social causes.

There is a general perception that the media is biased against pharmaceuticals. Hurst (2017) suggested that media describe the pharmaceutical industry in adverse terms. Hurst's assertion validates the Pharm Exec's 15th annual press audit that suggested headlines tone is still more negative than positive toward the pharmaceutical industry (Porth & Sillup, 2019). The increase in drug prices is an event that negatively affects a lot of the population, and the news media is fulfilling its responsibility to report on it. However, framing applies when the media coverage highlights the negative elements of the situation without providing the pharmaceutical industry stance.

Third Dimension. The third dimension of agenda-setting is *network agenda-setting* (NAS), which refers to different correlations between the components of the

media and the public agendas (McCombs et al., 2014). This third dimension of agenda-setting posits that the media network issue agenda can transfer its salience of relationships to the public network issue agenda (McCombs et al., 2014), influencing not only in what and how the public thinks but in how people relate issues and attributes (Vu et al., 2014). In essence, NAS posits prominent issues for the network's media such as online media, radio, television, and newspapers influence on the public media network of significant channels such as Facebook, Instagram, Twitter, and blogs, to mention some.

Fourth Dimension. The *need for orientation* (NFO) is the fourth dimension of agenda-setting. The NFO relates to how the media agenda affects individuals' psyche (McCombs et al., 2014), suggesting that people look for information that makes them feel comfortable with their physical and intellectual environs. McCombs and Weaver (1973) described NFO within the context of significance and unpredictability. Based on a survey on the 1972 presidential elections, McCombs and Weaver suggested that the NFO is low when the significance levels are low.

Conversely, when significance levels are high, and the unpredictability is low, the levels of NFO are moderate. Likewise, if the significance and unpredictability levels are high, the NFO level is high as well (McCombs et al., 2014). As a validation of the above assumption, Matthes (2005) established that significance prevails over uncertainty, meaning uncertainty counts if significance is high. In other words, the issues' relevance determines the importance of the unpredictability factor, affecting the levels of NFO.

Fifth Dimension. Agendamelding is the fifth dimension of agenda-setting. According to McCombs et al. (2014), *agendamelding* is the process whereby people

combine agendas from diverse communication sources that fit their personal preferences and intellect. Concerning the agendamelding process, Kim et al. (2017) suggested that individuals are prone to participate in groups associated with their interests combining the information received from these groups with the media and other sources. The necessary communities' information, and c) individuals' principles, experience, and interests (McCombs et al., 2014). The audience, according to McCombs et al., can select what media use to keep informed. Therefore, people choose and mix preferred media agendas, perceiving the world according to their experiences and interpretations. Agendamelding entails a natural and subconscious process through which people select the information that helps them produce the ambiances of interest such as work, study, and play, according to their preferences. In summary, agendamelding refers to people's selection and combination of agendas with which they feel comfortable.

The agenda-setting theory posits the influence of media on public opinion based on the association of the issues covered by the media and the issues people consider relevant. As an expansion and second dimension of the theory, the attributes agenda-setting proposes that issues' features emphasized by the media influence public perception of the relevance of those features. The subjectivity of this process might lead to framing when information is intentionally selected or excluded to achieve a particular purpose, which suggests that the media can have biases.

The agenda-setting theory has developed in other areas suggesting media influence on public opinion. The transfer of the online and mainstream media agenda to the public channels of social media is a media influencing method, especially in relevant

topics in which people desire information. The agenda-setting theory expanded its initial postulate to agendamelding by suggesting that people choose from their multiple communication sources the information which makes them feel more at ease.

Political Economy of Communications

The political economy communications approach originated as the *political economy* (Wasko, 2004). Smith (1776/2016) referred to the political economy within the context of wealth distribution, underlining the disparity of resources. The basic premise highlighted the allocation of limited resources with a consequent inequity in needs satisfaction. Political economy joined other studies interests on societal policies economy and ideas about social change purpose (Mosco, 2008). Within the context of this study, the media is a liaison between social interests and policymakers.

According to Mosco (2008, 2014), the political economy of communications has five tendencies: (a) the globalization of the discipline, (b) proliferation of historical research, (c) increased research on feminism and labor perspectives, (d) transformation from old to the new media, (e) and media activism. From these five trends, *media activism* closely relates to this study because of its relevance for creating alliances between labor organizations, communities, and industries sectors in their perspectives toward social issues. These alliances, together and through the media, have access to politicians with decision-making power.

The beginnings of the political economy of communications are related to concerns about the operational policies of mass media organizations, the structures under which they were formed, and their impact on society (Smythe, 1960). Three policy issues

within the context of communications comprised the origins of this approach. The *production policy* relates to the quantity and quality of communication goods and services, considering their availability within the context of space, income levels, and stratum aligned to quality standards (Smythe, 1960). The production policy entails two policy challenges: the availability of communication goods or services and the principles of quality of communication goods or services.

The second policy of interest to the political economy of communications approach is the *policy allocation of communication goods and services*. The allocation policy refers to the fairness or inequity of delivering communication goods or services to determine for whom such goods or services are produced (Smythe, 1960). The *policy on capital, organization, and control* is the third policy of interest to the political economy of communications approach that refers to how communication organizations will provide communication goods and services. The type of service and to whom it will be delivered will primarily determine how the communication service will be provided (Smythe, 1960). In summary, the origins of the political economy of communications involved assessing communications policies and economic processes, their interconnection, the structures of communication institutions, and their societal impact.

With unequivocal Marxist tendencies (Wasko, 2004), Murdock and Golding (1973) asserted that media influences people's lives through two dimensions. The first dimension entails the industrial and commercial nature of communications organizations that affect the consumption of goods and services. Through advertising, the media plays a prominent role in people's decisions relative to their spending habits (Murdock &

Golding (1973). The second dimension of the media is associated with their ability to spread economic and political beliefs or ideas. Under this perspective, the news is an instrument of social change that affects the political and economic structures (Murdock & Golding, 1973).

For more than a century, academics have studied the connection between media and politics from macro to micro-perspectives, single individuals, and specific occurrences (Schulz, 2015). Although studies present mixed results, researchers note a consensus that the journalists' role has changed to more analytic and government challenging, highlighting news with greater interest for people (Weaver, 2015). The elevated drug prices and their continuous rise have been a constant public issue for decades (Leopold et al., 2016; Sillup et al., 2017). The media has given plenty of coverage, especially under public upheaval that caught the attention of politicians and policymakers. This situation aligns with Weaver's (2015) assertion that issues covered by the media are valuable because they can be used for political advantage. From another standpoint, Weaver claimed some social problems do not become *issues* because they have not been exposed by the media, emphasizing that the media impacts public opinion and government officials who develop policies.

The media has been considered as an instrument of change for multiple sectors of society. Blumler (2015) presented the media as a forceful and influential character during an evolving political process from a longitudinal outlook. Schulz (2015) refers to *mediatization* as assessing changes in politics and other social domains due to the communication media and their rising significance in society. Blumler and Kavanagh

(1999) presented mediatization as the gradual process whereby the media become the core of a social process. When the evolution of communication affects politics, it is called *mediatization of politics theory* (Blumler, 2015). The politics domain is not the only one affected by mediatization. Scholars have explored mediatization within other realms such as the judiciary, sports, science, religion, tourism, and society (Schulz, 2015), suggesting the meaningful role of the media as an agent of social change.

Although high drug prices have been a constant topic in the mainstream media, the unexpected and overwhelming price increases in certain medications during 2015 and 2016 caused public outrage, attracting comprehensive press coverage. The media pressure on politicians and government officials asking for solutions to make prescriptions drugs accessible to patients instigated the high drug price issue in becoming a political issue for the 2016 elections. The presidential candidates of the two major parties recognized the high drug price as a relevant issue that deserved governmental intervention, causing panic in the pharmaceutical industry because of the potential risk of drug price control that might affect their revenues.

This study current was framed in the stakeholder theory, the agenda-setting theory, and the political economy of communications approach. These three theories converge in the power of mass media communication as a relevant stakeholder with the ability to raise public awareness and influence the political arena for the social issue of drug-pricing affordability. This situation represents a probable contingency of negative financial results for the pharmaceutical industries that can affect investors, patients, and other stakeholders. Also, the uncertainty of the media relationship to the financial

performance and capitalization of pharmaceutical companies permeates decision makers' analysis for strategy development and stewardship of investors and other stakeholders' interests.

Literature Review

The literature review focus on the relationship between high drug prices, price increases and associated issues, the media coverage of these actions, and the stock behavior of the pharmaceutical companies which pricing policies caught the media's attention. Although the high drug prices and continuous increases have been a constant issue covered by the media (Reed, 2019; Sillup & Porth, 2017), rising drug prices triggered public criticism and attracted media scrutiny within an election year. According to Gronde et al. (2017), the issue of high prescription drug prices has evolved from a government and academic topic to a subject discussed within a societal context with media coverage and political ramifications. This situation can bring uncertain potential consequences for the pharmaceutical industry and its financial and nonfinancial stakeholders.

Drug Prices Controversy

The high price of drugs and their constant price increases have been controversial for decades. Even though the debate on high drug prices is not novel (Leopold et al., 2016; Manning, 2018), the public became more aware of this situation in 2015 and 2016 (Gronde et al., 2017) due to sharp price increases in old drugs without apparent reason. The annual press audit reports of Sillup and Porth have presented fifteen years of media coverage of pharmaceutical companies' news since 2005 to trace and evaluate the issues

covered by the media. Using the top five ranked U.S. newspapers (based on circulation), Sillup and Porth claimed that the drug prices issue has been a constant topic within the media, demonstrated by its high rankings through all the studies. Both Leopold et al. (2016), Manning (2018), and the Sillup and Port annual press audit reports series highlighted the news media's continued coverage of high drug prices. Although their studies involve the problem of drug prices and the media coverage of this topic, their studies do not reveal the association between the coverage of the drug price issue and the financial results of the pharmaceutical companies that attracted the press attention due to their products' prices. The high drug price problem became a political issue triggered by the public commotion, the high-profile media coverage, 2016 as an election year, and the pharmaceutical industry leadership, which could not demonstrate the rationale for such increases.

Several reasons contribute to the high drug prices and their increases. However, scholars have no consensus about the most significant contributing factor to the expensive drug prices and their constant raises. Conversely, the pharmaceutical industry leadership claims high-priced R&D is the principal reason for the high drug prices (Blackstone & Fuhr, 2019; Shanley, 2016), even though the public has questioned this claim (Manning, 2018). According to Ahmad et al. (2020), the supply chain components of pharmaceuticals (manufacturers, distributors, pharmacies) need to be transparent with their price policies so that multisectors can understand the cause of high drug prices. Disagreement between scholars and pharmaceuticals leaders about the cause of high drug prices and increases, along with the lack of transparency of price policy rationale, has

contributed to multisector inquiries about why medications are so expensive in the United States.

Reasons for High Drug Prices and Price Increases

Expensive Research and Development. The pharmaceutical industry leadership claimed the primary cause for high drug prices is the cost of R&D necessary to develop new drugs and treatments for people's illnesses. The most evident reason for the high drug prices, according to the pharmaceutical companies' governance, is the expensive R&D necessary to advance and develop new products (Blackstone & Fuhr, 2019; Deb & Curfman, 2020) and the time involved in the development of new drugs (Shanley, 2016). Although the high cost of drug development is a potential explanation for the high cost of prescription drugs, there is no clear evidence of the association between R&D and drug prices (Kesselheim et al., 2016; Moreno & Epstein, 2019). It has been difficult for drug companies to prove the authenticity of their claim.

Studies suggested that the cost of developing a new drug that enters the market is $2.6 billion. From the Tufts Center for the Study of Drug Development (TCSDD), DiMasi et al.'s (2016) findings supported pharmaceutical companies' claim that the make-up of the R&D estimated cost of $2.6 billion for developing a new drug includes funds from the private sectors, government, and nonprofit organizations. Kirchhoff et al. (2021) asserted that DiMasi et al.'s estimates of $2.6 billion included $1.4 billion in clinical outlays and $1.2 billion related to the *time costs* incurred for the time between the R&D expenditures disbursement and the time FDA approves the new drug's marketing.

Although the pharmaceutical leadership's claims of R&D cost are grounded on DiMasi et al.'s research, the study is considered controversial.

Scholars and other organizations have questioned the DiMasi et al. (2016) study's methodology and results. DiMasi et al.'s study has been criticized for lack of rigor (Kesselheim et al., 2016). Some scholars have censured the lack of transparency of the data utilized in the research, questioning the estimates' reliability, mainly when the TCSDD receives funds from pharmaceutical companies and related associates (Kirchhoff et al., 2021). The data from the confidential survey used for the study is considered proprietary information (DiMasi et al., 2016; Deb & Curfman, 2020), which independent sources cannot share and validate. The validation of this study rests on the analysis of independent data from the pharmaceutical industry. In other words, the lack of access to the original data by other researchers prevents an appropriate impartial evaluation of the study.

Determination of the R&D cost of a drug is challenging. The lack of standard methodologies to calculate the cost of new drug development leads to divergent estimates (Kirchhoff et al., 2021). Other studies about the estimated R&D cost of a new drug suggest an average range in R&D cost between $985.3 million to $2.6 billion considering assumptions of type of drug, time cost, and cost of capital that can significantly impact the estimates (Kirchhoff et al., 2021). The critical point of DiMasi et al.'s (2016) study is the appearance to the public that pharmaceutical companies pay $2.6 billion to develop a new drug. The fact is that private, nonprofit institutions and taxpayers' monies contribute a significant portion of that estimated cost, according to DiMasi et al.'s report. In other

words, the pharmaceutical companies make only a partial contribution to the R&D cost of a new drug.

Lack of transparency is a common critique of the pharmaceutical industry. Morgan et al. (2020) indicated that although pharmaceutical companies' leaders claim drug manufacturers must recover the high cost of R&D through high drug prices, they do not disclose the R&D costs, which is not considered a transparent policy. This criticism echoes Shanley (2016), who claimed there is no openness concerning pharmaceutical manufacturing costs, leading to the public's suspicion of the veracity of pharmaceutical companies' leaders' allegations about the high drug prices causes.

Profitability is a requirement for companies' survival and growth. According to Ottoo (2018), the dominant purpose of any for-profit entity is to generate and maximize stockholders' wealth through the promotion of business ventures and innovation. Firms must be capable of making profitable novel products that, through their marketing, will impact the company's long-term sustainability (Moreno & Epstein, 2019). When uncertainty is involved, expected gains will drive the funding (Grabowski & Manning, 2017). Investors feel confident contributing their resources to product development only when they believe there are good possibilities of superior gain (Grabowski & Manning, 2017). The high-risk operations and capital-intensive nature of pharmaceutical companies require them to be highly lucrative to be attractive in raising capital funds to invest in R&D.

Patents Rights. Diverse perspectives surround governmental grants to pharmaceuticals. Kesselheim et al. (2016) maintained that the most significant reason for

the high drug prices is the market exclusivity granted to pharmaceutical companies by the FDA and the U.S. Patent and Trademark Office provisions. Although this grant can be considered a temporary legal monopoly, according to Blackstone and Fuhr (2019), this action is necessary to incentivize innovation and new capital flow, supporting Kang et al.'s (2020) assertion that government concedes patents rights to protect pharmaceutical companies' R&D investment. On the other hand, Morgan et al. (2020) suggested that excess patents rights and government nonintervention on drug price limitations are hurting the health system and the access to medicines. Both perspectives have valid arguments supporting that government's intentions sometimes have unintended consequences.

The pharmaceutical industry market differs from the market of other products. It is a high-risk industry that requires high capital investment (Grabowski & Manning, 2017; Moreno & Epstein, 2019). The government concedes patent rights that grant exclusivity rights for a limited period to exclude others to use, manufacture, market, sell and execute actions related to the product under a patent (Burke, 2018). There are specific laws enacted to protect the patent holders and consumers, leading to maintaining a fair market for all parties surrounding the pharmaceutical industry environment.

Sherman Antitrust Law. This law was signed in 1890 to protect consumers from restraining trade or anticompetitive practices that affect the free market (Burke, 2018). Section 2 of the Sherman Act precludes any monopolization, agreement, alliance, or scheme from monopolizing commerce among States or foreign nations. According to Burke (2018), the Sherman Act aims to prevent anticompetitive practices that eradicate

competition without penalizing entities with successful business strategies that surpass their business rivals. Richards et al. (2020) asserted that the illegality of a monopoly occurs when anticompetitive behavior is present. Burke and Richards et al. suggested that having monopoly power in a specific market does not infringe section 2 of the Sherman Act when market dominance is a consequence of business insight, a superior product, or a historic disaster. In summary, a monopoly violates section 2 of the Sherman Antitrust Act when anticompetitive practices support it.

Hatch-Waxman Act (HWA). This law, better known by the creators' names, corresponds to *The Drug Price Competition and Patent Term Restoration Act*, signed in 1984 (Engelberg, 2020; Karas et al., 2018). This Act promotes the manufacturing of generic drugs (bioequivalent) to reduce drug prices and facilitate the application process for the new drug (Burke, 2018; Karas et al., 2018). Before the HWA implementation, the FDA approval of new generic products was sluggish, with a congestion of applications to be reviewed. This bureaucratic and expensive delay granted branded drug companies an implicitly extended patent period (Engelberg, 2020). In general terms, the HWA allows generic manufacturers to start researching and developing generics or biosimilar drugs and challenge a patent before its expiration date (Engelberg, 2020). In other words, this legislation attempted to make medications more affordable to the public by facilitating and speeding the approval process of bioequivalent drugs for generic drug companies.

Sometimes legislation's intentions have unintended consequences. According to Engelberg (2020), the approval of the shortened and simpler generic drugs process was conditioned on conceding an extension of drug patents by up to 7 years as a benefit for

the time consumed to navigate the FDA regulatory process (Burke, 2018). Although a 'legal' monopoly for a limited time encourages innovation (Burke, 2018), Engelberg warned that more extended pharmaceutical companies' patents would cause prescription prices to increase. These drug price increases could happen without any warranty that the revenues would be reinvested in pharmaceutical companies' R&D (Engelberg, 2020). Also, critics of the pharmaceutical industry claim that the actions of some drug manufacturers have twisted the Sherman Act and HWA laws for their benefit.

Multiple sectors such as health care practitioners, the general public, consumer advocates, insurers, academics, and politicians have questioned the practices of some pharmaceutical companies. Some practices are considered unlawful when deliberately preventing a generic product from entering the market to keep the high price of the original drug for as long as possible. Many scholars and authors consider the sharp price increase on drugs as *price gouging*, a business strategy that entails an exorbitant price rise on indispensable commodities (Engelberg, 2020; Reed, 2019; Woodcock, 2018). Some brand-name drug companies incur *product hopping* to prevent generic competition through minimal alteration of a drug before its expiration date, obtaining a new patent (Hill, 2017). These changes to the drug do not significantly improve its effectiveness, administration, or side effects reduction (Hill, 2017) but inhibit generic companies from marketing a biosimilar product at a reduced price.

A consequence of product hopping is that brand-name drug companies have more time with patent exclusivity while patients need to switch to the 'new' product regardless of the price charged (Burke, 2018). According to Burke (2018), product hopping is a

potential violation of the Sherman Antitrust Act concerning monopolistic practices because the result of extended patent rights in the pharmaceutical industry is a monopoly that prevents competition of generics in the drug market. The bottom line of product hopping is that patients lack the opportunity to access more affordable medications because of the lack of generic drug alternatives caused by the extension of patent rights of the original formulations.

Some branded-name drug companies protect their products' exclusivity rights in other forms. The potential litigation of pharmaceuticals because of patent claims that serve as a stop to generic companies that want to enter the system is one of the ways brand-named drug companies discourage generic companies from entering the generic market (Blackstone & Fuhr, 2019). Usually, the generic companies analyze the cost and risk versus the benefit of entering a battle with brand-name drug companies with much more economical and legal resources and desist from manufacturing generics. Other cases are solved through a *pay-for-delay* agreement between brand-name drug companies and the generics manufacturers, where pharmaceuticals pay money to their generics competition for entering the market on a later date or staying out of the market (Deb & Curfman, 2020; Engelberg, 2020; Hill, 2017; Richards et al., 2020). The delay to compete or stay out of the market by generic manufacturers allows the branded-name companies to continue with the established high drug prices policy with de facto exclusivity rights, affecting patients and the health system (Richards et al., 2020). Although these cases can be perceived as possible violations of the Antitrust Laws, the courts' evaluations are case by case, and the opposing sides usually reach an agreement.

The patent rights is not the only factor in high drug prices and their continued increases. After the patent's expiration date, some pharmaceutical companies with drugs without competition charge whatever price they want for their products (Blackstone & Fuhr, 2019; Traynor, 2016). Other cases involve pharmaceuticals that buy licenses of old products and increase their prices overnight, like the case of Turing Pharmaceutical with Daraprim (Gronde et al., 2017), in which there was no competition, and they were able to increase the price from $13.50 to $750 per tablet (Hill, 2017; Morgan et al., 2020; Woodcock, 2018). Within the context of the pharmaceutical industry, *patent thickets* is the practice of overlapping patent rights of a single product to prevent competition from entering the market after the expiration date of the original patent (Deb & Curfman, 2020). The strategy of patent thickets is to discourage potential competitors from entering the market, considering the attempt as high-risk and onerous (Richards et al., 2020). In summary, through the above practices, pharmaceutical companies can keep the exclusivity rights that allow them to set the drug prices they want without competitors.

Inefficient pharmaceuticals manufacturing practices. Another reason for the high drug prices is the inadequate performance of drug manufacturers. According to Shanley (2016), one of the reasons for the high drug prices and price increases is the inefficiency of pharmaceuticals' practices, reflected in the use of obsolete technology. Shanley's claim aligns with Moreno and Epstein's (2019) assertion that drug manufacturers must embrace advanced technology to reduce their R&D expenditure without relinquishing their operational performance. The pharmaceutical industry has been an essential factor in developing disease treatments, offering patients a better quality

of life (Anderson et al., 2018). However, many of the methods involved in clinical trials continue using techniques from the 1990s that do not keep pace with the increase in sources of information and evidence (Anderson et al., 2018), delaying processes with consequent cost increases.

On the other hand, regulatory issues might discourage pharmaceutical companies' investment in new information technology (IT) when the years involved in approving a product are too long (Shanley, 2016), delaying the return on investment. Although digital transformation is a complicated, resource-demanding, and prolonged process, according to Anderson et al. (2018), pharmaceutical companies must implement this strategy to acquire a competitive advantage. The inefficient internal policies and manufacturing practices might affect the development and production cost with adverse effects on operational performance leading to economic consequences.

Other reasons. Some academics and other sectors identify additional causes for the high drug prices. The U.S. subsidy of pharmaceutical products to underdeveloped countries faces critics from some sectors that complain countries do not share their part of the benefit received (Blackstone & Fuhr, 2019). Pharmacy benefit managers' (PBM) conflicting interests are another reason for the high cost of drugs, according to Blackstone and Fuhr (2019) and Shepherd (2020). The PBM are organizations that handle prescription drug insurance claims, distribution, and price negotiations for over 90% of Americans with medication insurance (Shepherd, 2020). The PMB plays a primary role within the distribution chain of medications. Critics highlight PBM's opposing business strategies when negotiating lower drug prices for patients. At the same time, their

benefits are contingent on drug prices (Blackstone & Fuhr, 2019), which results in a conflict between what is profitable for them and the most favorable for patients (Shepherd, 2020). In brief, U.S. subsidies of medications to developing countries and the perceived conflict of interests on PBMs contribute to the high drug prices in the United States.

Two conflicting perspectives frame the pharmaceutical drug pricing issue. According to Glabau (2017), outsiders such as patients assume drug price relates to a specific measurement cost and value of potential benefits. On the other hand, drug prices entail gains expectations for insiders, such as high-profile executives and shareholders, to achieve financial goals (Glabau, 2017), aligning with Gousgounis and Neubert's (2020) assertion that companies' pricing policy is a relevant element in accomplishing financial targets. Economists differ on the causes for the high drug prices and increases. Trujillo et al.'s (2018) findings showed economists believed that the main reason for the high drug prices is insurers' payment and pharmaceutical companies' profit targets. These contrasting perspectives of high drug prices rationale have as a backdrop the divergent interests of different pharmaceutical companies' stakeholders, the patients, and the financial stakeholders.

Public Upheaval

Constant drug price increases caused multisectoral claims for government intervention and an appropriate solution for all the affected parts. Branded-name drugs are not the only medications with increasing prices. Drug price increases also apply to generic drugs (Alpern et al., 2020; Kang et al., 2020; Leopold et al., 2016). Although the

high drug price is not a new issue, the sharp increase in some drugs during the years 2015 and 2016 caused a public commotion that triggered media coverage, attracting the attention of politicians in the middle of an election year. Three pharmaceutical companies faced wide criticism and inquiries from governmental agencies for the sharp increase in some of their products that were considered essential treatments for specific health conditions.

Turing Pharmaceuticals-Daraprim. The case of Turing relates to Daraprim, a 60-year-old specialty drug effectively used for the treatment of *toxoplasmosis* (Hill, 2017; Schoen et al., 2019), an infection caused by a parasite called *Toxoplasma gondii* (FDA, 2020). When the infection is strong, the disease can be detrimental to the brain, eyes, or other organs (FDA, 2020). Daraprim treatment is critical for patients with weak immune systems affected by this parasite ailment, such as pregnant women, cancer patients, HIV patients, and recipients of organ transplants (FDA, 2020; Schoen et al., 2019). Healthcare experts expressed their concerns that Daraprim's price increase would affect the treatment capability of infants and immunocompromised people (Traynor, 2016). Without the appropriate Daraprim dosages, these patients are under life-threatening conditions.

Daraprim's sharp price increase is an example of a legal and unconventional financial strategy (Schoen et al., 2019) without association with the R&D cost of developing a drug (Hurst, 2017). Turing Pharmaceuticals' problems started when they acquired Daraprim distribution rights from Impax Laboratories on August 10, 2015, and immediately increased its price from $13.50 to $750 per pill (Blackstone & Fuhr, 2019),

an increase of 5500% (Kesselheim et al., 2016). According to Schoen et al. (2019), the Daraprim price increase resulted in an annual cost of treatment of $336,000 for patients with a weight less than 132 pounds, while patients with a weight of 133 pounds or more faced a bill of $634,500 for the annual cost of the treatment. The dosages of Daraprim can vary considering the illness's strength. There are treatments where patients should take 100 pills for eight weeks (First, 2019). In any case, the treatment cost is prohibitive.

Business models created around the lack of competition in the manufacture and distribution of medications threaten the affected patients' health and the health system. When Turing Pharmaceuticals acquired Daraprim's rights, they purchased an old specialty drug with proven efficacy in treating toxoplasmosis (Hill, 2017). Although the need for Daraprim is critical for patients with this disease, a stable and limited number of patients is not enough incentive for generic companies to manufacture the product because of the risk of small profits (Blackstone & Fuhr, 2019; Kang et al., 2020; Schoen, et al., 2019). Owning the manufacturing and distribution rights of Daraprim, Turing Pharmaceuticals could legally fix whatever price it decided (Hill, 2017; Kang et al., 2020; Schoen et al., 2019), and they did it.

The acute price increment of Daraprim was not the only issue involved in the controversy. The price increase accompanied a supply shortage that Turing Pharmaceuticals instigated when they restricted Daraprim's distribution to prevent research for a generic version (Schoen et al., 2019). Turing Pharmaceuticals prevented generic companies from legally acquiring Daraprim samples to conduct bioequivalence tests. These tests are necessary for FDA approval of generics and biosimilars (Karas et

al., 2018). It seems that lack of competition in the generic market is the common denominator between drug shortages and price increases (Traynor, 2016). Daraprim was an old and effective treatment for toxoplasmosis that did not involve any apparent modifications leading to medical improvement (Kesselheim et al., 2016). Turing Pharmaceuticals' governance supported the Daraprim price increase based on the intention to raise capital for researching alternative treatments for toxoplasmosis (Schoen et al., 2019).

In contrast, a former general counsel of Turing Pharmaceuticals testified at a hearing on March 17, 2016, to inquire about the Daraprim price increase. The Company did not have a formal procedure report to research potential alternative treatments for Toxoplasmosis (Schoen et al., 2019). The case of Turing demonstrates that the acquisition of a license to manufacture a product when there is no competition can result in a skyrocketing price increase of such product (Morgan et al., 2020), with adverse effects for the people who most need them, the patients.

Turing Pharmaceuticals' decisions had consequences. The wave of public criticism for Daraprim's remarkable drug price increase affected Turing's stock value (Shanley, 2016). Fearing that Turing's pricing practices would affect the image of the *Big Pharmas*, pharmaceutical manufacturers disassociated from Turing's practices (Shanley, 2016). Extensive media attention to Turing Pharmaceuticals' case (Trujillo et al., 2018) triggered government intervention where Turing's CEO Martin Shkreli testified during U.S. Senate hearings and defended the Daraprim price increase. When asked to submit relevant documents, Mr. Shkreli invoked the Fifth Amendment without producing the

required information (U.S. Senate, Special Committee on Aging, 2016b). His testimony harmed Turing Pharmaceuticals, the company he represented. The paradox of this case is that Mr. Shkreli was in prison until May 2022 (Torchinsky, 2022) for other reasons unrelated to Turing's price increase on Daraprim. However, according to Sisak and Pelts (2022), a court decision ordered him to return $64.6 million in profits obtained for monopolizing Daraprim and prohibited him from being related to the pharmaceutical industry for life.

Valeant Pharmaceuticals-Calcium EDTA, Syprine, & Cuprimine. Initially known as ICN Pharmaceuticals, Inc., after a merger of diverse pharmaceuticals in 1994, this company changed its name to Valeant Pharmaceuticals International in 2003 (Dabney, 2020). In 2010, Biovail Corporation, the largest Canadian public pharmaceutical company, acquired Valeant (U.S. Senate, Special Committee on Aging, 2016b), moving Valeant's headquarters to Canada and retaining the name of Valeant Pharmaceuticals International for the combined entity (Dabney, 2020). With around 16,800 employees, Valeant's growth resulted from multiple acquisitions that spread its operations to six continents (U.S. Senate, Special Committee on Aging, 2016b), becoming a star company for Wall Street.

Valeant Pharmaceuticals and Turing Pharmaceuticals cases shared a similar financial strategy. They acquired the manufacturing and marketing rights of older drugs through a company purchase that allowed them to set a sharp price increase without apparent medical advance (Kesselheim et al., 2016; U.S. Senate, Special Committee on Aging, 2016b) and without concern about the competition (Lu, 2017). In 2012, Valeant

Pharmaceuticals acquired Medicis Pharmaceuticals (which previously acquired Calcium EDTA through the purchase of Graceway Pharmaceuticals in 2011) and fixed manufacturing problems with the drug (First, 2019). In 2012, one box of 50 mg Calcium EDTA was sold for $950. The price increased to $7,116 by 01/01/2014, and in December 2014, the price rose to $26,927 (First, 2019). In contrast, a company in France was selling 50mg of the drug for about $75 (First, 2019), reflecting a highly noticeable difference in price that needed a rational explanation.

The standard gold treatment for lead poisoning is Calcium EDTA. Lead poisoning cases in the United States are few, but urban hospitals need to have it in stock because of the likelihood of facing these cases (First, 2019). In 2016, US Representative Dan Kildee of Flint, Michigan, inquired why Valeant Pharmaceuticals increased the poisoning treatment from $900 to $2,700 upon discovery that the municipal water supply was contaminated with lead (Shanley, 2016). According to First (2019), the case of Calcium EDTA involves exploitation because Valeant took advantage of the severe situation of lead contamination found in the water that affected mainly children.

Valeant Pharmaceuticals' CEO, Michael Pearson, visualized pharmaceutical companies from a different perspective than the traditional innovation industry. Advocates of Mr. Pearson praised his business model of expansion through continuous acquisitions, especially those with tax benefits abroad, forceful expenses cutting, and a brake on R&D of new drugs, which were considered high-risk activities (McLean, 2016). Expressions of Mr. Pearson implied that investing in the development of new drugs was not good business for the pharmaceutical industry.

Valeant Pharmaceuticals' drug price increase policy was not limited to Calcium EDTA. In 2010, Valeant acquired Aton Pharma, Inc., which owned Cuprimine and Syprine, specialty drugs considered the standard treatment of Wilson's disease (McLean, 2016; U.S. Senate, Special Committee on Aging, 2016b). The FDA approved Cuprimine and Syprine to treat Wilson's disease in 1965 and 1985, respectively, being Syprine the gold standard because of its reduced secondary effects (U.S. Senate, Special Committee on Aging, 2016b). According to the National Human Genome Research Institute (2010), Wilson's disease is an uncommon inherited condition that affects about one in 30,000 people worldwide, in which the body cannot metabolize copper. Although the body needs a small amount of copper, an excess of this mineral can cause damage to the liver, brain, eyes, and other organs (National Human Genome Research Institute, 2010). Without adequate treatment, this condition can cause death (U.S. Senate, Special Committee on Aging, 2016b), a fact that Mr. Pearson accepted during his response to the questions at the Senate Special Committee on Aging hearings held on April 27, 2016.

The skyrocketing price of Cuprimine and Syprine angered people and caught the attention of the media and politicians. When Valeant acquired Aton Pharma in 2010, the price of Cuprimine and Syprine was $444.89 and $652.05, respectively (U.S. Senate, Special Committee on Aging, 2016b). Gradual price increments on both medications resulted in a cumulative 99.5% increase in early 2013 for Cuprimine with a new price of $887.57. On the other hand, Syprine reflected a cumulative 113.9% price increase as early 2013 to a new price of $1,394,73 (U.S. Senate, Special Committee on Aging, 2016b). Although Valeant continued raising Cuprimine prices gradually, the spike from

$6,547.16 to $25,188.64 in 29 days as of 07/31/2015 (U.S. Senate, Special Committee on Aging, 2016b) triggered the ire of the public, media coverage, and government interest.

Syprine suffered a comparable effect when as of 07/02/2015, its price was $21,267. In comparison with their original prices when Valeant acquired their former owner in May 2010, Cuprimine and Syprine suffered a cumulative price increase of 5786.5% and 3161.5% as of July 31, 2015, and July 2, 2015, respectively (U.S. Senate, Special Committee on Aging, 2016b). Initial investigations into the relentless price hikes of Cuprimine and Syprine opened the door to SEC investigations of dubious operational and financial activities of Valeant Pharmaceuticals International. According to Otto (2018), Valeant's peak stock price was $262.52 per share on August 5, 2015, reflecting a return of 43.58% during the first three quarters of 2015 compared to a loss for the S&P index of 3.02%. During the SEC investigation, Valeant's shares' value dropped to $21.96 as of August 5, 2016, one year after reaching its highest value.

Turing Pharmaceuticals and Valeant Pharmaceuticals shared similar business strategies and outcomes. Their business model rested on finding and acquiring a specialty drug with the following characteristics:

Sole-source off-patent drug

The acquired drug could only be produced by one manufacturer. When only one source manufactures a drug, the lack of a competitor allows the manufacturer to set whatever price they decide because there is no competition to be concerned about (Alpern et al., 2020; U.S. Senate, Special Committee on Aging, 2016b).

Gold Standard

The acquired drug must be considered the best treatment for the condition, implying that regardless of the drug's price, doctors will continue prescribing it (U.S. Senate, Special Committee on Aging, 2016b).

Small Market

The drug should treat rare diseases with modest revenues from a few patients. Generic drug manufacturers are not interested in product elaboration with a likelihood of small revenues within the pharmaceutical context (Alpern et al., 2020). For this reason, when a specialty drug is off patent, the original manufacturer has no competitor and has the power to set aggressive prices (Kang et al., 2020; U.S. Senate, Special Committee on Aging, 2016b).

Under different approaches, Turing and Valeant managed to control access to their off-patent drugs to prevent generic companies from obtaining the required samples to test for bioequivalent or generic options (Alpern et al., 2020; U.S. Senate, Special Committee on Aging, 2016b). With specific financial goals of substantial revenues in a brief time, the companies significantly increased the drug prices that originally were low (Alpern et al., 2020; U.S. Senate, Special Committee on Aging, 2016b). The public commotion for the sharp increase in the drug prices caused high-profile media coverage that intensified when Turing and Valeant's CEOs faced the U.S. Senate and House of Representatives hearings about the price increase on their off-patent drugs.

The scandals that surrounded Turing Pharmaceuticals and Valeant Pharmaceuticals led to their Board of Directors' decision to change their names. Fearing that the negative publicity received from Daraprim's price increase and the events

surrounding its former CEO could affect the value of the Company, Turing Pharmaceuticals' Board of Directors decided to change its name to Vyera Pharmaceuticals in September of 2017 (Flores, 2018). Basically, for a similar reason, the Board of Directors of Valeant Pharmaceuticals decided to change the company name to Bausch Health Companies Inc., taken from its subsidiary Bausch & Lomb, which was acquired during 2013 (Bausch Health, 2018; Dabney, 2020). Companies whose image has been affected sometimes change their names as a measure of distancing and disassociation from past adverse events.

Mylan Pharmaceuticals-EpiPen. The EpiPen case from Mylan Pharmaceuticals caused a wave of public criticism and attracted the attention of the media and politicians. Mylan Pharmaceuticals is a global firm that acquired, in 2007, Merck KGaA's generic pharmaceutical division, which owned EpiPen (First, 2019; Peters et al., 2017; & Rubin, 2016). *EpiPen* is a drug used to treat *anaphylaxis*, a hazardous health condition resulting from an acute allergy reaction. The seriousness of anaphylaxis lies in the rapid onset of the condition, making it a medical emergency (Rance & Goldberg, 2015). If the person does not recognize the symptoms and is not treated with *epinephrine* immediately, the result can be lethal (Rance & Goldberg, 2015; Peters et al., 2017). The potentially life-threatening condition of a severe allergic reaction makes it imperative for the public to be able to afford this medication that can save lives.

The sharp EpiPen price increase caused concern and censure by the public. The EpiPen price spike is an example of a price increase unrelated to R&D (Hurst, 2017). According to First (2019), the cost of producing a dosage of epinephrine dispensed in an

EpiPen is around $1. The EpiPen is used for emergency acute allergy reactions through an autoinjector device that delivers epinephrine to patients (First, 2019). Although the epinephrine is not patented, the EpiPen injector has a patent, and it was invented in the 1970s (First, 2019). The continuous and sharp price increases of a life-saving treatment for more than 45 years without apparent improvement attracted the attention of multiple sectors.

Initially, EpiPen generated low sales within the pharmaceutical industry context. During 2007, the year Mylan Pharmaceuticals acquired EpiPen, its sales generated only $200 million, but by 2015, EpiPen sales were more than $1 billion (First, 2019; Peters et al., 2017). Mylan's CEO, Heather Bresch, led an aggressive and expensive marketing campaign to raise awareness of the dangers of acute reaction to allergies, especially in children, which included lobbying Congress to legislate for requiring schools to have EpiPens in stock to face anaphylactic events (Peters et al., 2017). One reason for the outstanding increment in EpiPen sales was the 2013 School Access to Emergency Epinephrine Act, whereby schools that kept emergency supplies of epinephrine received funds (First, 2019; Rubin, 2016). The EpiPen's price issue drew more public, media, and government attention when the U.S. Congress summoned Mylan CEO Heather Bresch to a hearing about the EpiPen price increase. Mrs. Bresch is the daughter of U.S. Senator Joe Manchin (D-W.Va.) and Gayle Manchin, head of the National Association of School Boards.

Although Mylan was not the only provider of Epinephrine, the other companies had manufacturing issues with their products. Being a life-saving medication, it is

entirely understandable, as assured by First (2019), that people would not risk the lives of their loved ones with a possibly defective product. In other words, most EpiPen users faced the affordability paradox; they could not afford it, but they could not afford not to have it.

The case of EpiPen presents a discrepancy between the perceived social role of pharmaceuticals and the ethicality of the price to achieve financial goals and maximize investors' interests. Debates about pharmaceutical companies such as Turing, Valeant, and the EpiPen price caused public concern and turmoil for constant increases in drug prices (Emanuel, 2019). According to Woodcock (2018), many authors and academics considered that the price increases of Daraprim, EpiPen, and Calcium EDTA lead to price gouging by the pharmaceuticals Turing, Mylan, and Valeant. However, antitrust laws cannot do anything because they lack the power to control prices (Woodcock, 2018). The World Preview 2016 report developed by Evaluate Pharma suggested worldwide prescription sales forecast with annual compound growth of 6.3% between 2016 and 2022. The projected large volume of new products in the market for seven years caused this optimistic prediction. However, Evaluate Pharma (2016) anticipated adversity for Valeant, Turing, and Mylan for overpricing older drugs, exposing drug price issues' sensitivity to political pressure.

Pharmaceutical Industry Image

Studies suggest that a company reputation influences its financial performance and value. Although organizations do not create their reputation overnight, and its essence depends on diverse factors, Krueger and Wrolstad (2016) suggested that a good

reputation is a rational augur of its future performance because it represents low risk. Executives and insider stakeholders have different perceptions of the pharmaceutical companies than patients and other outsider stakeholders. This divergence contributes to the arguments about the continuous increase in the cost of prescriptions (Glabau, 2017). Misalignment between pharmaceutical companies and nonfinancial stakeholders' interests adds to the poor image that the public has of pharmaceutical companies.

The pharmaceutical industry has kept a low image ranking for many consecutive years. Since 2001, Gallup has conducted annual polls about how the public rate U.S. essential business and industry sectors, adding the federal government to the list in 2003 (Saad, 2018). A summary of seven surveys showed that out of 25 key U.S. business sectors, pharmaceutical companies' ranking had fluctuated between 22 and 25 since 2015. Pharmaceutical companies had their lowest ranking (25) in 2019 and their highest ranking (22) in 2021 (Brenan & Jones, 2021; Jones, 2015; McCarthy, 2019; Saad, 2016, 2017, 2018, 2020), when pharmaceuticals tied with the legal field (Brenan & Jones, 2021). However, according to Inserro (2019), pharmaceutical companies have never had the 2019 low rating since Gallup began conducting surveys of America's industries in 2001. Although many industries have overcome reputation issues, Inserro (2019) and McCarthy (2019) claimed that the drug-pricing problem requires a solution for pharmaceutical companies to build a good reputation.

Other research suggests additional public perspectives of drug manufacturers. The Kaiser Family Foundation (KFF) 2019 Health Tracking Poll found that 59% of Americans believed pharmaceuticals contributed to their lives' wellness improvement

over the last 2 decades. However, at the same time, 79% believed drug prices were excessive (Kirzinger et al., 2019). In the KFF 2023 Public Opinion on Prescription Drugs and their Prices poll, 82% of the respondents claimed the price of prescription medicines was untenable (Kirzinger et al., 2023), showing that the public has not changed its mind regarding the price of medicines. KFF 2023 research on prescription drugs prices found that the public perceives that the principal reason for the high drug prices is the pharmaceutical companies' profits, followed by R&D and marketing and advertising expense as important contributive factors to the excessive medication prices (Kirzinger et al., 2023). Looking for public opinion about the greatest motivation of work for doctors, nurses, insurance companies, and drug companies, KFF conducted a poll which found that 76% of the people perceived pharmaceutical companies as primarily interested in making a profit (KFF, 2020). According to KFF (2020), a poll conducted by NBC News/Wall Street Journal in 2005 found the same trend of 76% of people who perceived the most significant interest of drug companies was to make profits. In other words, regardless of people's recognition of pharmaceutical companies' role in improving persons' well-being, people have perceived from a long time ago that pharmaceutical companies' driving force is money-oriented.

Impact of Media on the Pharmaceutical Industry

Many studies suggest that the media play a prominent role in molding public opinion about organizations. According to Hamborg et al. (2019), media bias can affect the public interpretation of an issue. Hurst (2017) suggested the media is biased against the pharmaceutical industry. Hurst's assertion of media biases against pharmaceutical

companies aligns with claims from Sillup and Porth's studies from the series of annual press audits of the media coverage of pharmaceutical companies' news since 2005, where they aim to trace and evaluate pharmaceutical industry issues covered by the media (Porth & Sillup, 2019).

Although the media have constantly covered the drug pricing issue for decades, the high-profile drug pricing cases of Turing, Valeant, and Mylan during a narrowed period created a media storm. Walgrave et al. (2017) maintained that *media storms* entail an outpouring of media coverage of a particular topic that lasts for a significant period, according to the media standards. Walgrave et al.'s study used longitudinal data from the New York Times (1996-2006) to explore whether an outburst of news on a particular subject triggers congressional hearings on that specific matter, leading to political cascade effects. Because politicians use the media as a source of information, they make decisions based on the exposure of the event that they must decide about, suggesting that politicians react to the news contingent on the media attention level (Walgrave et al., 2017). To summarize, intensive mass media coverage of a particular issue is critical for political action.

The public turmoil and the constant media coverage of drug price rises attracted the attention of politicians from both parties. High-ranked Turing Pharmaceuticals and Valeant Pharmaceuticals officers were summoned to testify at public hearings about increases in drug prices. On December 9, 2015, the U.S. Senate Special Committee on Aging started a series of hearings to investigate and analyze the reason for the abrupt price increase in off-patent drugs (U.S. Senate, Special Committee on Aging, 2016b).

They received testimonies from recognized health-related experts about how the increase in certain drugs affected the health system. During the House Committee on Oversight and Reform hearings about the rise in drug prices on February 4, 2016, Martin Shkreli, CEO of Turing Pharmaceuticals, invoked the Fifth Amendment, made no statements, and declined to answer the House panel's questions. Mr. Shkreli's actions and comments of apparent disregard for the process and House Committee members were the subjects of ample coverage by the different news media, affecting his image, the company he represented, and the pharmaceutical industry in general.

Mr. Shkreli was not the only pharmaceutical company's CEO required to submit corporate documents and depose under oath at a governmental hearing about old, off-patent drug price increases. Under a threat of contempt (U.S. Senate, Special Committee on Aging, 2016a), Valeant Pharmaceuticals' CEO, Michael Pearson, deposed to a U.S. Senate Committee on April 18, 2016 (Staton, 2016a). This deposition was a prelude to a hearing on April 27, 2016, investigating the excessive price rise of old prescription drugs whose patents have expired (Lynch, 2016). In his statement before the Special Committee on Aging of the U.S. Senate during the April 27, 2016, hearing, Mr. Pearson defended and explained the price increases of off-patent drugs such as Curprimine and Syprine. Also, he described the programs they implemented to make them accessible to patients who needed them (*Valeant Pharmaceuticals' business model*, 2016). In his statement, Mr. Pearson emphasized that his public comments in business meetings with shareholders misrepresented the primary and only interest of Valeant's CEO was shareholders' interests, which, according to Mr. Pearson, was incorrect (*Valeant Pharmaceuticals'*

business model, 2016). Mr. Pearson's departure from Valeant Pharmaceuticals did not bring closure to the company's problems and government investigations.

The continuous increase in the price of EpiPen triggered public commotion and activism, leading to Congressional hearings with high-profile media coverage. Although the price increases were gradual (Peters et al., 2017), a two-pack of EpiPen sold for $100 in 2007 while sold for $600 in 2016 (First, 2019). On September 21, 2016, Mylan's CEO, Heather Bresch, presented her testimony about the EpiPen's price controversy before the House Committee on Oversight and Government Reform. She emphasized Mylan's efforts to raise awareness of the danger of anaphylactic reactions and implement programs to facilitate patients' access to EpiPens (*Reviewing the rising price of EpiPens*, 2016). The answers of Mylan's CEO in the Congressional Hearing did not satisfy legislators' inquiries about the reasons for EpiPen's price increases (Miyashiro, 2017), giving the media enough to write about the EpiPen's price issue.

The media can frame any organization within any context for different reasons. The EpiPen price increase affected individuals who needed it and insurance companies, branded drug companies, pharmacies, schools, and the government, making the drug price case one of public interest (Markovich, 2021). The EpiPen price increase issue focused on the economic and the human-interest frames. The media emphasized two aspects: the profit and loss for Mylan and the effect on the persons using EpiPen (Markovich, 2021). During the Congressional hearings, one of the things asked Mylan's CEO was about the relationship between the EpiPen sales price increase and her salary of $19 million a year (Markovich, 2021) and the reason for using a private jet to get to

Washington, DC (Staton, 2016b). The media framed Mylan and its CEO as greedy. In other words, the mass media emphasized the dark side of the EpiPen price increase issue, creating an avaricious and wasteful image of Mylan and its CEO before public opinion.

Mainstream Media

Mainstream media is considered the traditional mass communication instrument through television, radio, and newspapers. During the broadcast era (around the 1970s), radio, television, and newspapers were the media sources the public could select from, and the media message reached a broad public (Feezell, 2018). However, the arrival of many media outlets because of technological advances allowed people to access more news and information about their interests and preferences (Feezell, 2018). The increase in media sources to obtain information and develop opinions caused audience fragmentation, potentially affecting the traditional mass media's impact on public opinion.

The move from mass broadcasting to niche media that allows people to access sources of information relevant to their interests has consequences. Because people have more alternatives to see and stay informed of what they consider significant, traditional mass media struggles to convey its messages to the masses (Feezell, 2018), affecting the awareness of the issues that governments consider prominent at a particular time. From a political and civil perspective, the mass media discloses relevant and reliable information that people use to make informed decisions that might influence government initiatives (Feezell, 2018). In other words, the main concern is that people relying only on

specialized media are less informed audiences who could make decisions affecting society.

Regardless of the arrival of the internet and the consequent rise of social media, many people consider recognized mass media outlets as their primary news source (Hamborg et al., 2019). According to Sillup and Porth (2016), results suggest that newspapers usually provide more thorough coverage than other media sources, an assertion aligned with Weaver (2015), underscoring the reliability of journalism research following ethical practices. Concerning the effect on governmental policies, Weaver suggested that policymakers and politicians usually react to newspaper coverage by considering the narrative as an issue of public interest. In summary, some academics suggest that traditional news media continues to be the source of information for many of the audience, including politicians, who depend on news coverage to make decisions.

Social Media

The advent of the internet, with the resultant social media, changed the traditional mass communication landscape. McCombs et al. (2014) claimed that social media data are voluminous with messages from different sources, and it departs from the relationship between conventional media and its audience. Feezell (2018) suggested that information on social media affects people's perception of relevance, influencing public opinion and political actions. In brief, social media shapes people's perceptions of reality, impacting their decision-making process.

Although social media information differs from mass media information, traditional and social media do not necessarily follow opposite paths. According to

McCombs et al. (2014), news media occasionally triggers social media conversation with the subsequent ignition of news media, creating a bidirectional flow of information between news media and the public. The EpiPen's price issue is an appropriate example of the correlation between traditional news and social media. According to Greene (2017), in early 2016, the news media began circulating stories of parents outraged and alarmed by the high price of EpiPen, considered by many to be a life-saving treatment. An emergency doctor's post to Mylan's CEO Heather Bresch on Facebook about the effect of the high cost of EpiPen in patients with critical adverse allergic reactions became viral (Greene, 2017). The letter transcended not only to all media but also to politicians' inquiries about his testimony (Greene, 2017), denoting the impact of news convergence between mainstream and social media.

Studies differ on the effect of social media on public opinion. Feezell (2018) suggested that information on social media influences people's viewpoints, whereas McCombs et al. (2014) claimed that the internet does not offer a big picture of public opinion. According to McCombs et al., more than 50% of senior citizens do not use the internet, meaning that social media conversation does not include a large part of the U.S. population. In contrast, Jung and Sundar (2016) suggested that senior citizens visualize their Facebook use as a means of communication with relatives, old friends, and people who are challenging to contact. Newman et al. (2021) demonstrated the same finding as Jung and Sundar; the principal reason for senior citizens' use of social networking sites (SNS) is to interact with their loved ones and acquaintances. On the other hand, Etter et al. (2019) suggested that social media allows public and prompt assessment of

companies' performance with the potential impact on the organizations' reputation. Regardless of the demographics and purpose of using social media sites, social media has developed as an influential source of information that can impact public opinion or at least reinforce or undermine individual viewpoints without much supporting evidence.

Political Ramifications

Pharmaceutical drug pricing has been a prominent issue with perceived political consequences for decades. U.S. Senator Estes Kefauver (D-Tenn), leading committee hearings in 1959 and 1960, sought testimony from pharmaceutical companies' CEOs about the rationale for high drug prices (Hancock, 2019; Manning, 2018). Senator Kefauver expressed the committee's fundamental concerns as skyrocketing drug prices, excessive profits in the pharmaceutical industry, and operational inefficiencies leading to high R&D costs (Hancock, 2019; Manning, 2018). Years later, the Clinton Administration proposed a health care reform bill to remove drug manufacturers' tax benefits (Fritz, 1993). President Clinton accused the pharmaceutical industry of taking advantage of sick American citizens through the high prices of medications (Fritz, 1993). During the early days of his administration, President Trump lashed out at the pharmaceutical industry, stating they were "getting away with murder" (Johnson, 2017; Reed, 2019) and promising to drive down drug prices. In other words, pharmaceutical drug pricing has been an issue for decades for the two main U.S. political parties based on the same controversies: high drug prices, pharmaceutical companies' excessive profits, and R&D costs.

The public expects actions from the new administration concerning drug pricing reduction. According to Politico/Harvard T.H. Chan School of Public Health (2021), 87% of Americans consider that the federal government must act to reduce prescription drug prices, making this issue the second priority that followed the passing of a bill for assistance to businesses and individuals affected by the pandemic. These results align with the KFF's health tracking polls through the years that suggest the public perceives, across parties, that drug prices need more government regulation (DiJulio et al., 2015; Kirzinger et al., 2017; Kirzinger et al., 2019; Kirzinger et al., 2023). In summary, regardless of political affiliations, the public favors government intervention in the drug pricing issue.

Consensus between representatives of all parties about the relevance of the drug pricing issue does not necessarily lead to effortless and faster solutions. Regardless of their political affiliation, there is a consensus among U.S. Congress members looking for answers to reduce drug prices as uppermost on their agenda (Politico/Harvard T.H. Chan School of Public Health, 2021). However, disagreements between Democrats and Republicans on how to solve the problem obstruct the efforts to attain a concurred solution (Politico/Harvard T.H. Chan School of Public Health, 2021).

On the other hand, supporters of the two principal political parties (an average of 72%) considered the pharmaceutical industry to have excessive influence in Washington, demonstrating dissatisfaction with the U.S. Congress for the lack of effective measures to reduce drug prices (Kirzinger et al., 2018). The public insight into pharmaceuticals' influence in Washington aligns with Kesselheim et al. (2016), suggesting potential drug

price control measures are unrealistic because of pharmaceuticals' political lobbying. Studies from STAT showed that more than two-thirds of Congress (72 senators and 302 members of the House of Representatives) received donations totaling approximately $11 million for their 2020 election political campaigns (Facher, 2020, 2021). These findings validate the public perception of pharmaceuticals' influence in Washington. The conflicting interests between the pharmaceutical industry as lobbyists and donors and the public as voters represent a challenge to the members of Congress concerning the drug pricing issue.

Financial Performance

The financial performance concept involves the assessment of the financial condition of an organization through financial metrics or financial ratios relevant to a particular industry. Stakeholders such as investors, commercial creditors, employees, bondholders, and managers look for specific financial indicators related to their several interests (Kenton, 2023), showing that one metric does not represent the overall financial performance picture. Different ratios can evaluate several dimensions of financial performance, such as liquidity, profitability, financial leverage, return on investment, and market valuation (Jambulingam et al., 2016). Determination of financial performance involves assessing management skills in utilizing resources to enhance a company's financial condition (Jambulingam et al., 2016; Kenton, 2023). In essence, a financial performance assessment indicates to financial and nonfinancial stakeholders the company's condition within an economic and management context.

Although industries have unique characteristics that distinguish them, they are similar in financial reporting requirements, a foundation for financial metrics. Industries such as pharmaceutical companies are usually public companies required to submit a complete set of financial statements and a Form 10-K to the Securities Exchange Commission (SEC). The three fundamental financial statements are *The Balance* Sheet, *The Income Statement*, and *The Statement of Cash Flows* (Kenton, 2023; Nikolai et al., 2007). The Balance Sheet summarizes the company's assets, liabilities, and equity at a particular date, usually at the end of the accounting period. The income statement summarizes the company transactions for a period of time, usually a month, a quarter, or one year, with a consequent result of operations that can be net income or loss. The Statement of Cash Flows presents the cash inflows and outflows resulting from the operating, investing, and financing transactions. This report reconciles the beginning and ending cash balances as per the balance sheet (Nikolai et al., 2007). Although all financial statements play a fundamental financial reporting role, many analysts give more importance to the Statement of Cash Flow because it derives from the income statement and balance sheet and provides the sources and uses of cash (Kenton, 2023). Typically, companies prepare interim financial statements to update financial and nonfinancial stakeholders about the enterprise's financial condition.

The set of financial statements is one of many filing requirements for public companies like pharmaceuticals. Most U.S. public companies annually submit Form 10-K to the SEC, which provides relevant information for a thorough financial performance analysis and is used by investors to make trading decisions (Hayes, 2021; Kenton et al.,

2023). Form 10-K includes sections with a comprehensive description of the company's operations, risk factors, and operating and financial results for a specific period (Hayes, 2021; U.S. Securities and Exchange Commission, 2021). Also, Form 10-K incorporates a section where the management discusses the results of operations, trends, and risks that could affect the financial results and how management addresses these uncertainties (Hayes, 2021; Kenton et al., 2023; U.S. Securities and Exchange Commission, 2021). Beyond compliance with the SEC requirement and its apparent complexity, Form 10-K allows investors to understand the company's operations, risk elements, and financial condition to make informed decisions to buy or sell shares.

The distinctions between industries due to products, markets, resources, risk, financing sources, logistics, and organizational structures require different assessment approaches for financial performance. Although all the financial ratios are essential within their particular scope, each industry has key financial ratios relevant to its business characteristics that allow comparing performance between companies of the same industry sector and detect the strong points and weaknesses (Kenton, 2023). In other words, although fundamental financial ratios apply to companies in general, financial analysts and stakeholders use the key financial ratios that best assess a particular industry.

Like other industries, the pharmaceutical industry has key financial ratios that provide more information relevant to their type of operations. Pharmaceutical companies are capital-intensive, with one of their more noticeable capital expenditures being the R&D costs of developing new drugs (Blackstone & Fuhr, 2019; Maverick, 2021). Funding those R&D expenses requires high indebtedness and profitability, with the need

to evaluate the returns from the R&D disbursements (Maverick, 2021). Considering that R&D is an essential cost for pharmaceutical companies, the RORC shows the gross profit for every dollar spent for R&D purposes. The RORC ratio calculation is determined by dividing the current year's gross profit by the previous year's R&D expenses (Maverick, 2021). Investors should be careful with the interpretation of the RORC ratio because the development of a new drug takes several years (Frankenfield, 2023) with related R&D disbursements that do not necessarily match the following year's revenues.

A high-capital-intensive industry like pharmaceutical companies requires high profitability to sustain their operations and continued growth. Profitability analysis is necessary to measure managers' use of the resources to generate earnings for the shareholders and creditors who provided funds (Porter & Norton, 2011). Profitability is critical for shareholders because profits affect the likelihood of dividend payments and stock market value. Likewise, creditors care about profits because higher profitability increases the ability to receive principal and interest payments (Porter & Norton, 2011). The fundamental profitability ratios are *operating margin* and *net margin*. The operating margin indicates how much profit a company generates per dollar of sales after considering the cost of goods sold and operational expenses, excluding interest, taxes, depreciation, and amortization expenses (Maverick, 2021; Jambulingam et al., 2016). The operating margin is calculated by dividing operating earnings by revenues or sales, where operating earnings entail earnings before interest, taxes, depreciation, and amortization (EBITDA) (Jambulingam et al., 2016; Maverick, 2021). The operating margin is an essential ratio in a company's profitability analysis.

The net margin, also known as the net profit margin, is another profitability metric. The net margin indicates how much profit a company generates per dollar of sales after considering all expenses (Jambulingam et al., 2016; Maverick, 2021). The net margin is determined by dividing net income by revenues. According to Murphy (2022), the relevance of the net margin rests in that it is a metric that allows comparison with previous years' results of operations and similar companies within the same industry. These comparisons are essential to evaluate management's ability to generate profits and control expenses. Analysts should be aware of once-off transactions that affect profits (Murphy, 2022), impacting the net margin ratio analysis. Although the net margin is one of the indicators of a company's financial health, analysts use it along with other profitability ratios, such as the operating margin, to make a more precise analysis.

Liquidity and solvency are essential for all businesses. It is even more critical for pharmaceuticals with substantial R&D expenses that usually relate to high indebtedness levels (Maverick, 2021). *Liquidity* analysis measures companies' ability to pay their short-term bills and liabilities and how efficiently assets convert to cash without affecting their market value (Hayes, 2022; Porter & Norton, 2011). *Solvency* analysis measures a company's ability to meet its long-term obligations as scheduled, reflecting a viable, long-term, healthy financial condition (Anthony et al., 1998; Hayes, 2022). In summary, creditors and investors use liquidity and solvency measures to determine businesses' capability to pay their debts when they are due.

Paying their obligations when they become due is a sign of good financial health for any company. Although there are various metrics for liquidity, Jambulingam et al.

(2016) and Maverick (2021) suggested the *quick ratio* formula for measuring short-term liquidity for pharmaceuticals. The quick ratio, or *acid test ratio*, calculates current assets minus inventories divided by current liabilities. The quick ratio measures businesses' capacity to pay their current liabilities due in less than a year, with the assets most easily converted to cash, excluding inventories from the equation (Hayes, 2022; Warren, 2011). Different solvency ratios measure companies' ability to pay their financial obligations. Jambulingam et al. and Maverick suggested the *debt ratio* formula for measuring solvency for pharmaceuticals. The debt ratio, or *debt-to-assets*, calculates total debt (short-and long term) divided by total assets (Maverick, 2021; Nikolai et al., 2007). The debt ratio indicates how much of the assets are debt-financed, suggesting the higher the percentage, the higher the financial risk (Hayes, 2022), a critical factor in assessing any pharmaceutical's long-term stability. Like other financial ratios, the liquidity and solvency ratios should be used concurrently to portray a company's ability to pay its debts more effectively, recognize trends, and avoid misinterpretations.

In addition to solvency, investors want to know the type of return a company produces with its equity. The fundamental purpose of the *return on equity* (ROE) ratio is to determine the management's efficiency in using owners' resources to maximize owners' wealth (Blackstone & Fuhr, 2019; Jambulingam et al., 2016; Maverick, 2021; Nandy, 2020). The ROE calculates net income divided by the average total shareholders' equity (Fernando, 2023b; Warren, 2011), suggesting that a higher ROE indicates efficient management of shareholders' capital (Maverick, 2021). However, extreme debt and unstable profitability might cause a high ROE that deserves investigation to prevent a

distorting analysis (Fernando, 2023b; Maverick, 2021). The capital-intensive nature of pharmaceuticals requires their ROE to be good enough to reaffirm investors' confidence that their contributed capital is efficiently managed (Maverick, 2021). Like other financial metrics, the ROE ratio should be used with other return on investment indicators considering the industry sector, competitors, and internal trends to evaluate whether management efficiently used the contributed capital.

Financial and nonfinancial stakeholders are interested not only in a company's ability to pay its debts, the use of capital for wealth maximization purposes, or whether profits comply with targets. A company's market value is essential information for shareholders who want to know the market price of their investments at a specific date. According to Nandy (2020), scholars have included the *market capitalization* concept, known as *market cap*, as one of the financial performance indicators. Market capitalization is the price that a company would be sold based on the market price of its stock at a specific time (Fernando, 2023a; Moreno & Epstein, 2019; Nandy, 2020). Market capitalization calculates total outstanding shares multiplied by the current market price per share (Fernando, 2023a; Moreno & Epstein, 2019; Nandy, 2020; Trombetta, 2021), meaning that changes in the outstanding shares number or price per share impact a company's market capitalization figure. The market capitalization formula presents a simple way of estimating a company's worth (Fernando, 2023a) and an uncomplicated steadiness measurement (Financial Industry Regulatory Authority, 2022). Market capitalization entails a perceived value instead of a company's and its components' actual value (Financial Industry Regulatory Authority, 2022). So, investors should be cautious

when using the market cap because this measure should not be the only reference for their investment-related decisions.

Descriptions of companies usually consider market cap to delimit company sizes. Mega-cap companies with a market value of $200 billion or more are considered the most prominent (Chen, 2022). Large-cap companies have a market value of $10 billion or more, while the mid-cap market values fluctuate between $2 billion and $10 billion. Small-cap companies have a market value between $250 million and $2 billion, and micro-cap, which is $250 million or less (Fernando, 2023a; Financial Industry Regulatory Authority, 2022). The market cap can help investors in their portfolio diversification strategy because a company's size usually relates to its ranking in an industry, indicating different levels of risk (Fernando, 2023a; Financial Industry Regulatory Authority, 2022). Generally, mega-cap and large-cap companies, such as Big Pharmas, are well-known, firmly established companies that do not offer hefty returns for a brief period. However, their reliable share value increases and dividend payments, indicating stability, make them low risk (Fernando, 2023a) but not immune to failure (Financial Industry Regulatory Authority, 2022).

On the other hand, mid-caps include recognized companies with predictable development involving a higher risk than the large caps, with their main attraction being their foreseeable growth (Fernando, 2023a). The small and micro caps are companies established within a specialized market or new industry for a few years (Fernando, 2023a). With fewer resources than the large and mid-caps, these companies are more susceptible to economic struggles affecting the volatility of their stock and becoming

higher-risk investments than the larger and more established companies (Fernando, 2023a). However, small and micro-cap companies are more likely to develop quickly during prosperous economic times (Financial Industry Regulatory Authority, 2022), resulting in high shareholders' returns. Regardless of the market cap, investors should consider using other financial metrics to make the analysis that fits their investment purposes.

The complexity of the pharmaceutical industry influences the fluctuation of its market capitalization. Unlike other industries, pharmaceutical companies' stock prices are associated over time with profitability forecasts of products already in the market and under development (Moreno & Epstein, 2019), making successful R&D outcomes critical for pharmaceuticals' value enhancement. External factors such as new competitors, patent expiration, and generics entrance into the market can affect profitability forecasts, impacting market capitalization (Moreno & Epstein, 2019). Also, according to Moreno & Epstein (2019), pharmaceuticals' profitability forecasts rest on price expectations impacting market capitalization. In other words, internal and external factors that influence pharmaceutical companies' profitability predictions might impact their market capitalization. As with other financial indicators, the market capitalization interpretation requires other metrics and company comparisons within the same industry sector with a similar size.

Relationship Between News and Stock Price Changes

Scholars suggest that news can influence financial and nonfinancial stakeholders' decisions affecting companies' stock prices. According to Strycharz et al. (2018),

although previous studies claim the amount of media coverage relates to the stock market, an outburst of news of a particular issue is not the only reason for stock price fluctuations. Li et al. (2014) suggested that the media impact on companies' stock depends on the companies' attributes and the content of the news or articles. Although there are two types of investors: *noise traders* and *experienced investors* (Vanstone et al., 2019), investors pay attention to news and articles about the companies they have invested in before making trading decisions (Li et al., 2014). Various factors intertwine with the media's influence on investors' trading decisions.

Different factors trigger companies' stock reactions. Although not a financial stakeholder, the media can convey information that might affect investors and nonfinancial stakeholders, impacting companies' stock prices and trading volume (Strycharz et al., 2018). New information might alter investors' beliefs about a company's potential value, affecting stock price, especially when reliable stock price forecasts are critical for investors (Vanstone et al., 2019). The financial press might influence stock reactions, but consumer-related topics might impact stock reactions, too (Strycharz et al., 2018). The public commotion about the skyrocketing price increases on some drugs illustrates that public response to welfare threats might affect the stock market.

Research trends point out the role of emotions in stock trading decisions. Li et al. (2014) asserted that emotions affect investors' decisions, emphasizing that a news article's positive or negative tone can affect emotive or sensitive investors. Li et al.'s assertion aligned with Vanstone et al.'s (2019) claims that sentiment plays a role in stock

modeling. Emotive investors can be affected by the positive or negative tone of the news or by peer feelings following herd behavior concerning investment decisions (Li et al., 2014). Easy access to information, whether through the financial press, news, or the opinions expressed on discussion boards, influences the behavior of following what others do in investment matters (Strycharz et al., 2018). Through this behavior, investors might fail to make a reliable assessment of the possible effect of their investment decisions on their portfolios.

Investors interpret information in diverse ways, resulting in different reactions. Some investors can modify their investing strategies by considering quantitative and qualitative data (Li et al., 2014). This statement aligns with Gowri and Seetha-Ram's (2019) assertion that investors evaluate news within a framework of their expectations, considering their stock ownership, financial resources, time, and risk tolerance. Also, various academics maintain that the media affects the stock market at different levels (Li et al., 2014; Strycharz et al., 2018) because investors differ in their ability to access and evaluate information to make rational financial decisions rapidly (Strycharz et al., 2018). According to Gowri and Seetha-Ram, investors' behavior cannot be standard or reasonable because individuals' biases, characteristics, and expectations prevent a uniform news evaluation leading to stock trading decision making. In other words, factors other than new information can affect investors' rationale when trading their stock.

Investors can underreact or overreact to new information. Chan (2003) identified two lines of reasoning between investors. First, investors do not react quickly or underreact to reliable public information, producing a variation of stock movement.

Second, investors overreact to stock price upsets that cause an overflow of trading volume and consequent volatility in the stock market (Chan, 2003). According to Gowri and Seetha-Ram (2019), investors' underreaction or overreaction to new information has different reasons. Investors underreact to auspicious and reliable public information, demonstrating that good news stimulates them to retain their stock, waiting for a price increase that generates revenue, reducing loss risk (Chan, 2003; Gowri & Seetha-Ram, 2019). Other causes for underreaction are the investors' lack of attention to new information because it contrasts with personal opinions denoting biases. Also, investors ignore the news they consider inconsequential to their interests or that they do not comprehend (Gowri & Seetha-Ram, 2019). On the other hand, Gowri and Seetha-Ram suggested that investors overreact when they have promising, unreliable private information, causing an excess trading volume with consequent stock volatility. In summary, emotions and investors' attributes and circumstances affect investors' trading reactions to the news.

Studies about the predictability of stock prices show mixed results. According to Chan (2003), research suggests stock prices are foreseeable reacting to news or lack thereof, with bad news producing more drift movement than good news. In contrast, Vanstone et al. (2019) suggested that random variables might impact predicted stock prices, affecting investors' expectations. Also, Dong et al. (2022) claimed that studies on the effect of adverse media coverage present conflicting results. Pharmaceutical companies' stock price changes do not follow the usual profitability patterns of other companies. Moreno and Epstein (2019) suggested that pharmaceutical companies' share

price changes often depend on their profitability expectations, which are associated with drug price projections. According to Moreno and Epstein, drug prices constitute an essential element for R&D activities, the foundation of long-term sustainability for the pharmaceutical industry. Pharmaceutical companies' stock price dependency on profitability forecasts was validated when World Preview 2016 reduced the pharmaceutical industry's 2022 sales forecast for the first time since its inception due to the public's reaction to drug price increases (Evaluate Pharma, 2016). To conclude, investors and analysts of the pharmaceutical industry face a significant challenge in assessing the different assumptions about stock price predictions considering the news content, the political environment, the stock market, and the economy.

Summary and Conclusions

Chapter 2 indicates that this study was framed in the intersection of the stakeholder theory, agenda-setting theory, and the political economy of communications approach. These theories converge to explain the power of mass media communication as a relevant stakeholder to raise public awareness and influence the political arena on the social issue of drug price affordability. The media have covered the high drug price issue for decades (Leopold et al., 2016; Reed, 2019; Sillup et al., 2017). However, sharp increases in drug prices caused public turmoil and media frenzy (Gronde et al., 2017), making political waves during an election year, which caused a threat to pharmaceutical companies for possible governmental regulation of drug prices that might impact their revenues.

The literature review addressed the drug prices controversy by contrasting the pharmaceutical industry's support of pricing policy based on expensive R&D costs (Blackstone & Fuhr, 2019; Deb & Curfman, 2020; Shanley, 2016) against multiple sectors claiming lack of affordability of medications and pharmaceuticals' lack of transparency on disclosing R&D costs' composition (Morgan et al., 2020; Shanley, 2016). Also, the literature review illustrated the possible effect of the media on politicians (Trujillo et al., 2018; U.S. Senate, Special Committee on Aging, 2016a, 2016b) and public opinion (Strychartz et al., 2018). The media influences their rationale for making decisions that potentially impact pharmaceutical companies' financial performance, affecting their financial and nonfinancial stakeholders.

Chapter 2 described some metrics used to measure pharmaceutical companies' financial performance and the mixed studies results about the stock value after investors receive new information. Pharmaceuticals' stock price changes relate to the profitability forecasts associated with drug price predictions (Moreno & Epstein, 2019). However, uncertainty permeates the financial performance and predictability of stock prices with news of drug price issues, affecting the pharmaceutical leadership and stakeholders' analysis and decision making. The literature review evaluation sustains additional research about whether news on drug price issues might relate to pharmaceutical companies' financial performance and capitalization, affecting decision making, strategy development, and investors and other stakeholders' interests. The aim of this study was to present the stock behavior of pharmaceutical companies that have received media coverage of their drug price issues, which might affect their financial performance and

capitalization. The study findings might generate a better understanding of the relationship over time between the news of drug price issues and pharmaceutical companies' performance, leading to better decision making.

Through the next chapter, Research Method, I describe and justify the research design and the rationale for selecting the target population, sampling, and data collection procedures. Also, I identify the archival data and the instrument used, along with the data analysis plan and description of the threats to validity. Chapter 3 was designed to substantiate quantitative data collection to address this study's research questions and hypotheses.

Chapter 3: Research Method

Several studies have been published about the sources, ramifications, and potential solutions to the issue of high drug prices. Conversely, there is no research on the association of media coverage of the drug price issue to the pharmaceutical industry's financial performance and capitalization. The purpose of this quantitative correlational study was to examine the relationship over time of mass media coverage of the drug price issue to the financial performance and capitalization of pharmaceutical companies.

In Chapter 3, I present the quantitative research method used to examine whether the mass media coverage of drug price issues relates to U.S. pharmaceutical companies' financial performance and capitalization over time. I provide an in-depth description of the research design and the rationale that justifies its application to this study, followed by the methodology, explanation of the population, sampling, and data collection procedures. Also, I illustrate the archival data information, the selected instrumentation, and the data analysis plan. The last sections of this chapter outline the potential threats to validity, ethical considerations that might apply to this study, a summary, and a brief transition presentation to Chapter 4.

Research Design and Rationale

This study involved the application of a quantitative descriptive-correlational approach to examine relationships over time between drug price news and the financial performance and capitalization of U.S. pharmaceutical companies. Academics have stressed the significance of correlational research as a scientific inquiry tool (Curtis et al., 2016). The correlation measurement offers a more accurate assessment of the level of

relationship between predictor and criterion variables, without inferences of causality implying a variable behavior causes other variable's outcomes (Bryman, 2008). In other words, a correlation between two or more variables does not suggest a cause-effect relationship between the variables.

Frankfort-Nachmias and León-Guerrero (2018) asserted that correlational tests measure the presence, intensity, and direction of a relationship between variables, in alignment with Reinard (2011), who stated that correlational hypotheses pertain to whether there is a modification in one variable when the value of another variable changes. In this quantitative study, I addressed the research questions and hypotheses through the descriptive-correlational approach.

The predictor variable, drug price issue-related news, was the basis for tests at multiple points in time to determine whether relationships exist between drug price news and key financial metrics, addressing hypotheses and research questions. Key financial ratios illustrate the criterion variables, financial performance, and capitalization of U.S. pharmaceutical companies.

The general objectives of quantitative research entail describing events, assessing relationships, and exploring occurrences in the pursuit of certainties to offer explanations that allow prediction and control of events (McGregor, 2019). In contrast, qualitative research objectives require understanding occurrences and appreciating people's interpretations of different truths that emerge during the research process (Bryman, 2008; McGregor, 2019). Consequently, a qualitative design did not fit the current study. A quantitative method was appropriate for this study because it can measure the relationship

between the predictor and criterion variables. The research design includes collecting and analyzing empirical data such as stock prices and financial information relevant to the sampled pharmaceuticals at different dates, considering drug price issue-related news' dates, which fits a quantitative research method.

The hypotheses focus on determining whether the news about drug prices (predictor variable) relates over time to U.S. pharmaceutical companies' financial performance and capitalization (criterion variables). The study examines whether there is a relationship over time between the predictor and criterion variables.

Methodology

Population

The target population of this study was the occurrences of drug price news of U.S. pharmaceutical companies whose price issues on their product caught the media's attention. The study focused on data for 1-year periods from October 1 to September 30 between October 1, 2014, to September 30, 2021. Estimating the target population size is challenging because multiple factors influence what the media might consider a significant drug price issue to deserve coverage. The 15 years of Annual Press Audit Reports (Porth & Sillup, 2019; Sillup & Porth, 2018) reflected an average of 32 articles per year referring to pharmaceutical companies' high drug price issues. However, I cannot consider this average a reliable reference to the sample. Although these articles are related to the pharmaceuticals drug price issue, they do not necessarily provide information about the drug pricing policies of a particular pharmaceutical company. Studies suggest that a topic's importance is only sometimes associated with its media

coverage because the media gives more weight to what seems to catch the audience's attention (Kim et al., 2011, 2015). In other words, drug price-related issues do not guarantee extensive reporting of the situation because the media emphasize the coverage of those events of utmost interest to the general public.

Sampling and Sampling Procedures

The sample consists of 208 news occurrences about U.S. pharmaceuticals with drug price issues in their products. Purposive sampling, or judgment sampling, is a strategy where the collected data are pertinent to the research questions (Bryman, 2008) and germane to the study's purpose (Andrade, 2021). These statements align with Trochim et al. (2016), who established that samples have specific characteristics in purposive sampling. Purposive sampling was used to select data to address the research questions and hypotheses, which pertain to the relationship of the media coverage of drug price-related issues to pharmaceutical companies' financial performance and capitalization. The sampling consisted of news of U.S. pharmaceutical companies subject to the media coverage of drug price issues in their products.

Typically, purposive sampling is used for qualitative research. Researchers whose studies involve individuals or units of analysis with specific attributes relevant to the subject under study use purposive sampling to associate the sample with the research questions (Bryman, 2008; Etikan et al., 2016). Nevertheless, purposive sampling is not only used for qualitative research. Tongco (2007) claimed that purposive sampling could be used with qualitative and quantitative research methods when the selected sample relates to a particular purpose relevant to the study.

Quantitative studies on different domains involved the use of purposive sampling. In a quantitative study to assess whether human, social, and psychological capital impacts women's entrepreneurial alertness (EA), Montiel-Campos (2019) used purposive sampling to select participants, which, in the researcher's judgment, met the requirements relevant to the research question. The research question "Which intangible resources of women middle managers are most critical to the EA process in work contexts characterized by complexity?" (Montiel-Campos, 2019, p. 249) was the starting point to establish the attributes of the sample. The participants were women who had worked for the last 3 years, and their job titles represented middle manager positions (Montiel-Campos, 2019). The researcher selected the sample with these characteristics from female students enrolled in an MBA program at five private universities in Puebla, Mexico.

Purposive sampling can be used for studies where data collection procedures involve qualitative and quantitative approaches. To explore business students' concerns about business intelligence integration in their curriculums, Kissi et al. (2017) used purposive sampling to select participants who, to the researchers' judgment, met the requisites applicable to the research questions. The research questions centered the inquiry on the graduate student's concerns about the importance of business intelligence knowledge, its integration into the business curriculum, and its influence on potential job opportunities (Kissi et al., 2017). Kissi et al. aimed to explore different concerns about integrating business intelligence in the business education curriculums among business administration (MBA) and management information systems (MIS) graduate students.

The sample selection consisted of students from North Cyprus Universities pursuing the MBA and MIS degrees, which are relevant characteristics for the research questions.

Recently, researchers have used purpose sampling for pandemic-related quantitative studies. To explore employees' insights about the flexible work arrangements (FWA) implemented by employers in certain African countries during the pandemic lockdown and its impact on employees' efficiency, Atiku et al. (2020) used purposive sampling and the snowball technique to obtain the sample. The participants worked from their homes in the chosen African countries with access to technological facilities (Atiku et al., 2020). With access to the online survey for this study (Atiku et al., 2020), these participants met the specific requirements to provide reliable information about how FWA adopted by employers affected employees' productivity.

The above three studies show that purposive sampling has been used for research with a quantitative approach. These studies validate Tongco's (2007) assertion that qualitative and quantitative research can use purposive sampling when the study requires a sample with features relevant to its purpose. The examples above present research in social, education, and management fields, showing that the purposive sampling technique can be applied to different domains when the study design requires it.

The media played a vital role in the sample selection. As measured by circulation, the top five U.S. newspapers represented the media. The U.S. top five-ranked newspapers for 12-month periods from 10/01 to 09/30 between 10/01/2014 to 09/30/2018 were *USA Today*, *The Wall Street Journal*, *The New York Times*, *Los Angeles Times*, and *The Washington Post* (Porth & Sillup, 2019; Sillup & Porth, 2016, 2017, 2018). These

newspapers retained top-five status for the 12-month period ending September 30, 2019, 2020, and 2021 (Turvill, 2022).

I obtained the sample from the front-page stories, headlines, and editorials concerning the pharmaceutical industry drug pricing issue. The sampling technique relates to McCombs and Shaw's (1972) assertion that the relevance of items in the print media is based on space and position, highlighting the importance of newspapers headlines and editorials. In alignment with McCombs and Shaw, Sillup and Porth (2018) highlighted that front-page stories and editorials imply relevant news and public beliefs. Also, Porth and Sillup (2019) suggested that newspapers present a variety of issues with thorough coverage.

The sampling procedure followed the methodology used for the Pharm Exec annual press audit within the context of news about high drug prices and pricing-related issues. The purpose of this annual press audit, sponsored by the Arrupe Center for Business Ethics at Saint Joseph's University, was to monitor and analyze pharmaceutical industry issues covered by the media (Sillup et al., 2017). The selected occurrences of drug price news about U.S. pharmaceutical companies were the ones whose product price issues have been exposed in articles by the top five ranked U.S. newspapers, as defined by circulation. I did not select news occurrences of U.S. pharmaceutical companies whose media coverage referred to reasons other than drug-price-related issues.

I used the Walden Library to search articles from the top-five ranked U.S. newspapers related to the drug price-related issue. I used the ProQuest Central database to search through the headlines, editorials, and front-page stories of the top five-ranked

U.S. newspapers. The primary keywords used were *Daraprim*, *drug pric**, *drug price increases*, *drug cost*, *drug expens**, *drugmaker*, *drug manufacturers*, *drug pricing*, *EpiPen*, *generics*, *Mylan*, *pharma**, *pharmaceutical industry*, *prescription drugs*, *prescription prices*, *price gouging*, *Turing*, and *Valeant*. These key terms and their derivatives were used individually and combined to increase the probability of finding relevant and pertinent articles. After searching for articles covering drug price-related issues, I selected those articles that included the name of pharmaceutical companies with a product whose price caught media attention.

Sample Size and Power Analysis

Obtaining an appropriate sample size for a study is essential to any researcher. No straightforward rule defines an optimal sample size (Bryman, 2008). Attaining the ideal sample size is subject to different factors. Resources limitation, exactitude expectations, the purpose of the study, and the selected sampling strategy (Trochim et al., 2016) are some of the issues that affect sample size. According to Kang (2021), improper sample sizes or power can provide incorrect information, leading to misjudgment of evidence. Sample size estimate is highly linked to statistical power (Trochim et al., 2016), stressing that a bigger sample size leads to more robust results.

Statistical power is the probability that the null hypothesis is rejected if the null is false, meaning that the alternative hypothesis is true (Trochim et al., 2016). In a correlational study, the degree of statistical power represents the ability of the researcher to identify a relationship (alternative hypothesis) if that relationship does exist (Faul et

al., 2007). Kang (2021) asserted that low statistical power implies that a researcher may have difficulty rejecting a null or identifying a relationship, when the relationship exists.

To calculate a priori power analysis to estimate a representative sample size, I used G*Power 3.1.9.6, a power analysis program used in many statistical tests of social and behavioral sciences studies (see Faul et al., 2009). According to G*Power 3, the necessary sample size for a bivariate correlational test is $N = 67$. This calculation is based on an error of .05, power = .80, and a medium effect size of .30. The effect size indicates the strength of relationships or differences (Kang, 2021; Trochim et al., 2016). The statistical power of .80 increases the probability that an effect or relationship can be detected, avoiding Type II error in which the null hypothesis is retained when the alternative hypothesis is true (Kang, 2021; Trochim et al., 2016). The sample of 208 occurrences of news about U.S. pharmaceuticals with drug price issues in their products was therefore sufficient to support the proposed analyses.

Procedures for Data Collection

This study did not require recruiting participants for surveys, interviews, or any procedure where people's opinions or their direct participation is necessary. Therefore, there was no need for an informed consent form or disclosure of debriefing or follow-up interview procedures. The study was based on archival data from different sources.

Archival Data

This study involved obtaining archival data that consisted of drug price-related news covered by the U.S. top-five ranked newspapers (defined by circulation). The U.S. top-ranked newspapers as measured by circulation for 12-month periods from 10/01 to

09/30 between 10/01/2014 to 09/30/2018 were *USA Today*, *The Wall Street Journal*, *The New York Times*, *Los Angeles Times*, and *The Washington Post* (Porth & Sillup, 2019; Sillup & Porth, 2016, 2017, 2018). These newspapers retained top-five status for the 12-month period ending on September 30, 2019, 2020, and 2021 (Turvill, 2022). Also, I obtained financial and nonfinancial information of U.S. pharmaceuticals referred to in the sampled news occurrences from their filed Form 10-Ks, 10-Qs, stock indexes, and pharmaceuticals' websites. I collected stock price information of the U.S. pharmaceutical companies at a particular date from NASDAQ, a stock exchange that provides historical and real-time data from public companies.

The search for the U.S. top five-ranked newspapers that I used to select the news occurrences about U.S. pharmaceutical companies with drug price issues in their products was made through the ProQuest Central-Newspapers & Magazines database, establishing the specific date range for the search. I searched for financial information for U.S. public pharmaceutical companies through the SEC website. I collected pharmaceutical companies' financial information from Forms 10-K and 10-Q, which public companies must file with the SEC. Accessing the SEC to search public companies' information does not need a password or unique identification. The public has free access to public companies' financial information in filings submitted to the SEC through the EDGAR database (U.S. Securities Exchange Commission, 2018). Although the SEC does not assure the accuracy of the reports received (U.S. Security Exchange Commission, 2021), regulations require public companies to submit reliable, accurate, and complete information. Conventional wisdom implies that public companies' Forms 10-K and 10-Q

are reliable. Financial data of public companies are submitted under oath to a federal agency and are considered public information. I accessed additional financial or nonfinancial information through companies' annual reports on their websites when necessary.

Instrumentation and Operationalization of Constructs

Drug price issue news was measured by the instances the mainstream media covered drug price-related news. The top five U.S. newspapers, measured by circulation, represented the media. The U.S. top-ranked newspapers as measured by circulation for 12-month periods from 10/01 to 09/30 between 10/01/2014 to 09/30/2018 were *USA Today*, *The Wall Street Journal*, *The New York Times*, *Los Angeles Times*, and *The Washington Post* (Porth & Sillup, 2019; Sillup & Porth, 2016, 2017, 2018). These newspapers retained top-five status for the 12-month periods ended on September 30, 2019, 2020, and 2021 (Turvill, 2022). Sillup and Porth used the top five ranked U.S. newspapers to determine the pharma-related topics most covered by editorials and headlines for their fifteen annual press audit reports. I used Walden Library to access U.S. newspapers through ProQuest Central-Newspapers & Magazines database.

Financial metrics key to the pharmaceutical industry determined the criterion variables: financial performance and capitalization. The financial ratios and stock prices measure business performance from different perspectives. Companies, investors, government, and other stakeholders use these financial metrics to assess their interests from a financial standpoint. I extracted components of the financial metrics from Forms 10-K and 10-Q submitted by the sampled pharmaceutical companies to the SEC on an

annual and quarterly basis. NASDAQ stock exchange was the source of the stock prices of the U.S. pharmaceutical companies that were referred to in the selected occurrences of drug price news.

Data Analysis Plan

For this descriptive-correlational study, I used IBM SPSS Statistics version 28 for analysis and data processing. An Excel spreadsheet was used for data sorting, logging, comments, and organization. Also, I used an Excel Spreadsheet to configure the financial ratios applicable to the sample companies based on the financial information extracted from Forms 10-K and 10-Q filed to the SEC and stock prices based on the NASDAQ stock exchange. I submitted the Excel spreadsheet to advisors for assessment of the reliability of formulas. Data cleaning entailed determining whether the selected articles refer to U.S. pharmaceutical companies whose products' prices were the subject of media coverage.

The following research questions (RQs) and hypotheses guided me to collect data that help me to determine whether the mass media coverage of drug prices relates over time to U.S. pharmaceutical companies' financial performance and capitalization. The predictor variable consists of drug price news. The criterion variables consist of financial performance, represented by key financial ratios of the pharmaceutical industry, and capitalization, calculated as the total of outstanding shares at their market stock price.

RQ1. What is the relationship over time between drug price news and the financial performance of U.S. pharmaceutical companies?

RQ1a. What is the relationship over time between drug price news and the operating margin of U.S. pharmaceutical companies?

$H1a_0$: There is no relationship over time between drug price news and the operating margin of U.S. pharmaceutical companies.

$H1a_a$: There is a relationship over time between drug price news and the operating margin of U.S. pharmaceutical companies.

RQ1b. What is the relationship over time between drug price news and the net margin of U.S. pharmaceutical companies?

$H1b_0$: There is no relationship over time between drug price news and the net margin of U.S. pharmaceutical companies.

$H1b_a$: There is a relationship over time between drug price news and the net margin of U.S. pharmaceutical companies.

RQ1c. What is the relationship over time between drug price news and the quick ratio of the U.S. pharmaceutical companies?

$H1c_0$: There is no relationship over time between drug price news and the quick ratio of U.S. pharmaceutical companies.

$H1c_a$: There is a relationship over time between drug price news and the quick ratio of U.S. pharmaceutical companies.

RQ1d. What is the relationship over time between drug price news and the debt ratio of U.S. pharmaceutical companies?

$H1d_0$: There is no relationship over time between drug price news and the debt ratio of U.S. pharmaceutical companies.

$H1d_a$: There is a relationship over time between drug price news and the debt ratio of U.S. pharmaceutical companies.

RQ1e. What is the relationship over time between drug price news and the return on research capital ratio (RORC) of U.S. pharmaceutical companies?

$H1e_0$: There is no relationship over time between drug price news and the return on research capital ratio (RORC) of U.S. pharmaceutical companies.

$H1e_a$: There is a relationship over time between drug price news and the return on research capital ratio (RORC) of U.S. pharmaceutical companies.

RQ1f. What is the relationship over time between drug price news and the return on equity (ROE) of U.S. pharmaceutical companies?

$H1f_0$: There is no relationship over time between drug price news and the return on equity (ROE) of U.S. pharmaceutical companies.

$H1f_a$: There is a relationship over time between drug price news and the return on equity (ROE) of U.S. pharmaceutical companies.

RQ2. What is the relationship over time between drug price news and the market capitalization of U.S. pharmaceutical companies?

$H2_0$: There is no relationship over time between drug price news and the market capitalization of U.S. pharmaceutical companies.

$H2_a$: There is a relationship over time between drug price news and the market capitalization of U.S. pharmaceutical companies.

I analyzed the financial performance of the U.S. pharmaceutical companies covered in the selected occurrences of drug price news by calculating financial ratios relevant to the

pharmaceutical industry. These metrics evaluate various dimensions of financial performance, such as liquidity, profitability, financial leverage, return on investment, and market valuation (Jambulingam et al., 2016) because one metric is not representative of the overall financial picture.

The following financial metrics measured the financial performance of the sampled pharmaceutical companies:

Profitability ratios: Metrics measure a manager's use of a company's resources to generate earnings for the shareholders and creditors who provided funds (Porter & Norton, 2011). The two profitability ratios that I used are:

$$\textit{Operating Margin} = \frac{\text{EBITDA}}{\text{Revenues}}$$

EBITDA stands for earnings before interest, taxes, depreciation, and amortization, also known as operating earnings.

$$\textit{Net Margin} = \frac{\text{Net Income}}{\text{Revenues}}$$

$$\textit{ROE} = \frac{\text{Net Income}}{\text{Average shareholders' equity}}$$

The ROE is a profitability ratio from investors' perspective that measures investors' gains for each dollar invested (Maverick, 2021).

Liquidity and Solvency Ratios: Metrics measure businesses' capacity to pay their current and long-term liabilities when they are due (Anthony et al., 1998; Hayes, 2022; Porter & Norton, 2011).

$$\textit{Quick Ratio} = \frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}}$$

$$\textit{Debt Ratio} = \frac{\text{Total debt}}{\text{Total assets}}$$

Total debt refers to short and long-term liabilities.

Return on Research Capital Ratio (RORC): Metric indicates the gross profit for every dollar spent for R&D purposes (Maverick, 2021).

$$\textit{RORC} = \frac{\text{Current year's gross profit}}{\text{Previous year's R\&D expenses}}$$

Analysis of the RORC ratio requires considering that developing a new drug takes several years, and the related R&D expenses do not necessarily match the following year's revenues (Frankenfield, 2023).

Market capitalization: The estimated price that a company would be sold based on the market price of its stock at a specific time (Fernando, 2023a; Moreno & Epstein, 2019; Nandy, 2020).

Market Capitalization = Total outstanding shares X current market price per share.

This metric represents a perceived value instead of the company's actual value and components (Financial Industry Regulatory Authority, 2022).

The financial performance analysis was conducted considering the market cap that delimits the company sizes of sampled pharmaceuticals to assess data of companies of similar sizes.

Descriptive statistics illustrated the data characteristics with frequency counts and percentages and measures of central tendency, such as mean, median, and mode, and dispersion measures, such as standard deviation. Correlational tests were used to determine the strength of association and direction between the predictor and criterion

variables. I used the Pearson product-moment correlation when there was an assumption of normal distribution on a pair of variables. Spearman's rho correlational test was used when non normal distribution was assumed on a pair of variables.

The bivariate correlational test used for each of the hypotheses depended on the level of measurement of the predictor and criterion variables in each pair and whether the distribution of the variables was normal. Ratio is the level of measurement of the predictor and criterion variables. I assessed the normality of the distribution of the variables for skewness and kurtosis considering Matore and Khairani's (2020) assertion that when the sample size is ≥ 200, the cut-off value for skewness and kurtosis is ± 2.58. The Pearson product-moment correlation test was used for the pairs of variables with normal distribution assumptions when their skewness and kurtosis values were ± 2.58. When a pair of variables' skewness and kurtosis did not comply with the threshold of ± 2.58, Spearman's rho correlational test was used because the distribution was not normal.

Threats to Validity

A fundamental principle of any research is validity. Validity indicates the soundness of the conclusions of a study (Bryman, 2008), represented in different dimensions, and the importance and priority depend on the type of study involved. Threats to validity involve those factors that question the integrity of the research results.

Internal Validity

Generally, academics consider internal validity in studies within a causal relationship context. Trochim et al. (2016) suggested that internal validity is the estimated certainty of cause-effect relationship outcomes. Rational explanations of causal

relationship assumptions between predictor and criterion variables permeate the internal validity criterion (Bryman, 2008; Isaac & Michael, 1995) as long as no other factors could be considered plausible explanations (Bhandari, 2023; Trochim et al., 2016). This study did not seek to establish assumptions of causal relationships between variables; therefore, it was not required to achieve internal validity within cause-effect parameters.

Some scholars suggest there is a trade-off between external and internal validity. The stronger the internal validity, the weaker the external validity (and vice versa) (Streefkerk, 2023). However, this study has weak internal validity because of the lack of intention to establish assumptions of cause-effect relationships between variables. Although an optimal goal of researchers is achieving validity under different criteria (generalization, relationships, and measurement), the research design and the study's attributes play a central role in the most significant type of validity that the researcher pursues. According to Trochim et al. (2016), internal validity pertains to whether the procedures conducted in experimental studies lead to the results and are germane to the research. The current study was nonexperimental.

Threats to internal validity refer to elements that might contribute to the wrong assumption that study outcomes result from specific procedures (Trochim et al., 2016). This study does not involve an experimental design manipulating independent variables, so it has a low internal validity. The results of this nonexperimental research do not support any inference of a cause-effect relationship between the variables.

External Validity

External validity refers to the ability to generalize the results of a study to other populations within other contexts of location and point in time (Trochim et al., 2016). The nature of this study required that the data selection occur through purposive sampling, also known as *judgmental sampling*. The sample's characteristics must be inherent to answer the research questions and hypotheses, following Bryman's (2008) claim that purposive sampling is a strategy where sampling directly relates to the research questions. In alignment with Bryman, Trochim et al. (2016) suggested that purposive sampling is useful for a population with specific attributes. This study's sampling consisted of news about pharmaceutical companies whose drug prices and pricing policies attracted the media's attention.

The purposive sample targeted the specific population corresponding to the study's problem, research questions, and purpose. This sampling methodology involves the researcher's judgment in selecting the sample units to be evaluated (Laerd dissertation, 2012). This research was limited to news occurrences about U.S. pharmaceuticals whose products' prices or pricing policies caught the media's attention. Although nonprobability purposive sampling was useful in this study's context, its specific sample selection feature might prevent the generalization of the results within other contexts, departing from achieving external validity.

Even though the characteristics of purposive samples limit the sampling method's external validity, purposive samples have some advantages. According to Andrade

(2021), studies involving a population with specific attributes have a more analogous sample, increasing the likelihood of obtaining statistical significance.

Construct Validity

Construct validity refers to the trustworthiness of a study, representing the accurate measures related to the study purpose and answering the research questions. Construct validity refers to the quality of the instrument (Trochim et al., 2016) usually associated with outcomes, but it also relates to the operationalization of all the variables involved in the study. Operationalization is critical because it transforms our definition of a construct into something measurable (Trochim et al., 2016), requiring an accurate description of how variables will be measured (Simon & Goes, 2018), leading to determining whether the instrument appropriately measures what it intends.

This research involved predictor and criterion variables. Fundamental to reaching construct validity is to have the appropriate instrument that accurately measures each variable (Trochim et al., 2016), considering that the measurement strategy is distinctive to the uniqueness of the situation (Leedy & Ormrod, 2019). The operationalization of the variables of this archival study was made through data from public sources such as the SEC, NASDAQ, and U.S. newspapers. The variables entailed gathering archival quantitative data with existing measures regarding news instances and financial ratios.

Threats to construct validity involve elements that might affect inferences that the operationalization of the variables represents the constructs as expected (Trochim et al., 2016). Drug price news was measured by instances of the media covering a U.S. pharmaceutical company’s product price or pricing policy issue. Financial ratios and

stock prices measure the criterion variables of financial performance and capitalization to assess the business performance along different dimensions. Companies, governments, investors, and other stakeholders have used these financial metrics to analyze their interests from a financial perspective. The pharmaceuticals' information used to assess their financial performance and capitalization was extracted from the Forms 10-K and 10-Q that public companies submit to the SEC on an annual and quarterly basis and the NASDAQ stock exchange. Because Forms 10-K and 10-Q have standard structures, I assumed that companies follow uniform specifications concerning the submitted information, promoting reliability and consistency in assessing and comparing financial information.

Ethical Procedures

This study did not require recruiting participants for surveys, interviews, or any procedure where people's opinions or their direct participation is necessary. Therefore, there was no need for an informed consent form or disclosure of debriefing or follow-up interview procedures to safeguard the participants' voluntary participation, safety, and privacy. The study was based on archival data from publicly available sources of information.

I collected data from public sources such as NASDAQ, SEC, U.S. newspapers, and pharmaceutical companies' websites. The data were organized, sorted, and compiled through EXCEL spreadsheets. This information is stored as paper documents and digital facsimiles. No present or potential conflicts of interest might arise from conducting this research impacting its outcomes.

Summary

Chapter 3 presented the quantitative research method I used to explore whether the mass media coverage of drug price issues relates to U.S. pharmaceutical companies' financial performance and capitalization. This chapter included information about the research design and rationale, methodology, procedures for data collection, data analysis, threats to validity, and ethical procedures.

Chapter 3 is the preamble for the next chapter. Chapter 4 focuses on the study results, with a more detailed explanation of the data collection procedures, the statistical assumptions and data analysis, and hypotheses testing to present the main findings.

Chapter 4: Results

The purpose of the current quantitative descriptive-correlational study was to examine the relationship over time between mass media coverage of drug price issues and U.S. pharmaceutical companies' financial performance and capitalization. The aim of the research questions and hypotheses was to determine whether the drug price news relates over time to the financial performance and capitalization of U.S. pharmaceutical companies. I obtained the drug price news from the top five ranked newspapers that represented the mainstream media. Different critical metrics of the pharmaceutical industry measured the financial performance and capitalization of the referred companies.

The following research questions (RQs) and hypotheses were used to determine whether a relationship existed over time between the drug price news and the financial performance and capitalization of U.S. pharmaceutical companies.

RQ1. What is the relationship over time between drug price news and the financial performance of U.S. pharmaceutical companies?

RQ1a. What is the relationship over time between drug price news and the operating margin of U.S. pharmaceutical companies?

$H_0$1a: There is no relationship over time between drug price news and the operating margin of U.S. pharmaceutical companies.

H_a1a: There is a relationship over time between drug price news and the operating margin of U.S. pharmaceutical companies.

RQ1b. What is the relationship over time between drug price news and the net margin of U.S. pharmaceutical companies?

$H_0$1b: There is no relationship over time between drug price news and the net margin of U.S. pharmaceutical companies.

H_a1b: There is a relationship over time between drug price news and the net margin of U.S. pharmaceutical companies.

RQ1c. What is the relationship over time between drug price news and the quick ratio of U.S. pharmaceutical companies?

$H_0$1c: There is no relationship over time between drug price news and the quick ratio of U.S. pharmaceutical companies.

H_a1c: There is a relationship over time between drug price news and the quick ratio of U.S. pharmaceutical companies.

RQ1d. What is the relationship over time between drug price news and the debt ratio of U.S. pharmaceutical companies?

$H_0$1d: There is no relationship over time between drug price news and the debt ratio of U.S. pharmaceutical companies.

H_a1d: There is a relationship over time between drug price news and the debt ratio of U.S. pharmaceutical companies.

RQ1e. What is the relationship over time between drug price news and the return on research capital ratio (RORC) of U.S. pharmaceutical companies?

$H_0$1e: There is no relationship over time between drug price news and the return on research capital ratio (RORC) of U.S. pharmaceutical companies.

H_a1e: There is a relationship over time between drug price news and the return on research capital ratio (RORC) of U.S. pharmaceutical companies.

RQ1f. What is the relationship over time between drug price news and the return on equity (ROE) of U.S. pharmaceutical companies?

$H_0$1f: There is no relationship over time between drug price news and the return on equity (ROE) of U.S. pharmaceutical companies.

H_a1f: There is a relationship over time between drug price news and the return on equity (ROE) of U.S. pharmaceutical companies.

RQ2. What is the relationship over time between drug price news and the market capitalization of U.S. pharmaceutical companies?

$H_0$2: There is no relationship over time between drug price news and the market capitalization of U.S. pharmaceutical companies.

H_a2: There is a relationship over time between drug price news and the market capitalization of U.S. pharmaceutical companies.

The predictor variable for both research questions consisted of the drug price news. Fundamental financial ratios of the pharmaceutical industry represented the criterion variables for the subresearch questions of RQ1. The criterion variable for RQ2 was market capitalization, which is calculated as total outstanding shares times the current market price per share.

Chapter 4 describes the data collection procedure and the sample attributes. The results section contains descriptive statistics and presents the analysis of findings based on different statistical tests organized by research questions and hypotheses. This chapter finishes with a summary of the answers to the research questions and additional analysis.

Data Collection

Walden University approved the study (Institutional Review Board Number 07-22-22-0086967) on July 22, 2022. The data collection process started on July 25, 2022, and finished on April 30, 2023. This process was conducted in three stages, delineated by each archival data source: the top five-ranked U.S. newspapers, the NASDAQ stock index, and the SEC/EDGAR database.

The first stage of the data collection process involved the search for news about U.S. pharmaceutical companies whose drug prices caught the media's attention through the top five-ranked U.S. newspapers. As measured by circulation, the top five-ranked U.S. newspapers between October 1, 2014, to September 30, 2021, were *USA Today*, *The Wall Street Journal*, *The New York Times*, *The Washington Post,* and *Los Angeles Times*. The U.S. pharmaceuticals in these news occurrences are companies registered in the United States or registered in foreign countries with a presence in the United States through the manufacture of products, a significant segment of their business is in the United States, or a material percentage of their revenues is from U.S. sources. These selected pharmaceuticals are companies whose stock trades in the stock market, and they submitted financial reports (10-K and 10-Q) under the SEC requirements.

Searching for drug price-related news involved three search versions through keywords combined with a common element of *drug price* and *pharmaceutical industry* stated in different terms. The first search version focused on drug cost and price increases. Search version two included the names of pharmaceuticals distinguished by their high-profile media cases of drug prices. The last search included the political

spectrum through keywords such as *politic* and Congress**. The three search versions were conducted similarly through 1-year periods from October 1 to September 30 between October 1, 2014, to September 30, 2021.

Limiting the search to the top five-ranked U.S. newspapers, I found 1,310 articles in which front-page stories, headlines, or editorials included keywords used in the search. Articles not referring to drug price-related news of specific pharmaceuticals were automatically excluded from the review. The sample consisted of 208 occurrences of news where drug price issues of U.S. pharmaceutical companies caught the press attention from October 1, 2014, to September 30, 2021. These news occurrences were reported in 145 articles referring to 21 U.S. pharmaceutical companies subject to a media inquiry about the prices of their products.

The second stage of data collection consisted of searching the sampled companies' stock prices at the date of the news that pharmaceutical companies were mentioned in one or more of the top five-ranked U.S. newspapers. I obtained the opening and closing price per share and the volume of traded shares from the NASDAQ stock exchange's historical data tool. When news dates were federal holidays or weekends, I calculated the stock price of those dates as the mean of the closing price per share of the day immediately before and after. I also applied this mean procedure to the volume of traded shares.

The last stage of the data collection process involved searching the financial information of the sampled companies for the dates included in Forms 10-Q or 10-K that public companies must submit to the SEC. I obtained this information through the

EDGAR database. I used the unaudited financial information of Forms 10-Q and the audited financial reports included in Form 10-K to calculate the financial ratios that represent the financial performance.

Data Cleaning

Data cleaning was a continuous process during the data collection procedure. I aimed to determine four fundamental inclusion elements: (a) the selected articles referred to U.S. pharmaceutical companies whose product prices caught the media attention, (b) the U.S. pharmaceuticals referred to in the chosen news complied with the requirements of being public companies whose stock was traded in the stock market, (c) their stock price information at the date of the news was available in the NASDAQ stock index, and (d) the U.S. pharmaceuticals covered submitted the 10-K and 10-Q forms to the SEC.

Initially, the search produced 1,310 news articles; however, their review showed many articles referred to privately held companies and mergers and acquisitions (M&A) or did not mention specific drugmakers. Articles with drug price-related topics such as states' battle on high drug prices, claims of collusion to fix drug prices, roles of pharmacy-benefit managers in drug prices, regulation and control of drug prices, and alliances of patient's advocate groups, were also excluded.

I conducted the data cleaning through the data collection process. The exclusion of articles about U.S. pharmaceuticals involved the three stages of data collection. I determined an exclusion when new data showed the pharmaceutical did not comply with some inclusion requirements. Not all drugmakers mentioned in the top five-ranked U.S.

newspapers complied with the requisites of being public companies, their stock price information was available, or they submitted forms 10-K and 10-Q to the SEC.

Privately held pharmaceuticals with a limited number of shareholders who owned the stock were excluded from the sample. The sample did not include news of U.S. pharmaceuticals acquired and whose stock price information was unavailable at the news date. Articles about pharmaceuticals that complied with business presence in the United States, whose stock information was available in NASDAQ, but whose reports to the SEC were other than Forms 10-K and 10-Q, were excluded from the sample because of the required uniform source of financial information for this study.

Descriptive Characteristics of the Sample

The sample consisted of 208 occurrences in which drug price-related issues of U.S. pharmaceutical companies caught the press attention from October 1, 2014, to September 30, 2021. These 208 occurrences were news reported in 145 articles about 21 U.S. pharmaceuticals subject to press coverage of the prices of their products. All the selected articles and companies complied with the inclusion requirements for the study. Table 1 lists the U.S. pharmaceutical companies whose drug price policies were news from October 1, 2014, to September 30, 2021, in the top five U.S. newspapers and details the number of occurrences of drug price news by company.

Table 1

News Occurrences of Drug Prices of U.S. Pharmaceuticals

Pharmaceutical Company Name	*N*	%
AbbVie Pharmaceuticals, Inc.	11	5.3
Acorda Therapeutics, Inc.	2	1.0
Amgen, Inc.	4	1.9
Amneal Bioscience, Inc.	1	0.5
Aytu Biopharma, Inc.	2	1.0
Bausch Health Companies (Former Valeant)	51	24.5
Biogen, Inc.	8	3.8
Bristol-Myers Squibb Company	4	1.9
Eli Lilly & Co.	18	8.7
Gilead Sciences, Inc.	8	3.8
Horizon Pharma, PLC	4	1.9
Johnson & Johnson	9	4.3
Lannett Company, Inc.	1	0.5
Merck & Co., Inc.	10	4.8
Perrigo	1	0.5
Pfizer, Inc.	30	14.4
Teva Pharmaceuticals Industries Ltd.	4	1.9
Travere Therapeutics (Former Retrophin)	3	1.4
Vanda Pharmaceuticals, Inc.	2	1.0
Vertex Pharmaceuticals Incorporated	1	0.5
Viatris (Former Mylan Pharm)	34	16.3

Note. *N* = 208 occurrences of drug price news

Table 1 shows that Bausch Health Companies (Former Valeant), Viatris (Former Mylan), Pfizer, Inc., and Eli Lilly & Co. were the U.S pharmaceuticals with more occurrences of drug price news in the top five-ranked U.S. newspapers for the period from October 1, 2014, to September 30, 2021. Together, these four pharmaceuticals had 133 drug price news, reaching 63.9% of the 208 news occurrences on drug prices.

Although all the selected articles were about companies within the pharmaceutical industry, the companies have substantial differences in assets, obligations, manufacturing, ranking, and financial resources. As a measure of size leading to reliable comparisons and decision making, investors use market capitalization to assess and contrast companies within their parameters of interest. For an appropriate presentation of companies within the same size range, the selected pharmaceuticals are categorized by the following market cap levels, listed by market value, as shown in Table 2.

Table 2

Market Caps Size and Value

Market cap	Market value
Mega cap	≥ $200B
Large cap	≥ $10B <$200B
Mid cap	≥$2B <$10B
Small cap	≥$250m <$2B
Microcap	<$250m

The market value of a company, known as market capitalization, is calculated by multiplying the number of outstanding shares by the share market price at a specific time. It is considered the market's perception of the company's value (Financial Industry Regulatory Authority, 2022). Although ranges between market cap levels are wide, companies can have changes in their market value, affecting their market cap. Companies might increase their market capitalization through organic growth or acquisitions of new companies, causing a shift to higher market cap levels. Companies with financial struggles can have a reduction in their market capitalization with the possibility of descending to a lower market cap. In other words, market value changes might affect companies' market caps. Some U.S. pharmaceuticals referred to in the 145 articles about drug prices had changes in their market caps. Table 3 lists the number of companies by market cap whose drug price policies caught the media's attention during this study's 7-years period.

Table 3

Pharmaceuticals with Drug Price News During the Seven Periods of Study

Market Cap	YE 9/30/15	YE 9/30/16	YE 9/30/17	YE 9/30/18	YE 9/30/19	YE 9/30/20	YE 9/30/21
Mega cap	2	2	2	2	3	1	2
Large cap	4	8	6	3	3	5	2
Mid cap	0	3	2	0	0	1	1
Small cap	0	2	1	0	0	1	0
Microcap	0	0	0	1	0	0	0

Table 3 shows the number of pharmaceuticals categorized by market caps whose drug prices were news in the top five U.S. newspapers during the 7 years of study. Table 3 illustrates that drug price issues of large-cap pharmaceuticals attracted more media attention in alignment with Table 4, which shows that 67.3% of drug price news occurrences belonged to large-cap pharmaceuticals. Also, Table 3 shows more media scrutiny of pharmaceuticals' drug price issues for the years ended 09/30/16 and 09/30/17, when 15 and 11 pharmaceutical companies, respectively, made headlines for those periods. Table 4 displays the occurrences of drug price news detailed by market cap.

Table 4

Occurrences by Market Cap

Market cap	Occurrences	%
Mega cap	41	19.7
Large cap	140	67.3
Mid cap	18	8.7
Small cap	7	3.4
Microcap	2	0.9

Note. *N* = 208 occurrences of drug price news

The figures in Table 4 are compatible with Table 3 in that large-cap pharmaceuticals received more scrutiny by the top five U.S. newspapers during the study period. Also, Table 4 shows that 87% of the drug price news occurrences refer to U.S. pharmaceuticals with a market value of over $10 billion.

Study Results

This section involves two parts. The first part consists of the descriptive statistics of the essential financial elements of the 21 U.S. pharmaceuticals referred to in the sample of 208 occurrences of news of drug prices from October 1, 2014, to September 30, 2021. The second part illustrates the statistical analysis findings of the hypotheses testing.

Descriptive Statistics

The descriptive statistics are presented below and represent the central tendency measures of the financial elements that compose the different criterion variables. These elements are essential for determining the financial ratios that measure companies' financial performance through different dimensions.

Table 5

Measures of Financial Elements of Mega Cap U.S. Pharmaceuticals

Financial element ($)	Mean	*SD*	Median	Mode
Net income	2,852.3	1,726.2	3,410.0	2,852.3
EBITDA	4,870.6	2,133.6	5,493.0	2,641.0
Net revenues	13,552.7	4,329.0	13,628.0	13,628.0
Total assets	158,700.7	15,801.9	160,640.0	171,615.0
Total debt	94,996.3	15,242.8	96,174.0	111,776.0
Stockholders' equity	63,479.9	11,017.1	65,026.0	59,544.0

Note. Dollar figures presented in millions. Based on 41 occurrences of drug price news of Mega Cap pharmaceuticals. See Table 4 detail.

Table 6

Measures of Financial Elements of Large Cap U.S. Pharmaceuticals

Financial element ($)	Mean	*SD*	Median	Mode
Net income	1,015.3	2,266.2	38.4	-119.8
EBITDA	2463.9	3,140.0	1,309.5	265.0
Net revenues	6,823.2	6,391.6	3,982.0	3,057.1
Total assets	49,092.9	22,699.9	47,662.2	36,538.5
Total debt	36,495.4	20,771.4	37,614.0	24,709.7
Stockholders' equity	12,002.2	9,637.0	11,287.3	11,287.3

Note. Dollar figures presented in millions. Based on 140 occurrences of drug price news of large cap pharmaceuticals. See Table 4 detail.

Table 7

Measures of Financial Elements of Mid Cap U.S. Pharmaceuticals

Financial element ($)	Mean	*SD*	Median	Mode
Net income	-200.6	387.2	-269.9	-512.0
EBITDA	349.9	298.2	440.7	440.7
Net revenues	1,737.9	1,166.2	2,109.0	2,402.6
Total assets	29,265.4	20,111.2	42,333.0	43,529.0
Total debt	25,374.3	17,774.8	30,339.0	40,271.0
Stockholders' equity	2,951.3	3,095.3	3,258.0	3,258.0

Note. Dollar figures presented in millions. Based on 18 occurrences of drug price news of mid cap pharmaceuticals. See Table 4 detail.

Table 8

Measures of financial Elements of Small Cap U.S. Pharmaceuticals

Financial element $	Mean	*SD*	Median	Mode
Net income	-13,939.0	23,008.5	-2,469.0	-2,469.0
EBITDA	24,611.3	62,773.2	-9,196.0	-11,177.0
Net revenues	169,791.0	245,690.0	33,262.0	30,448.0
Total assets	1,031,411.7	1,254,048.9	512,400.0	512,400.0
Total debt	780,746.0	1,294,901.8	212,429.0	212,429.0
Stockholders' equity	293,406.7	148,727.4	299,971.0	299,971.0

Note. Dollar figures presented in thousands. Based on seven occurrences of drug price news of small cap pharmaceuticals. See Table 4 detail.

Table 9

Measures of Financial Elements of Micro caps U.S. Pharmaceuticals

Financial element ($)	Mean	*SD*	Median	Mode
Net Income	-3,446,483.0	0.0	-3,446,483.0	-3,446,483.0
EBITDA	-2,813,115.0	0.0	-2,813,115.0	-2,813,115.0
Net revenues	1,431,809.0	0.0	1,431,809.0	1,431,809.0
Total assets	17,984,697.0	0.0	17,984,697.0	17,984,697.0
Total debt	7,854,561.0	0.0	7,854,561.0	7,854,561.0
Stockholders' equity	10,130,136.0	0.0	10,130,136.0	10,130,136.0

Note. Based on two occurrences of drug price news of microcap pharmaceuticals. See Table 4 detail.

Table 10 illustrates the central tendency measures for the criterion variables. The dates for drug price news occurrences for which the mean, median, and mode were calculated are March 26, 2017, September 18, 2016, and August 26, 2016, respectively. These data reflect a concentration of drug price news in two study periods, from 10/01/15 to 09/30/16 and from 10/01/16 to 09/30/17. Appendix A shows the total drug price news occurrences in detail per the seven periods of the study. The 1-year periods with the most instances of drug price news were from 10/01/15 to 09/30/16 and 10/01/16 to 09/30/17, with 134 instances of drug price news, constituting 64.4% of the total drug price news occurrences for the 7 years included in the study.

Table 10

Descriptive Statistics for the Criterion Variables

Variable	Mean	*SD*	Median	Mode
Operating margin ratio (%)	28.3194	30.57341	34.0572	8.67
Net margin ratio (%)	4.9523	32.56418	2.1095	-3.92
Quick ratio (%)	135.3076	89.29864	108.5943	55.24
Debt ratio (%)	69.4125	16.88188	67.6265	67.63
RORC (%)	1124.3516	1066.99424	637.9260	734.15
ROE (%)	-0.5843	27.79983	0.8241	-1.08
Market capitalization ($)	89,325,645,232	86,320,379,818	56,807,882,249	23,024,202,120

Note. RORC = Return on Research Capital; ROE = Return on Equity

Hypotheses Testing

Before conducting the analysis, I reviewed the Excel spreadsheet with the data to ensure accuracy and completeness. There were no missing values. After importing data from Excel to SPSS 28 software, I recoded values to prepare the data to be analyzed. The

following subsections include the research questions and the statistical tests used to assess each null hypothesis and the results of each test.

Research Questions 1a-1f

RQ1a refers to the relationship over time between drug price news and the operating margin of U.S. pharmaceutical companies. A Spearman's rho correlation was conducted to evaluate the relationship over time between drug price news and the operating margin of U.S. pharmaceutical companies. The relationship between drug price news and operating margin was not significant, $r_s(206) = -.02$, $p = .823$, leading to accepting the null hypothesis, H_01_a.

RQ1b refers to the relationship over time between drug price news and the net margin of U.S. pharmaceutical companies. A Spearman's rho correlation was conducted to evaluate the relationship over time between drug price news and the net margin of U.S. pharmaceutical companies. Drug price news and the net margin ratio of U.S. pharmaceutical companies were moderately positively correlated, $r_s(206) = .33$, $p < .001$. Consequently, the null hypothesis (H_01_b) was rejected. Squaring *rho* to generate the coefficient of determination indicated that drug price news accounts for .022 (2.2%) of the variance in the net margin of U.S. pharmaceutical companies.

RQ1c refers to the relationship over time between drug price news and the quick ratio of U.S. pharmaceutical companies. A Spearman's correlation was conducted to evaluate the relationship over time between drug price news and the quick ratio of U.S. pharmaceutical companies. The relationship between drug price news and quick ratio was not significant, $r_s(206) = -.07$, $p = .337$, leading to accepting the null hypothesis, H_01_c.

RQ1d refers to the relationship over time between drug price news and the debt ratio of U.S. pharmaceutical companies. A Pearson product-moment correlation test was conducted to evaluate the relationship over time between drug price news and the debt ratio of U.S. pharmaceutical companies. The results indicated that the relationship between drug price news and the debt ratio of U.S. pharmaceutical companies was not significant, $r(206), = .04$, $p = .559$, leading to accepting the null hypothesis, H_01_d.

RQ1e refers to the relationship over time between drug price news and the RORC ratio of U.S. pharmaceutical companies. A Pearson product-moment correlational test was conducted to evaluate the relationship between drug price news and RORC ratio of U.S. pharmaceutical companies. Drug price news and RORC ratio of U.S. pharmaceutical companies were moderately negatively correlated, $r(206) = -.43$, $p < .001$. Hence, the null hypothesis (H_01_e) was rejected. Through *R*-squared, I obtained the coefficient of determination, which indicated that drug price news accounts for 0.187 (18.7%) of the variance in the RORC ratio of U.S. pharmaceutical companies.

RQ1f refers to the relationship over time between drug price news and the ROE of U.S. pharmaceutical companies. A Spearman's correlation was conducted to evaluate the relationship over time between drug price news and the ROE ratio of U.S. pharmaceutical companies. Drug price news and the ROE ratio of U.S. pharmaceutical companies were found weakly positively correlated, $r_s(206) = .25$, $p < .001$. Hence, the null hypothesis (H_01_f) was rejected. Squaring *rho* to generate the coefficient of determination indicated that drug price news accounts for 0.031 (3.1 %) of the variance in the ROE ratio of U.S. pharmaceutical companies.

Research Question 2

RQ2 refers to the relationship over time between drug price news and the market capitalization of U.S. pharmaceutical companies. A Pearson product-moment correlational test was conducted to evaluate the relationship between drug price news and the market capitalization of U.S. pharmaceutical companies. Drug price news and market capitalization of U.S. pharmaceutical companies were found moderately positively correlated, $r(206) = .33$, $p < .001$. Consequently, the null hypothesis ($H_0 2$) was rejected. Through *R*-squared, I obtained the coefficient of determination, which indicated that drug price news accounts for 0.107 (10.7%) of the variance of the market capitalization of U.S. pharmaceutical companies.

Additional Analyses

The descriptive statistics showed a concentration of drug price news in two of the 7-year periods of the study. Appendix A illustrates the years ended 09/30/16 and 09/30/17 as the periods with more drug price news, constituting 64.4% of the total news on drug prices for the 7-year study. Due to the intensity of drug price news in a reduced time within the study period, I considered it essential to conduct the same correlational tests within the frame of 10/01/2015 to 09/30/2016 and from 10/01/2016 to 09/30/2017.

The purpose of the additional statistical tests was to assess the relationship between drug price news and U.S. pharmaceutical companies' financial performance and capitalization for the periods under more media scrutiny versus the 7 years of the study. Table 11 illustrates the results of the correlational tests on the relationship between drug price news and these criterion variables from 10/01/2015 to 09/30/17.

Table 11

Statistical Tests Results for the Period from 10/01/15 to 09/30/17 (N = 134)

Criterion variable	10/01/15 to 09/30/17	R^2 or rho^2
Operating margin	$r_s(132) = -.03$, $p = .730$	-
Net margin	$r_s(132) = .38$, $p < .001$	0.146
Quick ratio	$r_s(132) = -.04$, $p = .620$	-
Debt ratio	$r(132) = .11$, $p = .206$	-
RORC	$r(132) = -.52$, $p < .001$	0.272
ROE	$r_s(132) = .40$, $p < .001$	0.138
Market capitalization	$r_s(132) = .19$, $p = .025$	0.087

Note. RORC = Return on Research Capital; ROE = Return on Equity

The concentration of drug price news was also reflected in some U.S. pharmaceuticals. Bausch Health Companies (formerly Valeant), Eli Lilly & Co., Pfizer, Inc., and Viatris (formerly Mylan) had 134 drug price news in total. In other words, 19% of the pharmaceuticals in the study accounted for 63.9% of drug price news. Due to the concentration of drug price news in a reduced number of the pharmaceuticals in the study, I considered it pertinent to conduct the same correlational tests to the four pharmaceuticals with the most significant number of drug price news.

The purpose of the additional statistical tests was to assess the relationship between drug price news and financial performance and capitalization of U.S. pharmaceuticals with more drug price news for the study period. Table 12 illustrates the correlational test results on the relationship between drug price news and Bausch Health

Companies (formerly Valeant) criterion variables for the study period from 10/01/2014 to 09/30/2021.

Table 12

Correlational Test Results for Bausch Health Companies (Formerly Valeant) (N = 51)

Criterion variable	10/01/14 to 09/30/21	R^2 or rho^2
Operating margin	$r(49) = -.70, p < .001$	0.495
Net margin	$r_s(49) = -.48, p < .001$	0.111
Quick ratio	$r(49) = -.15, p = .297$	-
Debt ratio	$r_s(49) = .98, p < .001$	0.916
RORC	$r(49) = -.72, p < .001$	0.514
ROE	$r_s(49) = -.33, p = .017$	0.815
Market capitalization	$r(49) = -.53, p < .001$	0.285

Note. RORC = Return on Research Capital; ROE = Return on Equity

Table 13 illustrates the correlational test results on the relationship between drug price news and Eli Lilly & Co. criterion variables for the study period from 10/01/2014 to 09/30/2021.

Table 13

Correlational Test Results for Elli Lilly & Co (N = 18)

Criterion variable	10/01/14 to 09/30/21	R^2 or rho^2
Operating margin	$r_s(16) = .11$, $p = .667$	-
Net margin	$r_s(16) = .13$, $p = .608$	-
Quick ratio	$r(16) = .58$, $p = .011$	0.338
Debt ratio	$r(16) = .66$, $p = .003$	0.430
RORC	$r(16) = .59$, $p = .010$	0.351
ROE	$r_s(16) = .12$, $p = .625$	-
Market capitalization	$r(16) = .63$, $p = .005$	0.401

Note. RORC = Return on Research Capital; ROE = Return on Equity

Table 14 illustrates the correlational test results on the relationship between drug price news and Pfizer, Inc. criterion variables for the study period from 10/01/2014 to 09/30/2021.

Table 14

Correlational Test Results for Pfizer, Inc. (N = 30)

Criterion variable	10/01/14 to 09/30/21	R^2 or rho^2
Operating margin	$r(28) = .47$, $p = .009$	0.220
Net margin	$r(28) = .29$, $p = .115$	-
Quick ratio	$r_s(28) = -.19$, $p = .311$	-
Debt ratio	$r(28) = -.57$, $p < .001$	0.329
RORC	$r(28) = .28$, $p = .137$	-
ROE	$r(28) = .59$, $p < .001$	0.349
Market capitalization	$r(28) = .39$, $p = .033$	0.152

Note. RORC = Return on Research Capital; ROE = Return on equity

Table 15 illustrates the correlational test results on the relationship between drug price news and Viatris (formerly Mylan) criterion variables for the study period from 10/01/2014 to 09/30/2021.

Table 15

Correlational Test Results for Viatris (Formerly Mylan) (N = 34)

Criterion variable	10/01/14 to 09/30/21	R^2 or rho^2
Operating margin	$r_s(32) = .41$, $p = .017$	0.146
Net margin	$r_s(32) = .40$, $p = .018$	0.157
Quick ratio	$r_s(32) = .34$, $p = .050$	0.022
Debt ratio	$r_s(32) = .36$, $p = .037$	0.206
RORC	$r_s(32) = .34$, $p = .048$	0.095
ROE	$r_s(32) = .40$, $p = .018$	0.155
Market capitalization	$r_s(32) = -.81$, $p < .001$	0.725

Note. RORC = Return on Research Capital; ROE = Return on Equity

Summary

Chapter 4 includes the study results. A descriptive-correlational approach was applied to a sample of 208 drug price news occurrences from the top five U.S. newspapers, reflected in 21 U.S. pharmaceutical companies, to examine if drug price news relates to U.S. pharmaceutical companies' financial performance and market capitalization. The null hypotheses were rejected in four instances, leading to the acceptance of the alternative hypotheses. The results of Spearman's *rho* show a significant moderate positive relationship over time between drug price news and the net margin of U.S. pharmaceutical companies ($RQ1/H_a1_b$). The Pearson product-moment correlational test results show a significant moderate negative relationship over time between drug price news and U.S. pharmaceutical companies' RORC ratio ($RQ1/H_a1_e$). The results of Spearman's *rho* show a significant weak positive relationship over time

between drug price news and the ROE of U.S. pharmaceutical companies ($RQ1/H_a1_f$). The Pearson product-moment correlational test results show a significant moderate positive relationship over time between drug price news and the market capitalization of U.S. pharmaceutical companies ($RQ2/H_a2$). The results of the other hypotheses tested did not reveal significant relationships, leading me to retain null hypotheses for $RQ1/H_01_a$, $RQ1/H_01_c$, and $RQ1/H_01_d$.

In the data collected, 64.4% of drug price news was concentrated from 10/01/2015 to 09/30/2016 and 10/01/2016 to 09/30/2017. Correlational tests showed comparable results with those for the 7-year study period in the strength and significance of the relationships over time between drug price news and different indicators of financial performance and capitalization. The results for the 2-year period showed the same retained null hypotheses.

The data collected indicated that 63.9% of the drug price news referred to only four of the 21 U.S. pharmaceuticals in the study. Correlational test results for these pharmaceutical companies showed stronger relationships over time between drug price news and different indicators of financial performance and capitalization than for the 7-year study period.

Chapter 5 entails analyzing and interpreting the study results and their implications within a theoretical and research framework. Chapter 5 also includes a discussion of the study's limitations. The chapter concludes with recommendations for future research considering the findings and the potential impact on social change.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this quantitative, descriptive-correlational study was to examine the relationship over time between mass media coverage of drug prices and the financial performance and capitalization of U.S. pharmaceutical companies. The study was conducted because of the uncertainty of whether mass media coverage of the drug prices issue relates to U.S. pharmaceutical companies' financial performance and capitalization that may affect decision making, strategy development, and investors and other stakeholders' interests. Regardless of the uncertainty, there is limited literature on the relationship between drug price news and U.S. pharmaceutical companies' financial performance and capitalization.

The data in the sample of 208 occurrences of news about U.S. pharmaceuticals with drug prices issues in their products were collected through purposive sampling. Drug price news was collected from the top five U.S. newspapers, as measured by circulation, for 12-month periods from 10/01 to 09/30 between 10/01/2014 and 09/30/2021. Financial and nonfinancial information of U.S. pharmaceuticals referred to in the sampled news occurrences was obtained from filed Forms 10-Ks, 10-Qs, NASDAQ stock exchange, and pharmaceutical websites.

The results of this study addressed the gap in knowledge of whether the mass media coverage of drug price news relates to the financial performance and capitalization of U.S. pharmaceuticals. The study results uncovered (a) a moderate positive relationship between drug price news and net margin ratio, (b) a moderate negative relationship between drug price news and RORC ratio, (c) a weak positive relationship between drug

price news and ROE, and (d) a moderate positive correlation between drug price news and market capitalization of U.S. pharmaceutical companies. The relationships between drug price news and the operating margin, quick ratio, and debt ratio of U.S. pharmaceuticals were not significant. The frequency of drug price news, time, and political exposure might vary the strength and direction of these relationships. The relationship between drug price news and indicators of financial performance and capitalization is stronger for U.S. pharmaceuticals with superior media coverage than those with less media coverage exposure. Drug price news upsurge for an individual pharmaceutical company does not necessarily relate to other pharmaceutical companies' financial performance and capitalization. Still, it might attract multisector attention to the pharmaceutical industry's drug pricing policies.

Chapter 5 includes analysis and interpretation of the findings and their implications within a theoretical framework. Chapter 5 also contains the study's limitations and recommendations for future research. This chapter finishes with a summary of the findings and the potential contribution to the existing literature on the media's association with pharmaceutical companies' financial results and capitalization.

Interpretation of Findings

This section includes explanations of findings, their analysis and interpretation within the context of the theoretical framework, and a comparison of what has been observed with what has been found in the peer-reviewed literature illustrated in Chapter 2. For decades, scholars have examined the association between media and politics from macro to microangles, single individuals, and specific occurrences (Schulz, 2015).

Initially, I conducted the correlational tests from the macro perspective, represented by the sample of 208 drug price news occurrences for the 7 years under study. After noticing the descriptive statistics results and concentration of drug price news, I conducted correlational tests from specific occurrences and micro perspectives.

The specific occurrences perspective was represented by the period from 10/01/2015 to 09/30/2017, reflected 64.4% of the total drug price news, and included the election year 2016. The four U.S. pharmaceutical companies with more drug price news characterized the micro perspective of individual U.S. pharmaceuticals. The explanation of the findings encompassing the whole sample (macro) is detailed by research question.

Research Question 1 (RQs 1a-1f)

Research question 1a refers to the relationship over time between drug price news and the operating margin of U.S. pharmaceuticals. Operating margin is one of the profitability ratios that measures revenues minus production costs and other variable expenses. The operating margin ratio indicates how efficiently companies manage costs and obtain profit from their central operations without considering interest, income taxes, depreciation, and amortization expenses (Maverick, 2021; Jambulingam et al., 2016). The results showed no significant relationship between drug price news and the operating margin.

Research question 1b refers to the relationship over time between drug price news and the net margin of U.S. pharmaceutical companies. Net margin ratio, or net profit margin, indicates how much net income is earned as a percentage of revenues. The net margin is significant because it suggests the profit rate after deducting all the company's

expenses, including interest and taxes (Jambulingam et al., 2016; Maverick, 2021). The results showed a moderate positive relationship between drug price news and the net margin ratio of U.S. pharmaceutical companies. Drug price news explains only 2.2% of the variance in the net margin of U.S. pharmaceutical companies, which can be interpreted as factors other than drug price news had a moderate association with the net margin of U.S. pharmaceuticals.

Research question 1c refers to the relationship over time between drug price news and the quick ratio of U.S. pharmaceutical companies. As a liquidity ratio, the quick ratio measures companies' ability to pay their daily operating expenses and short-term liabilities with their current assets that can quickly be converted to cash (Hayes, 2022; Warren, 2011). The results showed no significant relationship between drug price news and the quick ratio.

Research question 1d refers to the relationship over time between drug price news and the debt ratio of U.S. pharmaceutical companies. The debt ratio measures the percentage of a company's assets financed by short and long-term debt. The higher the ratio, the greater the risk due to the degree of leverage (Hayes, 2022). The results indicated no significant relationship between drug price news and the debt ratio.

Research question 1e refers to the relationship over time between drug price news and the RORC ratio of U.S. pharmaceutical companies. The RORC ratio measures companies' gross profit from money spent on R&D activities during the previous year (Maverick, 2021). Although this metric was designed to assess how efficiently R&D funds have been used, critics point out that the pharmaceutical industry requires years of

research to develop a new drug, which is not considered in the RORC ratio equation (Frankenfield, 2023). The results showed a moderate negative relationship between drug price news and the RORC ratio of U.S. pharmaceutical companies. Drug price news explains the 18.7% variance in the RORC ratio of U.S. pharmaceutical companies.

Research question 1f refers to the relationship over time between drug price news and the ROE of U.S. pharmaceutical companies. The ROE indicates a company's profitability by measuring the return on dollars invested (Maverick, 2021). In other words, ROE measures management's efficiency in using resources to optimize shareholders' wealth (Blackstone & Fuhr, 2019; Jambulingam et al., 2016; Maverick, 2021; Nandy, 2020). The results indicated a weak positive correlation between drug price news and the ROE of U.S. pharmaceutical companies. Drug price news explained only 3.1% of the variance in the ROE of U.S. pharmaceutical companies, which can be interpreted as factors other than drug price news had a stronger association with the variance in the ROE ratio of U.S. pharmaceuticals.

Research Question 2

Research question 2 refers to the relationship over time between drug price news and the market capitalization of U.S. pharmaceutical companies. Market capitalization measures a company's size based on the total market value of the outstanding shares, determined by the market price per share multiplied by the outstanding shares (Fernando, 2023a; Moreno & Epstein, 2019; Nandy, 2020; Trombetta, 2021). Due to investors determining the price per share, market capitalization is a company's perceived value, not its actual value and all its components (Financial Industry Regulatory Authority, 2022).

The results showed a moderately positive correlation between drug price news and the market capitalization of U.S. pharmaceutical companies. Drug price news explained 10.7% of the variance of the market capitalization of U.S. pharmaceutical companies, which might be interpreted as investors purchasing additional shares with expectations of more revenues because of drug price increases.

Specific Occurrences from 10/01/2015 to 09/30/2017

Descriptive statistics showed a 64.4% concentration of drug price news occurrences in the two one-year periods from 10/01/2015 to 09/30/2017. I ran the same correlational tests for this period based on the agenda-setting theory's fundamental principle of *issue salience*, which establishes that an audience's perception of a topic's importance relates to its coverage frequency (see McCombs et al., 2014). The period from 10/01/2015 to 09/30/2017 showed more instances of drug price news and included the election year 2016. Although the high drug prices and continuous rise have been in the public eye for decades (Leopold et al., 2016; Sillup et al., 2017), the frequent media coverage and the public commotion caught the attention of politicians and policymakers. Lack of attention or action to a public issue affecting voters' wellness might jeopardize political aspirations. This situation aligns with Weaver's (2015) assertion that issues covered by the media are valuable because they can be used for political advantage. Even though the media is considered a secondary stakeholder (Freeman et al. (2007), it can influence decision makers (Strycharz et al., 2018).

The correlational test results for the period from 10/01/2015 to 09/30/2017 showed stronger relationships between drug price news and the net margin, RORC ratio,

and ROE ratio of U.S. pharmaceutical companies than the results for the 7-year study period. Also, the results show a weaker relationship between drug price news and market capitalization from 10/01/2015 to 09/30/2017 compared with the results for the 7-year study period.

U.S. Pharmaceutical Companies with More Instances of Drug Price News

The frequency of coverage rationale was also applied to U.S. pharmaceutical companies with more drug price news during the 7 years of the study. Four U.S. pharmaceuticals comprised 63.9% of the overall drug price news occurrences. Correlational test results for Bausch Health Companies (Formerly Valeant), Elli Lilly & Co., Pfizer, Inc., and Viatris (Formerly Mylan), respectively, revealed positive or negative, moderate to strong relationships between drug price news and different indicators of financial performance and market capitalization. The results indicated no significant relationship between drug price news and some companies' financial metrics. However, the results also showed that drug price news materially accounted for the variance in many financial metrics.

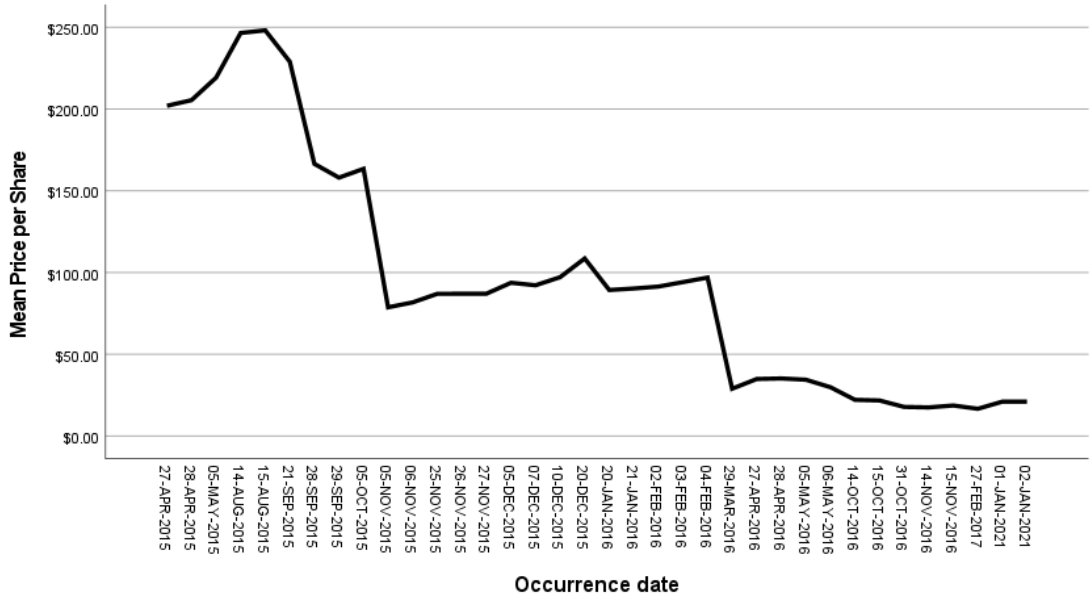
Bausch Health Companies (former Valeant)

Shanley (2016) asserted that pharmaceutical companies that significantly increased their drug prices suffered a decrease in their stock price when the issue was more prominently discussed in the newspapers. Bausch Health Companies (Formerly Valeant), which had 24.5% of the drug price news of this study, had their stock price at $262.52 per share on August 5, 2015, plummeted to $21.96 on August 5, 2016 (Ottoo, 2018). Figure 1 illustrates Bausch Health Companies' stock price behavior through the

news of its drug price issue for the current study's 7-year period. The sharp price increase in some of their products (U.S. Senate, Special Committee on Aging, 2016b) caused public outrage and caught the attention of the media, politicians, and government.

Figure 1

Bausch Health Companies – (Formerly Valeant) Price per Share During Price News



Strycharz et al. (2018) asserted that although previous studies indicated the amount of media coverage relates to the stock market, an upsurge in news of a particular issue is not necessarily the only reason for the stock price variation. Li et al. (2014) suggested that news content and company characteristics also affect share prices. Initial investigation of skyrocketing price increases in some patent-expired drugs (Lynch, 2016) triggered an SEC investigation (Ottoo, 2018) about questionable distribution and accounting practices that led to the reinstatement of financial statements. Michael Pearson, CEO of Valeant (now Bausch Health Companies), was summoned to Congress

hearings on April 27, 2016, to inquire about the drug price increase on some of their products (U. S. Senate Special Committee on Aging, 2016a).

Viatris (Formerly Mylan Pharmaceuticals)

Former Mylan Pharmaceuticals (now Viatris) caught the public, media, and politicians' attention for the constant price increase of its EpiPen drug. This medication treats potentially life-threatening acute allergy reactions that, if not treated immediately with an EpiPen, effects can be lethal for the patient (Rance & Goldberg, 2015; Peters et al., 2017). Therefore, people must acquire EpiPen at a reasonable price in an emergency. According to Miyashiro (2017), 3.5 million Americans receive a prescription of EpiPen annually.

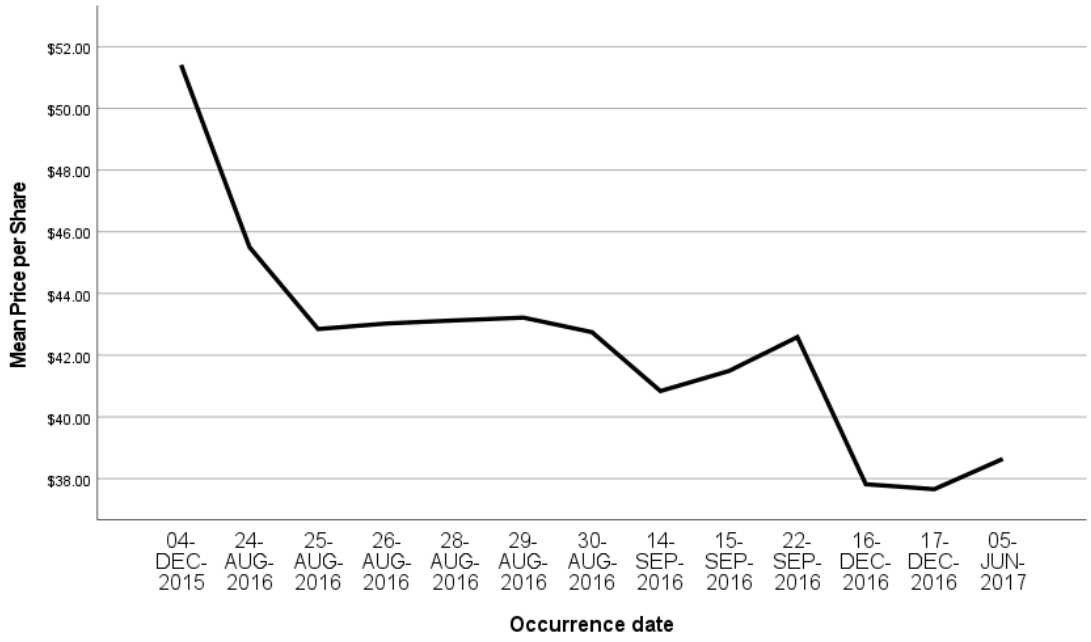
Although EpiPen price increases were gradual (Peters et al., 2017), it was not easy for people to accept that a medication of 45 years that was sold for $100 in 2007 had increased its price to $600 in 2016 (First, 2019), without apparent improvement. The last price increase in 2016 triggered public outrage, leading to Congressional hearings of former Mylan's CEO Heather Bresch on September 21, 2016, who presented her testimony before the House Committee on Oversight and Government Reform. According to Miyashiro (2017), the answers of Mylan's CEO in the Congressional hearings did not satisfy legislators' inquiries about the reasons for EpiPen's price increases, which the media exposed in the news.

Mylan Pharmaceuticals (now Viatris) suffered a decrease in its stock price during the period when the EpiPen price issue received more media coverage. Figure 2 illustrates Mylan Pharmaceuticals' (now Viatris) stock price behavior through the news

of the drug price issue of its EpiPen product. As with Valeant (now Bausch Health Companies), investigating EpiPen's price increase caused greater scrutiny of Mylan's EpiPen's business model (Miyashiro, 2017). Mylan N.V. (now Viatris) faced various lawsuits related to EpiPen in the last quarter of 2016 and during 2017. Through a settlement with the Department of Justice, Mylan agreed to pay $465 million for EpiPen misclassification as a generic drug, which led to paying incorrect lower rebates to state Medicaid programs (U.S. Department of Justice, 2017).

Figure 2

Viatris (Formerly Mylan) Price per Share During Drug Price News



I framed my study in the intersection of stakeholder theory, agenda-setting theory, and the political economy of communications approach. These theories converge to explain the power of mass media communication as a relevant stakeholder to raise public awareness and influence the political arena on the social issue of drug price affordability.

Formerly Valeant Pharmaceuticals (now Bausch Health Companies) and formerly Mylan N.V. (now Viatris) experienced intense media scrutiny because of drug price sharp increases in old products without apparent medical improvement. This situation provoked public commotion that caught politicians' attention during an electoral period.

Valeant Pharmaceuticals and Mylan N.V.'s (now Bausch Health Companies and Viatris, respectively) situations seem to fit what Walgrave et al. (2017) referred to as *media storms*, which denotes an outpouring of media coverage of a particular topic that lasts for a significant period according to the media standards. McCombs and Shaw (1972) claimed that the public perceives that topics prominently covered by the media are relevant. In contrast, Walgrave et al. (2017) stated that politicians' reactions to the news are contingent on the level of media attention.

The frequent drug price news of Valeant and Mylan's products caught the attention of politicians within an election year, leading to Congressional hearings with subsequent investigations of their business models. Valeant and Mylan's cases might be examples of Walgrave et al. (2017) finding that the effects of media information in congressional hearings can have a more significant impact when the media is in a media storm atmosphere than when the coverage of congressional hearings is a usual procedure.

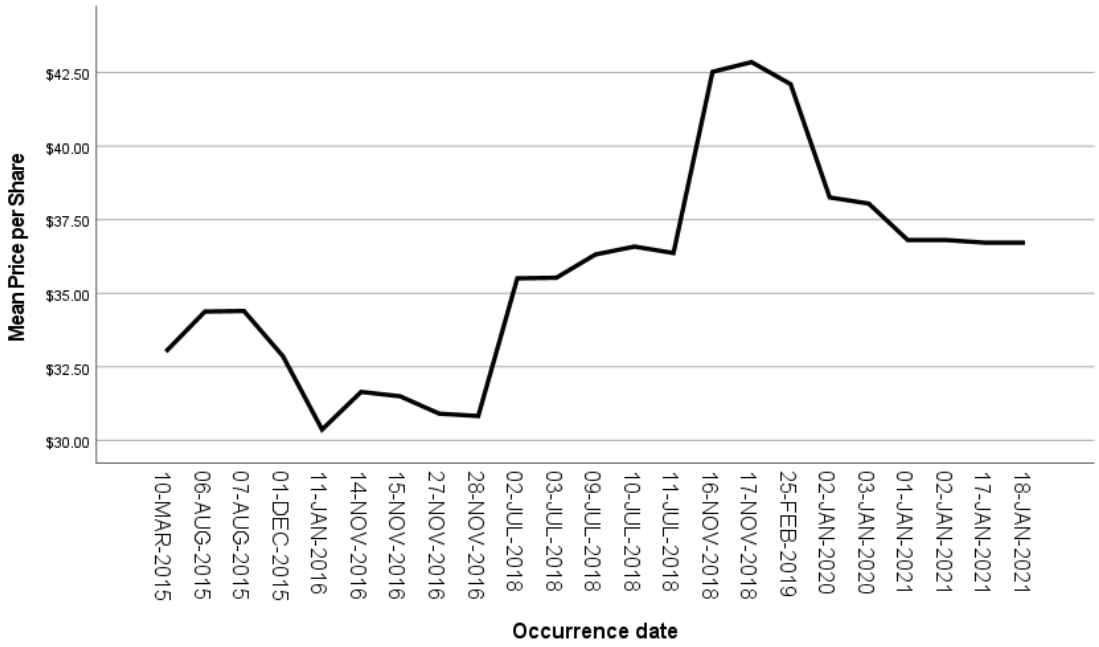
Pfizer, Inc.

Pfizer, Inc. ranked third with 30 drug price news in the study. This pharmaceutical company was the only drugmaker to get drug price news in each of the seven years of the study. Figure 3 illustrates Pfizer, Inc.'s stock price behavior in relation to its drug price

news through the study 7-year period. Appendix 1 shows Pfizer, Inc. drug price news distribution for the study period.

Figure 3

Pfizer, Inc. Price per Share During Drug Price News

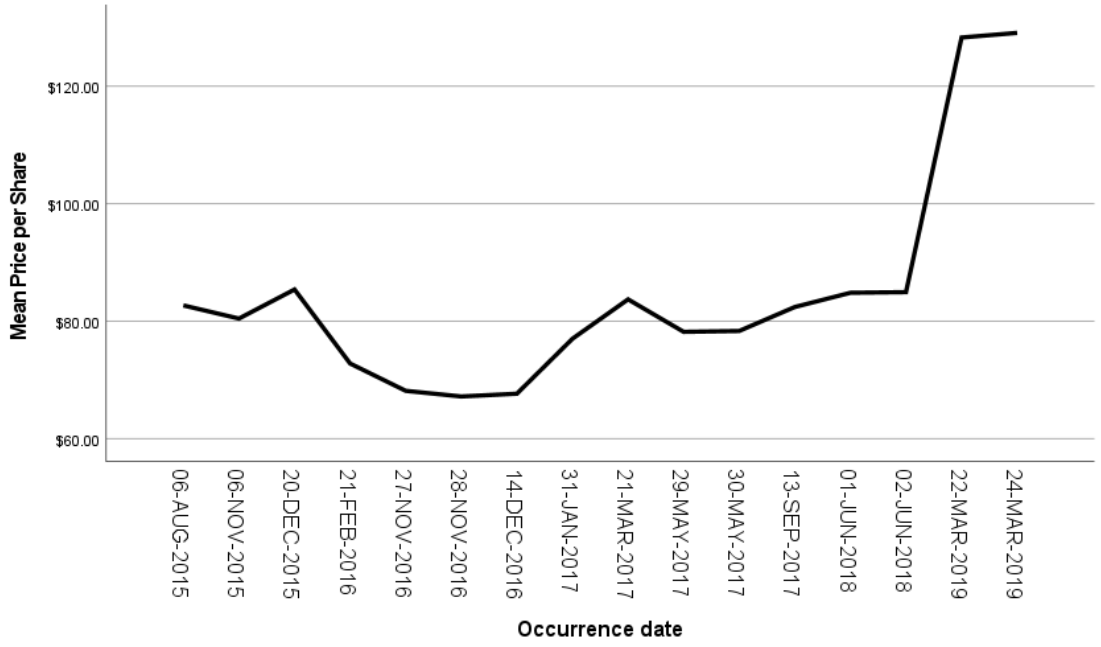


Eli Lilly & Co.

Eli Lilly & Co. ranked fourth with 18 drug price news in the study, with 55.6% of its news concentrated in 1 year ending on 09/30/2017. Figure 4 illustrates Eli Lilly & Co.'s stock price behavior in relation to its drug price news through this 7-year study. Appendix 1 shows the Eli Lilly & Co. drug price news distribution for the study period. Eli Lilly & Co. only had 8.7% of the total drug price news of the study. Figure 4 shows fluctuations in their stock price for the period with more news.

Figure 4

Eli Lilly & Co. Price per share During Drug Price News



Even though Pfizer, Inc. and Mylan, N.V. had similar totals in drug price news for the 7-year study, Mylan's news recurrence in a shorter period caught the public and politicians' attention with the results previously discussed.

This 7-year study included 2016 and 2020 election years. Despite both being election years, 2016 and 2020 show a significant difference in the concentration of drug price news. According to Sillup and Port (2021), the COVID-19 pandemic explains this difference by becoming the *issue salience* whereby the public shifted its attention from drug price concerns to virus-related issues.

Although media can convey information to investors, affecting the volume and market value of stocks (Strycharz et al., 2018), various academics maintain that the media affects the stock market at different levels (Li et al., 2014; Strycharz et al., 2018). Not all

investors make their financial decisions in the same way. Financial resources, stock ownership, time, risk tolerance, individuals' biases, and expectations preclude making a reliable forecast of reaction to the news that might affect a company's financial aspects and stock trade (Gowri & Seetha-Ram, 2019).

My study showed that the relationship over time between drug price news and U.S. pharmaceutical companies' financial performance and capitalization may be affected by (a) frequency of drug price news, (b) time, and (c) political exposure. Also, the relationship over time between drug price news and financial performance and capitalization seems more robust for the U.S. pharmaceuticals, whose media coverage was concentrated over a period. The results of the tests for the period from 10/01/2015 to 09/30/2017 showed a stronger relationship between drug price news and financial performance than the results for the 7 years covered in the study. These results might be interpreted as the concentration of drug price news in a limited period leading to a stronger relationship between drug price news and financial performance and capitalization. However, drug price news of individual U.S. pharmaceuticals does not necessarily relate to other pharmaceutical companies' financial performance and capitalization.

Limitations of the Study

This study was based on archival data from the top five-ranked U.S. newspapers determined by circulation, financial information submitted to the SEC, and stock prices obtained from the NASDAQ stock exchange, so this study did not involve an experimental design. Internal validity refers to determining whether the procedures

conducted in experimental design studies are relevant to the research and lead to the results with certainty that changes in the independent variable might provoke changes in the dependent variable (Bryman, 2008). Based on the inherent cause-effect attribute of internal validity, this study does not have strong internal validity.

I accessed drug price news and U.S. pharmaceutical companies' financial information to attain the study's purpose. I collected media coverage of drug prices from communication databases. Financial databases and pharmaceutical companies' websites were the sources of financial information. The operationalization of the variables depended on these sources of information. Therefore, the reliability of the results is limited by the trustworthiness of these resources.

The core of external validity rests in the generalization of a study's results, whereby the study conclusions can apply to settings other than the context where the research was conducted (Bryman, 2008; Trochim et al., 2016). The purposive sample focused on a specific population with particular attributes concerning the study's problem, research questions, and purpose. This research was limited to occurrences of news about U.S. pharmaceutical companies whose product prices or pricing policies caught the media's attention. Nonprobability purposive sampling was suitable within this study setting. However, the sample selection characteristics might prevent the generalization of the results within other contexts, deviating from attaining external validity.

The sample of 208 occurrences of news about U.S. pharmaceuticals with drug price issues in their products was enough to support the proposed analysis. Initially, there

were 41 pharmaceuticals referred to in the drug price news. Lack of compliance with one or more inclusion requirements led to the exclusion of 20 pharmaceuticals from the study, leaving a reduced number of 21 U.S. pharmaceutical companies that met the inclusion criteria for this study. The reliability of the results is limited by the small number of U.S. pharmaceuticals referred to in the selected articles for which I obtained the financial information.

Recommendations

This study was based on archival data from the top five-ranked U.S. newspapers, determined by circulation. USA Today, The Wall Street Journal, The New York Times, Los Angeles Times, and The Washington Post target diverse audiences with different education levels and interests. The Wall Street Journal is distinguished by its business and political approach. Assumptions of this study included that the media coverage of high drug prices and price increases influence public opinion about the pharmaceutical industry and that the general uproar over the situation can exert political pressure on lawmakers to regulate drug prices.

Dong et al. (2022) claimed that studies on the effect of adverse media coverage present conflicting outcomes. The stock price changes of pharmaceutical companies do not follow the usual profitability pattern compared to other companies whose stock price aligns with the financial results of their operations. Moreno and Epstein (2019) suggested that pharmaceutical companies' share price changes often depend on their profitability expectations, usually associated with drug price projections.

My study was conducted based on the drug price news of the top five-ranked U.S. newspapers with a diverse audience with or without knowledge, skills, and resources invested in the stock market. I recommend a study to determine the relationship between drug price news and the stock price of U.S. pharmaceuticals when drug price news is collected from sources specializing in stock trading and financial analysis. These sources' targeted audience would be individual and institutional investors, venture capitalists, and other financiers with sophisticated knowledge of the public market and access to inside information that might affect investment decision-making at a higher level. Potential research could focus on comparing the strength of the association between drug price news and stock prices of U.S. pharmaceuticals of different market caps. This study would add knowledge to the existing research on stock price behavior, which is challenging to forecast.

This study illustrated how the prolific media coverage of drug price policies for some U.S. pharmaceutical companies became a political campaign issue during the election year 2016, leading to congressional hearings and financial struggles for the companies under significant media scrutiny. The COVID-19 pandemic became the *issue salience* in the election year 2020, when the virus wreaked more havoc, and the vaccine was under development. Although the general public was still concerned about drug prices, the COVID-19 pandemic became the subject of complete prominence and coverage in the pharmaceutical industry (Sillup & Port, 2021).

The drug prices and their continuous increases have been under media scrutiny for decades (Leopold et al., 2016; Reed, 2019; Sillup et al., 2017). I recommend a

longitudinal study to determine whether there is a relationship between drug price news and the stock price behavior of U.S. pharmaceuticals when political intervention is present. This study would add knowledge to the existing research about stock price behavior.

Implications

This study included the intersection of health, communications, and finance disciplines concerning public expectations of whether media coverage of drug price news might influence U.S. pharmaceutical companies' revenues and value. Pharmaceuticals distinguish itself as a capital-intensive industry (Blackstone & Fuhr, 2019; Fernando, 2023b), where innovation is fundamental to developing and improving products that enhance the health and wellness of the population and guarantee the company's growth. Significant expenses require great investments with investors' expectations of substantial returns due to the high risk.

Several factors measure financial performance. Business complexity precludes using only one metric to assess a company's financial health. Jambulingam et al. (2016) asserted that different ratios can evaluate several dimensions of financial performance, such as liquidity, profitability, financial leverage, return on investment, and market valuation. Jambulingam et al. (2016) and Kenton (2023) stated that financial performance entails assessing management skills in utilizing resources to enhance a company's financial condition.

The results of this study suggest that drug price news was moderately related to net margin, RORC, and market capitalization of U.S. pharmaceutical companies. The

study results showed a weak relationship between drug price news and the ROE of U.S. pharmaceutical companies. Frequent and consistent drug price news within a limited time frame may alter the strength and direction of the relationship between drug price news and the financial measures of liquidity, profitability, financial leverage, return on investment, and market value of U.S. pharmaceutical companies. The intensity of political activity might enhance media coverage.

Significance to Theory

Managers and pharmaceutical leaders faced the challenge of juggling conflicting interests, mainly because the public reaction to high drug prices and price increases could produce unintended government intervention, as Glabau (2017) and Kesselheim et al. (2016) pointed out. The current study showed that an upsurge in drug price news for pharmaceuticals might relate to changes in financial performance and market capitalization, especially when politics are intense. Li et al. (2014) claimed that media influence in stock markets varies between companies and news subjects, suggesting that the results would not necessarily apply similarly to all pharmaceuticals.

Budget managers, business analysts, and finance-related professionals can benefit from this study's results by considering the media's role as a possible agent of change that might influence public opinion and attract policymakers' attention. In contrast, Dong et al. (2022) asserted that studies on the impact of adverse media on companies show mixed results, suggesting that adverse media effects depend on the organization's particular situation.

Significance to Practice

High drug prices and continuous price increases portray an unfavorable pharmaceutical industry image. The public upheaval claiming affordable drug prices (Hurst, 2017) in an election year threatened pharmaceutical leadership with potential governmental measures of drug price control (Kesselheim et al., 2016), affecting revenues. At the same time, investors rely on sales increases, supported by drug prices, to maintain or increase their capital investments, which are essential for R&D operations. The media, as a secondary stakeholder, might become an agent of change due to their power to influence public opinion and access to high levels of decision authority in public policy, especially in times of intense political activity.

Accountants, business analysts, budget managers, and finance-related professionals can use this study to be aware that the media, as a secondary stakeholder, might influence pharmaceuticals' financial results and value. The media can access multiple sectors and other stakeholders, such as clients (patients) and the government, through their communication capacity. This study raises awareness that intensive political activity might enhance media coverage.

With knowledge of the media's possible influence on financial results, the pharmaceutical industry's operational managers, budget managers, business analysts, and finance-related professionals should consider the media factor and anticipate the political atmosphere when developing their projections and financial and operational strategies. Business-related professionals in the pharmaceutical industry can use this study to monitor and analyze the media's influence on their organization's financial performance

and capitalization by recognizing trends that assist them in generating confident decisions.

Significance to Social Change

The drug price issue entails a dilemma for many U.S. pharmaceutical companies' stakeholders. Primary stakeholders, such as clients, endure the consequences of price increases on expensive drugs that are increasingly difficult to afford. In contrast, investors, as primary stakeholders who provide the needed capital to sustain innovation, rely on revenue increases that guarantee them a return on their investment of high risk due to their research and regulatory nature. Secondary stakeholders, such as the news media, play a leading role in raising awareness of patients' grievances, creating political pressure on lawmakers to intervene on the drug price issue.

Pharmaceutical industry leaders have faced the uncertainty of whether mass media coverage of the drug price issue relates to U.S. pharmaceutical companies' financial performance and capitalization. This incertitude may affect decision making, strategy development, and investors and other stakeholders' interests. The findings might lead to positive social change within different dimensions. The current research indicated the relationship of drug price news to several financial performance metrics and capitalization of U.S. pharmaceutical companies. Also, the results showed that factors such as frequency of drug price news, time, and political intensive activity may alter the relationship between drug price news and the financial performance and capitalization of U.S. pharmaceuticals.

With the knowledge that media coverage of the drug price issue or price increases might be associated with the financial performance of pharmaceuticals and the role of politics around the media coverage, managers and leaders of the pharmaceutical industry can make informed decisions for the benefit of the pharmaceutical companies and the interests of the internal and external stakeholders. Since pharmaceutical companies are a capital-intensive, innovative industry, superior knowledge and performance are critical for raising the funds to develop and manufacture affordable drugs that contribute to people's better quality of life.

Leaders of organizations other than pharmaceuticals may also benefit from the results of this current study. Consumer advocate groups can assess whether their awareness campaigns have the expected effect on their targets, using the media as support to voice their claims in alignment with political activity.

Research about the predictability of stock prices shows differing results. The assortment of factors that might influence investors' decisions, such as news, ownership interest, financial resources, risk tolerance, trading expertise, and biases, are elements that companies should consider when making decisions. The possible effect of all these factors on investors' decision making has been challenging to predict. The current study will add to the extant literature about the media's relationship to the companies' financial results and market value, considering an intense political atmosphere.

Conclusions

Events related to a significant spike in prices of old drugs without apparent improvement produced a public backlash and caught the media's attention. The massive

media coverage of the drug price issue created political interest during an election year, threatening pharmaceutical leaders with legislation for control of drug prices that would affect revenues and potential capital investments in innovation. Although the drug price issue has been a constant topic in the media for decades (Leopold et al., 2016; Reed, 2019), no published research was found on whether the media coverage of drug prices is associated with U.S. pharmaceutical companies' financial performance and capitalization. The purpose of this quantitative correlational study was to examine the relationship over time between drug price news and the financial performance and market capitalization of U.S. pharmaceutical companies.

The results showed a moderate relationship between drug price news and some profitability indicators, RORC and market capitalization of U.S. pharmaceutical companies. This study showed a weak relationship between drug price news and the ROE of U.S. pharmaceutical companies. The results of the relationships between drug price news, operating margin, and leverage metrics of U.S. pharmaceutical companies were not significant. These relationships may be affected by news frequency, elapsed time in the news, and intensity of political activity. The relationships between drug price news and financial performance and capitalization seem stronger for pharmaceutical companies with more media coverage.

An outbreak of drug price news for an individual pharmaceutical company might not necessarily relate to other pharmaceutical companies' financial performance and capitalization. Still, it might attract the attention of multiple sectors of society to the pharmaceutical industry's drug price policies. As the drug price issue is a topic of public

concern that can become a campaign issue, intense media coverage of drug prices of U.S. pharmaceuticals incentivizes politicians' interest during times of elevated political activity.

This study will add to the existing literature about the media's relationship to the companies' financial results and market value, considering an intense political atmosphere. Managers and finance-related professionals from the pharmaceutical industry could use this study when considering the synergy between the media and politics during the development of strategies involving drug prices, leading to increased pharmaceutical value and enhancement of public wellness.

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Appendix A: Table A1: News Occurrences of Drug Prices per Study Period

Pharmaceutical company name	YE 9/30/15	YE 9/30/16	YE 9/30/17	YE 9/30/18	YE 9/30/19	YE 9/30/20	YE 9/30/21	Total news Occurrences
AbbVie Pharmaceuticals, Inc	0	0	3	0	2	3	3	11
Acorda Therapeutics, Inc.	0	2	0	0	0	0	0	2
Amgen, Inc.	0	3	1	0	0	0	0	4
Amneal Bioscience, Inc.	0	0	0	0	0	1	0	1
Aytu BioPharma, Inc.	0	0	0	2	0	0	0	2
Bausch Health Companies (Former Valeant)	10	31	8	0	0	0	2	51
Biogen, Inc	1	4	0	0	0	3	0	8
Bristol-Myers Squibb Company	0	0	0	0	3	1	0	4
Elli Lilly & Co	1	3	10	2	2	0	0	18
Gilead Sciences, Inc.	3	1	3	0	0	1	0	8
Horizon Pharma, PLC	0	3	1	0	0	0	0	4
Johnson & Johnson	1	1	4	2	1	0	0	9
Lannet Company, Inc.	0	0	1	0	0	0	0	1
Merck & Co, Inc.	0	1	4	4	1	0	0	10
Perrigo	0	1	0	0	0	0	0	1
Pfizer, Inc.	3	3	7	5	4	3	5	30
Teva Pharmaceuticals Industries, Ltd	0	0	0	0	0	2	2	4
Travere Therapeutics (Former Retrophin)	0	3	0	0	0	0	0	3
Vanda Pharmaceuticals, Inc.	0	2	0	0	0	0	0	2
Vertex Pharmaceuticals Incorporated	0	0	0	1	0	0	0	1
Viatris (Fromer Mylan Pharm)	0	30	4	0	0	0	0	34
Total drug price news occurrences	19	88	46	16	13	14	12	208
Occurrences % per period	9.1%	42.3%	22.1%	7.7%	6.3%	6.7%	5.8%	100%