International Journal of Trend in Scientific Research and Development (IJTSRD)
Volume 5 Issue 2, January-February 2021 Available Online: www.ijtsrd.com e-ISSN: 2456 – 6470

Stock Market Reactions to Corporate Social Irresponsibility Actions: Evidence from the US Fast Food Chains Industry

Prince Owusu Sarkodie[1], Tian Gang[1#], Michael Novor Addo[2], Samuel Atingabili[1], Derrick Ashietey Yebuah Wilson[1]

[1]School of Management, Jiangsu University, Zhenjiang, China
[2]Institute of Distance Learning, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

ABSTRACT

Fast food has become an important source of people's daily food. However, corporate social irresponsible (CSIR) events in the fast-food industry in recent years have aroused concerns among stakeholders. Existing literature generally ignores the investor's response to CSIR events in the fast-food industry and the resulting impact on enterprises and the industry. Based on the event research method, this paper studied the investor's response to food-borne infections caused by American fast food companies and analyzed the impact on the entire industry. Research has shown that the CSIR events have had a significant adverse effect on the target company's stock market earnings. At the industry level, although the study found significant impacts in all three cases, the directions of the impacts are different. The directions of the impacts depend on the nature of the CSIR event, investors' assessment of the harm caused by the events, and the degree of trust in the industry. This research expands the corporate social responsibility literature in the food industry. At the same time, it also provides practical significance for the fast-food industry to respond to corporate irresponsible events.

KEYWORDS: *corporate social irresponsibility, food-borne diseases, event study, fast food industry, stock market reaction*

[#]Corresponding Author:
Tian Gang
School of Management, Jiangsu University, Zhenjiang, China

How to cite this paper: Prince Owusu Sarkodie | Tian Gang | Michael Novor Addo | Samuel Atingabili | Derrick Ashietey Yebuah Wilson "Stock Market Reactions to Corporate Social Irresponsibility Actions: Evidence from the US Fast Food Chains Industry" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-5 | Issue-2, February 2021, pp.229-237, URL: www.ijtsrd.com/papers/ijtsrd38418.pdf

IJTSRD38418

1. INTRODUCTION

In a world driven by technological advancements, where timesaving has evolved to form an integral part of human's daily activities, the edge for fast foods has surged greatly in recent times [1]. Quoquab, Sadom [2]Note that fast foods have risen to become an essential source of daily food for most urban dwellers. Freeman [3]nexplains that some socio-cultural reasons have been argued to account for the irresistible edge for fast foods.

The fast-food industry has accordingly expanded in line with the rise in urbanization among developed and developing economies [4]. Royle [5] describes the fast food industry as one of the world's truly global industries with the top ten industry leaders collectively having an annual turnover of nearly US$ 100 billion, whilst employing over five million employees in over a hundred thousand outlets across the globe.

Within the developing and emerging market economies, studies have shown that incidences of corporate social irresponsibilities persist in different sectors of their economies[6]. The fast-food sector has equally not been spared. Al-Mazrous [7] examined incidences of corporate misconducts leading to food poisoning in the Kingdom of Saudi Arabia and found that food-related infections such as Salmonella species, Escherichia coli and Norwalk are some common pathogens that are linked to ill-handling of food items by fast-food operators in the country especially in the summer months and Hajj seasons. In Sub-Saharan Africa, Omari and Frempong [8], found that most fast food consumers in Ghana exercise utmost caution when patronizing from fast food joints. The study established that the etreme use of artificial flavor and pesticide residue in vegetables, creates some irresponsible actions that raises health concerns about foods served at fast-food joints. These incidences are not peculiar to developing countries alone as[9] assert that food control authorities in Europe have reported several incidences of offences of food business operators selling products against European food laws.

Thus, the edge to protect the general public by offering foods devoid of harmful pathogens are essential in the restaurants and fast foods industry [10].Steiner, Steiner [11] assert that it is the responsibility of a firm to create wealth through ways that are devoid of harm and protects stakeholders. This is further elaborated by Lantos [12] as he argues that firms

are expected to engage in actions that ensure mutual respect to all and avoid harm & injury. To assure the public of wholesome foods, consumer safety remains the number one priority at both the firm and regulatory level.

Aside from the palpable harmful effects to consumers as a result of being exposed to irresponsible actions of fast-food chains, occurrences of these irresponsible acts can similarly pose serious economic, environmental, and financial consequences to stakeholders. Economy-wise, incidences of irresponsible practices among fast-food chains may lead to the temporary or permanent closure of the restaurant resulting in loss of jobs, incomes and lawsuits against individuals and the firm as a whole. Socially, intense media coverage erases positive consumer and investor sentiments towards a particular brand[13].

The impact of irresponsible actions of fast food chains resulting in foodborne infections on stock market value may work its way through several means. Irresponsible acts may send a signal to investors that sound operational guidelines are not maintained. These events also attract stricter scrutiny by the relevant regulatory agencies and other stakeholders and may further attract unbudgeted expenditures. Such occurrences also lead to loss of goodwill, reputation, and other gains made[2]. All these cumulatively impacts on the market performance of the affected entity.

Overall, restaurants and diners in the US and other highly industrialized nations are considered to be among the safest around the globe [13]. Despite this, the US fast food industry is still plagued by irresponsible behaviors by industry participants, leading to outbreaks of infections that undermine consumer trust. According to statistics in the United States, about 48 million people suffered from foodborne illness, about 3,000 of them died each year; there are 350 food safety incidents a year on average in the United States, and the economic loss caused by food pollution is as much as US$152 billion[14]. These events have consequently demonstrated the vulnerability of the industry and highlighted the key challenges facing the industry as well as the relevant statutory authorities.

Numerous studies in financial literature have focused on the determinants of stock price volatility [15-18]**.** Other researchers have also employed some techniques to investigate the reaction of stock market prices to announcements and/or discovery of economic events, corporate misconducts, environmental & health news, dividend announcements, and technological breakthroughs [13, 19, 20]**.**Jain and Zaman [21]suggest that these studies which are recurrent topics in financial literature have extensively shown that firms' value decline following the discovery of an adverse or negative event and vice versa.

Despite the existence of numerous studies that have made several attempts to establish the link between negative events and their impacts on stock market prices, to the researcher's best knowledge, there is a paucity of studies examining stock market reactions to irresponsible actions of fast-food chains. Deák and Karali [22], investigated stock market reactions to environmental news in the food industry. The Research, however, focused on the broader food industry and did not narrow down to the US fast-food sector given its dominance in recent times. This area is thus left unexplored.

This study attempts to bridge the gap in existing literature. Specifically, this paper makes original contributions in the following areas. Firstly, this research has contributed to CSIR research by advancing the understanding of investors' reactions to negative events in the fast-food industry; secondly, as far as we know, this is the first study of the capital market's response to the social irresponsibility of fast-food companies in the United States. The event study method helps to identify the impact of the social irresponsibility on the incident company and other companies of the industry from the perspective of investors. Finally, this paper can provide practical insights for other countries and industries facing similar challenges to reduce corporate social irresponsibility.

The remaining sections of the study are organized as follows. Chapter two explains a review of the relevant literature. Chapter three presents the research methodology used in carrying out the study. Chapter four explicates the findings of the study whilst the last chapter concludes the study and offers policy recommendations.

2. MATERIAL AND METHODS

2.1. Data Type and Sources

In consonance with prior studies[13, 20, 23]this current study adopts secondary data for its analysis. Secondary data utilized were entirely stock market prices of the main target firm Chipotle Mexican Grill (CMG)V and four other competitors within the fast-food industry, all of which are listed on the New York Stock Exchange (NYSE), as well as data on the NYSE Composite Index. These datasets were obtained for the periods 2015, 2017, and 2018. Over these three years, the main target firm, Chipotle, was cited for some irresponsible acts resulting in the E. coli outbreak in 2015, Norovirus in 2017, and Clostridium perfringens in 2018.

2.2. Variable Description and Measurement

Similar to most researchers that have employed the event study methodology, this study utilized stock prices of the selected firms and the market index as its primary variables. The closing stock prices of Chipotle Mexican Grill (CMG), McDonald's (MCD), Yum Brands (YUM), Restaurant Brands International (QSR), and Domino (DPZ) were used as proxies to indicate the prices of the selected firm's stocks. The daily closing figures of the NYSE Composite Index was also utilized as a proxy to signify the performance of the broader market. The secondary set of variables utilized in this study are the stock market return and the market return. These variables are subsequently computed from the primary variables mentioned above. Both the stock market return and the market return are computed as the daily change in the stock market price and market index respectively relative to the previous day's figure. They are expressed mathematically as;

$$SR_t = \frac{P_t}{P_{t-1}} - 1 \quad (1)$$

$$MR_t = \frac{I_t}{I_{t-1}} - 1 \quad (2)$$

Where *SR* and *MR* denote stock market return and market return respectively, *P* and *I* denote the closing price of a stock and market index respectively, and *t* represents the current time.

2.3. Event Study Methodology

Following [24] but with modifications, the steps considered in performing the event study methodology are discussed in the ensuing sections. The modification was created to allow the researcher to narrow the event window from 40 days to 15 days. This was because insider information is uncommon to incidences of CSIR actions of fast food businesses compared to dividend announcements as studied by [24]. Event study methods involve the identification of timelines within which events unfold. These timelines include an estimation period, observation period or event window, and event day.

Estimation period denotes a time horizon that is unaffected by the event of interest but it is required to estimate a model of normal stock market performance. It is therefore useful for determining the normal behavior of stock market variables. This study employed a 100-day estimation period in all cases.

Event window represents the periods surrounding the event day. It consists of days before and/or after the day on which a predefined event, news, or occurrence took place. Within this period, a researcher examines if the event had an impact on the stock prices. This study adopted -5/+10 framework as its event window representing 5 days before the event and 10 days after the event.

Event day is the date a specified event or an occurrence took place or a news publication was made which is believed to have some impact on equity returns. The researcher identified three separate dates as event days on which some customers of Chipotle were taken ill from E. coli, Norovirus, and Clostridium perfringens infections on 19th October 2015, 13th July 2017, and 26th July 2018 respectively.

2.3.1. Estimation of Normal Returns

This study adopted the market model in estimating a stock's normal returns over the estimation period. "Normal returns" denotes the expected daily return on a stock. The market model suggests a steady linear relationship exists between the market return and an individual stock market return. The market model is specified as;

$$\bar{R}_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (3)$$

With E $[\varepsilon_{it}] = 0$ and Var $(\varepsilon_{it}) = \sigma_i^2$

Where $\bar{R}_{it}$ and R_{mt} denote expected day *t* returns on stock *i* and the market return respectively; α_i and β_i represent the constant and slope terms of a linear regression model for stock *i;* and ε_{it} is the disturbance term for stock *i* at day *t.*

2.3.2. Estimation of Abnormal Returns

The abnormal return (AR) for an individual stock *i*is the prediction error arising from the variations between the observed return and the expected normal return estimated from the market model[25]**.** It is estimated as;

$$AR_{it} = R_{it} - \bar{R}_{it} \quad (4)$$

Equation (4) can further be expressed as

$$AR_{it} = R_{it} - (\alpha_i + b_i R_{mt}) \quad (5)$$

Where AR_{it} represents the abnormal return of stock *i* at day *t*; *a* and *b* are regression estimators of α and β respectively from equation (3).

For a group of stocks or events, there is the need to estimate the average abnormal return in a bid to examine the impact of the event(s) on firm(s)' stock market performance. The average abnormal return is defined as;

$$AAR = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \quad (6)$$

Where *AAR* denotes average abnormal return and *N* represents the total count of individual stocks or events.

2.3.3. Estimation of Cumulative Abnormal Return

Testing for the persistence of the effect of the specified event, occurrence, or news on stock market prices during the event window, the cumulative abnormal return (CAR) is estimated from the AR for each given stock[25]**.** Thus the CAR is the cumulative abnormal returns over the event window. It is expressed as;

$$CAR_{i,(t_1,t_2)} = \sum_{t=T1}^{T2} AR_{it} \quad (7)$$

Similarly, for a group of stocks or events, the average of the cumulative abnormal returns is estimated as;

$$ACAR_{i,(t_1,t_2)} = \frac{1}{N}\sum_{i=T1}^{T2} CAR_{it} \quad (8)$$

Where *CAR* and *ACAR* are cumulative abnormal returns and average cumulative abnormal returns respectively; $T_1$and T_2 are periods in the event window such that T_1 is greater than or equal to the lower bound of the event window and T_2 is lesser than or equal to the upper bound of the event window for both the pre and post-event day ends.

2.3.4. Hypothesis Testing

Based on the core underlying premise of an efficient capital market in an event study method, capital markets are assumed as possessing the capacity to ascertain the effect of new information on estimated future cash flows. Thus, if such information is relevant to stock market prices, ARs and CARs will be found to be significantly different from zero [19]. Consequently, granting that an AR is easily detectable, it ought to be shown statistically that the resultants are not realized coincidentally or via biased time series [24].

In an event study methodology, to test the null hypothesis that the ARs or CARs are the same as zero, a t-test statistic is computed under an assumption that the test statistics are identically distributed independent random variables [23]**.** The t-statistic is computed for each stock for each day within the event window for pre and post-event day abnormal and cumulative abnormal returns. Under the null hypothesis, the t-test statistic is specified as;

$$t = \frac{AR_{it}}{(\sigma_{it}^2(T_1,T_2))^{\frac{1}{2}}} \sim N(0,1) \quad (9)$$

$$t = \frac{CAR_{it}}{(\sigma_{it}^2(T_1,T_2))^{\frac{1}{2}}} \sim N(0,1) \quad (10)$$

Where $(\sigma_{it}^2(T_1,T_2))^{\frac{1}{2}}$ is the standard deviation of the error terms or abnormal returns calculated from the 100-day estimation period before the event window.

3. RESULTS

The study tested for the statistical significance of the abnormal returns (AR) and cumulative abnormal returns (CAR) in the event window using the t-test statistics. This enabled the researcher to identify periods within the event window that possessed significant ARs and CARs. Tables 1 and 2 shows a summary of the test results of the event study methods employed for answering the study's hypotheses.

Table 1: Abnormal return and cumulative abnormal return showing the impact of foodborne illness on CMG stock returns

	Outbreak of E. Coli in 2015				Outbreak of Norovirus in 2017				Outbreak of Clostridium in 2018			
Days	AR	t-test	CAR	t-test	AR	t-test	CAR	t-test	AR	t-test	CAR	t-test
-5	0.01865	1.52468	0.01865	1.52468	0.00549	0.41482	0.00549	0.41482	0.00176	0.06204	0.00176	0.06204
-4	0.00715	0.58464	0.02580	2.10932 **	-0.00006	-0.00441	0.00543	0.41041	-0.01232	-0.43329	-0.01056	-0.37126
-3	-0.04239	-3.46652 ***	-0.01660	-1.35720	-0.01499	-1.13296	-0.00956	-0.72255	0.00759	0.26680	-0.00297	-0.10446
-2	-0.00370	-0.30293	-0.02030	-1.66013 *	-0.02746	-2.07603 **	-0.03702	-2.79858 ***	-0.02405	-0.84540	-0.02702	-0.94986
-1	-0.00611	-0.49974	-0.02641	-2.15988 **	-0.00243	-0.18373	-0.03945	-2.98230 ***	-0.00638	-0.22416	-0.03339	-1.17402
0	-0.00576	-0.47118	-0.03218	-2.63106 ***	0.00692	0.52347	-0.03253	-2.45884 ***	-0.01644	-0.57808	-0.04983	-1.75210 *
1	-0.01957	-1.60028	-0.05175	-4.23134 ***	-0.01341	-1.01385	-0.04594	-3.47269 ***	0.05576	1.96042 **	0.00593	0.20832
2	-0.05397	-4.41293 ***	-0.10571	-8.64426 ***	-0.00901	-0.68127	-0.05495	-4.15396 ***	-0.01702	-0.59856	-0.01110	-0.39024
3	-0.03318	-2.71291 ***	-0.13889	-11.35717 ***	-0.04238	-3.20383 ***	-0.09733	-7.35778 ***	-0.07730	-2.71786 ***	-0.08840	-3.10810 ***
4	-0.00678	-0.55449	-0.14567	-11.91166 ***	-0.00928	-0.70162	-0.10661	-8.05940 ***	0.02164	0.76078	-0.06676	-2.34732 ***
5	0.01587	1.29796	-0.12980	-10.61370 ***	-0.04493	-3.39691 ***	-0.15154	-11.45632 ***	0.03642	1.28050	-0.03034	-1.06682
6	-0.00288	-0.23541	-0.13268	-10.84911 ***	-0.02864	-2.16529 **	-0.18018	-13.62161 ***	-0.00231	-0.08125	-0.03265	-1.14807
7	-0.01276	-1.04314	-0.14543	-11.89225 ***	-0.01408	-1.06451	-0.19427	-14.68612 ***	0.02093	0.73577	-0.01173	-0.41230
8	-0.00980	-0.80172	-0.15524	-12.69397 ***	0.02205	1.66675 *	-0.17222	-13.01937 ***	-0.00110	-0.03874	-0.01283	-0.45104
9	-0.01204	-0.98487	-0.16728	-13.67884 ***	-0.02270	-1.71587 *	-0.19492	-14.73524 ***	0.01690	0.59406	0.00407	0.14302
10	-0.03439	-2.81229 ***	-0.20167	-16.49112 ***	0.02749	2.07801 **	-0.16743	-12.65723 ***	-0.00125	-0.04410	0.00281	0.09892
R-Sq		0.93070				0.95873				0.72012		
Std Err		0.01980				0.02194				0.02798		

*Note: * represents significance at the 10% level; ** represents significance at the 5% level; *** represents significance at the 1% level;*

Source: Research findings (2020)

Table 1 provides summaries to aid in examining the impact of the irresponsible acts of Chipotle resulting in the outbreak of three foodborne illnesses in 2015, 2017, and 2018 on the stock market performance of the fast-food chain. Regarding the outbreak of E. coli in 2015, the study uncovered significant negative ARs on days 2, 3, and 10 in the post-event day period at the 1% significance level. Using a CAR of 5-day pre-event day window and 10-day post-event day window (CAR -5, 10), the study uncovered a significant negative CAR from the event day through today 10 in the post-event day period at the 1% level of significance. CAR on the last day of the event window was -20.17%, significant at 1%.

For the outbreak of Norovirus in 2017, varying levels of significance were obtained for the ARs. Significant negative ARs were discovered on days 3 and 5 (at 1% significance level), days 6 and 10 (at 5% significance level), and days 8 and 9 (at 10% significance level). However, the CARs showed significant negative results on the event day and over the entire 10-day post-event day window (at the 1% level of significance). On day 10 of the post-event day period, a CAR of -16.74% was recorded at 1% significance level.

Finally, in 2018 when Clostridium perfringens foodborne infection was associated with Chipotle, a significant negative AR was observed on the third day of the post-event day window at 1% level of significance. On the event day, a CAR of -0.05% was discovered at the 10% significance level. Significant negative CAR was also uncovered on days 3 and 4 during the post-event day window at the 1% level of significance.

A plot of the three CARs associated with the three foodborne outbreaks showed that E. coli and Norovirus outbreaks in 2015 and 2017 respectively resulted in a steep downward trend of the CAR curves. Thus the CAR of CMG dropped continuously over the event window and failed to post a recovery. The CAR associated with the outbreak of Clostridium in 2018 remained relatively steady in the event window as declines on the pre-event day window was followed by a sharp recovery in the post-event day window. Figure 1 shows the CAR of the three foodborne illnesses associated with Chipotle plotted against the event window.

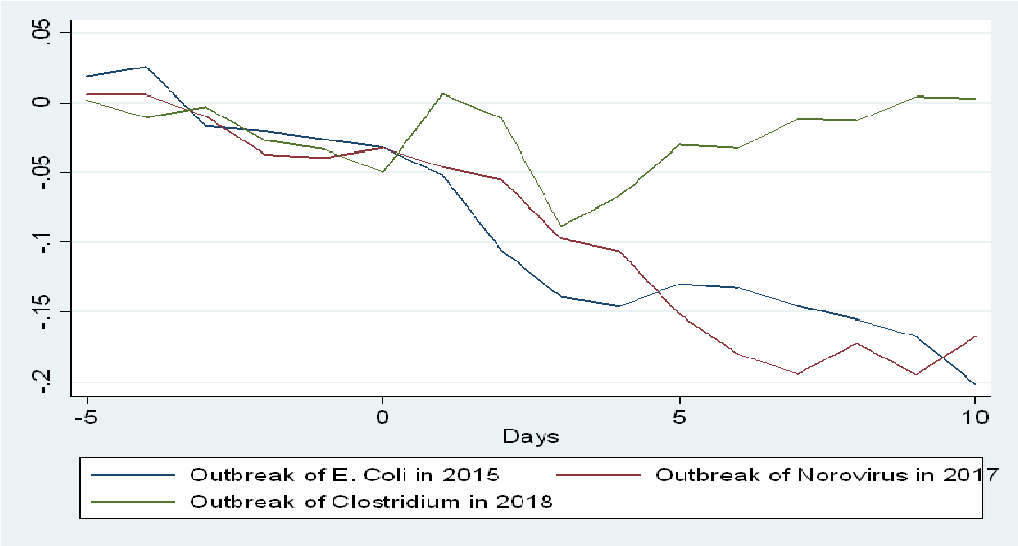

Figure 1: Plot of cumulative abnormal return of CMG
Source: Research findings (2020)

Table 2: Average abnormal return and average cumulative abnormal return showing the impact of foodborne illness on the fast-food industry

	Outbreak of E. Coli in 2015				Outbreak of Norovirus in 2017				Outbreak of Clostridium in 2018			
Days	AAR	t-test	ACAR	t-test	AAR	t-test	ACAR	t-test	AAR	t-test	ACAR	t-test
-5	0.00652	0.66781	0.00652	0.66781	0.00155	0.23345	0.00155	0.23345	-0.00500	-0.71794	-0.00500	-0.71794
-4	0.00576	0.58936	0.01228	1.25718	0.00834	1.25248	0.00990	1.48592	0.00442	0.63371	-0.00059	-0.08423
-3	-0.01031	-1.05477	0.00198	0.20241	-0.00059	-0.08790	0.00931	1.39802	-0.00695	-0.99750	-0.00754	-1.08172
-2	-0.00392	-0.40105	-0.00194	-0.19865	0.00065	0.09765	0.00996	1.49567	-0.01641	-2.35483 ***	-0.02394	-3.43655 ***
-1	0.01376	1.40789	0.01181	1.20924	-0.00553	-0.83064	0.00443	0.66503	-0.00403	-0.57814	-0.02797	-4.01469 ***
0	0.01178	1.20533	0.02359	2.41457 ***	-0.00897	-1.34728	-0.00454	-0.68224	-0.01000	-1.43590	-0.03797	-5.45059 ***
1	0.00216	0.22131	0.02575	2.63588 ***	-0.00488	-0.73332	-0.00943	-1.41557	0.00416	0.59777	-0.03381	-4.85281 ***
2	-0.00845	-0.86479	0.01730	1.77109 *	-0.00577	-0.86632	-0.01520	-2.28188 **	-0.00634	-0.91015	-0.04015	-5.76296 ***
3	0.00805	0.82421	0.02536	2.59529 ***	0.00302	0.45345	-0.01218	-1.82843 *	0.00295	0.42303	-0.03720	-5.33992 ***
4	0.00256	0.26208	0.02792	2.85738 ***	-0.00007	-0.01078	-0.01225	-1.83921 *	0.01276	1.83186 *	-0.02444	-3.50806 ***
5	0.01781	1.82341 *	0.04573	4.68079 ***	0.00057	0.08550	-0.01168	-1.75371 *	0.00564	0.80906	-0.01880	-2.69900 ***
6	0.00966	0.98851	0.05539	5.66930 ***	0.00025	0.03702	-0.01143	-1.71669 *	0.00291	0.41757	-0.01589	-2.28143 **
7	0.00745	0.76207	0.06283	6.43137 ***	-0.00575	-0.86267	-0.01718	-2.57936 ***	-0.00265	-0.37984	-0.01854	-2.66128 ***
8	0.00196	0.20093	0.06480	6.63229 ***	-0.01332	-1.99940 **	-0.03049	-4.57876 ***	-0.00895	-1.28472	-0.02749	-3.94600 ***
9	-0.01402	-1.43510	0.05078	5.19719 ***	-0.01482	-2.22460 **	-0.04531	-6.80336 ***	0.01442	2.07026 **	-0.01307	-1.87574 *
10	-0.00871	-0.89178	0.04206	4.30542 ***	-0.00369	-0.55404	-0.04900	-7.35740 ***	0.00913	1.31013	-0.00394	-0.56560
R-Sq		0.78713				0.82010				0.69338		
Std Err		0.01032				0.00784				0.01317		

*Note: * represents significance at the 10% level; ** represents significance at the 5% level; *** represents significance at the 1% level;*

Source: Research findings (2020)

The study also sought to establish the existence of a contagion effect on the entire US fast food industry as a result of the outbreak of the three foodborne infections associated with Chipotle. Table 2 presents a summary of average abnormal returns (AAR) and average cumulative abnormal returns (ACAR) of the four fast-food chains listed on the NYSE representing the industry.

Regarding the event of the outbreak of E. coli in 2015 associated with consumers patronizing the services of Chipotle, the AAR of the four fast-food chains recorded a significant positive figure at the 10% level of significance on day 5 of the post-event day window. A positive and significant ACAR at the 1% level of significance was discovered on the event day. AnACAR of +2.36% was found on the event day. This trend was also observed throughout the post-event day window where significant positive results at the 1% level of significance were observed. However, on day 2 of the post-event day period, a positive and significant figure was observed at 10% level of significance. ACAR uncovered at the close of the post-event day window was +4.21% significant at the 1% level.

Concerning the outbreak of Norovirus in 2017 resulting from consumers eating from some restaurants of Chipotle, the study discovered negative AAR significant at the 5% level on days 8 and 9 during the post-event day window for the four competitors of Chipotle. Varying levels of significance were also discovered in the ACAR in the post-event day window. A negative ACAR significant at the 5% level of significance was uncovered on day 2; a negative ACAR significant at the 10% level on days 3, 4, 5, and 6 were revealed; and finally, the last 4 days of the post-event day window recorded a negative ACAR significant at the 1% level. ACAR at -4.90% was realized on the last day of the event window.

With regards to the event in 2018 where some consumers after patronizing the services of Chipotle were found to be infected with Clostridium perfringens, the study's result revealed that the four competitors of Chipotle recorded anACAR of -3.80%

significant at the 1% level on the event day. Similarly, negative ACARs significant at various levels were uncovered throughout the ensuing 9 days after the event day.

Figure 2 depicts a pictorial trend of the ACARs of the four fast-food chains showing the impacts of the three outbreaks over the event window. It is observed that the outbreak of Norovirus in 2017 impacted negatively on the ACARs of the four competitors as the ACAR of the industry trended downwards over the event window without exhibiting any signs of recovery. It is also observed that concerning the outbreak of Clostridium perfringens in 2018, the ACAR of the fast-food industry followed a downward trajectory in the pre-event day window. A resistance was, however, formed on the event day after which the ACAR of the industry climbed up steadily in the post-event day period. Finally, concerning the outbreak of E. coli in 2015, the ACARs of the fast-food industry stayed on an upward trajectory in most parts of the entire event window.

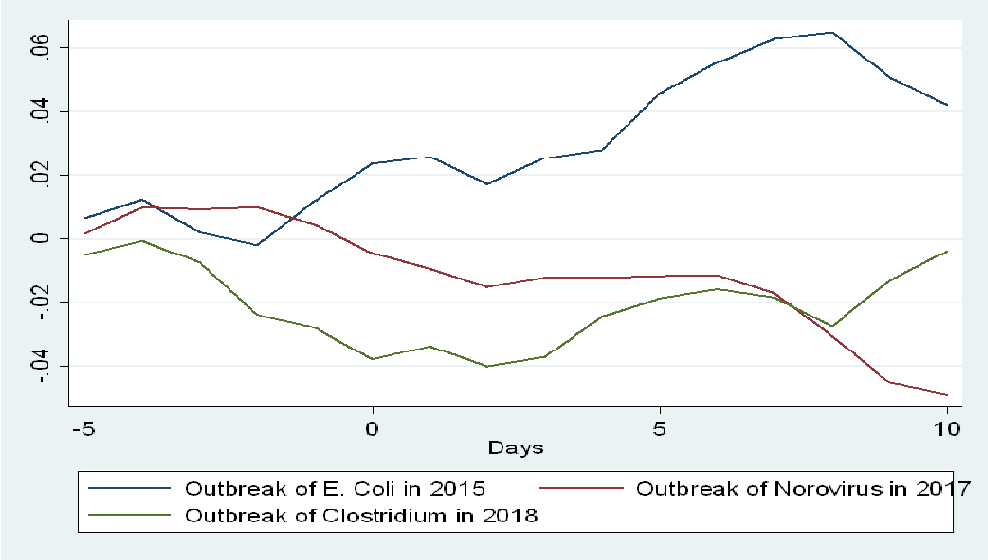

Figure 2: Plot of average cumulative abnormal returns of the fast food industry
Source: Research findings (2020)

4. DISCUSSION

The first specific objective of the study sought to investigate stock market reactions to Chipotle's stock following the discovery of three irresponsible actions leading to an outbreak of foodborne infections. Traditionally, for event studies, we expect events and news with negative implications to have an adverse impact on the stock market returns of the affected stock.

With regards to the outbreak of E. coli in 2015, the study found significant negative AR and CARs on the event day and event window. This discovery validates revelations made by [26] who through an exploratory study on Chipotle affirms that after the challenges faced by Chipotle in 2015, its stocks fell by 41% from its 2015 summer high. This discovery further validates the findings of [22] and [13] who through event studies found evidence to back the assertion that negative events impact adversely on stock market returns.

Regarding the outbreak of Norovirus in 2017, the Loudoun County Health Department attested that over one hundred individuals feel sick after eating from one of Chipotle's outlets in Virginia. Although the study found no significant AR on the event day, a significant and negative CAR was found on the event day and was maintained through the entire post-event day window. This findings, thus, follows a similar trend as observed in 2015 where E. coli outbreak was associated with purchases made at some Chipotle fast food joints. The underlying conclusion is that shareholders stand ready to sell their stocks when there is news of irresponsible acts leading to food poisoning.

In the second half of 2018, public health investigators at the Delaware General Health District and the Ohio Department of Health probed a Clostridium perfringens outbreak linked with one of Chipotle's joint in Ohio. For this event, a significant and negative CAR was uncovered on the event day and only a fewer number of significant negative results observed in the post-event day window indicating relatively unresponsive reactions to the event.

This comes on the back of robust measures undertaken by the management and board of Chipotle to swiftly implement strategies that seek to minimize the overall impact of future outbreaks on the operations and stock performance of Chipotle. Walker and Merkley [26] posit that Chipotle uses promotions to sway back customers after an incidence of foodborne illness has hit the firm.Harris, Ali [10] point out that unlike other food companies that have been hit with foodborne infections, which eventually resulted in their collapse. Chipotle's proactive response after the incident helped restore consumer and investor confidence. Therefore, holders' of Chipotle stocks remained calm despite the outbreak as they anticipated that the company's stock will trend steadily.

The discovery of the general unresponsiveness of the stocks of Chipotle to the outbreak of Clostridium perfringens in 2018 agrees with the findings of [27] who revealed that stock market reactions to events depended on some factors. Javid [27]demonstrated that as against expectations, negative or undesirable events may have a positive, adverse, and no impact on stock market prices depending on several factors including the operations of firms, the correlation of

the event to the firm, the form of the event, and among a host of others.

The second specific objective of the study sought to examine investors' reaction to the fast-food industry's stocks if a quoted fast-food firm has been discovered to have engaged in an irresponsible act leading to an outbreak of foodborne infection. Ordinarily, empirical evidence has shown that no specific conclusion can be established as to the decisions that investors are likely to make as investors could either buy or dump the stocks of fast food companies currently not involved in an irresponsible action.

The study found evidence to back the assertion that investors increase their purchases of other fast-food stocks when a member of the industry has been identified as having been involved in an irresponsible act. This phenomenon was observed with the outbreak of E. coli in 2015 when Chipotle was linked with the foodborne infection. The study found no significant average abnormal return (AAR) on the event day, however, a significant and positive average cumulative abnormal return (ACAR) was found on the event day for CMG's four competitors. Accordingly, positive and significant ACARs were found in the entire post-event day window.

As the outbreak of the foodborne illness impacted adversely on the operations and hence the stock returns of Chipotle, investors and stockholders of other fast-food chains expected patrons of Chipotle to switch to other competitor firms. Subsequently, the market prices of the four sampled competitors surged. Thus, shareholders did not anticipate a contagion effect on the wider fast food industry. Existing literature has shown that a company's irresponsible actions may have two effects on other companies within the same industry; contrast and contagion effect. A contrast effect was thus observed with this event as the stocks of Chipotle returned negative results whilst competitor stocks recorded positive returns.

As regarding the outbreak of Norovirus in 2017 in which Chipotle was identified as the source of the foodborne illness, the study found significant and negative ACAR on the second day of the post-event day period and was sustained in the remainder of the window. The discovery of negative AAR and ACARs indicated a possible contagion impact of the foodborne infection associated with Chipotle on the wider fast food industry. Furthermore, an inspection of the market return of the NYSE Composite Index revealed that the wider market struggled during the event window.

Regarding the outbreak of Clostridium perfringens in 2018, the study found a significant and negative ACAR on the event day. The negative and significant ACAR observed on the event day was sustained in the post-event day window. This is similarly attributable to a potential contagion effect of the irresponsible act of Chipotle leading to the outbreak.

The discovery of the contagion effects on the wider industry as to the events in 2017 and 2018 is attributable to the relatively larger number of persons who reported ill following the incidence of foodborne illnesses. Public records revealed by the appropriate state agencies indicated that over 135 and 650 patrons of Chipotle were infected with Norovirus and Clostridium in 2017 and 2018 respectively. The alarming number of persons who were affected reduced the confidence level of holders of fast food stocks. This shows that when the CSIR event has a greater impact, it will cause investors to panic, which will cause a crisis of trust in the entire fast food industry and choose to abandon the industry's stocks, bringing contagious effects to the fast-food industry.

5. CONCLUSION

The study draws the following conclusions. In the particular case of the target firm – Chipotle, the study found evidence suggesting that irresponsible actions leading to the outbreak of foodborne infections caused a significant and negative ARs and CARs of its stocks. This paints a picture that investors expect irresponsible acts resulting in outbreaks of foodborne illnesses to impact negatively on the future cash flows, as well as pose possible disruptions to the operations of the affected fast-food chain thereby affecting its stock performance.

At the industry or competitors level, although the study found a significant ACARs in all three cases, the direction of the impact varied. For the incidence in 2015, market watchers expected other industry members or competitors of Chipotle to attract the customers of the affected firm. This is because the CSIR incident was not directly related to the fast-food industry itself. Investors, therefore, maintained their confidence in the entire industry. As Chipotle did not respond swiftly and reasonably after the incident, consumers shifted their demand to their competitors, resulting in positive average cumulative abnormal returns for the competitors.

However, with the occurrence of later CSIRevents in 2017 and 2018, investors feared a possible contagion effect on the entire fast-food industry. Due to the relatively large scope of these incidents, investors worried that poor food handling will cause a large number of infections, thus losing confidence in the fast-food industry and hence dump the industry's stocks, thus making the CSIR incident have a contagious effect on the industry.

The study, therefore, draws an inference that irresponsible actions of a particular fast-food chain leading to an outbreak of foodborne infections have an impact on the broader industry, however, the direction of the impact depends on the nature of the CSIR incident, investors' assessment of the harm of the incident, and the degree of trust in the industry.

Based on the discoveries established in this study which provided evidence that incidences of irresponsible actions have spillover effects on the stock returns of the affected firm as well as the industry, the study makes the following recommendations. According to the US's Centers for Disease Control and Prevention, one in six persons in the US falls sick from contaminated food yearly. This alarming statistics calls for stricter regulations and effective implementations of these regulations on players in the food and consumables line of business. Regulations should be supported by appropriate sanction regimes andan enforcement body to ensure strict adherence. This will help to check players in the food, consumables, and food-handling value chain businesses.

Financial management roles of corporations lay a critical duty on the board and management of corporations to

achieve the shareholder wealth maximization goal. This is further iterated by the agency and stakeholder theory which lays key restraints on firms to promote the interest of its stakeholders. Based on this, the study recommends that fast food companies institute measures that seek to limit overly exposures to events that have negative bearings on its operations, future cash flows and stock prices. Although some events cannot be predicted, appropriate risk management strategies and disaster recovery procedures can help mitigate the overall impact of irresponsible acts and disasters on operations and stock performance.

Chipotle has over the years been successful despite its challenges mainly as a result of strategic measures that have been adopted to mitigate the adverse impacts of foodborne infections. These strategies have centered on intense promotional activities such as free food promotions to sway customers back after it has been hit with an outbreak of foodborne illnesses. However, to prevent any further occurrences of irresponsible acts leading to an outbreak of foodborne infections, there ought to be conscious efforts aimed at dealing only with suppliers who provide the right and healthy raw ingredients, a strict scrutiny of logistical needs, processing of food under hygienic conditions, and proper storage of all food materials. These schemes should also include arrangements made to identify the source of the outbreak, changing menus and among others.

Although discussions on corporate social responsibility have been elevated in academic research in recent times[28], less attention is given to the scope and concept of corporate social irresponsibility despite its equal relevance to academia and professional space. Future research studies should therefore aim to deepen studies in the concept of CSIR activities and how it impacts firm performance and societal actions. Similarly, the upsurge in fast food businesses worldwide has not been met with scholarly articles examining the operations of these fast food businesses and the impact on national economies, consumers, and other variables. Future studies could narrow down to explore the fast-food business from diverse dimensions.

REFERENCES

[1] Wang, Y., et al., A review of the growth of the fast food industry in China and its potential impact on obesity. International journal of environmental research and public health, 2016. 13(11): p. 1112.

[2] Quoquab, F., N. Z. M. Sadom, and J. Mohammad, Driving customer loyalty in the Malaysian fast food industry. Journal of Islamic Marketing, 2019.

[3] Freeman, A., Fast food: Oppression through poor nutrition. Calif. L. Rev., 2007. 95: p. 2221.

[4] Shamhuyenhanzva, R. M., et al., Factors influencing Generation Y consumers' perceptions of eWOM credibility: a study of the fast-food industry. The International Review of Retail, Distribution and Consumer Research, 2016. 26(4): p. 435-455.

[5] Royle, T., Realism or idealism? Corporate social responsibility and the employee stakeholder in the global fast-food industry. Business Ethics: A European Review, 2005.

[6] George, O. J., O. L. Kuye, and U. C. Onokala, Corporate Social Irresponsibility (CSI) a Catalyst to the Niger Delta Crisis: The Case of Nigerian Oil Multinational Companies versus the Militants ofNiger Delta Region of Nigeria. 2012.

[7] Al-Mazrous, Y., Food poisoning in Saudi Arabia. Saudi Med. J, 2004. 25: p. 11-14.

[8] Omari, R. and G. Frempong, Food safety concerns of fast food consumers in urban Ghana. Appetite, 2016. 98: p. 49-54.

[9] Lachenmeier, D. W. and S. G. Walch, Cannabidiol (CBD): a strong plea for mandatory pre-marketing approval of food supplements. 2020, Springer.

[10] Harris, K. J., F. Ali, and K. Ryu, Foodborne illness outbreaks in restaurants and patrons' propensity to return. International Journal of Contemporary Hospitality Management, 2018.

[11] Steiner, G. A., J. F. Steiner, and G. A. Steiner, Business, government, and society: a managerial perspective: text and cases. 1994: McGraw-Hill.

[12] Lantos, G. P., The boundaries of strategic corporate social responsibility. Journal of consumer marketing, 2001.

[13] Garcia-Fuentes, P. A., et al., Consumer confidence in the food system, media coverage and stock prices of food companies: A regression analysis. 2010.

[14] Dewey-Mattia, D., et al., Surveillance for foodborne disease outbreaks—United States, 2009–2015. MMWR Surveillance Summaries, 2018. 67(10): p. 1.

[15] Mazzucato, M. and W. Semmler, The determinants of stock price volatility: An industry study. Nonlinear Dynamics, Psychology, and life Sciences, 2002. 6(2): p. 197-216.

[16] Balke, N. S. and M. E. Wohar, What drives stock prices? Identifying the determinants of stock price movements. Southern Economic Journal, 2006: p. 55-78.

[17] Nazir, M. S., et al., Determinants of stock price volatility in karachi stock exchange: The mediating role of corporate dividend policy. International Research Journal of Finance and Economics, 2010. 55(55): p. 100-107.

[18] Corradi, V., W. Distaso, and A. Mele, Macroeconomic determinants of stock volatility and volatility premiums. Journal of Monetary Economics, 2013. 60(2): p. 203-220.

[19] Dasgupta, S., et al., Disclosure of environmental violations and stock market in the Republic of Korea. Ecological Economics, 2006. 58(4): p. 759-777.

[20] Xu, X., S. Zeng, and C. M. Tam, Stock market's reaction to disclosure of environmental violations: evidence from China. Journal of Business Ethics, 2012. 107(2): p. 227-237.

[21] Jain, T. and R. Zaman, When boards matter: The case of corporate social irresponsibility. British Journal of Management, 2020. 31(2): p. 365-386.

[22] Deák, Z. and B. Karali, Stock market reactions to environmental news in the food industry. Journal of Agricultural and Applied Economics, 2014. 46(1379-2016-113876): p. 209-225.

[23] Aharony, J. and I. Swary, Contagion effects of bank failures: Evidence from capital markets. Journal of Business, 1983: p. 305-322.

[24] Suwanna, T., Impacts of dividend announcement on stock return. Procedia-Social and Behavioral Sciences, 2012. 40: p. 721-725.

[25] MacKinlay, A. C., Event studies in economics and finance. Journal of economic literature, 1997. 35(1): p. 13-39.

[26] Walker, R. and G. Merkley, Chipotle Mexican grill: Food with integrity? 2017: Kellogg School of Management.

[27] Javid, A. Y., Stock market reaction to catastrophic shock: Evidence from listed Pakistani firms. 2007.

[28] Popa, M. and I. Salanta, Corporate social responsibility versus corporate social irresponsibility. Management & Marketing, 2014. 9(2): p. 137.