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Impact of internal corporate social responsibility factors on the employee's innovation climate in the medical diagnostics industry

Sofia M. Beglari

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Pepperdine University
Graduate School of Education and Psychology

IMPACT OF INTERNAL CORPORATE SOCIAL RESPONSIBILITY FACTORS ON THE
EMPLOYEE'S INNOVATION CLIMATE IN THE MEDICAL DIAGNOSTICS INDUSTRY

A dissertation submitted in partial satisfaction
of the requirements for the degree of
Doctor of Education in Organizational Leadership

by

Sofia M Beglari

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James Dellaneve, Ed.D. – Dissertation Chairperson

This dissertation, written by

Sofia M Beglari

under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

Doctoral Committee:

James Dellaneve, Ed.D. Chairperson

Ebony Cain, Ph.D., Co-Chair/Committee

Donny Gruendler, Ed.D. Co-Chair/Committee

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VITA

Education

Doctor of Education (Ed.D.), Organizational Leadership, Pepperdine University
Dissertation Topic: Impact of Internal Corporate Social Responsibility Factors on the Employee's Innovation Climate in the Medical Diagnostics Industry

Doctor of Information System Management (I. S.M), System Management, Walden University
Dissertation Topic: Effective Competitive Strategies of U.S. In Vitro Medical Device Manufacturers

Master of Industrial Engineering (M.S.I.E), System Designer, TA University of Technology
Bachelor of Chemical Engineering, Applied Chemistry, TA University of Technology

Skill Set

Training, Coaching, and Teaching Leadership, System Operation Designer, Project Management Planner, Leadership Developer, ISO Planner, Medical FDA System Planner, Risk Management Designer, CSR Designer, Supply Chain Designer, Innovation & Development Trainer, Scientific Researcher, Organization System Developer, Functional System Design in ISO and FDA, Emerging Technologies, and Manufacturing System Processes. Conducting Leadership and Operational Training in a Global European Branch.

Professional Experience

Diagnostic Automation, Inc, Vice President, January 2002 – PRESENT, USA.
Advance Switching Company, Switch Test Engineer, January 2001- January 2002, USA.
Xyntex, Chemical System Designer, May 2000 - January 2001, USA.

Consulting Certificate

Certified Consulter in Strategic Planning, Project Management, Operations Management, Organization Development, and Business Analytics from Pepperdine University, May 08 2021.

Award

The International Organization of Social Sciences and Behavioral Research Fall 2016 Conference – Global access and tech-enhanced learning: Empowering Women in Developing Countries - Best Paper Award

Presentations and Peer-Reviewed Article

Alderei, A. M., Beglari, S., Panganiban, R. Taherizadeh, E., Taylor, S., & Fraizer, L. (2016). *Global access and tech-enhanced learning: Empowering Women in Developing Countries* [Conference session]. Proceedings of the International Organization of Social Sciences and Behavioral Research Conference. San Antonio, TX.

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ABSTRACT

This study examined the relationship between employee-driven corporate social responsibility (CSR) factors and employee innovation in U.S. medical diagnostic companies during the respiratory syndrome coronavirus (COVID) pandemic. This study examined what employee-driven CSR factors affect such motivation of employees toward innovation. The research population was employees who have worked in operation, quality control, research, technical, and management departments of medical diagnostics companies in the United States of America. The investigator used a survey questionnaire for this correlation design study. Employees' responses were analyzed based on education level, gender, and job function using descriptive analysis, *t*-test, and *ANOVA*-test. The theoretical framework consisted of the theory of corporate social responsibility and the expectancy theory of motivation. The study questions focused on nine predictors of employee-driven CSR, including employees' rewards and recognition, empowerment, resources, engagement, and decision-making involvement, horizontal communication, vertical communication, employee job satisfaction, employee training, and leadership relationships as dependent variables and their impact on employee innovation climate as independent variables. Correlation and multiple regressions were conducted to determine the underlying relationship of the variables. The result indicated a significant relationship between employee-driven CSR and employee innovation. In addition, the study revealed that nine employee-driven CSR factors explained about 50% of the employee innovation as predictor variables. Job satisfaction had the most significant impact on employee innovation climate, followed by Horizontal communication.

In conclusion, this study recognized job satisfaction as the most critical employee motivational factor to innovate through quantitative research, which was also a characteristic of employee-driven CSR. The value of employee-driven CSR factors' influence on innovation can

contribute to both theory and practice. This research may highlight how medical diagnostics business leaders foster innovation through employee-driven CSR.

Chapter 1: The Problem

The COVID pandemic's emergence has threatened global health and the economy. The COVID pandemic caught most countries worldwide unprepared and has challenged global leaders to consider the preparation needed to survive present and future pandemic threats (Leach et al., 2021). Gross domestic product (GDP) for the United States was reduced to about 30%, equivalent to \$18 billion in 2020. Simultaneously, the U.S. government spent \$2.8 trillion to compensate for the financial losses caused by business closures needed to cope with a pandemic (Azoulay & Jones, 2020). In addition, firms have faced a labor shortage during the pandemic, and firms' projects have not been implemented effectively (Majumder et al., 2021). The question is, how can medical diagnostics business leaders cope with economic crises, lack of labor, and pandemic health?

In crises, society is more vulnerable, harmful, and demanding; therefore, entrepreneurs must control crises by thinking outside the box to fight unexpected obstacles. Hostager et al. (1998) stated that as environmental pressures rise, environmental opportunities are born. Leaders must manage the crisis by transforming social inquiries into new business opportunities and economic benefits (Drucker, 1984). A new business strategy and a sustainable business model are required to foster innovation to address social demands in times of crisis (Guo & Lu, 2021). In this world of uncertainty and ambiguity, organizational leaders must anticipate change and transform their businesses into social innovations (Ullah & Sun, 2021). Widiastuty and Soewarno (2019) noted that innovations that respond to society's demands would represent corporate social responsibility (CSR) opportunities for the corporation. In this role, organizations should tailor their CSR strategies to establish a commitment to the community (García-Sánchez & García-Sánchez, 2020). Corporations are responsible for society, and CSR should incorporate corporate sustainability and citizenship (Grafström & Windell, 2011). According to Samantara and Dhawan (2020), CSR's success lies in its practical application as a central element of an enterprise development strategy.

The pandemic has forced many businesses to adapt their CSR policies to cope with current social needs (Aguinis et al., 2020). CSR allows organizations to tackle public issues that affect a broad range of stakeholders (Min et al., 2020). In 1953, Bowen explored CSR as a company responding to adopt desirable policies and actions according to society's values. According to Frederick (1960), CSR refers to voluntary action toward human capital and the economic position to use resources for broader social purposes. Gesso and Romagnoli (2020) added that a business's success depends on how they implement CSR.

The role of companies in society has been increasingly considered in the academic field and practice as a CSR concept (Liu et al., 2020). In the 1960s, the CSR idea emerged that leaders must take responsibility for their ethical obligations to society beyond their commercial advantages (Cordeiro & Tewari, 2014). In addition to being productive and profitable, organizations must consider the expectations and interests of shareholders and stakeholders (Yang & Basile, 2021). CSR actions are divided into external CSR and internal CSR (Ji & Miao, 2020), referring to corporate activities inside and outside the business (Jia et al., 2019; Risi & Wickert, 2019). External CSR is an external operation of an organization that involves external stakeholders like consumers, vendors, communities, and shareholders (Jia et al., 2019). Internal CSR practices are defined as activities associated with internal operations to satisfy employees as internal stakeholders (Risi & Wickert, 2019). While CSR is considered standard practice in many organizations, managers still pay little attention to employees as core stakeholders (M. Farooq et al., 2019). Malik et al. (2016) affirmed that CSR's internal and external dimensions influence employee dedication to business productivity and innovation.

Alas et al. (2018) and Ma (2022) posited that U.S. firms must innovate to elevate economic growth. Over the past few decades, global economists and academic researchers have considered CSR and its influence on innovation (Hengst et al., 2020). Organizations with sustainable CSR strategies are more likely to gain market share because they create innovative methods to enhance social benefits (Shahzad et al., 2020). Olufunke (2020) declared a positive

correlation between CSR, innovation, and organizational performance. Borger and Kruglianskas (2006) stressed a substantial connection between innovation and corporate CSR adoption. In addition, Übius and Alas (2010) highlighted a certain relationship between CSR implementation and the innovation environment. Herrera (2015) has determined a preliminary format for corporate social innovation. Herrera revealed how implementing the company's CSR strategy with stakeholders contributes to product development through stakeholder engagement, sustainability, and performance (H. Zhou et al., 2020).

The innovation plan has become one of the core necessities in the healthcare system (Abdel-Basst et al., 2020). Innovation among medical diagnostics companies is critical in addressing potential shortages or disruptions during a public health pandemic. Invention is defined as creating unique components, processes, and markets that have been motivated by human capital's creativity as a central factor in economic growth (Yektadoost et al., 2021). Innovation metrics vary considerably from one company to another, including the cost of innovation, the effectiveness of creation, the contributions of employees, and the profit associated with the result of innovation (Schiavone & Simoni, 2019). Innovation influences business effectiveness, competitiveness, market share, and performance (Abdul Hamid et al., 2020). Abdeldayem et al. (2021) proposed that innovation's contribution to economic growth stimulates productivity and creates incredible wealth. Many researchers have stated that organizations could become more efficient by innovating while being socially responsible (Schiavone & Simoni, 2019; Übius & Alas, 2010). Innovation requires creating a new idea, behavior, and action from the corporation's employees (Pfajfar et al., 2022). Employees are considered the core members of an organization, and their role in stimulating innovation is essential (L. Li et al., 2019; Pukkeeree et al., 2020).

Leaders need to apply practical approaches to encourage employees to innovate toward organizational success. A leader's ability to provide a platform for motivating and supporting employees is a critical component of product and process innovation (X. Li, 2020; Siyal et al.,

2021). Employees' cultural intelligence positively influences their behavior as enduring innovators (J. Li et al., 2021). An open innovation culture based on mutual trust, collaboration, knowledge management, and a learning environment strengthens business innovation capacity (Franco-Riquelme & Rubalcaba, 2021; Lam et al., 2021).

Employees should be encouraged toward innovative behavior (Pukkeeree et al., 2020). Employees' motivation and collaboration in innovation could lead a company to success during a pandemic (Y. Wang et al., 2020). X. Li (2020) asserted that internal CSR activities have a core intermediary influence in promoting innovation performance and creating a modern economic system. Varyash et al. (2020) stated that internal CSR activities associated with employees are categorized according to different values, namely: (a) worker competency development, (b) health and safety, (c) social equity, and (d) employee satisfaction (M. G. Shin et al., 2020). Therefore, employees' CSR as a driving motivation toward innovation may help medical diagnostic companies cope with pandemics. Paillé and Mejía-Morelos (2014) conducted a quantitative study focusing on perceived corporate support as a motivator for employees among 1,500 employees in Mexico. According to M. Guo et al. (2021) perceived corporate support is positively linked to worker engagement and job fulfillment.

Übuis and Alas (2010) and Bocquet et al. (2019) conducted empirical studies that demonstrated a positive correlation between employee-driven CSR and the innovation atmosphere. H. Zhou et al. (2020) assessed the effect of firms' CSR strategies on companies' invention outcomes via employee involvement and vendor collaboration. H. Zhou et al. (2020) revealed that internal CSR impacts the innovation of services and products. Liu et al. (2020) proposed that employee-driven CSR is a significant determinant of its invention. Therefore, there was a consideration of fostering innovation in medical diagnostics companies' workforce and strengthening leadership to motivate employees toward innovation during a pandemic. Because different companies have different perceptions of CSR activities, it is essential to

understand how CSR activities affect employee motivation for creation (Asante Boadi et al., 2019).

Although CSR is a popular concept in medical diagnostics industries, research on implementing CSR to improve employee motivation toward innovation in medical diagnostics firms is limited. Moreover, the medical diagnostics industry has not examined the influence of employee-driven CSR factors on workforce innovation during the pandemic. Therefore, there was a need to understand what employee-driven CSR factors can motivate employees toward creation in the U.S. medical diagnostic industry during the COVID pandemic.

Leaders must pay attention to internal employee-driven CSR factors, which are often neglected to optimize company innovation success (Mehra & Nickerson, 2019). A few empirical and practical studies on CSR's influence on innovation climate require further examination (Diaz-Carrion & Franco-Leal, 2021; Ratajczak & Szutowski, 2016). Nevertheless, as determined by the researcher's review of the literature from 2010 to 2020, only a few peer-reviewed studies were found to focus on the influence of employee-driven CSR factors on worker innovation (Bahta et al., 2020). The fact remains that such a research outcome cannot be generalized to other regions, cultures, industries, and the pandemic situation.

Managers need to provide a motivational platform to promote employees' innovative behavior. This study aimed to identify the correlation between employee-driven CSR activities and employee innovation in the medical diagnostics industry. Based on the Übius and Alas (2010) study, this research focused on nine employee-driven CSR activities, including employees' extrinsic and intrinsic rewards and recognition, empowerment, resources, employee engagement, and decision-making involvement, horizontal communication and vertical communication, employee job satisfaction, employee training, and leadership relationships and their impact on innovation climate.

Background of Problem

Consumers demand that businesses become more transparent and actively resolve social, cultural, and environmental issues (H. J. Jung et al., 2020). Medical diagnostics businesses are essential for responding to viral outbreaks and pandemics (Kelly-Cirino et al., 2019). Diagnostic medical diagnostics manufacturers supply medical tests to health care providers to detect, prevent, and treat diseases, such as COVID diagnostic tests and ventilators (U.S. Food and Drug Administration [FDA], 2021). The U.S. medical device industry was worth approximately \$156 billion in 2017, creating 2 million jobs in the United States (International Trade Administration [ITA], 2016; SelectUSA, 2017). The medical diagnostic industry has been a consumer market with product differentiation and pricing pressure (Peeling et al., 2020).

As the COVID epidemic purged globally in 2019, millions of lives were negatively affected. New medicines and medical testing diagnostics devices have not been provided and respond to the needs of society on time (Marjanovic, 2020). Some business projects did not take place during the COVID-19 pandemic due to a shortage of motivated skilled workers (Majumder et al., 2021).

U.S. executives of manufacturing organizations have had difficulty maintaining their competitive position due to the lag in global innovation (Marketplace.org, 2020). Some leaders lack internal CSR strategies to motivate employees to innovate during a pandemic (Haque, 2021). Remarkably, some medical diagnostics business leaders do not have an employee-driven CSR approach to encourage employees to innovate in a COVID pandemic.

Nonetheless, the human tragedy of losing millions of lives, a broken economy, and social changes may prompt medical diagnostics companies' leaders to shift toward social innovation strategies to address social challenges. Companies can cope with pandemics by enhancing employees' collaboration and boosting the power of purpose to achieve the impossible (Fearne et al., 2021). Medical companies' leaders may utilize internal CSR strategies to affect employees' motivation toward innovation rather than having employees leave the

companies in times of need. Serhan et al. (2021) indicated that motivational factors affect work performance and the environment. Indeed, motivated employees are innovative, passionate, and have a corporate commitment (Abdul Hamid et al., 2020).

In addition, an internal CSR strategy that affects business innovation may require more empirical and theoretical studies (Chkir et al., 2021). More specifically, no research has been devoted to the association between employee-driven CSR and the innovation climate in medical diagnostics companies in a pandemic situation. Hence, this research aimed to determine the correlation between employee-driven CSR and employee innovation in the U.S. medical sector by utilizing a conceptual model based on CSR theory and the expectancy theory of motivation.

Purpose and Importance of Study

This quantitative correlation study examined the relationship between employee-driven CSR factors and employee innovation in U.S. medical diagnostics companies during pandemics. Also, this study explored how this relationship, if any, depended on employees' gender, education level, and organization size. On the other hand, some U.S. medical diagnostics companies' leaders can apply internal CSR strategies to motivate employees to be innovative during pandemics. The research population consisted of employees who have worked in operations, quality control, research, technical, and management departments in medical diagnostics companies in the United States.

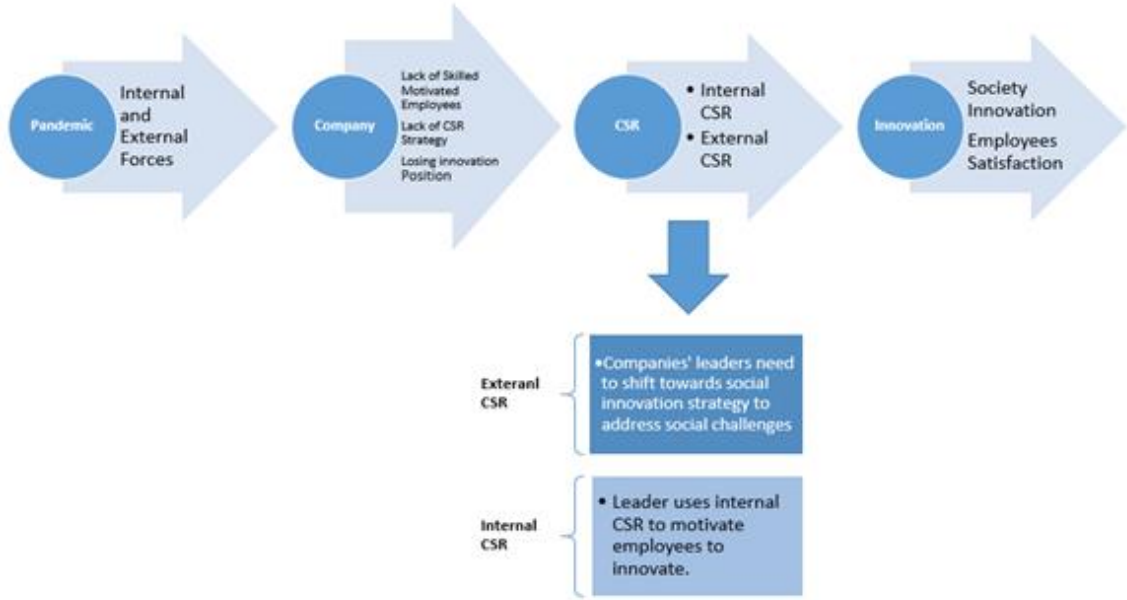
This study focused on employee-driven CSR factors based on Übius and Alas's (2010) CSR and innovation climate survey with full permission from the authors. Furthermore, the study focused on the considerable differences in respondents' answers based on demographic information in the medical diagnostics business, including education level, organization size, and gender. Leadership's ability to adopt CSR is critical to the company's success (Hofmeyer et al., 2020). Conducting this quantitative method study was vital to provide an opportunity to

collect the professional perceptions of employee-driven CSR’s effect on the employee innovation climate in U.S. diagnostic medical manufacturers.

Moreover, information on employees’ gender, education level, job function, the number of years working in the industry, and CSR-related information provides further details regarding developing innovation strategies, especially during times of crisis. The research results can encourage medical manufacturing leaders to focus more on employee-driven CSR to improve innovation performance to gain competitive advantage, increase business profitability, and reduce U.S. unemployment and retention. This research was the first known to consider the effect of employee-driven CSR factors on the staff innovation climate in the USA medical diagnostics business. This study’s findings may help medical diagnostics companies develop better strategies for implementing employee-driven CSR to enhance innovation, seek a competitive edge, and improve financial performance.

Figure 1

Internal and External CSR and Social Innovation



Research Question

One study question explored the correlation between employee-driven CSR factors and employee innovation. The study addressed the following research question (RQ):

- RQ1: “What relationship, if any, exists between employee-driven CSR factors, including employees` extrinsic and intrinsic rewards and recognition, empowerment, availability of resources, employee engagement, and decision-making involvement, horizontal communication, vertical communication, employee job satisfaction, employee training, leadership relationships, and employee innovation in medical diagnostics companies?”

The RQ led to the following null hypothesis and directional hypothesis:

- H10: None of the employee-driven CSR factors has any positive relationship with employees` innovation climate.
- H1: At least one of the employee-driven CSR factors has a positive relationship with employees` innovation climate.

Conceptual Hypothesis

The two theories that have strengthened the research validity were CSR and expectancy theories of motivation. Key constructs surrounding these theories are an organization's social influence and performance. A conceptual hypothesis provides practical guidance in formulating the researcher's argument, from theoretical concepts to data collection, analysis, and dissemination (Keith et al., 2020). A theoretical framework presents critical factors as descriptive variables for justifying and ensuring that expected relations are appropriate (Jiu et al., 2020). The theoretical foundation of this research provided an opportunity to visualize key concepts and relationships relevant to the central RQ; “what relationship, if any, exists between employee-driven CSR factors and employees` motivation toward generating innovation?” The framework laid out a relationship between employee-driven CSR and employee innovation.

The study concentrated on the company's labor force as internal stakeholders. The researcher examined the correlation between employee-driven CSR and employee innovation climate. Therefore, the theoretical framework of this research relied on the theories of CSR and the expectancy theory of motivation.

Theories of Corporate Social Responsibility

The construct has ground in moral philosophy, specifically ethics (Proikaki et al., 2018). The 1960s witnessed the birth of the modern concept that business leaders must impart their moral duty to the community in a way that extends beyond corporate profits (Hengst et al., 2020). Frederick (1960) argued that leaders of organizations have a moral obligation to work for advocacy (Magalhães, 2022). Yasin (2021) added that firms' leaders should serve society without losing their business objectives. The key concepts underlying the theory of CSR are protecting the social economy, respect for human rights, social standards, public policy values, and people's quality of life.

Gatewood and Carroll (1981) and Alas and Tafel (2008) indicated that CSR studies fall into three categories: (a) developing, (b) structured, and (c) normalized. In 1991, Carroll proposed that CSR development consists of four components: "economic, ethical, legal, and voluntary" (p. 42). Economic responsibility creates profitability by supplying high-quality products, product safety, and affordable prices for the market (Hengst et al., 2020). Legal obligation refers to firms' need to pursue their financial goals under the government's rules and laws, such as the Labor Act, the Environmental Protection Act, and the Anti-Corruption Act. Ethical accountability is the company's expectations of corporate values and standards beyond written law (Halkos & Nomikos, 2021). Social responsibility includes the firms' obligations to support the community and respect the public interest and the quality of life of individuals (Albitar et al., 2021). In 2005, the structured perspective proposed by Wilenius addressed the following three areas of CSR: economic expansion, social responsibility, and environment

management. From a normative perspective, different levels of public duty may be achieved based on the organization's CSR act with respect to the social prospect (Übius & Alas, 2010). Normative corporate responsibility indicates that corporate conduct must be legitimated for every human being. In contrast, every CSR initiative has a unique feature that affects its vision, functioning, and social responsibility strategies. CSR institutionalization should align with the organizational mission, culture, and strategy (Tran, 2021).

Expectancy Theory of Motivation

In 1964, Vroom drafted the expectancy motivation theory to define how employee performance drives employee behavior (Gant, 2021; Stern et al., 2021). Porter and Lawler (1968) and Pinder (1998) expanded this theory. This theory encourages employees to envision their effort outcome (Nimri et al., 2015). The expectancy theory of motivation indicates that staff will be enabled whenever they trust that they will be rewarded for their achievements. Employees are encouraged if they believe their attempts lead to high returns and contribute to the desired rewards (Eccles & Wigfield, 2020). Vroom (1964) determined three perceptions that affect the relationship between employees' behavior and their goal: (a) expectancy that an employee's attempt would drive the employee's achievement through self-reliance and perceived control; (b) instrumentality, considering the external motivation that affects an individual's conduct, and (c) valence, the expected reward value for the individual (Sigaard & Skov, 2015).

Abdul Hamid et al. (2020) stated that motivated employees go above and beyond their tasks and engage in innovative behaviors. Motivational factors are subject to recognition, job satisfaction, career progression opportunities, and non-monetary awards (Herzberg, 1968). Management must use motivational tools to tap into employees' potential. Motivation could provide individual desires and benefits over the course of employment, such as (a) employee morale, (b) employee's financial needs and promotion, (c) job security, and (d) a suitable

workplace (Abdul Hamid et al., 2020). A lack of communication between employers and employees results in a lack of employee incentives (Vroom, 1964). Vroom's (1964) expectancy theory of motivation relies on prosperity and optimism over the progress related to employees' emotional state. Creating a leadership mindset benefits manager to mentor employees to tackle complex day-to-day challenging tasks and improve efficiency in the workplace. However, Souder and Badwaik (2022) added that business leaders could motivate their employees through long-term incentives. The absence of individual recognition could negatively affect employee emotions, attitudes, and behaviors (Afsar et al., 2016; Peng & Chen, 2022). Vroom added that the employee's accomplishment is influenced by personal factors such as skills, knowledge, experience, character, and proficiency. Motivated employees are innovative, passionate, and have a corporate commitment (Abdul Hamid et al., 2020). Implementing an internal CSR model creates employee motivation and enhances employee engagement, collaboration, confidence, and innovation (Dagogo & Barasin, 2020).

Significance of the Study

This research provides significant insights to facilitate an effective CSR strategy that may enhance manufacturers' innovation climate and gain a competitive edge. Moreover, some companies may consider internal CSR activities encouraging employees to innovate during a pandemic. CSR strategies are critical leadership abilities that motivate employees to innovate during a pandemic. This study may help leaders prepare for future pandemics and the tight competitive marketplace by securing employees' commitment to the company and society. Leaders must think ahead to lead their company to optimize effectiveness among organizations. Leaders of U.S. manufacturers may implement the innovation strategy in the context of employee-driven CSR to improve organizational performance by addressing society's needs and encouraging the next generation to be creative. The COVID pandemic should serve as a wake-up call for all U.S. medical manufacturing leaders in terms of preparation for future crises.

The study results could enable medical corporations to assess their commitment to their employee-driven CSR strategy in combination with their profitability targets. This research can help practitioners conceptualize the CSR picture from employees' perspectives and design employee-driven CSR strategies to stimulate innovation. Lastly, the collected information about education level, job position, gender, and the number of years spent working for the company, as well as their association with employee-driven CSR, provide additional information on developing possible innovation strategies.

Definition of Terms

- *Corporate Social Responsibility*: A moral commitment, including legal, ethical, and discretionary expectations undertaken toward stakeholders by the company leader to improve business profit and reputation (Longo et al., 2005; Jackson & Apostolakou, 2010).
- *Internal CSR Practices*: Refers to corporate policies and practices related to employee wellbeing (Golob & Podnar, 2021).
- *Innovation Climate*: An environment inside an organization that encourages and spreads creative techniques for reaching organizational goals. In addition, it has a variety of traits among the organization members that foster innovative ideas (Huang & Li, 2021).
- *Innovation*: Anything that creates new, unique, or enhances resources, processes, or values in the market or society (Denning & Ashrafian, 2020).
- *Employee motivation to innovate*: Employees take the initiative to be more creative (Martins & Terblanche, 2003).
- *Medical Device Manufacturers*: The suppliers of medical devices or subcontractors of the operation process (FDA, 2015).

Summary

COVID pandemic has challenged our preparedness for pandemic threats and has caught most countries unprepared (Leach et al., 2021). Medical diagnostics companies represent a significant public health response to viral outbreaks and to preventing pandemics (Blakely et al., 2022). The human tragedy of losing millions of lives, a broken economy, and social changes may prompt medical diagnostics companies' leaders to shift toward social innovation strategies to address social challenges. Widiastuty and Soewarno (2019) noted that innovations that respond to society's demands would represent CSR opportunities for the corporation. CSR allows organizations to tackle public issues that affect a broad range of stakeholders (Min et al., 2020).

Employees are considered the core members of an organization, and their role in stimulating innovation is essential (L. Li et al., 2019; Pukkeeree et al., 2020). Leaders must encourage employees to innovate to benefit corporations and stakeholders (Rampa & Agogué, 2021). Despite this, some leaders lack CSR strategies to encourage employees to innovate during a pandemic (Haque, 2021). This study explored how American medical diagnostics companies could stimulate innovation by leveraging employee-driven CSR factors during crises.

Although CSR is considered standard practice in many organizations, managers still pay little attention to employees as core stakeholders (M. Farooq et al., 2019). Gorgenyi-Hegyes et al. (2021) indicated that the firm's internal CSR activities are poorly understood, particularly during a pandemic. Indeed, only a few studies have been compiled concerning the influence of employee-driven CSR activities on staff innovation (Franco-Riquelme et al., 2021; Kim & Scullion, 2013). This study was only a few to examine employee-driven CSR trends in innovation. The aim was to provide managers with a better comprehension of the internal CSR factors that encourage employees to innovate and enhance the company's efficiency. The objective of this study was to assess the relationship between employee-driven CSR activities,

including employees' extrinsic and intrinsic rewards and recognition, empowerment, availability of resources, employee engagement and decision-making involvement, horizontal communication, vertical communication, employee job satisfaction, employee training, and leadership relationships on employee innovation. The study identified differences in the participants' responses based on demographic characteristics such as gender, organization size, and education level. The research results can be valuable to U.S. medical diagnostics industry leaders' perceptions of sustained CSR strategies to motivate employees to be innovative. The research results are significant for company innovation, CSR, and crisis management. This study may provide valuable information to businesses to respond successfully to similar crises in the future.

In Chapter 2, the researcher examined CSR, employees, and innovation strategy literature. Chapter 2 discusses the study themes and synthesizes past research supporting the research problem and question. The literature review focused on CSR theory, the expectancy theory of motivation, and a synopsis of previous CSR studies on company innovation. Chapter 2 provides a brief on developing employee-driven CSR toward innovation in medical diagnostics companies during a pandemic.

Chapter 2: Literature Review

Chapter 2 seeks to contextualize the theoretical frameworks of CSR and expectancy theory of motivation that formulate this research. Leaders need to leverage CSR to motivate employees to innovate (creating new products, ideas, performance, and strategy) in crises. This research examined the correlation between employee-driven CSR factors and employee innovation during the COVID pandemic in medical diagnostics companies.

The rapid change has forced leaders to find innovative solutions to cope with economic, social, and environmental problems (Haque, 2021). Innovation has transformed the nature of the medical industry over the last century. However, the COVID pandemic has created a new perspective on CSR in the industry, forcing businesses to rethink how CSR programs can contribute more to the corporation's efficiency concerning employee innovation. Business devotion to CSR principles positively influences employees' performance and the organization's value (Simpson et al., 2020; Titko et al., 2021). According to Aguinis and Glavas (2017), most researchers consider CSR as a multiplex perception linked to different company stakeholders, including employees (internal stakeholders) and consumers, suppliers, and stockholders (external stakeholders). Khaskheli et al. (2020) stated that employees as internal stakeholders are the key players in CSR activities. Khaskheli et al. (2020) noted a strong association exists between employee perceptions of CSR and corporate citizenship behavior, employee involvement, and job satisfaction. To date, existing experimental research on CSR has demonstrated that CSR can stimulate employees' workplace achievements, such as engagement at work and devotion to the organization. The perceived management of CSR supports positively influences workplace dedication, organizational commitment, and job efficiency (X. Wang et al., 2021). While these findings underpin the appropriateness of CSR for workplace involvement, there has been limited research on internal CSR activities and their influence on innovation. Therefore, this research examined whether employee-driven CSR affects organizational innovation during the COVID pandemic.

COVID and CSR Needs

COVID is a highly contagious virus circulating in humans; in 2020, it transformed into a pandemic (Centers for Disease Control & Prevention [CDC], 2021). As recently as mid-August 2021, the CDC of the United States reported 38,527,411 confirmed cases and 632,786 deaths in the U.S. due to COVID. The world is confronted with many crises, including economic challenges, lack of capital and intellectual resources, and critical health or outbreak situations. The world is now at risk from the COVID pandemic, which has altered the dimensions of our livelihoods and workplaces worldwide. Therefore, companies should act responsibly to society, design their business models according to social needs, and play a vital role during the crisis (García-Sánchez & García-Sánchez, 2020). Specifically, leaders must allocate organizational resources to CSR practices, respond successfully to stakeholder requirements, and emphasize societal and environmental issues (Aguinis et al., 2020; Yasir et al., 2021). CSR is an excellent appliance for measuring a company's capacity to contribute to society (Asna, 2020). CSR remains a critical workplace component under the current COVID pandemic (He & Harris, 2020). In the last few years, many businesses have added social endurance to their corporate objective and embraced CSR as a strategy in their business models (Coppola et al., 2020; Kim & Kim, 2021; Yasir et al., 2021). Business leaders who do not have a plan for implementing CSR action risk the profitability of their organizations (Scarpato et al., 2020). In addition, ineffective CSR strategies negatively impact the organization's brand, reputation, and financial growth (Izadi et al., 2021). For businesses, putting CSR into practice is crucial to gaining stakeholders' trust and the business's success (Izadi et al., 2021).

CSR has become a core priority in the strategic portfolios of many organizations and has received considerable attention as a research subject (Yasir et al., 2021). Researchers have already developed various CSR frameworks relating to various CSR methods and procedures. Although some studies have explored the positive impact of CSR on the environment, society, and economy, few considered CSR's impact on employee innovation. The quality of a

corporation's interaction with its employees is vital to its social responsibility and sustainability (Herrera & de las Heras-Rosas, 2020). Therefore, this research examined the correlation between CSR driving factors and employee innovation.

History of Corporate Social Responsibility

CSR is a broad and uncertain construct since it progressively includes distinct domains with different approaches to society's concerns (Coppola et al., 2020). CSR concepts involve social activities such as creating jobs, environmentally friendly performance, making donations, and establishing human rights policies (Kim & Kim, 2021). The original orientation of CSR is a public expectation of the organization to make positive contributions to social, environmental, and global sustainability in addition to making profits (Singh & Misra, 2022). The corporation is ethically responsible regarding the environment, society, and the requirements policy. The company's ethical responsibility is maintaining a healthy environment, supporting community requirements, and establishing and implementing legal policies.

In 1932, Merric Dodd highlighted management's role and corporate responsibilities as general business practices (Zafar, 2015). In 1953, Bowen determined CSR as a corporate duty that compelled the corporation to pursue defined rules and actions that foster social values. According to Bowen's approach, social responsibilities are correspondence, social checks, stakeholder recognition, and organizational citizenship (as cited in Windsor, 2001). Frederick (1960) argued that business leaders are morally obliged to work for advancement through employment-related CSR initiatives. In 1962, Friedman proposed that organizations utilize their resources to profit while complying with government rules and social norms in a free competitor market (Amoako & Boateng, 2022; Bankins, 2021). Later, Davis (1967) added a new concept that social responsibility occurs from the ethical effort that influences the interests of others in terms of business ethics (Thomas, 2021).

In 1971, another CSR model emerged related to merchandise, job opportunities, and economic expansion to improve the social environment (Committee for Economic Development [CED], 1971). Eells and Walton (1974) declared that CSR practice should go beyond the company's profit and fulfill society's needs. Business survival relies on the effective operation and practice of CSR in a free community that supports and enhances the community. Sethi (1975) added that CSR practice enhanced corporate behavior via prevailing social norms (Bolstad & Blindheimsnes, 2021). Carroll (1979) argued that CSR includes the promotion of good causes, pursuing good practices, and philanthropy to achieve the firm's ethical position. Society is concerned about an organization's moral, judicial, regulatory, and discretionary measures. Gatewood and Carroll (1981) researched on the social response model and pattern in 1980s. Drucker (1984) recommended that firms should turn a social challenge into financial benefits, human skills, and well-paying jobs. Drucker defined CSR as one of the eight core areas for firm objectives, emphasizing that managers need to consider the influence of corporate policies, actions, rules, and procedures on society while also profiting (Joyner & Payne, 2002). The new perception that a business could be responsible for community and profit created a need for designing new strategies. In 1984, some organizations adopted a new corporate approach to responding to stakeholders' demands. Stakeholders include employees, clients, suppliers, and individuals with various interests within the organization. Stakeholders implement the organizational objective, critical decision-making, resource allocation, and control of business activities in the collaborative processes of developmental value (Freudenreich et al., 2020). In 1984, Freeman introduced stakeholder theory, declaring that leaders of organizations face a moral and economic obligation to meet stakeholders' requirements. Stakeholder theory explains that organizational success occurs when customers, suppliers, employees, shareholders, and communities move in the same direction (McWilliams & Siegel, 2001). Stakeholder theory concepts include work performance, social influence, organizational finance, and crisis management (Činčalová, 2021; Freudenreich et al., 2020). Aupperle et al. (1985)

stated that leaders could improve corporate profits while remaining ethical in operations, regulation, and society.

The 1990s witnessed a revolution in the CSR concept due to globalization (Munro, 2020). Advance technology, reform business models, stakeholder perspective on CSR implementation, and other crucial changes have altered CSR characterization in society (Potočan et al., 2021). During this era, CSR visibility ushered in civil rights action, activists, and strict government policies and rules that have played a vital role in CSR evolution (Carroll, 2016). Meanwhile, researchers studied whether implementing CSR benefits organizations (Carroll, 1999). Many researchers, such as Clarence Walton, Keith Davis, and William Frederick, sought to articulate the CSR definition. Keith Davis revealed that firms' economic gains could justify corporate responsibility toward society. William Frederick noted that the company's community responsibility refers to a voluntary response from companies to the socio-economic situation and human capital for the public interest, not for the companies or the personal interest. In the 1990s, leaders practiced corporate cultures such as the "triple bottom line" (people, planet, and profit) and the financial performance measurement toward social responsibility (Q. Farooq et al., 2021). Carroll's (1991) paradigm introduced four elements: "economic, legal, ethical, and voluntary" (p. 42).

Economic Responsibility

The financial obligation provides the basis for all aspects of the CSR hierarchy. Historically, companies have been conceived as financial entities to supply society with merchandise and services. Firms try to find a solution to facilitate their business growth while benefiting the community (Yasin, 2021). Therefore, economic responsibility implies creating benefits by supplying high-quality products, a fair market price, and natural environment or product safety (Hengst et al., 2020).

Legal Responsibility

Legal duty has evolved as a second layer of the hierarchy of social responsibility. Firms must pursue their financial purpose under legislation and regulations such as the Labor Act, the Environmental Protection Act, and the Anti-Corruption Act (Halkos & Nomikos, 2021). Halkos and Nomikos (2021) reported a greater need for an international legal framework to protect society and the environment.

Ethical Responsibility

Ethical accountability is defined as society's expectations of corporate values and standards beyond the written law. Ethical accountabilities contain compliance with moral principles, fairness and equity, and respect for human rights. Ethics embody responsibilities and standard norms that reflect society (Halkos & Nomikos, 2021).

Social Responsibility

At the fourth stage and the top of the triangle, social responsibility requires a humanitarian response that encompasses the love of human beings (Chian, 2021). Social responsibility calls for a humanitarian exercise at the fourth and top levels of the hierarchy. CSR reflects the firm's voluntary effort to address social inquiries and issues. The social dimension contains company duties to assist the community and respect the public interest and citizens' quality of life (Albitar et al., 2021). Chia et al. (2020) suggested that companies should be responsible for respecting, preserving, and promoting social rights.

Wood (1991) studied three corporate responsibility types: stakeholder management, environmental management, and crisis management. Wood considered that CSR could be used for coping with crises. In 1997, Brown and Eisenhardt stated that business leaders have considered employees' valuable CSR assets that help corporations succeed (Brown & Eisenhardt, 1997). Sharma and Vredenburg (1998) discovered a connection between proactive work environmental behavior and innovative capabilities.

Carroll (1999) stated that the CSR strategy leads the corporation to social reactivity, social performance, and morality towards stakeholders. Carroll further proposed that although businesses have become the most powerful and influential institutions worldwide, they should be more responsible for the well-being of society as per public expectations. Carroll leveraged the Wood framework to design the pyramid of responsibilities that has changed the relationship between organizations and society, including economic, ethical, legal, and voluntary (discretionary) factors. In 2000, the need for CSR included business practice and strategy (Nam, 2020). Additionally, it was found that high-quality employees prefer working with companies with CSR policies (Greening & Turban, 2000; Steps & Melva, 2020).

McWilliams and Siegel (2001) declared that CSR and innovation correlate substantially, concluding that CSR strategies promote research investments that lead to new operations, products, and processes. In 2001, Larsen and Peck added that the strategy and actions of innovative organizations must be based on social justice, environmental quality, and decision-making. Orlitzky et al. (2003) proposed that CSR practices required internal management, employee involvement, and knowledge management to develop the company brand, advanced competencies, and skills. In other words, corporate responsibility toward stakeholders, society, and the environment affects the company's reputation, marketplace, and brand.

The researchers sought to determine how businesses could protect society from various perspectives. In 2004, Garriga and Melé classified CSR theories into four groups: "instrumental, political, integrative, and ethical" (p. 62). Instrumental theories concern firms as a source of wealth creation for society, political views focus on corporate power in society, integrative approaches focus on how an organization can fulfill the social requirement, and ethical theories analyze firm ethical accountability. Kotler and Lee (2005) added that CSR is a corporation's dedication toward public wellbeing by providing resources or discretionary measures to the organization. Werther and Chandler (2005) stated that different societies have various requirements, anticipation, and expectancy; therefore, the corporation must consider what is

accredited within their community. Borger and Kruglianskas (2006) argued that innovative performance is strongly associated with adaptive CSR. Asongu (2007) noted that organizations must meet the community's expectations from a CSR perspective in order to make practical innovations.

Hopkins (2007) stated that business leaders needed to leverage CSR to treat stakeholders ethically in a civilized society. He divided stakeholders into two categories: (a) internal (employees) and (b) external (environment). Certain CSR roles fall within the indoor stakeholders (internal CSR), while others are outdoor stakeholders in the company (external CSR). Accordingly, organizations should improve their external and internal communication efficiency on CSR (Schaefer et al., 2020). Hopkins (2007) suggests that social responsibility enhances the community's standard of living, including internal and external stakeholders, while ensuring the organization's cost-effectiveness.

Husted and Allen (2007) debated whether the enforcement of CSR has the potential to affect competitive edge, value creation, and invention. Hence, Husted and Allen argued that the effect of CSR on developing and designing new supplies and services leads the market towards competitiveness. The results of Husted and Allen's study demonstrated that CSR strategies in the proper conditions could promote innovation and market access. Furthermore, Asongu (2007) added that businesses must develop innovative supplies or services that meet community requirements and the corporation's financial performance.

Crane et al. (2008) stated that CSR lacked a standard definition, and to this day, there remains no coherent paradigm in this area. Dahlsrud (2008) tried to identify analogy and differentiation among the extant definitions of CSR. Dahlsrud (2008) categorized CSR definitions into five dimensions: stakeholder, financial, social, voluntariness, and atmospheric (H. Park et al., 2021). However, Blowfield and Murray (2008) emphasized that it is not possible to establish a universal conception of CSR based on various parameters. Therefore,

organizations must formulate their CSR plan around their stakeholders' expectations, needs, and prospects.

Alas and Tafel (2008) and Gatewood and Carroll (1981) indicated that CSR studies fall into three categories: (a) development, (b) structured, and (c) normative. In 1991, Carroll proposed that CSR development sustains four components: “economic, ethical, legal, and voluntary” (p. 42). Economic responsibility creates profitability by supplying high-quality products, product safety, and affordable prices for the market (Hengst et al., 2020). Ethical accountability is the company’s expectations of corporate values and standards beyond written law (Halkos & Nomikos, 2021). Legal obligation refers to firms’ need to pursue their financial goals under the government’s rules and laws, such as the Labor Act, the Environmental Protection Act, and the Anti-Corruption Act. In 2005, the structured perspective proposed by Wilenius addressed the following three areas of CSR: economic expansion, social responsibility, and environment administration. From a normative perspective, different levels of public duty may be achieved based on the organization's CSR action with respect to the social perspective (Übuis & Alas, 2010). Normative corporate responsibility indicates that corporate conduct must be legitimated for every human being.

Hull and Rothenberg (2008) noted that firms must establish a novel business pattern for developing socially beneficial innovations. Leaders can benefit from this business model by supporting an organization’s sustainability. In addition, leaders can achieve their innovation strategy by paying attention to employee participation in CSR action (Bhattacharya et al., 2009). Nord and Fuller (2009) proposed an alternative paradigm to finalize the traditional CSR strategy, announcing that CSR could be achieved at the lowest and higher business levels. They argued that organizations gain a competitive advantage when employees receive more attention through CSR. Übuis and Alas (2010) studied the CSR driving factors related to employee innovation, finding that employee-driven CSR actions foster a company’s value, determine public benefits, and enhance innovation. According to Übuis and Alas, many innovators are

concerned about social issues, and the distribution of budget and social appraisal is solely driven by the community. Social innovation may be a new product, service, technology, manufacturing process, principle, legislation, social movement, or a compounding of all these factors.

Moreno (2010) identified CSR in terms of business endeavors that preserve and improve the welfare of society beyond corporate profit. Übius and Alas (2010) also declared a positive association between corporate CSR accomplishment and the innovation ambiance. In addition, the community, economics, legislation, and the organization's environment could shape this association. Freeman (2010) argued that business leaders who create value by sacrificing stakeholder requirements face significant financial losses at the time of a crisis. Fauzi et al. (2010) declared that the "financial, social, and environmental aspect known as a "triple bottom line" (p. 1353), encompasses the concept of corporate social performance (CSP). Companies with societal, stakeholder and environmental responsibility seek solutions to advance the development and meet community needs.

Perrini et al. (2011) asserted that the company's commitment to stakeholders has resulted in trust, reputation, satisfaction, quality, and innovation. Business dialogue to meet social demand and community development drive organizational change and innovation. Therefore, quality, reputation, trust, and innovation link business performance and CSR action (Ramos-González et al., 2021). According to Bocquet and Mothe (2011), small and large businesses must use the CSR approach to create social innovation. He and Brown (2013) stated that CSR affects employee attitudes, behaviors, and identification. Ramos-González et al. (2021) added that CSR activities affect achieving invention through company engagement.

Santhosh and Baral (2015) stated that organizational citizenship behavior among employees is necessary in order to achieve organizational success. Mirvis et al. (2016) studied how enterprises learn to engage in efficient social novelty by acquiring tacit knowledge from stakeholders. To succeed, business leaders need to create value for their employees as core

stakeholders (El-Kassar et al., 2017). Employees are the most critical assets in a company's success (Mauri et al, 2017). In addition, successful implementation of CSR occurs when leaders focus on the appropriate organizational culture (Espasandín-Bustelo et al., 2021). Jia et al. (2019) examined the impact of CSR on workplace commitment through a combination of social identity theory and exchange. Their findings indicate that the workforce's insight of CSR positively influences employee involvement through corporate pride and perceived corporate support (POS). Their results also show that management can adopt CSR strategies based on employees' value preferences to enhance workplace motivation.

Coppola et al. (2020) examined the relation between CSR strategies and company economic achievement through innovation variables. Coppola et al.'s study stressed that corporations lacking CSR orientation have lower rates of financial return. Businesses can profit and protect the environment and society through social innovation (Liu et al., 2020). Moreover, mediating driving factors link CSR and firms' productivity, including standard, invention, trust, brand, reputation, and social principle (Coppola et al., 2020; Nazzaro et al., 2020). Esa et al. (2020) performed a mixed study with 130 participants, investigating the causal relationships between CSR, the credibility of the business's brand, the business's reputation, and the equity of the business's brand. ESA et al. revealed that CSR affects company trademark credibility, reputation, and brand equity both directly and indirectly.

Companies' significant efforts in employee-driven CSR translate into higher employee satisfaction and employee innovation performance (Espasandín-Bustelo et al., 2021; C. Zhou et al., 2021). The organization cannot succeed without employees' involvement, communication, recognition, and commitment (Goyal & Srivastava, 2021). Chou et al. (2021) developed a conceptual model to describe the influence of CSR initiatives on the behaviors and posture of service workers concerning client satisfaction. CSR contributions make employees proud and more eager to pursue good deeds. Their findings suggest that perceived CSR affects employee and customer service satisfaction. Miethlich et al. (2022) noted that a company's CSR policies

could strengthen employers' commitment to the organization and motivate employees to perform well. In contrast, business leaders can meet society's demands by motivating employees toward social innovation based on CSR history and theories.

Employee-Driven CSR (Internal) and External CSR

The perception of CSR effort, including economic, legal, social, and environmental components—can interest different stakeholders. Researchers differentiate social initiatives from internal and external stakeholders (Maqbool et al., 2022). Jia et al. (2019) stated that leaders should clearly distinguish external CSR from internal CSR. The specific combination of external and internal CSR actions defines the firm CSR strategies that directly influence the firm's efficiency (Coppola et al., 2020).

External CSR

External CSR refers to ecological and social morality contributing to a company's authenticity and reputation amongst external stakeholders. External CSR operations comprise corporate volunteer work, philanthropy, wildlife, and the protection of the environment (Yang & Basile, 2021). Chalabi (2020) highlighted that the perceived external CSR stipulates the perceived external prestige of the corporation. Moreover, external CSR refers to the organization's public responsibility activities toward exterior stakeholders including community, client, atmosphere, and vendors (Waheed et al., 2021). Community CSR includes charitable contributions on humanitarian grounds, investments in community development, and social health (Jia et al., 2019). Environmental CSR includes environmental protection, reducing pollution, and sustainability for future generations. The CSR commitment to the clients consists of supplying high-quality merchandise or services, understanding the consumer needs, engaging with clients, and protecting consumer rights beyond the requirements of the law. According to Zastempowski and Cyfert (2021), one of the social responsibilities of an organization is to deliver efficient and environmentally friendly products and services that meet

social standards (Hou et al., 2020). Supplier CSR refers to the company's responsibility toward suppliers, including maximum collaboration, adaptation to international quality standards, transparency, improved product quality and service, and customer service (Chen, 2020).

Despite the distinction between internal and external social responsibility, most CSR research has explored CSR implications for external stakeholders (Waheed et al., 2021). According to Ye and Li (2021), some companies prioritize their limited resources to meet external rather than internal stakeholder expectations. Ye and Li added that external stakeholders are deemed vital in these organizations due to their proficiency in allocating essential business inquiries. The advantage of CSR activities is not restricted to external stakeholders but also facilitates modifying the perspective of internal stakeholders (Nam, 2020; Tuan Luu, 2018). As a result, recent studies have addressed this deficiency by exploring trends in employee-driven CSR efforts (Nam, 2020; Tuan Luu, 2018; Ye & Li, 2021).

Employee-Driven CSR (Internal CSR)

Internal CSR practices refer to public endeavors involving employees (Low & Bu, 2022). The social actions within the organization concerning employee interest and wellbeing are called internal CSR (Ye & Li, 2021). Internal CSR refers to the corporate regulation and policy associated with employees' psychological and physiological well-being (Chan & Hasan, 2019). Internal CSR includes respecting employees' rights, education, training, decision-making, recognition, diversity, equal opportunity, health and safety, and diversity (Chan & Hasan, 2019; Jia et al., 2019). Thus, CSR activities play an essential role in employees' lives in the workplace and beyond (Golob & Podnar, 2021). The results of internal CSR activity include improving the organization's performance and retaining more qualified and engaged employees (Jia et al., 2019).

Organizations need to have a social purpose, set of values, and commitment to their employees. Internal CSR is associated with the well-being and benefits of employees while

pursuing corporate interests (Jia et al., 2019). The organization should perceive internal CSR activities that conform to the moral standard and meet the requirements of its internal stakeholders. Organizations have a moral and ethical duty to help workers feel significant. CSR instinctively needs to foster a social exchange process between organizations and employees. In response, these employees are more likely to deliver a substantial performance than those with a lower appeal orientation (Tuan Luu, 2018).

Internal CSR relies on the voluntary corporate action of serving employees with solid organizational support. As a result, employees are psychologically, intellectually, and behaviorally involved in the work environment. A previous study has demonstrated that internal CSR affects employees' trust, engagement, and behavior (Carlini & Grace, 2021). Employees work harder when they feel their relevant requirements are met. Thus, internal CSR activities positively affect employees' perceived respect and enhance their organizational identification (Jia et al., 2019).

CSR activities positively affect job satisfaction (Van Dick et al., 2004), corporate citizenship behavior (Blader & Tyler, 2003), and employee retention (Mael & Ashforth, 1995). CSR sustains an effective workforce that influences corporate productivity, efficiency, and competitive edge (Tuan Luu, 2018; Marakova et al., 2021). Lee and Choi's (2021) research indicated that internal CSR is an essential action that improves business efficiency and value. Employees who benefit from company social support are more likely to be dedicated to the company's goal (García et al., 2022). Employees' creative behavior is driven by individuals and is determined by the company's internal social responsibility (Rampa & Agogué, 2021). In addition, motivated employees are innovative, passionate, and have a corporate commitment (Abdul Hamid et al., 2020). Therefore, managers need to consider internal CSR driving factors to motivate employees to innovate during the COVID pandemic. Organizational leaders who struggle to maintain their internal CSR are at risk of experiencing a lack of competitive advantage, business sustainability, and profitability (Girschik, 2020).

Innovation

Dynamic changes in the marketplace require companies to be innovative in developing and creating new products that optimize corporate achievement (Changsuoo & Ming, 2021). Innovation has become the key to success with numerous changes in stakeholder behavior during the global COVID pandemic (Aghaei et al., 2020).

History has shown that the economic growth of nations depends on innovation and human aptitude (Surya et al., 2021). The invention can refer to anything that creates new or enhanced resources, processes, or values (Denning & Ashrafian, 2020). Businesses constantly seek to develop new products, services, and designs to distinguish themselves from their rivals and gain competitiveness (Porter, 2020). Porter (1989) noted that innovation could improve business operations and competitive advantage. More importantly, innovation supports economic growth, prosperity, quality of life, and social progress (Tidd & Bessant, 2018).

In 1967, Robertson divided organizational innovation into continuous and discontinuous categories (as cited in Singh & Aggarwal, 2022). Continuous innovation causes minimal disruption to the established model and minor modifications to existing products or services. Discontinuous innovation involves producing a new commodity, process, design, service, or changing the established behavioral method. In 2002, Elaine Dundon and Thomas S. Robertson categorized innovation into efficiency, evolutionary, and revolutionary (Downs & Velamuri, 2018; Tsakalidis et al., 2022). Efficiency innovation aims to enhance what already exists. Evolutionary innovation seeks to identify a concept that is novel and preferable. Radical new ideas drive revolutionary innovation. Most leaders believe innovation is essential in remaining competitive in the worldwide marketplace (Beglari, 2017; Breton et al., 2014). Initial innovation planning and design involve developing a clear purpose, progressing a detailed plan, allocating resources, and implementing. The three factors that influence innovation in the organization are (a) people, (b) technology, and (c) the marketplace (Buljubašić, 2020).

Innovation and Internal CSR

In response to consumers' demands, the innovation plan has become one of the core requirements of the healthcare industry (Abdel-Basst et al., 2020). Innovation depends on the industry, market, and societal inquiry (Jeppesen, 2021). A critical shortage of medical supplies during the COVID pandemic has pushed companies to innovate (Crupi et al., 2021). Udwadia (1990) provided many definitions of organizational innovation. Standard definitions include implementing new ideas that benefit businesses and society (Jeppesen, 2021; Prasanna, 2021). Innovative companies are always looking for superior approaches to resolving social issues.

A new business strategy and a sustainable business model are required to foster innovation in order to address social demands during a crisis (Guo & Lu, 2021). Aghaei et al. (2020) suggested that companies needed to improve their social responsibility behaviors toward innovation to sustain their market position during a pandemic. Consequently, social innovation presents a sustainable solution to prevailing social problems (Gupta et al., 2020).

Engelberger (1983) declared that the following three factories are required to drive innovation: (a) the need to innovate, (b) skilled employees, and (c) financial resources. In 1984, Lazarus, Coyne and Folkman stated that employees are the key to evaluating and responding to challenging situations by considering their individual goals and coping capacity, perceived opportunities, and inventing new ideas (Chiu et al., 2021). Furthermore, workforce innovation depends upon a climate of innovation within a corporation (Ronquillo et al., 2021). Thus, it is unavoidable for businesses to measure predictive drivers of employee innovation. Ronquillo et al. (2021) suggested that the production of novel conception occurs in an enthusiastic and inclusive cultural ambiance. Employees need a creative atmosphere to innovate and implement new ideas (Nyström, 1990). Thompson and Sanders (1997) introduced the new model of *innovation* called *gardening diagram*. In this diagram, senior management creates an appropriate atmosphere where innovation can thrive by stimulating and rewarding workers' innovative behavior and fostering the invention's enforcement (Ardill, 2022). Organizations must

be adaptable and innovative to cope with the constantly shifting environment; therefore, they must drive the creative behavior of employees (Ekvall, 1999). Ekvall and Ryhammar (1999) studied a positive correlation between inventive organizations and the innovative environment. Martins and Terblanche (2003) examined an innovative environment and its relationship to employee engagement and support, concluding that managers should applaud and recognize the excellent innovation efforts of staff. Timmer and Los (2005) argued that employee innovation could achieve organizational success. Davila et al. (2006) indicated that the measurement of the invention differs extensively among corporations, including the cost of innovation, efficiency, profit, and employee contribution and motivation for innovation. Motivation is a leader' communication to inspire employees to pursue performance effectively (Mayfield, 2006). Übius and Alas (2010) asserted that an organizational climate plays a fundamental role in employees' innovation. Übius and Alas concluded that internal CSR affects motivation toward innovation, citing eight drivers as predictors of employee-driven CSR toward innovation, including employee recognition and reward, empowerment, resources, engagement, communication, job satisfaction, training, and supervisor relations.

Gopalakrishnan et al. (2012) suggested that organizations should be involved in CSR practice, including health and safety, training, equitable compensation, and recognition to motivate high performance. Ortiz et al. (2016) noted that corporate leaders seek to accomplish results, focusing on motivational factors that employers consider valuable. Leaders can evaluate corresponding staff motivation factors that lead to corporate creativity (K. Min et al., 2016). Therefore, managers must understand the drivers of employee innovation by implementing internal CSR. Aras and Crowther (2010) suggested that an internal CSR strategy creates value for the business to stimulate innovation.

The appropriate development of human resource practices based on CSR-oriented strategy allows companies to carry out more effective innovative activities. To motivate employees, managers should focus on employee-driven factors such as self-efficiency, growing

opportunities, competitive reward, and decision-making involvement (Abdullah Al Mamun & Nazmul Hasan, 2017). The staff's motivation for high performance depends solely on perceived fairness in labor compensation policies and employees' treatment at the workplace (Bawa, 2017). Motivation is a method that a company employs to inspire employees to achieve acceptable performance relative to the organization's perspectives (He et al., 2019). Motivation infuses employees to perform tasks with the highest effort (Guzman et al., 2020). The main characteristic of motivation is a guided process that converts individual skills into high performance.

Y. Wang et al. (2020) stated that firms could leverage employees' motivation toward innovation in crisis management. Employees must be motivated to ascertain the value of achievement toward innovative behavior (Pukkeeree et al., 2020). Leaders can act as an intermediary between employee forces and innovation by work motivation (Ge & Sun, 2020). As a result, organizations can leverage the benefits of CSR considerations to motivate employees to innovate to pursue the organizational vision (Jia et al., 2022; Tajeddini et al., 2020).

Liu et al. (2020) studied company innovation from an employee CSR perspective in China, finding that employee CSR generates more motivation to high performance and innovation success. Employee CSR promotes innovation through employee dedication and complacency to effectiveness. Liu et al. stated that corporate's dedication to practicing superior employee-driven CSR is a crucial factor in staff member innovation (Liu et al., 2020). Business leaders can leverage CSR to create the proper position in the minds of stakeholders (Aghaei et al., 2020). H. Zhou et al. (2020) indicated that CSR positively affects innovative performance through staff commitment. They noted that the positive impact is definite when staff members contribute to innovation. Lashitew et al. (2020) added that the combination of profit-making and social impact fosters innovation. I. Shin and Hur (2020) indicated that employees' conception of internal CSR motivates them to achieve superior service performance.

The firm's employee-driven CSR is a significant determinant of its innovation. Employee-driven CSR spurs innovation through employee commitment and stability (Liu et al., 2020). The most successful and innovative firms produce unique supplies, techniques, strategies, methods, and services to tackle social issues (Donthu & Gustafsson, 2020). These successful companies perceive the public issue as an opportunity for innovation, value building, and a competitive edge (Chkir et al., 2021). Santos et al. (2021) studied the influence of internal CSR on innovation in a sample of 2,825 Spanish businesses. The results indicated that inner CSR affects company innovation positively. Moreover, Huang and Li (2021) conducted a study to explore how the innovative atmosphere develops information management and novelty work attitude among companies. The results show that the innovation climate has positively affected knowledge management, idea generation, and innovation work attitude. The innovative culture of employees enhances the efficiency of the company. Consequently, Santos et al. found that CSR-centered innovation has been a valuable strategy for medium and small sized businesses to achieve a competitive edge.

Espasandín-Bustelo et al. (2021) suggested that managers can proactively promote internal CSR by designing the clan and adhocracy cultures such as flexibility, supervisors' support, mentoring, risk-taking, creativity, communication, and training. Employee satisfaction builds social effectiveness and can be reinforced with internal CSR. Mollinger-Sahba et al. (2021) found that social innovations are fostered by market demand, and these innovations stimulate the market.

Employees play a critical role in innovation and producing high performance. The organization must employ the creativity of its employees to innovate and gain a competitive edge (Engelsberger et al., 2021). In addition, the more individuals can originate ideas, the more possibility they develop an effective invention (Thorgersen & Mars, 2021). It would be essential to determine what activities stimulate individuals to participate and contribute to innovation and how business leaders motivate employees' innovative behavior (Changsuo & Ming, 2021).

Rampa and Agogu  (2021) stated that employees should be encouraged to innovate for organizational benefit. Motivated employees can create innovative ideas and products that enhance organizational performance and foster social respect (Siyal et al., 2021). However, employees' creative behavior is driven by individuals and is determined by the company's internal social responsibility (Rampa & Agogu , 2021). In the current study, the researcher focuses on  bius and Alas's (2010) eight drivers as predictors of employee-driven CSR toward innovation, including employee recognition and extrinsic and intrinsic rewards, empowerment, resources, engagement, communication, job satisfaction, training, and supervisor relations.

Employee Recognition, Extrinsic and Intrinsic Rewards

Flocco et al. (2021) explored how leadership style affects employee-driven innovation (EDI) through employee recognition. Employees need recognition for their job to be motivated for higher performance (Ali & Anwar, 2021). A business manager can promote an employee innovation culture by recognizing employee ideas and creating innovative opportunities (Si Dah et al., 2022). Leaders should encourage their workforce to become trusted innovators (Campos-Bl zquez et al., 2020). Recognition can take various patterns, from oral communication to tangible rewards (Newton & Asimakopoulou, 2021). Business leaders can achieve the desired outcomes by establishing transparency, clear communication, trusting relationships, empowerment, and recognition amongst employees (Kifor et al., 2021). The failure of managers to recognize employees' performance results in the voluntary resignation of employees (Robertson, 2021).

Abdullah et al. (2021) asserted that employees remained loyal to organizations that offered social and psychological rewards during the COVID pandemic. In order to motivate employees, the organization's compensation must be in line with the employees' qualifications (Ali & Anwar, 2021). Herzberg (1968) explained how hygiene and motivation affect employees' job satisfaction and performance. Herzberg referred to hygiene motivational factors such as

company regulations and rules, level of supervision, working environment, paying system, and job stability as necessary factors influencing employees' primary needs. Herzberg added that motivation refers to internal forces such as recognition, transparency, accountability, promotion, and growth. Vroom (1964) described motivation as a management tool stimulating work efficiency. According to Vroom, motivation is a determining factor that drives individuals to achieve the desired results.

Leaders facilitate organizational innovation by rewarding the invention and providing sufficient resources for its diffusion (Cortes & Herrmann, 2020). Luqman et al. (2021) noted that reward is vital for employees' motivation. Both internal and external rewards need to be present in the workplace in order to achieve desired performance (Sigaard & Skov, 2015). The company can increase employee motivation and commitment by implementing psychological and physical rewards. Managers need to identify reward systems where employees feel valued and appreciated for their inventions. Extrinsic rewards include competitive salaries, bonuses, profit-sharing plans, paid vacations, salary increases, promotions, tuition compensation, employment security, and stock options (Abdullah et al., 2021). Underpaid employees have resentment, leading to a lack of motivation and productivity and negatively impacting corporate funding (Kifor et al., 2021).

Employees are inherently motivated to engage in meaningful and enjoyable work activities (Ali & Anwar, 2021). When corporate leaders inspire their workforce in a motivating atmosphere, their dedication and work performance improve (Vu et al., 2022). Intrinsic rewards come in the form of a variety, including a clear vision, a motivational goal, self-improvement, outstanding accomplishments, job challenges, self-development, recognition, and empowerment (Guzman et al., 2020).

Expectancy Theory of Motivation. CSR influences employees' attitudes and behavior through the expectancy theory of motivation, which asserts that employees are motivated when

they believe they receive a reward for their accomplishment (Vroom, 1964). Employees are powered if they trust that their significant endeavor results in higher returns and that higher returns contribute to the desired rewards (Eccles & Wigfield, 2020). A fundamental principle of the expectancy theory of motivation emphasizes reciprocity, particularly concerning CSR.

Vroom (1964) suggested that employees understand the relationship between desired results and work efficiency. The behavior of a workforce arises from individual factors such as personality, skills, enlightenment, expertise, and abilities that play a significant role in employees' efforts. Vroom noted that employee motivation is driven by behavior, personal intent, and expectation. Vroom's expectancy theory comprises three stimulatory forces: expectancy, instrumentality, and Valencia. The degree of motivation in the workplace depends on these three forces.

Expectancy. Expectancy is a staff member's persuasion that something desirable happens due to their deed (Watters, 2021). Vroom (1964) asserted that employees expect their effort toward company goals to be compensated. Business leaders need to find employees' desire to drive employees to perform at their best possible level. Higher organizational innovation expectations stimulate innovation motivation and promote more innovation behaviors (Changsuo & Ming, 2021).

Instrumentality. Instrumentality is the expectation of a workforce that the employer's compensation is equal to their level of achievement. Instrumentality is employees' belief that employers grant efficient completion (Watters, 2021). Instrumentality occurs when employees' confidence in their management is genuine about the rewarding system (Watters, 2021).

Valence. Valence refers to how employees perceive their expected reward. The employees' rewards must be aligned with their preferences to drive them to perform efficiently (Yoes & Silverman, 2021). However, each employee's values are different. Corporate leaders need to recognize their workforce preferences and accordingly determine the most desirable

reward (Yoes & Silverman, 2021). Business leaders need to identify which factors motivate individual behaviors to achieve work efficiency (Ali & Anwar, 2021).

Vroom suggested that employees' perception of an organization's reward system affects their efficiency and productivity. The expectancy theory consists of the employees' attempts, achievements, preferences, and expected rewards. Employees are ready to learn a new skill and apply it to achieve greater efficiency over the desired compensation of the business. Expectation-based motivation strengthens an individual's tendency to act specifically concerning the expected or desired outcome (Watters, 2021).

Employee Empowerment

Companies must continually adjust to complex and growing markets (Gukasyan et al, 2022). Empowering employees to participate in innovation and development processes requires organizational infrastructure that facilitates employee engagement and empowerment (Atapattu & Huybers, 2021). The exploitation of the power of human capital has resulted in CSR efforts having so much impact. Managers should put employees at the center of CSR strategy, align employees' tasks with company objectives, and give employees the means to achieve the goal. Corporate leaders can influence employees' creativity and innovative processes by empowering, communicating with, engaging, and recognizing employees (Suifan et al., 2018). Encouraging and inspiring employees to reach corporate goals enhances organizational performance (Azizi et al, 2021). Organizations have different ways of empowering their employees. In a decentralizing system, businesses allow employees to participate in day-to-day operational system decision-making, affecting their work performance and effectiveness (Rosin et al., 2022). Medical firms' leaders can empower their employees to use their skills and expertise to innovate products and services to contribute to communities significantly. Echebiri et al. (2020) found an affiliation between worker empowerment and employee steer innovation,

adding that innovation can only happen if managers provide employees with the means to generate creativity and enforce their idea.

A motivational atmosphere empowers employees to be efficient and productive (Atapattu & Huybers, 2021). Empowerment promotes the ability of employees to adapt to change, accept high risks, face challenges, and effectively achieve organizational objectives (Huntsman et al., 2021). Empowered employees are highly collaborative, open to new methods, problem solvers, and willing to perform the innovated approach to accomplish their job (Huntsman et al., 2021). Commonly, workers' anger toward their organizations may result from the lack of management support.

Resources

Companies must devote their resources to social innovation and tackling existing social problems (Cheng et al., 2021). The resource-based view (RBV) theory developed by Barney in 1991 revealed that the organization possesses strategic resources to achieve its goal (Shaw, 2021). The re-prioritization of innovative resources fosters innovation (You et al., 2021). The primary resources impacting company innovation during crises include employees finance, technology, time, raw material, and equipment (Vahdat, 2021). Leaders must determine and protect essential company resources. Gorgenyi-Hegyey et al. (2021) stated that workers are the most valuable resource of a company's success. In the face of economic, social, demographic, and environmental crises, business leaders need to direct their human capital to contribute to big new ideas and help organizations move forward (Boonsiritomachai & Sud-On, 2022). Human capital supports innovation development within organizations (Norouzinik et al., 2021). Managers should put their employees at the center of their strategy, align their work with the company's core objective, and enable employees to achieve it. Ge and Sun (2020) added that employees' strengths enhance their innovative behavior. Business leaders must ensure that the workforce has adequate resources to achieve their intended outcomes (Hu et al., 2021).

Changsuo and Ming (2021) surveyed 16 companies in China to determine the relationship between knowledgeable employees and innovative behavior. They identified that methods of encouraging innovation differ among employees, such as self-recognition, innovation capability, and error-tolerant atmosphere expectations (Rampa & Agogu , 2021). Leaders who fail to prioritize the essential needs of the organization and the allocation of innovation resources expose their business to high risk (Cheng et al., 2021).

Employee Engagement and Decision Making

Employee engagement affects innovation, absenteeism, teamwork, retention, and improvement of the organization's processes and practices (Berraies & Chouiref, 2021; Singh & Singh, 2021). Employees enjoy participating in the work process and flourishing (Ali & Anwar, 2021). Boudrias et al. (2021) stated that employees needed to participate in the decision procedure and perform a proactive role in the work process. Workplace engagement fosters the connection between employee capability and innovation (Ge & Sun, 2020). In addition, employee engagement is essential to managers because it impacts the corporation's competitiveness, efficiency, and engagement. Worker engagement is a multidimensional concept that enables the workforce to communicate with supervisors, co-workers, and the corporation (Liu et al., 2020). Corporate executives need to increase employee engagement in the work process to remain competitive and increase profits. Employee work and decisive engagement enhance productivity and efficiency and minimize turnover (Al Mehrzi & Singh, 2016). In times of crisis, employees remain committed to an organization if they are engaged in the process and decision-making of the company (Boonsiritomachai & Sud-On, 2022).

Ge and Sun (2020) asserted that employee engagement fosters innovative behavior where employees benefit from effective collaboration, teamwork, organizational involvement, and brand reputation in the external environment. Employee engagement and innovation strengthen one another. In other words, an engaged workforce is more likely to innovate, and an

innovative organization is more likely to engage its employees (Jason & Geetha, 2021). Committed employees are highly productive, collaborative, and capable (Castro-Martínez, 2020). The negative behavior of workers towards their companies is stimulated by the lack of support and sustainability of management (Kifor et al., 2021).

Horizontal and Vertical Communication

With globalization, employees find themselves in a diversified cultural atmosphere (Khalid et al., 2022). Consequently, Information transparency and the capability to manage the workforce in various contexts influence employee behavior and organizations' sustainable innovation capacity (J. Li et al., 2021). Barić et al. (2021) studied the effect of CSR on corporate strategy on social action and information channels. This communication can be up or down the hierarchy (vertical level) or with other employees in the same hierarchy level (horizontal level). When corporate leaders communicate effectively with their staff and provide them with the necessary resources, productivity and profits are strengthened (Cheng et al., 2021). Appropriate communication can improve employees' work-life, increase work pleasure, and reduce team miscommunication (Mahvar et al., 2020).

Communication issues are significant organizational conflicts among employees leading to errors, poor collaboration, delays, financial losses, and inefficient performance (J. Li et al., 2021). Innovation occurs in an advanced decentralized system with transparent communication and bypassing bureaucracy (Al-Hawari et al., 2021; Minssen et al, 2020). Horizontal communication implies a higher problem-solving ability, fostering information exchange across the organization (Tjosvold & McNeely, 1988; Wu et al., 2021).

In contrast, vertical communication systems are highly feedback-oriented and go from the top downward. Owczarek (2021) indicated that transparency and clear communication in crisis management is the foundation for prompt and efficient decisions to cope with uncertain changes and operating conditions. He asserted that affected communication influences work

efficiency. The appropriate level of communication strengthens organizational collaboration that clarifies the situation, understands the actions taken so far, and shares knowledge and information about resources. Throughout all emergency management processes, vertical communication can ensure the quality of information necessary to develop a typical picture of the situation and joint action. Efficient employee-supervisor relations and a positive corporate atmosphere positively impact employee engagement in innovative workplace behaviors (Bai et al., 2021). Therefore, a company's relationship with its employees is essential (Kim & Kim, 2021).

Employee Job Satisfaction

Employee Job satisfaction measures how gratified employees are with their occupation (Loor-Zambrano et al., 2021). Employee job satisfaction increases employee motivation and workplace productivity (Windaru, 2021). N. Newton et al. (2022) added that Job satisfaction is a critical consideration in retaining employees. Herzberg (1968) asserted that employees' job satisfaction is achieved with some elements of motivation, such as self-growth, promotional opportunities, recognition, self-achievement, meaningfulness tasks, and empowerment (Alshmemri et al., 2013).

Turnover in the medical field is one of the most expensive and disruptive problems (Rajan, 2021). Employee satisfaction can reduce the unemployment rate, stabilize the social economy of employees, and enhance organizational productivity (Narayanamurthy & Tortorella, 2021). Furthermore, employees are encouraged to be motivated in the organization's development, concerned about the success of their idea, and work toward future improvements. Demircioglu (2020) found that bottom-up innovations (ideas generated by employees) positively affect job satisfaction. Employee job satisfaction was the number one motivating factor for innovating during the COVID pandemic.

Employee Training

Employee knowledge, and expertise are the greatest strength in continuing innovation (Changsuo & Ming, 2021). H. Zhou et al. (2020) indicated that diversity of information and knowledge supports innovation. Organizations need a training strategy to enhance employees' job performance and provide a learning and error-tolerant atmosphere for innovation (X. Wang et al., 2021). Furthermore, employee knowledge plays a role in mediating employees' innovation intelligence and behavior (J. Li et al., 2021). Individuals' true confidence depends on their capacity for learning and putting effort into achieving the desired results. Corporate training should be employee-centered and management capacity-based. According to Kraiger and Ford (2021), the training facilitates the mastery of knowledge and accelerates the change of individual behavior to adapt to the company's expectations. The key to a successful innovation process is the training and support of influential professionals. Consequently, employees can analyze, interpret, and adapt an initiative based on lessons learned during its implementation (Campos-Blázquez et al., 2020). Self-growth is an employee's conviction and mindset about their high score accomplishment (Zhoc et al., 2021). Employee self-growth positively influences innovation in the knowledge-exchange working era (Teng et al., 2020).

In addition, diversity of knowledge and skills are vital elements of creation (Engelsberger et al., 2021). Knowledge workers often receive more innovation expectations from inside and outside the organization; therefore, corporate leaders need to encourage, recognize, and train knowledgeable employees' enthusiasm for innovation (Changsuo & Ming, 2021). In addition, the Staff tasks must be consistent with their skills, which positively influences employees' motivation relationships (Muñoz-Pascual & Galende, 2017). Rampa and Agogué (2021) noted that organizations increasingly depend on developing innovative capacities. Specifically, training and knowledge sharing foster innovation capabilities among corporations (Rampa & Agogué, 2021).

Employee training leads to employee self-growth, and self-efficiency and impacts work behavior. Self-efficacy is an element that business leaders utilize to enforce motivation toward high performance (Beasley, 2021). Beasley revealed self-efficacy as a predictable behavior that individuals exercise when motivated to perform specific tasks and goals.

Leadership Relationships

Leaders can use innovation as a source of competitive advantage as it helps the organization adapt to rapid and complex market changes (Afzar et al., 2021). Mather (2020) found that innovation is one of the critical drivers of business leaders' success during the COVID pandemic. Snyder et al. (2018) added that leaders should utilize innovation-focused strategies to cope with crises.

Damanpour and Schneider (2006) asserted that an innovative environment results directly from the attitude and characteristics of organizational leaders. Leaders in the organization can transform creative ideas into practical innovations by exercising sufficient leadership and building a culture of innovation (Hoang et al., 2020). Mismanagement of innovation occurs when leaders are unaware of employees' diverse personal needs, values, and abilities (Siyal et al., 2021). Employees become loyal to their organization when leaders sacrifice short-term profitability to adhere to social values (Samantara & Dhawan, 2020).

Business leaders can be essential to the employees' success toward innovation. Leaders can create an organizational culture that inspires and stimulates employee engagement, innovation, and work performance (Al Mehrzi & Singh, 2016). Corporate leaders can leverage employee CSR to boost organizational citizenship behavior and employees' high performance (Khaskheli et al., 2020; Yuan & Cao, 2022). Medical diagnostic business leaders can create an atmosphere that fuels motivation and employee performance in pandemic situations. They may identify multiple motivating factors that affect employee innovation. W. Zhou and Velamuri (2020) identified three driving factors to building innovation ability among

organizations: knowledge building, innovation mindset, and establishing employee compensation measurement.

Employees have a significant role in helping businesses cope with change during a pandemic (Young et al., 2020). Supporting leaders by their followers empower leaders to navigate crises as “Managing-Up Theory.” Employees need to collaborate and support leaders in the organizational process and make good relationships. The theory of leader-member exchange (LMX) developed by Geroge B. Graen and Mary Uhl-Bien in the 1990s stresses the relationship between corporate leaders and the two opposing groups of employees in an organization (Thomas-Collins, 2021). According to this theory, a motivating work environment would significantly promote the organization’s growth toward achieving its goals. Hence, companies should determine what enhances the relationship between leaders and their workers towards work efficiency (Soderberg & Romney, 2021). However, the quality of the relationship is measured by trust, loyalty, support, and respect between supervisors and subordinates. Motivated workers are considered a team of individuals who achieve accomplishments based on their strengths, objectives, and orientation toward organizational success. The manager/employee relationship, management strategy, motivation, and reward influence the employees' performance level (Zhuang & Pan, 2022). Satisfy employees are more supportive of organizational leaders. DuBrin, 2013 indicated that the efficiency of leaders in crises depends on leadership outcome and employee commitment.

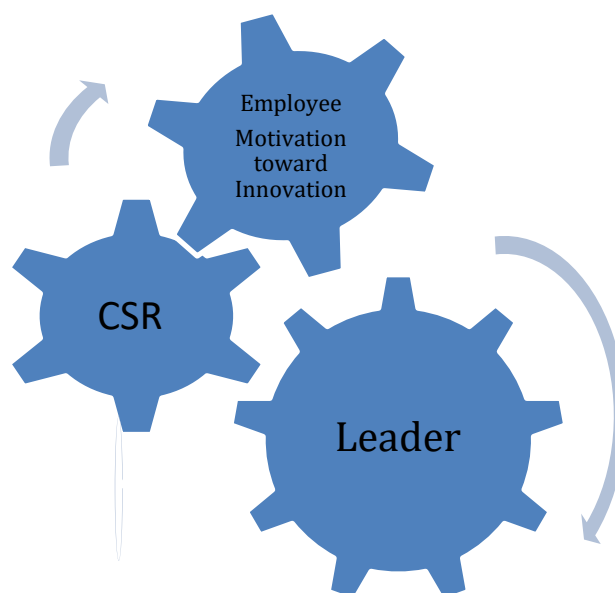
Employees' efforts to adapt to high performance are not readily achievable without a clear leadership vision and expectations (S. Newman & Ford, 2021). In addition, employee motivation and engagement decline if organizational leaders do not assess employee behaviors and workplace performance consistency (Jung et al., 2021).

In conclusion, leaders enact an essential contribution to stimulating employee innovation through CSR. Leaders provide a sense of vision, motivation, purpose, mentorship, and inspiration for business objectives. Furthermore, leadership style and organizational culture

define employees' innovation-driven behavior. Leadership style in innovation may vary depending on the corporate culture and environment (see Figure 2).

Figure 2

Leaders, CSR, and Employees' Innovation



Leadership Style and COVID Pandemic

During the COVID pandemic, corporate leaders face many challenges with new work environments, such as changes in consumer demand, regulatory vagueness, social needs, and supply chain disruption (Carnevale & Hatak, 2020; Graves & Karabayeva, 2020; Mather, 2020). Meanwhile, leaders must focus on employee wellbeing, safety, new communication, motivation, and creativity (Ouyang et al., 2021; Peng et al., 2022; Warrick, 2017). COVID epidemic may need new leadership skills with innovative thinking and strategies to cope with the most challenging situation.

Boin et al. (2013) identified vital leadership tasks in crises, including primary observation, detection, rapid decision-making, transparent communication, learning, stimulating creativity, and enhancing resilience. Thomas (2020) added that a few principles define leadership agility, including breaking down the work into smaller tasks, working in small groups, valuing knowledge and experience, encouraging teams to self-govern, and encouraging transparent communication.

Through an examination of previous theories and studies, the successful crisis leadership style includes but is not limited to recognizing and understanding the problem, discipline, flexibility to change, agility in action and decision making, strong vision, risk-taking, promoting innovation, networking, improving collaboration and team working, shifting cultural norms, assessing risks, decisiveness, and compassion (Bartsch et al., 2021; Graves & Karabayeva, 2020; Mather, 2020). Despite all previous studies, we may require a new style of leadership or a combination of leadership that is not similar to past theories or traditional analytical approaches (Grint, 2020).

The social responsibility of organizations towards employees, such as training, workplace climate, employee compensation, positive reinforcement, effective communication transparency, safety, and growth, is valued during pandemics (Dirani et al., 2020; Mani & Mishra, 2020). Fox et al. (2020) said there is an association between authentic leadership, CSR, and flexibility to change in times of crisis. Authentic leadership can influence organizational performance through empathy for leadership, self-confidence, self-discipline, tolerance for ambiguity, and the direction of stakeholder values (Fox et al., 2020).

Alheet et al. (2021) revealed that leadership skills affect the invention of a workforce that supports leading through a problem. Bataineh et al. (2022) asserted that participative leaders are innovative and encourage innovation in their respective organizations. They added that participatory leaders tend to tailor their thoughts, plans, and approaches to challenges.

Participatory leadership requires the leader to express creativity with better vision and effective dissolution to solve the problems (Peng et al., 2022). Newman et al. (2020) stipulated that transformational leadership influences innovation climates. Transformational leadership supports the innovation climate by articulating a corporate vision, individual support, and innovative role model behavior to their subordinates. Siyal et al. (2021) pointed out that inclusive leadership positively influences creative work behaviors. They added that inclusive leadership helps companies embrace diverse cultural insights, employees, customers, markets, partners, ideas, and talent. Innovation is a source of competitive benefits as it facilitates effective change and improves organizational performance (Fan & Ouppara, 2022). In addition, C. Zhao et al. (2021) researched that charismatic leadership has significantly influenced innovation among millennials in China. Charismatic leadership is a style of leadership that combines charm, interpersonal relationships, and convincing communication to motivate others. Crisis leaders are strategic, charismatic, transparent, and emotionally intelligent (Crayne & Medeiros, 2020). Furthermore, meta-leadership is another type of leadership used during an epidemic. In this style, leaders practice across hierarchical structures, realize opportunities, build high internal and external connectivity with stakeholders, and define stakeholders' capacity to meet the complex crisis's challenges (McNulty et al., 2021). In conclusion, various factors influence leadership style, including industry, organizational culture and beliefs, geography, demographics, and political governance. Gigliotti (2016) indicated that leadership in crisis shapes a leader's identity.

Summary

The COVID epidemic has imposed extra pressure on corporations to engage in their social and moral commitments. Businesses have attempted to manage the crisis by implementing a new business strategy and a sustainable business model to foster innovation to address social demands (Guo & Lu, 2021). Aghaei et al. (2020) suggested that companies need

to escalate their innovation and community responsibility behaviors to sustain their position in the pandemic. This research focused on how the perception of internal CSR impacts employee motivation for innovation. This chapter examined the literature on CSR theory and the expectancy theory of motivation as literature foundations. The literature examination provided an overview of developing employee-driven CSR toward innovation in the medical diagnostics manufacturing industry, focusing on nine employee-driven CSR activities: including employees' extrinsic and intrinsic rewards and recognition, empowerment, resources, employee engagement, and decision-making involvement, horizontal communication, vertical communication, employee job satisfaction, employee training, leadership relationships, and their impact on innovation climate.

Chapter 3: Methodology

Chapter three discusses the study questions, study methods, study design, sampling strategy, data gathering mechanism, analyzing data process, study reliability and validity, the human subject protections, and the investigator's personal bias statement. The researcher was the primary collecting data for this quantitative study. The researcher's role in this research included (a) selecting appropriate research methodology and design, (b) targeting participants, (c) data collection, (d) analyzing the data, and (e) verifying findings for reporting.

Restatement of Research Question and Hypothesis

In accordance with a research question (RQ) and reviewing of journals, the survey questionnaire has been selected. The central RQ examined the association between employee-driven CSR practices and worker innovation climate. The central RQ was “what relationship, if any, exists between employee-driven CSR, including reward and recognition, empowerment, resources availability, engagement and decision-making involvement, horizontal and vertical communication, training, job satisfaction, leadership relationships, and employee innovation climate?”

Hypothesis

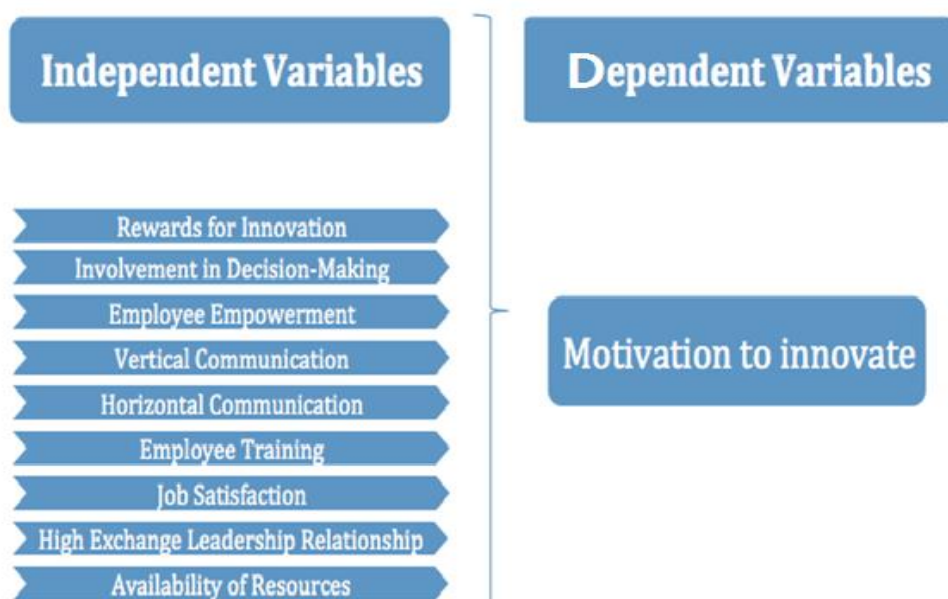
This research sought to understand whether there was any relationship between employee-driven CSR factors with employees' innovative climate (see Figure 3). The RQ drove to the subsequent hypothesis and null hypothesis:

- RQ1: “What relationship, if any, exists between employee-driven CSR factors, including employee reward and recognition, empowerment, availability of resources, engagement and decision-making involvement, horizontal communication, and vertical communication, job satisfaction, training, and leadership relationships, and employee innovation climate in medical diagnostics companies?”

- H10: None of the employee-driven CSR factors, including employee reward and recognition, empowerment, availability of resources, engagement and decision-making involvement, horizontal and vertical communication, job satisfaction, training, and leadership relationships, impact employee motivation to innovate.
- H1a: At least one of the employee-driven CSR factors, including employee reward and recognition, empowerment, engagement and decision-making involvement, availability of resources, horizontal and vertical communication, job satisfaction, training, and leadership relationships, have a positive impact on employee motivation to innovate.

Figure 3

Independent Variables and Dependent Variables



Research Design

Qualitative, quantitative, and mixed approaches represent three forms of search methodology (Forward & Levin, 2021; Yin, 2014). Choosing an appropriate search methodology

and design is essential to any research. Binnie et al. (2021) stated that the determination of the methodology and design of the study relies on whether the method and design are suitable to allocate the RQ. The first step was determining whether the research problem fitted into an approach. The researcher should identify whether this methodology is most appropriate for the research (Auby, 2020). The second step was identifying and describing the phenomenon in research design. The next step was to distinguish and specify the possible research assumptions.

Qualitative methodology explains, explores, understands, or interprets phenomena in concrete contexts (Forward & Levin, 2021). In a qualitative method, investigators utilize open-ended queries to examine how and why a phenomenon occurs (Forward & Levin, 2021; Yin, 2015). The qualitative approach explores research problems from various angles (Daalhuizen & Cash, 2021). Forward and Levin (2021) asserted that qualitative research tends to occur when understanding the phenomenon is limited or non-existent. Creswell and Creswell (2018) added that the examiner uses qualitative methods to understand participants' lived experiences and perceptions. Researchers implement the qualitative methodology via the following approaches: (a) ethnography, (b) narrative, (c) case study, (d) ground theory, (f) historical and (g) phenomenology (Renjith et al., 2021). In each technique, the researcher collects information to explore participants' lived experiences. Moreover, researchers gather data to identify frequent themes based on the responses (Renjith et al., 2021). Qualitative research integrates observance, evidence, documentation, interpretation, assessment, and the definition of a particular phenomenon (Lye et al., 2021). The intention is to comprehend the participants' perspectives. Granek et al. (2021) mentioned that qualitative study is not centered on sampling or graphic presentation. In contrast, it seeks to examine a phenomenon until no new theme arises from the data analysis. Even though a qualitative approach might add value to comprehending the relationship between employees' internal CSR factors and innovation more broadly, it was not consistent with this research goal. Qualitative investigators attempt to

determine a model and theme, whereas quantitative investigators seek to establish a numerical correlation (Hays & McKibben, 2021). Considering the phenomenon has been the subject of previous research, the quantitative method constituted the ideal and the preferred choice for this particular study.

Researchers utilize a quantitative research method to test research hypotheses, define statistical trends, and determine causal correlations amongst the variables (X. Li, 2020). The researcher rejects or accepts hypotheses relying on responses to closed questions from valid and credible instrumentation (Gómez & Suárez, 2021; Yin, 2014). Scholars employ closed-ended queries to test hypotheses or explore the association or distinction between dependent and independent variables in quantitative study (X. Li, 2020), which was the intention of the contemporary study.

This research study examined the correlation between employee-driven social responsibility factors and employee innovation climate. The goal was to furnish managers with superior insight into internal CSR factors that affect employees' innovation and enhance the efficiency and performance of organizations in crisis. This research design determined how employee-driven social responsibility factors (the independent variables) influence employee innovation (the dependent variable). As a result, the quantitative research methodology quantifies the phenomenon by collecting numerical data for statistical review to measure variables and extrapolate relationships (Cortina, 2020). Although this study identified critical predictors without requiring rich qualitative information, the quantitative methodology fully achieved this study's research goals. Unlike qualitative research, where researchers collect verbal data to describe the phenomenon in detail, quantitative research measures data to build statistical models. This research used the survey metric to gather digital data instead of conducting extensive interviews, observations, narratives, or participant comments typically

correlated with qualitative study (Hays & McKibben, 2021). The researcher utilized the CSR and innovation survey conducted by Übius and Alas (2010) to collect numerical data.

Quantitative investigators utilize numeric data without the presence of participants' impressions, apprehensions, and definitions attributed (Lye et al., 2021). Nevertheless, there are disadvantages to quantitative research methods, including: (a) survey questions may have a formulation impact that can cause a bias in respondents' responses, and (b) quantitative research could be costly and time-intensive (Edwards, 2020).

The mixed method combines quantitative (numerical trends) and qualitative (social experiments) techniques to respond to the RQ (Matook et al., 2022). The mixed-method approach is a method of inquiry in which qualitative and quantitative methods are required to allocate the RQ and support the research (Ahmad & Raja, 2021). The mixed method was inappropriate for the present study due to the fact that the researcher intended to test hypotheses or analyze statistical trends.

A study design is a layout to allocate the RQ and draw a persistent and rational conclusion on the results of a study (Smith & Hasan, 2020). Researchers can deploy the quantitative method with the following approaches: (a) correlational, (b) experimental design, and (c) quasi-experimental designs. The descriptive correlational design was appropriate to determine the association and predictive relations between variables in this research.

A quantitative study aims to perform the appropriate assessment, comparisons, and interpretations to verify statistical support for the hypothetical association or effect (Hays & McKibben, 2021). In correlational design, the researcher explores the relationships between several factors to recognize trends in the collected data and clarify the variables' associations and statistical patterns. Kelly (2021) warned that research fellows should consider timelines, geographical location, sub-group impacts, and the research phenomenon in the interruption process. Even though a researcher cannot conclude cause and effect, the design discloses the

variability due to the relation. Thus, the correlation design was the preferred design for attributing the studied phenomenon in this research. In addition, descriptive analysis describes the state of a determined variable and furnishes systematic data on a phenomenon (Y. Park et al., 2021; Zhang et al., 2021). The study variables were measured through digital responses to a Qualtrics survey tool. The researcher used a descriptive correlational design which has resulted in an objective vision of the variables and a relatively higher level of certainty. A researcher found correlational design appropriate for this quantitative research to define the connection between the research variables.

The experimental and quasi-experimental research design can be considered if the study consists of two groups of participants: (a) treatment and (b) control. By contrast, in experimental and quasi-experimental studies, researchers introduce changes and monitor their effects on variables which is helpful in laboratory investigation. The experimental design is invasive and is based on establishing an artificial condition so that the investigator can measure the causal affiliation with significant internal validity (Haynes et al., 2021).

Miller et al. (2020) declared that the experimental and quasi-experimental study designs need a randomly assigned group and a minimum of one treatment group receiving the intervention and control group not receiving the intervention. The experimental design also obliges attendance to be identical in all other attributes that could affect the outcome (Haynes et al., 2021). The experimental design was undesirable for this study, considering that this study was not intended to appraise, treating process, intervention, or define a cause or effect.

By considering correlational design, researchers determine the link between data to recognize changing patterns and trends of variables. The design was suitable for identifying potential predictive relations among the variables. The descriptive correlational design tackled the RQ to define the connection between individual CSR factors and innovation climate. This quantitative correlational design was the preferable research method because the study aimed to analyze the quantifiable concepts. Additionally, the researcher utilized closed-ended

questions based on job function, gender, education and length of employment within the organization. This research design outlined the data collection requirements consisting of data sourcing.

Sources of Data

Determining the sampling is a fundamental element of any research. It guarantees that an investigator implies the conclusion for the entire population with a certain level of confidence (Hennegan, 2019). The population for this research included employees with 3 years or more experience in operation, quality control, technical product support, research, and management departments in the medical diagnostics companies in the USA. A total of ninety-three volunteer employees complemented the entire survey and became the study subjects. A data source strategy for this research consisted of three elements: (a) the target population, (b) sampling, and (c) the sampling procedure.

Target Population

The research population was composed of working employees in U.S. medical diagnostics companies. As stated previously, the target population concentrated mainly on staff who work in the operation, quality control, technical product support, research, and management job functions. This requirement filled some certainty that the staff had accurate work qualifications to respond to this study's questionnaires. The further specific audience was the workforce with 3 years or more experience in U.S. medical diagnostics business. The rationale for including this provision was to ensure that the employees had work experience in medical diagnostics companies. The target population was selected based on the established criteria.

Sample Size

In quantitative studies, researchers identify target populations with similar characteristics. The selection of an appropriate pool of participants and sample size is essential (Y. Park et al., 2021). Probabilistic sampling was employed in the identification of a delegate sample. Probabilistic sampling, like random sampling, gives each member of the objective population a reasonable and equal chance to contribute and reduces the investigator's biases in the sampling process (Bhalla, 2021). The researcher subjectively selected participants according to research objectives, theories, hypotheses, and qualifications. Researchers' assumptions concerning the characteristics of the target audience restrain the generalizability of the result (Bhalla, 2021). The researcher used random sampling from the 2021 USA Medical diagnostics companies' database, enabling her to select a suitable sample of businesses with equal opportunities for participants with high statistical precision.

I have used G*Power (version 3.1.9.7) and empirical calculations to define the proper sample size selection. Statistical power is essential to clarify the proper sample size to present a real effect. In addition, test results are more accurate as of the sample size increases. Another essential factor in the sampling calculation is the alpha level, which indicates the possibility of risk in observed behavior during the study. According to Simon and Goes (2013), an alpha level of 0.05 suggests that the results are 5% probably to be faulty. According to preliminary power analysis, including an "alpha value of 0.05", a "medium effect size ($f = .15$)", and a "power value of .80" for multi-regression study requires a sample of at least 85 participants. The desired output increase to 0.95 (95% confidence level) renders the sample size to 129 attendance. Based on the estimated effect size the sampling size ranged from 85 to 129 for this study.

Data Collection Strategies & Procedures

The researcher chose the Internet for gathering information to secure data and save time. Through the internet, the geographical coverage would be maximal. The pandemic state,

traveling costs, and other risks led the researcher to deploy the Internet to collect the data, which was broad in performing surveys. Hence, this survey was performed electronically to collect data from participants who completed the survey. The survey elements were organized by subject.

Übius and Alas's (2010) CSR and innovation climate survey was used for collecting information with a closed-ended questionnaire (see Appendix A) via the 2021 USA Medical diagnostics companies database as the significant method of data gathering for this research. This data gathering method was appropriate as it was easy to deploy and restore from an extensive sample population. USA Medical diagnostics companies' databases obtain many memberships with demographic data and other features at the time of application. After signing the informed consent form (see Appendix B), the participants received an online survey, including 5 Likert-like scale questions. The collected data was uploaded to Microsoft Excel and migrated to Statistical Package for the Social Sciences (SPSS) software for further examination and analysis. The researcher determined the number of survey respondents and rejected incomplete responses.

Tools/Instrumentation Used

A questionnaire is defined as a research tool composed of a series of questions that gather information from participants (Beardsley et al., 2020; Zyphur & Pierides, 2020). Übius and Alas's (2010) "CSR and innovation climate" survey was used for data collection with full permission from the authors (see Appendix C). Übius and Alas studied Estonian firms in Europe and Asia branches (Chinese, Japanese, Czech Republic, Finnish, German, Russian, and Slovakian) to evaluate companies' innovation climate and CSR.

The research variables were measured using a "CSR and innovation climate survey" (Appendix A). Quantitative questions are structured carefully to increase reliability and validity (i.e., similar questions, sequences, and set answers). The survey questionnaire was based on

the Likert Scale (1-to-5 rating). The investigation was not limited or stratified, thus increasing its repeatability and redundancy. The investigator established several steps to ensure data integrity. First, the questions and instructions on the questionnaire were comprehensive and ensured the vocabulary was appropriate to the background and academic stage of the participant. Secondly, the online survey was formatted so that respondents specify the degree of agreement with a survey question by ticking a box.

The employee-driven CSR factors for this study consisted of employee reward and recognition, empowerment, engagement and decision-making involvement, availability of resources, horizontal and vertical communication, job satisfaction, training, and leadership relationships. The survey was sent electronically to the 2021 USA Medical Diagnostics companies' database list. The researcher chose the capable participants of the USA Medical diagnostics companies' database who met the target criteria. Ette et al. (2021) indicated that performing the web questionnaire included several advantages, such as a swift approach and reply. Internet surveys were highly accessible due to the platform and a list of drop-down menus. As the Institutional Review Board (IRB) requirement, the researcher was required to obtain the Collaborative Institutional Training Initiative (CITI) Human Subjects Training certification (see Appendix D) and the Pepperdine IRB approval (see Appendix E) to pursue the research prior to data collection.

Human Subjects Considerations-Ethical Procedures

Researchers need to follow ethical rules when engaging human participants in an investigation (Edwards, 2020). The proposed study was non-experimental research, and the researcher did not collect any direct data from human subjects. The investigator adhered to ethical standards to ensure participants agreed to participate and completed survey questionnaires voluntarily. The researcher was required to consider participant information on a classified and anonymous basis in data collection procedures.

The investigators must disclose the study purpose to the prospective research subject (Edwards, 2020). The researcher took all necessary precautions to ensure that the confidentiality of voluntary participants was protected and that there was no bias in the research. Aggarwal et al. (2021) suggested that all researchers comply with the ethical norms and protocols set out in the Belmont report.

The Belmont Report, instituted in 1979, comprises unified moral fundamentals of behavioral research involving human subjects (Aggarwal et al., 2021). There are three unified ethical principles in the Belmont Report: respect for attendance, beneficence, and justice (Thomas, 2021). I complied with the ethical pattern and protocols as defined in the Belmont Report in this study strictly. DuPont (2020) and Moses (2017) summed up three moral topics related to the guiding principles for ethical research as follows:

- respectfulness for participant privacy (providing permission),
- focus on well-being (i.e., minimize loss and enhance compensation),
- justice (equitable treatment and enhanced inclusiveness).

An ethics committee oversees the data collection process to prevent human rights violations. To ensure the protection of participants, I embraced the principles of research morality and sought authorization from Pepperdine's Institutional Review Board (IRB). The IRB requirement application included the Informed Consent (see Appendix B), the Recruitment Script (see Appendix F), and Recruitment Flyer (see Appendix G), and the Data Collection Protocol. Pepperdine University specified the IRB approval number for this study prior to collecting the data from the research attendance.

The researcher implied the ethical pattern and considerations. All attendees were adult volunteers; the audience could drop in to participate at any time; the researcher did not require revealing sensitive information; the survey complied with human rights; the researcher offered no compensation for attending the questionnaire. The researcher did not perform the study in

her corporation, eliminating any conflict of interest. The researcher introduced the study purpose and the potential respondents' participating interest in the invitation, flyer, and consent form.

The Research Consent Form guides briefed agreement assessing the study's purpose, advantages, and risks (Beardsley et al., 2020). Participants were informed of the study's purpose, possible risks, potential advantages, and entitlement regarding contribution and confidentiality. The online-signed contract ensured that the participants' rights were respected, and their responses remained anonymous, confidential, and secure. As stipulated in the agreement, the investigator ensured that the participant contribution had a minimum personal effort. Participants needed to understand and approve informed consent before data collection. Attendances were advised that participation was optional and could leave their consent during the process without consequences. Participants were also informed that they could decline to answer any questions.

After receiving IRB approval, the researcher solicited employees from the 2021 USA Medical diagnostics companies' database's participation pool. The process began by recruiting attendees and sending the invitation and contract to the 2021 US medical diagnostics companies' business database, which they needed to accept before accessing the online questionnaires. The researcher started collecting data following the receipt of the signed agreement from participation. The researcher collected data from participants who completed the Qualtrics Survey. Pseudonyms and numbers were used to replace organization names and participants' names to ensure privacy in case of an accident. All collected information was transferred to a password-protected iCloud application and a secured, sealed USB file in the investigator's office.

Proposed Analysis

The researcher analyzed data collected through statistical software (i.e., SPSS). The researcher examined the potential relationship between employee-driven social responsibility

factors and employees' innovative climate in this study. The researcher selected the following employee-driven CSR practices as study independent variables: (a) reward and recognition, (b) empowerment, (c) availability of resources, (d) engagement and decision-making involvement, (e) horizontal communication, (f) vertical communication, (g) job satisfaction, (h) training, and (i) leadership relationships. The employee innovation climate as a dependent variable was measured using the 5-point ordinal survey index. Answering this questionnaire was defined as 1 for firmly disagreeing and 5 for firmly agreeing. The information collected from the 2021 USA Medical diagnostics companies' database was uploaded and maintained securely in the iCloud app. The participants who didn't conduct the questionnaire substantially were disqualified and eliminated from the future study analysis. The numerical retrieved data was transferred into SPSS (Version 28.0) for analysis.

The subsequent statistical analysis was performed on the closed-ended query retrieval responses. The researcher deployed the descriptive analysis to compute the means range, pattern, and standard deviations. The frequency of replies to each query on the questionnaire was analyzed within the categories of participants. The researcher analyzed the variance to identify whether the mean of one category (gender, education, and job function) differed considerably from the mean of another class, based on the collected answers. Independent-samples *t*-test analyses were used to determine if there were significant differences in responses by employee category with respect to employee innovation climate.

Multiple regression was appropriate for data analysis to identify which independent variables influence the dependent variable. The researcher employed multiple regression analysis to identify meaningful correlations and demonstrate if two or more variables were significantly linked. The researcher examined the data using a 95% confidence interval and a significance level (alpha) of .05.

Descriptive Statistics

The researcher used the participants' demographic variables to shed light on the participants' general description and discussed the quantitative results established in previous research. The participants' demographic variables in the study included organization size, job function, gender, education, and the number of working years in the company. For these variables, the mean and standard deviation were reported. The researcher tabulated the means and standard deviations to examine the relationship between variables.

Inferential Statistics

This study employed correlative statistical tests to determine the relationships between employees' perception of their corporation's internal CSR as independent variables and employees' innovation climate as a dependent variable. The investigator performed a descriptive analyses, ANOVA, two-tailed significance *t*-test, Pearson's correlation coefficient (*r*), multi-regression. According to Suzuki et al (2021), researchers use correlation to measure the association between interval variables and the direction of the relationship. The researcher conducted multiple regression analyses when independent variables are two or more to control the internal effect, with *r* ranges between -1.0 and +1.0 (Devi et al., 2022; Warrick, 2016).

The researcher chose a multiple regression analysis to provide the combined and individual impacts of internal CSR factors in the employee innovation climate. Researchers utilized SPSS to calculate the regression coefficient in multiple regression, including model fit, multiple *R*, square *R*, and adjusted *R*² (Bokhari & Myeong, 2022; Warrick, 2016). The two essential components of multiple regression are estimates and model fit, which predict coefficients, multiple *R*, square *R*, and adjusted *R*² (Bokhari & Myeong, 2022; Warrick, 2016).

The *R*-value is the multi-correlation index between independent and dependent variables varying between -1.0 and +1.0, and *R*² indicates how much variability can be accumulated by the independent variable (Warrick, 2016). In addition, the adjusted *R*² suggests whether the

model can be generalized (Bokhari & Myeong, 2022). The model adapts efficiently when the adjusted square R and R^2 value is closed. In addition, the change statistic was fundamentally related to whether the change in R^2 was significant and whether the addition of a new variable made a difference (Bokhari & Myeong, 2022; Warrick, 2016).

Means to Ensure Study Validity

In 1979, Cook and Campbell described validity as the most acceptable explanation for the uncertainty of the conclusion or expectation of the study (Haghani et al., 2021). In 1971, Cronbach defined study validation as a methodology researchers considered when examining study hypotheses (Gonzalez et al., 2021). In quantitative research, the questions are formalized sequentially and a fixed response to increasing validity (Serdyukov, 2021). The study's validity is an assessment of the accuracy of the conclusion in the data process (Mitchell et al., 2019). Validity determines if a researcher examines what they aim to measure. Prochner and Godin (2022) defined high reliability, that is, how much a set of measurements is identical and certain to other measurements from a similar population and gives the same results. In contrast, there was a distinction between reliability and validity. Validity is defined as the degree that researchers produce a precise outcome on the relationships between variables, while reliability is the degree to which the measurement is repeatable or coherent (Surma-aho & Hölttä-Otto, 2022; Warrick, 2016).

Threatening the Validity

Threatening the validity in the present comparative study of cross-sectional analysis, external validity, internal validity, and construct validity. Investigators are confronted with diverse aspects of validity, depending on the research type, methodology, and design. Investigators should remain mindful of the factors that obstacle the strength and solidity of the research effort. Researchers should have an appropriate strategy and respond effectively to validity concerns to establish the generalizability of the study. As validity was one of the

concerns of the study, the following discussion revolves around how validity applies to this study.

External Validity

External Study validity concerns if the study findings are relevant to settings beyond this research. The external validity in quantitative research is intended to generalize the study's conclusions (Oducado, 2020). Researchers may detect threats to study external validity in consideration of selection bias. Selection bias occurs when the study sampling (individual or group) does not pose the desired population (Huebner & Giuffre, 2022). Consequently, the researchers imply a generalization of the research by simplifying the study's findings. Threats to external validity have a fundamental effect on the research generalization. In sampling bias, the researcher cannot generalize the research outcome (Oducado, 2020). A non-probability sampling might represent the population as a somewhat challenging risk to external validity. This researcher reduced the risk to external validity in the sampling method and data collection process. This research relied on random sampling that improves external validity. Also, the data represented specific periods, limiting their usage only for the research period.

Internal Validity

Internal validity concerns the proposed relationships between operational terms and the way researchers use those terms in the study (Haghani et al., 2021). Internal validity applies to the extent to which the investigator may conclude that one variable causes a causal effect on another (Mitchell et al., 2019). The internal validity of this study was applied in examining the link between the variables. In 1979, Cook and Campbell outlined internal validity factors, primarily the lack of accurate tests, research subject, research instruments, statistical regression, and test-related issues. Internal validity depends on the statistical function sufficiently to diminish internal threats to a minimum. As a result, inferences contain certain factors defining the character of the internal validity. The researcher assessed the study's

potential internal validity and performed an indeterminate research study independently of any established association between variables. There were more than two independent variables in this study's hypothesis; therefore, a multiple-regression analysis was desirable to measure the significance of the variables' correlation using an alpha value of .05 to present consistency.

Construct Validity

Construct validity is fundamental for researchers to measure the construct with a valid instrument. Threats to the influence of construct validity include hypothesis assumption, research design bias, and the researcher's expectations. Construct validity refers to the test standard and research instrument measurements that are generally parallel to the theoretical framework associated with the study (Çam & Yerlikaya, 2020; Fernández Álvarez & Fernández, 2021). The investigator adopted the survey questionnaires from Übius and Alas's 2010 published study with considerable validity.

Researcher Validation

Bavaresco et al. (2020) stated that conducting a pilot study might improve validity. Researchers deploy research with a different participant pool to strengthen clarity, increase transparency, remove ambiguous phrases, and decrease researcher bias from the instrument prior to data collection (Salminen et al., 2020). The researcher should ensure that the survey does not have an effect of formulation that might distort participants' responses. If researchers ignore the wording effect, they may create biases and compromise the instrument's validity and data collection (Molenaar, 1982). The researcher used the previously validated and tested survey instrument that improved the study's validity. In the meantime, the researcher enhanced the device's validity by documenting each stage in the study protocol. The methodology and design of the chosen research were reliable and valid, which was essential to the research; however, some minimal threats may remain.

Summary and Plan for Reporting Findings

In this chapter, the investigator addressed the study methods, the study design, the sampling design, the data collection technique, the survey instrument, the data analysis process, the reliability and validity of research, and the protection of human subjects. Chapter 4 presented the data analysis process and the analytical research result.

Chapter 4: Results

This quantitative correlation study focused on the relationship between employee CSR factors and employee innovation climate during pandemics in the US medical device industry. The researcher used a quantitative method to test the hypothesis, examined the correlation between the variables, controlled alternative explanations, and analyses the data based on statistical relationships to predict future outcomes.

Furthermore, the study analyzed how this relationship, if any, depends on gender, education level, and job position. The research population consisted of employees who work in the operation, quality control, research, technical product support, and management departments of medical diagnostics companies in the United States of America.

The research independent variables were employee-driven CSR factors, including extrinsic and intrinsic rewards and recognition, empowerment, availability of resources, employee engagement and decision-making involvement, horizontal communication, vertical communication, employee job satisfaction, employee training, and leadership relationships. Accordingly, the investigator examined the potential relationships between “employee-driven CSR factors and employee innovation climate”. Furthermore, the researcher sought to find which one of these internal CSR factors had the most significant statistical predictor of employee innovation climate. The participants were chosen randomly from the 2021 medical device employees' list population who applied for membership in the 2021 American Association Clinical Chemistry (AACC). Individuals must be 19 years of age or older and have worked full-time in medical device companies for three years to qualify for the sample. The qualified members were who fulfill the target audience criteria and replied to an online self-administered Qualtrics Survey.

The “CSR and Innovation Climate Survey” was employed for collecting data with full permission from author Ülle Übius (Appendix G). Übius and Alas (2010) utilized the “CSR and innovation climate questionnaires” to identify corporate accountability, employee task

commitment, and employee attitudes towards CSR. Therefore, the CSR and innovation climate survey was performed electronically via Qualtrics Survey tool. The researcher distributed and extracted the closed questionnaire using a self-administered survey following approval from the Pepperdine University IRB. The survey was accessible from March 01, 2022, to May 01, 2022.

The survey intended to gather information about how implementing internal CSR affected employee encouragement toward invention. The investigator utilized a Qualtrics survey to gather data on how the workforce would perform in favor of the invention if their organization exercised employee-driven CSR.

The survey questionnaire complied with the Likert Scale that sought to assess at an interval stage (1-to-5 rating). Items in the questionnaire were congregated by topic, and respondents replied to the “close-ended” questions. The collected data were downloaded as PDF file reports and an Excel sheet and conveyed to IBM SPSS software for further analysis. However, some incomplete replies were disqualified and deleted from the Excel worksheet before transferring to SPSS. The final dataset included 93 respondents, and the collected data were converted into digital codes for further analysis. The researcher ran frequencies, descriptive statistics, ANOVA, correlation, multiple regression analysis, and the sample t-tests using two-tailed tests, with 95% confidence interval and alpha at .05 on all the obtained data by Data Analysis tools and SPSS (see Appendix H). The results of the quantitative analysis examined and discussed the research question. This chapter presents the results of this quantitative correlation study.

Research Question and Hypotheses

One question explored the correlation between “employee-driven CSR factors and employee innovation”. The study addressed the following research question (RQ):

- RQ1: “What relationship, if any, exists between employee-driven CSR factors, including employees` extrinsic and intrinsic rewards and recognition, empowerment,

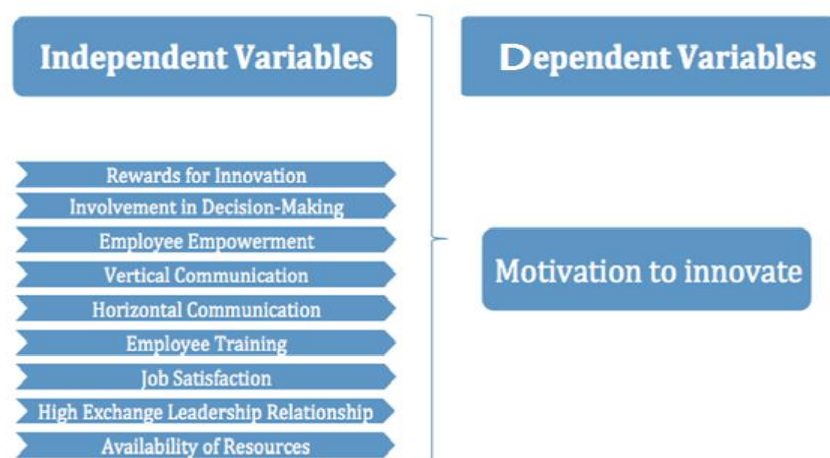
availability of resources, employee engagement and decision-making involvement, horizontal communication, vertical communication, employee job satisfaction, employee training, and leadership relationships, and employee innovation in medical device companies?”

The RQ leads to the following null hypothesis and directional hypothesis:

- H10: “None of the employee-driven CSR factors has any positive relationship with employees’ innovation.”
- H11: “At least one of the employee-driven CSR factors has a significant positive relationship with employees’ innovation.”

Figure 3

Depicts the Nine Independent Variables and One Dependent Variable for this Study



Results of Quantitative Analysis

The Qualtrics questionnaire site was available from March 01, 2022, to May 01, 2022. The collected information was downloaded to Excel File and saved in a secure setting following the site's closure. Participants who had not submitted substantial responses to the questionnaire were removed from the analysis. The collected information were transferred into the IBM SPSS for statistical analysis, including descriptive analysis to compute means, ranges, modes, standard error, and standard deviations. The frequency, range, and percentage of

answers based on each question have been computed. The researcher deployed the variance and ANOVA methods to determine whether the mean of one category (organization size and education) differed significantly from the mean of other categories. In addition, a samples t-test was performed to analyze if any considerable differences existed in responding based on employee gender in referring to innovation. Correlation methods were conducted to examine if any relation existed between variables. The researcher also used the multiple regression method to determine if two or more variables are significantly related. All collected data were examined utilizing a 95% confidence interval and a .05 alpha set.

Data Screening

One hundred thirty-nine respondents completed the survey, but only 93 met the inclusion criteria, resulting in a 67% success completion rate for the survey. The completion rate appeared acceptable in comparison to similar CSR and innovation studies.

Participants' Demographics

In this study, the participant demographics, including organization size, employees' gender, education level, job function, and years of employment in the industry, provided key information on the participants' general description. Gender, education level, and occupational function were categorical variables, while employment years were "continuous variables" to imply average, standard deviation, and mean.

Corporation Size. Participants specified the number of employees in their corporations. The researcher grouped the corporation size into three separate categories. The employees' numbers from 1 to 49 were labeled as small corporations. Employees' numbers from 50 to 249 were considered medium-sized corporations, and the number of employees of 250 and more was labeled as large corporations. Based on this categorization, approximately

70% of participants reported working for small organizations, approximately 14% for medium-sized organizations, and 16% for large corporations (see Table 1).

Table 1

Respondents' Corporation Size

Corporation Size	Frequency Range	Percent
Small Corporation	65	70%
Medium Corporation	13	14%
Large Corporation	15	16%
Total	93	100%

District. Respondents specified which part of the United States they were employed; approximately 40% of the respondents specified mentioned the west region, 12% of the respondents specified stated the south region, 28% of the respondents specified mentioned the northeast region, and 20% of the respondents located in Midwest region (see Table 2).

Table 2

Participants' Work District

District	Descriptive Result	
	Frequency	Percent
West	37	40%
South	11	12%
North	26	28%
Midwest	19	20%
Total	93	100%

Gender. There were 53% male and 46% female respondents (see Table 3).

Table 3*Participants' Gender*

Gender	Range	Percent
Male	49	53%
Female	44	46%
Total	93	100

Educational Level. Participants had the consequent alternative for choosing their educational attainment. High School, College diploma, Bachelor's diploma, Master's diploma, Professional diploma, Doctorate, and others. The respondents' educational level included 42% ($n = 39$) Bachelor, 23% ($n = 21$) Master 16% ($n = 15$) Doctoral, 11% ($n = 10$) who had a college degree, 3% ($n = 3$) who had a high school degree and Professional degrees. See Table 4 the finding summary.

Table 4*Participants' Educational Level*

Education	Range	Percent
High School	3	3%
College	10	11%
Bachelor	39	42%
Master	21	23%
Professional	3	3%
Doctorate	15	16%
Other	2	2%
Total	93	100

Job Level. Respondents were informed of their occupation level (superior management, midst management, intermediate, and entry-level); approximately 40% of the respondents stated that they were in senior management, 25% were in middle management,

22% were intermediate, and 6% were entry-level. Our variables are Categorical variables (See Table 5).

Table 5

Participants' Occupation Level

Job Level	Range	Percent
Superior Manager	37	40%
Midst Manager	23	25%
Intermediate	20	22%
Entry Level	6	6%
Others	7	8%
Total	93	100%

Industry. Respondents stated their principal industry given the following options (manufacturing, distributing, manufacturing, and distributing, and others); 33% of the respondents declared that they have employed in manufacturing. In comparison, 20% of the participants worked in a distributing company, and 34% worked in manufacturing and distributing company (see Table 6).

Table 6

Participants' Industry

Industry	Range	Percent
Manufacturing	31	33%
Distributing	19	20%
Manufacturing and distributing	32	34%
Others	11	12%
Total	93	100%

Job Role. Participants stated their job role among given alternatives (operation, QC,

technical, research, management, and others); 25% of the respondents indicated that they were involved in the operation, 5% in QC, 6% in technical, 9% in research. Approximately 33% of the participants had a management job role, and 22% others (see Table 7).

Table 7

Participants' Job Role

Job Function	Range	Percent
Operation	23	25%
QC	5	5%
Technical	6	6%
Research	8	9%
Management	31	33%
Others	20	22%
Total	93	100%

Years of Employment. When respondents identified the number of working years among the given alternative, the participants working for 3-6 years were about 31% of the participants; participants working for 7-10 years were about 19%, and about 49% were working over ten years (see Table 8).

Table 8

Participants' Number of Working Years

Employment Years	Range	Percent
3-6	29	31%
7-10	18	19%
Over 10	46	49%
Total	93	100%

Employee Motivation to Inventive

The study dependent variable was employees' innovation, and the indicator was "I feel encouraged to develop new and better ways of doing things." The responses relied on a Likert scale where 5 = Strongly Agree, 4 = Somewhat Agree, 3 = Neither Agree nor Disagree, 2 = Somewhat Disagree, and 1 = Strongly Disagree. In reply to the subject "At my company, I feel encouraged to come up with new and better ways of doing things," approximately 73% of the participants indicated that they strongly agreed, around 20% of participants stated they somewhat agreed, 3% of respondents indicated neither agreed nor disagreed, about 2% of participants indicated somewhat disagreed, and about 2% of participants informed they disagreed. The respondents' mean score to the indicator was 4.62 (see Table 9).

Table 9

Employee Motivation to Innovate

Innovation		Responses Percent				
Item	Mean Score	Strongly Agree	SW Agree	Neither Agree nor Disagree	SW Disagree	Strongly Disagree
"Employee motivation toward innovation"	4.62	68	19	3	2	1

Relationship Between Corporation Size and Employee Innovation

The question is if there was a difference between the organization size and employee innovation. I conducted ANOVA, as our variables are one Categorical parameter with three groups and one numeric. Employees at small corporations ($n = 65$) had a mean of 4.69. Employees at medium corporation size ($n = 13$) had a mean of 4.62, and large corporation size ($n = 15$) with a mean of 4.60. Employees in small organization size had the highest mean equal to 4.69.

As a p -value was above than 0.05, hence there were no statistically significant differences between organization sizes and employee innovation. The p -value was 0.85, indicating that there was an 85% possibility that motivation toward innovation in all organizations size were the same. If the p -value in data analysis process was lower than 0.05, we concluded that statistically considerable differences among organization sizes and employee innovation. The result implies that the corporation's size had not significantly impacted the employee incentive to innovate. In general, if the researcher calculated the F value (ratio of two mean square values) is smaller than your F critical value, you accept the null hypothesis. The study result indicated that the F value $<$ F critical; therefore, I confirmed that it is no difference between small, medium, and large organizations. The means of the three populations are almost all equal. In conclusion, the noted difference between the sample means was not persuasive to indicate that the motivation toward innovation between small, medium, and large companies was significantly different. See Table 10 and 11 for the results.

Table 10

Analysis of Variance Result Based on Corporation Size

Item	P	F	Mean in Small ($n = 65$)	Mean in Medium ($n = 13$)	Mean in Large ($n = 15$)
"Employee motivation to innovate"	0.85	0.17	4.69	4.62	4.60

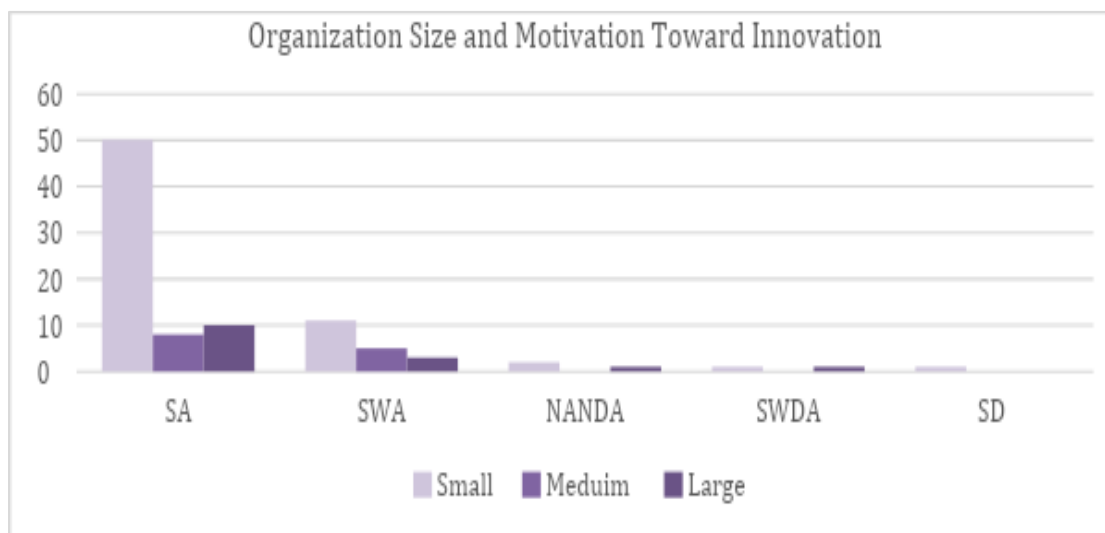
Table 11

ANOVA

Source of Variation	SS	df	MS	F	P-Value	F crit
"Between Groups"	0.144	2	0.07	0.17	0.85	3.10
"Within Groups"	38.52	90	0.43			
"Total"	38.66	92				

Figure 4

Means of Employees' Innovation Based on Company Size



Relationship Between Gender and Employee Innovation

The question was whether the motivation toward innovation between women and men was significantly different. I conducted *ANOVA* and *t-test*, as our variables were one Categorical parameter with two groups and one numeric parameter. The *t-test* could be helpful if the *df* and sample population are the same for both groups in categories. An *ANOVA* result stated that 44 females had a mean of 4.57 concerning innovation, whereas 49 men obtained a mean of 4.59 while responding to the query of “whether they felt encouraged to come up with new and better ways of doing things in their corporation.” The *p value* in the *ANOVA* test stated the possibility of the “Null Hypothesis” to be true. The results yield no considerable difference in employee invention by gender ($t = .71, p = .38$). The result presented that $p > 0.05$; therefore, the motivation toward innovation between the female and male populations was not significantly different. See Table 12 and 13 for a summary of the results.

Table 12*t-tests Analysis- Employee Innovation Based on Gender*

Item	<i>P</i>	<i>T</i>	Gender	
			Mean	Mean
			Male (<i>n</i> = 49)	Female (<i>n</i> = 44)
"Employee motivation to innovate"	.89	-.14	4.59	4.57

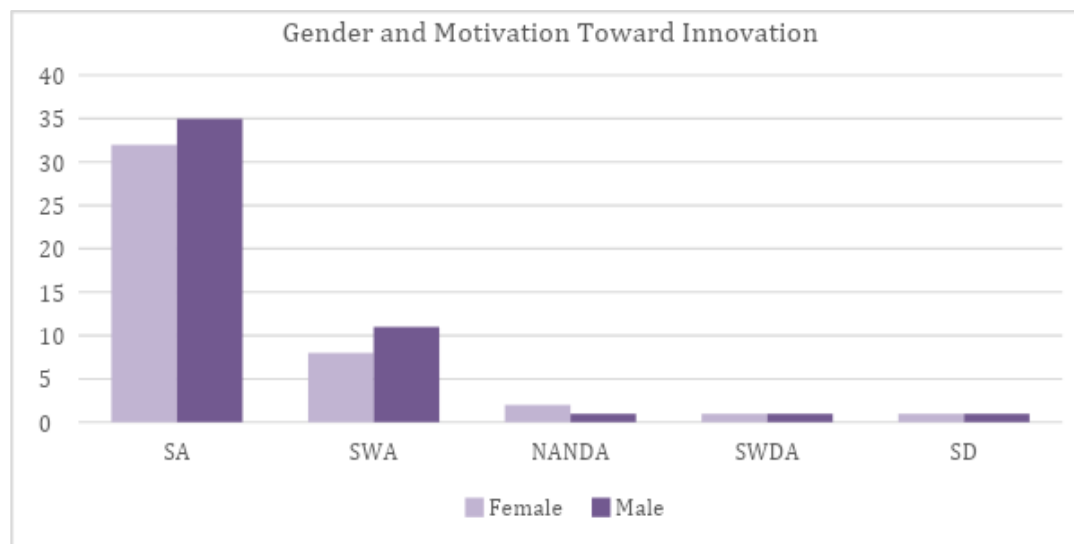
Table 13*ANOVA*

<i>Source of Variation</i>	<i>SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.01	1.00	0.01	0.02	0.89	3.95
Within Groups	64.63	91.00	0.71			
Total	64.65	92.00				

I conducted a Two-Sample Assuming Variances analysis test, and I compared the means of two groups. If the *t* Stat was stronger than the Critical two-tail, I concluded that the motivation toward innovation between females and males was significantly different. Therefore, as $-0.14 < 1.99$, we concluded that the difference between the sample *means* was not persuasive, indicating that the motivation for innovation between women and men differed significantly. Also, $t \text{ stat} < t \text{ crit}$, therefore we accepted that there was no difference between genders and motivation toward innovation. See Table 14 for the results.

Table 14*t-Test: Two-Sample*

	<i>Female</i>	<i>Male</i>
Mean	4.57	4.59
Variance	0.76	0.66
Observations	44	49
Hypothesized Mean Difference	0	
<i>Df</i>	88	
<i>t</i> Stat	-0.14	
$P(T \leq t)$ one-tail	0.45	
<i>t</i> Critical one-tail	1.66	
$P(T \leq t)$ two-tail	0.89	
<i>t</i> Critical two-tail	1.99	

Figure 5*Means of Employees' Innovation Based on Gender*

Relation Between Education Level and Motivation Toward Innovation

In response to the question on "whether employees felt encouraged to come up with new and better ways of doing things in their corporation," the researcher examined a *One Way*

between Groups ANOVA to find a link between participants' educational status as the "independent variable" and motivation to innovate as the "dependent variable." The level of agreement for "Professional and Doctorate" with ranged from ($M = 3.4$) to those with "Master's degree and bachelor's degree" with ($M = 12$), and those with "High school and College's degree" with ($M = 2.6$) had no significant difference in regard to employee innovation. The p -value was 0.53, indicating that there was a 53% possibility that motivation toward innovation in all levels of education was the same. This result suggests that educational attainment has not substantially influenced the staff members' motivation to find novel ways of practicing business. Also, $F < F$ crit; therefore, there is no difference between the level of education and employee innovation. The researchers analyze variance as it analyses the significance of group differences, whereas the independent variable consists of two or more categories (Field, 2013). The analysis of variance defines whether a deviation exists between groups. See Table 15 and 16 an overview of the findings.

Table 15

Analysis of Variance on Employee Education

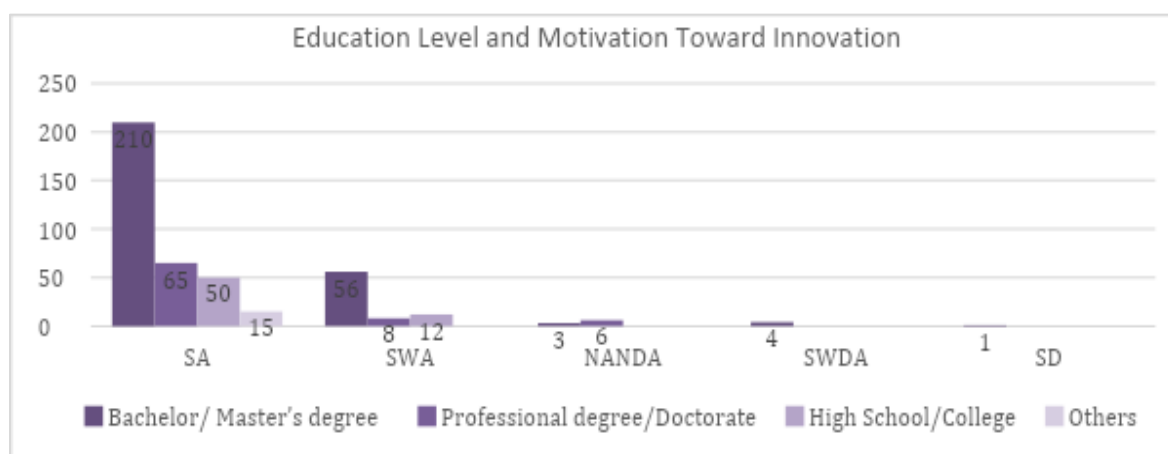
ANOVA results			Education		
	p	F	Mean	Mean	Mean
Item			High	Mean	Doctorate/
			School/ College	BS / MS degree	Professional Degree
			($n = 6$)	($n = 71$)	($n = 28$)
"Employee motivation to innovate"	.53	.78	2.6	12	3.4

Table 16

ANOVA

Groups	Count	Sum	Average	Variance
Bachelor/ MS	5	60	12	311.5
Doctorate/ Professional degree	5	17	3.4	29.8
College/ High School	5	13	2.6	18.8
Others	5	3	0.6	1.8

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	280.04	3.00	93.35	0.78	0.53	3.49
Within Groups	1440.40	12.00	120.03			
Total	1720.44	15.00				

Figure 6*Means of Employees' Innovation Based on Education Level*

Relationship Between Internal CSR Factors and Innovativeness

The researcher performed descriptive, correlation, and multiple regression analyses. Descriptive analysis was used to seek the total percentage of participant's responses to the impact of internal CSR on employee innovation. Meanwhile, the researcher used Pearson correlation testing to ensure the association between the variables. In addition, as the research hypothesis exceeded two independent variables; therefore, the researcher utilized a multiple

regression assessment to measure the significance of the relationship with a coefficient alpha value of .05. I selected multiple regression data analysis to seek the employee-driven CSR factors combined effect and the employee-driven CSR factors' individual effect on employee innovation. Researchers use multiple regression analyses to explore the correlation between two variables while considering the effect of other variables (Weisburd et al., 2022).

A regression analysis was conducted to determine the independent and dependent variables' association. The dependent variable used in the search was "employee innovation climate." The independent variables were the followings: extrinsic and intrinsic rewards and recognition, empowerment, availability of resources, employee engagement and decision-making involvement, horizontal communication, vertical communication, employee job satisfaction, employee training, and leadership relationships. The item for measuring the dependent variable was employee innovation "I am more likely to innovate on my job if. "The following questions were arranged to measure the independent variables:

- "I am satisfied with my job.
- I have personal empowerment with respect to work processes.
- I have trust and confidence in my supervisor.
- I am satisfied with my involvement in decisions that affect my work.
- I have managers who promote communication among different work units (such as projects, goals, and needed resources).
- I have managers who communicate the goals and priorities of the organization.
- I am satisfied with the training I receive for my present job.
- I am rewarded for being creative and innovative.
- I have the tools and resources to be innovative."

Table 17*Variables Construct-Internal CSR Factors and Stem Questions*

Internal CSR Factors	Stem Questions
Extrinsic and intrinsic rewards and recognition	"I am rewarded for being creative and innovative."
Empowerment	"I have personal empowerment with respect to work processes."
Availability of Resources	"I have the tools and resources to be innovative."
Employee engagement and decision-making involvement,	"I am satisfied with my involvement in decisions that affect my work."
Horizontal Communication	"I have managers who promote communication among different work units (such as projects, goals, and needed resources)."
Vertical Communication	"I have managers who communicate the goals and priorities of the organization."
Job Satisfaction	"I am satisfied with my job."
Training	"I am satisfied with the training I receive from my present job."
Leadership relationships	"I have trust and confidence in my supervisor."

Percentage of Responses in Terms of the Impact of Internal CSR Factors on Innovation

The researcher employed descriptive analysis to calculate the employees' percent replies and obtain the means of each answer (see Table 18). "I am more likely to innovate on my job if I..." and the corresponding questions. The answerers have been established as Likert scale where "1 = Strongly Disagree", "2 = Disagree", "3 = Neither Agree nor Disagree", "4 = Agree", and "5 = Strongly Agree". A summary of these findings is presented in Table 18.

Table 18*Employees' Innovation Based on Internal CSR Factors*

CSR Factor/ Independent Variables	Percent Responses "for employee motivation toward Innovation"		
	Mean	Standard Error	Standard Deviation
Employee job satisfaction	4.68	0.08	0.77
Empowerment	4.60	0.09	0.85
Leadership relationships	4.58	0.10	0.94
Decision-making involvement	4.67	0.08	0.77
Horizontal communication	4.55	0.09	0.84
Vertical communication	4.58	0.09	0.86
Employee training	4.28	0.10	0.99
Employee rewards and recognition	4.47	0.09	0.87
Tools and Resources	4.60	0.09	0.90

Correlation of CSR Factors on Innovativeness

The researcher used the "Pearson Correlation Coefficient" to ascertain the direction of the relationship between the variables was legitimate (see Table 19). I used Pearson's Correlation method to draw the optimal fit line through the variables' data. Pearson's correlation coefficient demonstrates what distance all collected data points are in this line of best fit (Clark et al, 2021; Warrick, 2016).

Table 19*Correlation Between Employee Innovation and Employee-Driven CSR*

Internal CSR	Correlation with Employee Innovation
Employee Innovation	1.00
Employee job satisfaction	0.47
Empowerment	0.26

Internal CSR	Correlation with Employee Innovation
Leadership relationships	0.13
Engagement and decision-making involvement	0.27
Horizontal communication	0.30
Vertical communication	0.22
Employee training	0.23
Employee rewards and recognition	0.04
I have the tools and resources to be innovative.	0.05

Researchers must ensure that the independent variables are not strongly related to one another at $r > .8$, which causes Multicollinearity. Multicollinearity status poses a challenge in the data interpretation of what independent variables contribute to the variance explained by the dependent variables (Negash, 2021; Warrick, 2016). In this research, none of the correlations among the predictors in the dataset were greater than .8 ($r > 0.8$), which implied that the regression was not lead to Multicollinearity mode (see table 20).

Table 20

SPSS Result-Collinearity Analysis of Independent Variables

Eigenvalue	Condition Index	(Constant)	JOBS	Empowerment	Leadership	DMI	HC	VC	Training	Reward	Tools
9.839	1.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.037	16.287	0.00	0.00	0.02	0.10	0.00	0.02	0.00	0.05	0.11	0.13
0.035	16.768	0.01	0.01	0.09	0.00	0.00	0.00	0.01	0.54	0.02	0.00
0.021	21.690	0.01	0.05	0.07	0.72	0.01	0.00	0.00	0.08	0.02	0.02
0.019	23.027	0.57	0.01	0.03	0.01	0.01	0.03	0.19	0.00	0.00	0.00
0.015	25.581	0.17	0.05	0.26	0.01	0.01	0.07	0.29	0.00	0.00	0.11
0.013	27.407	0.14	0.00	0.34	0.02	0.01	0.21	0.03	0.02	0.23	0.11
0.009	33.015	0.09	0.58	0.01	0.14	0.00	0.21	0.19	0.02	0.07	0.07
0.007	38.518	0.01	0.27	0.05	0.00	0.03	0.36	0.21	0.20	0.46	0.43
0.006	41.997	0.00	0.03	0.14	0.00	0.93	0.09	0.08	0.08	0.09	0.12

The tolerance rate lower than .10 in collinearity analysis specifies that multiple correlations between variables are high, and multicollinearity is possible (Amrullah, 2021). In addition, the variance inflation factor values need to be higher than 10 causing multicollinearity.

All measured indicators in this study displayed tolerance values greater than 0.10 and variance inflation factor values less than 10 (see Table 21), which indicated no collinearity in the data, and multicollinearity assumptions were not met. Table 21 presents the results of multicollinearity by examining the correlation coefficients and their tolerance and variance inflation factor values.

Table 21

SPSS Result-Collinearity Analysis of Independent Variables

Predictor	Sig.	Standardized Coefficients	Correlations			Collinearity Statistics	
			Zero-order	Partial	Part	Tolerance	VIF
Employee job satisfaction	0	0.623	0.466	0.430	0.398	0.408	2.453
Empowerment	0.737	0.043	0.257	0.037	0.031	0.526	1.901
Leadership relationships	0.431	-0.096	0.129	-0.086	-0.073	0.577	1.733
Decision-making involvement	0.468	-0.131	0.269	-0.080	-0.067	0.260	3.842
Horizontal communication	0.206	0.201	0.296	0.138	0.117	0.337	2.964
Vertical communication	0.49	-0.101	0.223	-0.076	-0.064	0.400	2.503
Employee training	0.41	0.103	0.230	0.091	0.076	0.544	1.839
Employee rewards	0.455	-0.111	0.043	-0.082	-0.069	0.383	2.613
Tools and resources	0.226	-0.179	0.050	-0.133	-0.112	0.392	2.551

Multi-Regression Between Factors of Internal CSR and Innovativeness

The researchers used multiple regression analysis in Excel and SPSS to compute correlation and multi-regression. Using multi-regression analyses, the researcher calculated model fit, R^2 , change statistics, descriptions, parts and partial correlation, collinear diagnosis, Durbin-Watson and Casewise diagnostics (Lee et al., 2021; Warrick, 2016). The two critical factors in multiple regression analysis were the coefficients of the regression and the model fit, which provided the ability to predict the outcome through the multiple R -value .55, R square .30, and adjusted R square .22. The R -value was the multiple correlation coefficient between the employee innovation climate and employee-driven CSR, ranging from -1.0 to +1.0. Furthermore, the R -square demonstrated the extent to which the percentage increase or decrease in innovation movement is attributable to employee-centered CSR. In contrast, the adjusted R

square indicates the extent of generalization of the model. The model adapts efficiently when the adjusted square R and R^2 value is closed. In addition, the change statistic was fundamentally related to whether the change in R^2 was significant and whether the addition of a new variable made a difference (Bokhari & Myeong, 2022; Warrick, 2016).

The multiple R presented a correlation between the employee-driven CSR and employee innovation ($R = 0.546$, $p = 0.000309$), which meant that the employee-driven CSR explained about 55% of the employee innovation as predictor variables. The R -square value proposed that 30% of the employee innovation movement is due to nine internal CSR factors (see Table 22). The β values presented the corresponding effect of captured variables (see Table 23). Job satisfaction had the most substantial impact on employee innovation climate ($\beta = .61$), followed by Horizontal communication ($\beta = .18$). In addition, as far as $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = \beta_9$ was not equal to zero, therefore we accepted H1, meaning that at least one of the employee-driven CSR had a significant positive association with employees' innovation (see Table 24).

Table 22

Multiple Regression Results, Internal CSR Factors and Employee Innovation

Regression Statistics					
Multiple R		0.55			
R Square		0.30			
Adjusted R Square		0.22			
Standard Error		0.66			
Durbin Watson		1.82			
Observations		93			
	Df	SS	MS	F	Significance F
Regression	9	15.59	1.73	3.97	0.0003
Residual	83	36.24	0.44		
Total	92	51.83			

Table 23*Multiple Regression Results Between Dependent and Independent Variables*

	Coefficients	Standard Error	t Stat	P-value
Intercept	2.92	0.51	5.76	0.00
Employee job satisfaction	0.61	0.14	4.33	0.00
Empowerment	0.04	0.11	0.34	0.74
Leadership relationships	-0.08	0.10	-0.79	0.43
Decision-making involvement	-0.13	0.18	-0.73	0.47
Horizontal communication	0.18	0.14	1.27	0.21
Vertical communication	-0.09	0.13	-0.69	0.49
Employee training	0.08	0.09	0.83	0.41
Employee rewards	-0.10	0.13	-0.75	0.46
Tools and resources	-0.15	0.12	-1.22	0.23

Table 24*SPSR Regression Results, Internal CSR Factors and Employee Innovation*

Internal CSR Factors	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	T	Sig.	Correlations			Collinearity Statistics	
						Zero-order	Partial	Part	Tolerance	VIF
(Constant)	2.92	0.51		5.76	0.00					
Job Satisfaction	0.61	0.14	0.62	4.33	0.00	0.47	0.43	0.40	0.41	2.45
Empowerment	0.04	0.11	0.04	0.34	0.74	0.26	0.04	0.03	0.53	1.90
Leadership Relationships	-0.08	0.10	-0.10	-0.79	0.43	0.13	-0.09	-0.07	0.58	1.73
Decision Making involvement	-0.13	0.18	-0.13	-0.73	0.47	0.27	-0.08	-0.07	0.26	3.84
Horizontal communication	0.18	0.14	0.20	1.27	0.21	0.30	0.14	0.12	0.34	2.96
Vertical communication	-0.09	0.13	-0.10	-0.69	0.49	0.22	-0.08	-0.06	0.40	2.50
Training	0.08	0.09	0.10	0.83	0.41	0.23	0.09	0.08	0.54	1.84
Reward	-0.10	0.13	-0.11	-0.75	0.46	0.04	-0.08	-0.07	0.38	2.61
Tools	-0.15	0.12	-0.18	-1.22	0.23	0.05	-0.13	-0.11	0.39	2.55

Summary

This quantitative correlation study focused on the relationship between employee CSR factors and employee innovation climate during pandemics in the US medical device industry.

The two theories that have strengthened the research validity were CSR and expectancy theories of motivation. This study addressed how internal CSR impact employees' motivation toward innovation. Ninety-three employees in the U.S. medical device corporation responded to a web-based survey. One hypothesis was tested through descriptive, ANOVA, analysis of variance, independent *t*-tests, correlation, and multi-regression analysis.

Two significant marginal differences in respondents' responses emerged from this study. First, no significant differences were observed by comparing the responses of employees of different organizational sizes regarding their encouragement to innovate in their organization at a 95% confidence level. This result implies that the organization's size did not significantly affect employee innovation. Second, there were no significant differences in employee responses to innovation with gender and educational differences.

A correlation analysis outcome clarified that nine internal CSR factors had a significant link with employee innovation climate. The independent variables including extrinsic and intrinsic rewards and recognition, empowerment, availability of resources, employee engagement and decision-making involvement, horizontal communication, vertical communication, employee job satisfaction, employee training, and leadership relationships among employee-driven CSR practices had a considerable correlation with employee innovation climate subsequent to the analysis of the quantitative study. The multiple *R* presented a correlation between the employee-driven CSR and employee innovation ($R = 0.546$, $p = 0.000309$), which meant that the employee-driven CSR explained about 55% of the employee innovation as predictor variables. The *R*-square value proposed that 30% of the employee innovation movement is due to nine internal CSR factors. Job satisfaction had the most substantial impact on employee innovation ($\beta = .61$), followed by Horizontal communication ($\beta = .18$). In addition, we concluded that job satisfaction as one of the employee-driven CSR had a significant positive association with employees' innovation climate.

Chapter 5: Conclusions, Implications, and Recommendations

This quantitative correlation research examined the association between employee-driven CSR factors and employee innovation in U.S. medical diagnostics companies during pandemics. Also, this study explored how this relationship depended on employees' gender, education level, and organizational size. The research population was employees who work in the operation, quality control, research, technical, and management departments in medical diagnostics companies in the United States of America. This research focused on employee-driven CSR factors based on Übius and Alas's (2010) CSR and innovation climate survey with full permission from the authors. Employee-driven CSR factors were subject to extrinsic and intrinsic rewards and recognition, empowerment, availability of resources, employee engagement and decision-making involvement, horizontal communication, vertical communication, employee job satisfaction, employee training, and leadership relationships.

The two theories that strengthened the research validity were CSR and expectancy theories of motivation. The theories' key constructs are an organization's social influence, protection of the social economy, respect for human rights, social standards and policies, employees' quality of life, and motivation toward high performance. The theoretical underpinning of this research offered an opportunity to visualize key concepts and relationships relevant to the RQ, e.g., "what relationship, if any, exists between employee-driven CSR factors and employees' innovation?" The framework instructed is based on a relationship among employee-driven CSR and employee innovation climate. CSR theories require managers to understand, love, and support society (Mohammadi, 2022). In this examination, the emphasis was on employees as internal stakeholders. Employees are encouraged if they believe their attempts lead to high returns and that they contribute to the desired rewards (Eccles & Wigfield, 2020). The expectancy theory of motivation indicates that staff will be encouraged whenever they trust that they will be rewarded for their achievements. The expectancy theory of motivation defines how employee performance drives employee behavior (Gant, 2021; Stern et al., 2021). Vroom

(1964) determined three perceptions that affect the relationship between employees' behavior and their goal: (a) expectancy that an employee's attempt would drive the employee's achievement through self-reliance and perceived control; (b) instrumentality, considering the external motivation that affects an individual's conduct, and (c) valence, the expected reward value for the individual (Sigaard & Skov, 2015). One question explored the correlation among employee-driven CSR factors and employee innovation climate. The study addressed the following research question (RQ):

- RQ1: "What relationship, if any, exists between employee-driven CSR factors, including employees' extrinsic and intrinsic rewards and recognition, empowerment, availability of resources, employee engagement and decision-making involvement, horizontal communication, vertical communication, employee job satisfaction, employee training, and leadership relationships, and employee innovation in medical device companies?"

The RQ leads to the following null hypothesis and directional hypothesis:

- H10: "None of the employee-driven CSR factors has any positive relationship with employees' innovation."
- H1: "At least one of the employee-driven CSR factors has a significant positive relationship with employees' innovation."

In chapter five, I interpreted the study's key findings. I acknowledged how the findings might contribute to the relationship between employee-driven CSR factors and employee innovation climate in U.S. Medical diagnostics companies during pandemics. An explanation of the theoretical contributions and their alignment with the research question and study result.

The discussion also focused on study limitations, recommendations, conclusions, and suggestions for further research.

Findings Related to the Hypothesis

The research study examined the potential correlation between employee-driven CSR and employee innovation. One research question was examined using descriptive analysis, ANOVA, analysis of variance, independent t-tests, correlation, and multi-regression analysis. Most participants were from the west region with bachelor's degrees, holding senior management positions in small manufacturing and distributing companies and working for over ten years. In response to RQ1, the analyzed data determined that employees-driven CSR had a considerable association with employee innovation.

The evidence gathered in this research analysis endorsed alternative hypotheses. Correlation analysis found that all independent variables were significantly related to employee innovation climate. The correlation analysis results showed a high correlation between employee innovation and each individual employee-driven CSR factor, including employees' rewards and recognition, empowerment, availability of resources, employee engagement and decision-making involvement, horizontal communication, vertical communication, employee job satisfaction, employee training, and supervisor relationships. The strongest correlation was between employee innovation and job satisfaction, followed by horizontal communication.

This result aligns with the CSR theory and the expectancy theory of motivation. The employees are important stakeholders as they contribute significantly to an organization's success or failure. Consequently, employees, as a vital resource for any business, need to feel satisfied, and such corporate internal CSR practice affects the employees' behavior and stimulates their performance. An employee-centered CSR is concerned about the justice of employment action for the employee's wellbeing.

The correlation data analyses also demonstrated a correlation between internal CSR factors. There was a correlation between job satisfaction and decision-making involvement and job satisfaction and vertical communication. Also, employee empowerment correlated with decision-making involvement. Finally, the decision-making involved is associated with vertical and horizontal communication.

As the research hypothesis included more than two independent variables, we also conducted the Regression Analysis to find the combined impact of employee-driven CSR factors on employee innovation climate. The result demonstrated that internal CSR positively affected employee innovation. The multiple R presented a correlation between the employee-driven CSR and employee innovation ($R = 0.546$, $p = 0.000309$), which meant that the employee-driven CSR explained about 55% of the employee innovation as predictor variables. The R -square value was $R = 0.30$, which meant that 30 percent of the innovation movement is due to nine internal CSR motivation factors. The β values presented the corresponding effect of captured variables. Job satisfaction significantly impacted employee innovation ($\beta = .61$), followed by Horizontal communication ($\beta = .18$). Our findings indicate a significant positive correlation between job satisfaction and motivation toward innovation. In conclusion, this study recognizes job satisfaction as critical employee motivational factor to employee innovation through quantitative research, followed by horizontal communication, which was also one of the factors above employee-centered CSR.

Job Satisfaction. The results of this study underpin that practicing the employee-driven CSR programs could encourage employees to innovate through job satisfaction. The significant contribution of job satisfaction to the employee innovation climate may be because managers adventure efforts to continually improve job satisfaction. Other cause of job satisfaction may consist of accomplishment, gratitude, accountability, self-growth, and other factors linked to the motivation of the staff in their profession (Fujii, 2020). Job satisfaction is predicted by self-

efficacy concerning the sense of work motivation, coping with change, and conflict resolution (Ahmad & Raja, 2021; Szabó et al., 2022). According to Winkelhaus et al. (2022), job satisfaction is impacted by intrinsic motivation, such as respect, appreciation, and praise. According to (Xia et al., 2022), employee job satisfaction is a motivational factor in the effect of change. Employees with high job satisfaction may tolerate change in times of crisis. Employee satisfaction plays a crucial role in personal growth and achieving the desired outcomes (Moslehpour et al., 2022). Therefore, as the result of this study, job satisfaction is a core employee-driven factor toward employee innovation.

Chavadi et al. (2022) found that job satisfaction is correlated to low turnover. In addition, Job satisfaction is a mediator between two outstanding commitments and creative behavior (Leung & Lin, 2022). I found that the employees had a greater incentive to be innovative when they satisfied with their job. Job satisfaction may create a sense of growth, creativity, commitment, security, empowerment, reducing fear of crisis and failure (Shehawy & Abouzied, 2022).

Also, the study results showed that employee job satisfaction was correlated to other CSR factors, like efficient vertical communication and decision-making involvement. This means that leaders may provide staff with the opportunity to express their self-efficiency and growth through the implementation of the following step:

1. Leaders need to involve employees in decision-making.
2. Leaders must communicate the corporate vision, purpose, and priorities.

Even though job satisfaction was credited as a predictor of employee innovation in this study, devolution of power to employees without proper involvement in decision-making and efficient communication would not drive an achievement (see Figure 7). The organizational leader who expresses their social innovation as a substantial element of their company strategy originates a culture of creativity that motivates the workforce to adopt innovative behavior (Afraz et. 2022; Getele et al., 2019; Jaroensutiyotin et al., 2019; Małecka et al., 2022). Decentralizing

responsibilities, authority, and decision-making increase the productivity and efficiency of the organization (Mathur & Vijayvargy 2022). Innovation occurs in an advanced decentralized system with high transparency and bypassing bureaucracy (Al-Hawari et al., 2021; Lingyan et al., 2022). Hence, it is necessary to implement the related factors as internal CSR, even if they have not been acknowledged as indicators of fostering innovation. From this point of view, decision-making participation and vertical communication factors may be considered to be compliance oriented.

Horizontal Communication. A lack of effective organizational communication results in a lack of employee incentives (LaVan et al., 2022). Consequently, information transparency and the capability to manage the workforce in various contexts influence employee behavior and organizations' sustainable innovation capacity (J. Li et al., 2021). Woo et al. (2022) demonstrated how organizational culture and communication flow affect employees' job performance. Leaders can motivate employees to innovate in pandemic situations by communicating transparently with them (Tan & Antonio, 2022). Appropriate communication can improve employees' work-life, increase job pleasure, and reduce team miscommunication (Mahvar et al., 2020). Employees' interactions and transparent communication in the corporation influence their creative behavior (Bodrožić-Brnić & Thiessen, 2022). Additionally, leaders must focus on solid communication, work appreciation, and positive reinforcement (Dirani et al., 2020). Leaders need to stimulate communication among various work divisions so that employees can clarify their responsibilities and tasks in various division and how their share decision influences the performance of the other department. Horizontal communication implies a higher problem-solving ability, fostering information exchange across the organization (Mustafa et al., 2022).

Figure 7

Core Employee-Driven CSR Factors Toward Employee Innovation



Beglari, S. (2022). Employee-driven CSR and Employee Innovation

Other Significant Result. Two significant findings were obtained from the respondents' responses. Firstly, there were no significant differences in comparing employee responses regarding motivation toward innovation in small, medium, and large organizations. This result suggests that the corporation's size did not influence on employees encouragements toward innovation. Secondly, there were no statistically considerable differences in comparing employee responses regarding innovation with gender and education differences. This finding suggested that the organization's size had no trend toward employee innovation in this study. Second, no statistically significant difference was found comparing employees' responses with different gender and education. This could mean medical device company employees have the same encouragement to innovate regardless of the organizational size, gender, and education due to loyalty, commitment, and responsibility to their organizations in the COVID pandemic.

In addition, employee job satisfaction correlated highly with employee innovation. The researcher concluded that staff could make every effort to innovate while achieving personal growth and the desired outcomes within the organization. This result aligns with the expectancy theory of motivation, which states that the workforce would be motivated if they consider that a

strong effort will guide to a successful operation, and a successful process will lead to desired compensation.

Implications

Many previous theoretical studies have been devoted to finding the connection between CSR factors, the green environment, and external stakeholder values. There was a lack of academic discussion on internal CSR factor's effectiveness on employee innovation in medical diagnostic companies. This study determined the relationship between employee-driven CSR and innovation climate during the COVID pandemic. The results of this research provide the opportunity for manufacturers to practice internal CSR strategies that align with their company goal and vision in motivating employees toward innovation. Motivation can provide individual desired outcomes and benefits throughout employment, such as (a) appropriate workplace, (b) job security, and (c) employee's financial requirements (Abdul Hamid et al., 2020).

Implementing an internal CSR model creates employee motivation and enhances employee engagement, collaboration, and confidence (Dagogo & Barasin, 2020). Therefore, efficient employee-driven CSR can motivate employees to social innovation and gain a competitive advantage. Shahzad et al. (2020) stated that organizations with sustainable CSR tend to gain a competitive advantage by creating innovative methods to enhance social benefit.

On the grounds of the findings of the present study, medical companies can leverage job satisfaction and employees' horizontal communication as effective internal CSR strategies to create an innovative climate and risk-taking organizational culture (adhocracy). In a supportive environment, inventive ideas can be triggered and put into practice efficiently (Nyström, 1990). Alas et al. (2018) stated that the organizational atmosphere represent an essential contribution in innovation. Hence, leaders of medical device manufacturers and distributors can benefit from this study's outcome by designing a new CSR-innovation strategy. Leaders can stimulate a culture of invention and prioritize their employee-driven CSR for the organization.

Finally, information on the size of the organization, gender, education, and their relationship to employee innovation strengthened the perception of CSR-Innovation strategies. The results include information that grants corporation to design appropriate training for front runners concerning internal CSR. Leaders can utilize internal CSR to enhance employee innovation, leading to a competitive advantage. Leadership's ability to adopt CSR is critical to the company's success (Hofmeyer et al., 2020). Creating an adhocracy culture benefits employees by tackling complex, challenging tasks, and seeking creativity and work efficiency. On the other hand, employees who trust their leaders and work environment feel empowered and serve a higher purpose. Therefore, the findings of this research can serve as a valuable source to enhance employees' innovation, commitment, and leadership skills in a crisis. As a result, motivated, satisfied, and passionate employees challenge crises by creating new ideas instead of leaving businesses in times of need.

Limitations of the Study

Although the investigator accomplished the objective of the research question, there were limitations to the methodology and design of the research. The first limit was cross-sectional, which means that the study provided employee perceptions at a specific time, not over time. The other limitation was the generalizability of the results, which may not apply to all industries or demographics. Global workers also have diverse social, cultural, and political backgrounds. An additional potential limitation was the reliability of the validity of the measuring instruments. To reduce this limitation, I have used validated measurement instruments in previous studies by Übius and Alas (2010). The other limitation was the time and costs associated with the study staff survey, which limited the number of participants.

Conclusions and Recommendations for Further Research

In recent decades, we have witnessed the rise of the epidemic and its adverse effects on the business world. The company's survival during an unprecedented pandemic is seen as vital

to the company's management and as a domino effect on the company's employees.

Companies can cope with pandemics by improving employee collaboration and strengthening the power of purpose to accomplish the impossible (Fearne et al., 2021). Therefore, understanding best practices are essential to coping with crises and leveraging effects.

The main factors that help companies survive a crisis are adaptation, resilience, the creation of new strategies, new products, and services that fulfill the needs of society. Social innovation practices assist organizations in growing and being cost-effective while responding to social demand. This has never been more relevant than at present when the world has been devastated by pandemic crises. U.S. executives of manufacturing and distribution organizations have had difficulty maintaining their competitive position due to the lag in global innovation (Marketplace.org, 2020). In addition, firms have faced a labor shortage during the pandemic, and firms' projects have not been implemented effectively (Majumder et al., 2021). Leaders need to understand internal CSR factors better to motivate their employees toward creativity rather than leaving the organization in times of need. The results of this study can help medical diagnostic companies develop better strategies for implementing employee-driven CSR to improve innovation, seek competitive advantage, and improve financial performance during crises.

The study result indicated that job satisfaction was a predictor of employee innovation. As such, a recommendation for prospect research is to create an environment where employees are sufficiently satisfied to be engaged, recognized, and motivated. Also, as job satisfaction is the main factor of employee-driven CSR toward employee innovation in this study, we may find other related factors that affect job satisfaction. We must seek a new definition of job satisfaction in the organization, particularly for workers of the new generation.

Afterward, this examination was performed in the United States of America; I deemed that the results might not be comprehensive in other countries. Since the driving force of motivation possibility vary in various nations due to cultural, financial, social, and political

distinction; therefore, as appropriate to replicate the examination in other countries. The researcher prospects that the relationship between employee-driven CSR and employee innovation will become a notable field for future studies worldwide.

The targeted audiences were employees who have been working in operation, research, technical, and management departments; therefore, the researcher conceded that the results might not be generalized to audiences with other occupations or other types of industries. Consequently, I suggest replicating this research with a variety of configurations, such as participants in other industries or workplaces to verify whether a frequent pattern is implemented in a diverse structural context.

This study indicated that 30% of employees' innovation movement is due to 9 employee-driven CSR. Therefore 70% of innovation movements are related to other factors that need to be studied. Further investigation may also probe other employee-driven CSR factors influencing employees' innovative behavior. Since internal CSR and innovation were considered challenging phenomena; I could investigate the influence of a limited number of employee-centered CSR, hence many other internal and external CSR factors left for forthcoming study.

In addition, an internal CSR strategy that affects business innovation may require more empirical and theoretical studies (Chkir et al., 2021). Moreover, information on employee-driven CSR factors can provide further details regarding developing innovation strategies, especially during times of crisis. Researchers can use other or mixed methodologies and designs in future studies to get detailed perspectives.

At the same time, managers must consider innovation costs, efficiency, employee contributions and motivation, and the profits associated with that innovation (Sarkar & Mateus, 2022; Leitão et al., 2022). CSR can influence business practice to increase profitability, sustainability, and efficiency by considering interactions among individuals, organizations, and the community (Dal Mas et al., 2021). Meanwhile, researchers can find the correlation between employee-driven CSR and corporate financial performance for the forthcoming examination.

Summary

Medical diagnostics businesses are essential for responding to viral outbreaks and pandemics (Z. Zhao et al., 2022). The leaders in medical device manufacturing fail to cope with medical device test needs in the worldwide pandemic (Marjanovic, 2020). With CSR strategy and developing innovative supplies or services, firms obtain a better chance of survival. While customers, suppliers, and stakeholders are vital to the corporation's accomplishment, employees are considered the core members of an organization, and their role in stimulating innovation is essential (Ge & Sun, 2020). Motivated employees are innovative, passionate, and have a corporate commitment. Organizations can leverage the benefits associated with employees-driven CSR factors to enhance innovation behaviors (Tajeddini et al., 2020).

This quantitative correlation study analyzed the association between employee-driven CSR factors and worker innovation climate in U.S. medical diagnostics companies during pandemics. This study was the first to assess the effect of employee-driven CSR on employee innovation in the medical diagnostic company in the United States. The two theories that have strengthened the research validity were CSR and expectancy theories of motivation. This study addressed how organizational internal CSR aspects affect employees' innovation during the COVID pandemic. Ninety-three U.S. employees from medical device organizations completed an online survey. The study result indicates that 30% of the employee innovation was explained by the nine employee-driven CSR factors as predictor variables. Job satisfaction significantly impacted employee innovation, followed by Horizontal communication. In conclusion, this study recognized job satisfaction as the most critical motivational factor to innovate through quantitative research, which was also one of the above considerations of employee-driven CSR. Also, promoting communication among different work departments can provide employees with a clear picture of other departments' responsibilities, collaboration, and interaction. Hence, the leaders of medical device manufacturers and distributors can benefit from this study's outcome

by designing a new CSR-innovation strategy to promote a culture of innovation and prioritize their employee-driven CSR in the organization.

This result aligns with the CSR theory, which states that corporations have social responsibility toward employees as core members of stakeholders. Also, it endorses previous research demonstrating a substantial association between internal CSR and innovation by Übius and Alas (2010). The results of this research can encourage leaders in the medical manufacturing industry to focus more on employee-driven CSR to improve innovation performance, gain a competitive edge, enhance the enterprise's profitability, and reduce US unemployment and retention.

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APPENDIX A

Survey Questionnaire

Thank you for agreeing to participate in this survey. This survey is about corporate social responsibility. Under international agreements, organizations are supposed to demonstrate a commitment to operate in an economically, socially, and environmentally responsible manner.

The purpose of this survey is to evaluate the relationship, if any, of corporate social responsibility on an employee's motivation to innovate within the company.

Your answers to the following questions will provide the researcher with information that will help the researcher understand what motivates employees to innovate.

1. **Which of the following best describes the principal industry of your organization?**
 - o Manufacturing
 - o Distributing
 - o Manufacturing and distributing
 - o Others

2. **In what region of the United States of America do you work?**
 - o **Northeast Region:** Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, and New Jersey.
 - o **Midwest Region:** Wisconsin, Michigan, Illinois, Indiana, Ohio, Missouri, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa.
 - o **South Region:** Delaware, Maryland, Washington, D.C., Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Mississippi, Alabama, Oklahoma, Texas, Arkansas, and Louisiana.
 - o **West Region:** Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico, Alaska, Washington, Oregon, California, Hawaii.

3. Approximately how many people are employed at the location where you currently work?

4. Which of the following best describes your job level?

- Senior Management
- Middle Management
- Intermediate
- Entry Level
- Other

5. Which of the following describes your job function?

- Operation
- Quality Control
- Technical Product Support
- Research
- Management
- Others

6. For the statement below, please choose the one answer that best describes your agreement or disagreement with the statement. There is no right or wrong answer.

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
At my company, I feel encouraged to come up with new and better ways of doing things.					

7. Please indicate whether you agree or disagree with each of the following statements as to whether the item motivates you to come up with new and better ways of doing things where you work. There are no rights or wrong answers:

I am more likely to innovate on my job if I...

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
A. Am Satisfied with my job.					
B. Have a reasonable workload.					
C. Have personal empowerment with respect to work processes.					
D. Have trust and confidence in my supervisor.					
E. Supervisors/team leaders in my work unit provide me with an opportunity to demonstrate my leadership skills.					
F. Am Satisfied with my involvement in decisions that affect my work.					
G. Have managers who promote communication among different work units (for example, about projects, goals, needed resources).					

H. Have managers who communicate the goals and priorities of the organization.					
I. Have supervisors/team leaders in my work unit who support employee development.					
J. Am satisfied with the training I receive for my present job.					
K. Receive pay raises/bonuses that are dependent on how well I perform on my job.					
L. Am satisfied with the recognition I receive for doing a good job.					
M. Am satisfied with my pay.					
N. Am rewarded for being creative and innovative.					
O. Have the tools and resources to be innovative.					

The next questions are used for classification purposes only. The information you provide will help the researcher to compare your answers with others participating in this survey. All information will be kept strictly confidential.

8. What is your gender?

- Male
- Female
- Prefer not to answer

9. What is the highest degree or level of school you have completed?

- High School
- Associate degree
- Bachelor's degree
- Master's degree
- Professional degree
- Doctorate degree
- Others

10. How many years do you work in Medical Diagnostics Industry?

- 1-3 years
- 4-6 years
- 7-9 years
- Over 10 years

Thank you for taking time out to participate in our survey. Sofia truly values the information you have provided.

APPENDIX B

Consent Form

(Graduate School of Education and Psychology)

INFORMED CONSENT FOR PARTICIPATION IN RESEARCH ACTIVITIES

IRB #: 21-12-1727

Research Title:

Impact of Employee-driven Corporate Social Responsibility Factors on the Employee's Innovation Climate in Medical Diagnostics Industry

Authorized Study Personnel

Principal Investigator: Sofia Beglari

This study is part of the degree requirements for the doctoral program for Sofia M Beglari at Pepperdine University. She is a Vice President of the USA medical device business; however, this study is entirely separate from that role.

Dear Participants,

My name is Sofia M Beglari. I am conducting a study to examine the relationship between employee-driven factors and employee innovation in medical device companies. If you are 19 years of age or older and work in the operation, quality control, and technical product support, research, and management departments in the U. S.A. medical diagnostics companies, you are eligible to participate. This informed consent form will provide you with brief information about your rights related to this research background information:

Key Information:

Should you agree to participate in this study, the project will involve:

- U. S.A. Medical Device employees between the ages of **19-90**.
- U. S.A. Medical Device employees worked in operation, quality control, and technical product support, research, and management in the United States for **at least three years**.
- Procedures will include:
 - Receiving the recruitment flyer
 - Reviewing and approving the informed consent
 - Responding to the questionnaires
 - Submitting the questionnaires
- Participants can complete the online survey in a location convenient to them.
- Answering the question will take 15-20 minutes approximately.
- Participant information will remain confidential.
- There is minimal risk associated with this study.
- There is no compensation for your participation.
- This study is voluntary. You are free to accept or refuse the invitation.
- The audience can drop in to participate at any time.

You are invited to take part in this research study. The information in this form is meant to help you decide whether or not to participate. If you have any questions, please email me at sofia.beglari@pepperdine.edu.

Why are you being asked to be in this research study?

You are being asked to be in this study because you are U. S.A. Medical Device Company's employee. You must be 19 years of age or older to participate.

What is the reason for doing this research study?

The research aims to find what factors motivate employees toward innovation during the respiratory syndrome coronavirus disease (COVID) pandemic. Employees play a critical role in innovation and producing high performance. It is essential to determine what company activities encourage employees toward innovation. Leaders' ability to provide an environment for encouraging and supporting employees is a critical component of innovation. Companies are socially responsible for employees' well-being and benefits while pursuing corporate interests. This research examines the relationship between employee-driven factors such as rewards for employee innovation in U.S. medical diagnostics. If you agree to be part of this voluntary study, you will be asked to complete the following tasks:

What will be done during this research study?

The researcher will ask you a series of semi-structured questions to determine what strategies leaders can use to motivate you to innovate. The study will be conducted using a web-based survey to secure information and save time. You can complete the online survey in a location convenient to you. You will be asked to complete an approximately 15-20 minutes questionnaire.

The researcher will collect data electronically from participants who complete the survey. All participants' responses will be collected confidentially. The data will be downloaded to Microsoft Excel and migrated to Statistical Package for the Social Sciences (SPSS) software for further examination and analysis. The research will take approximately 12 weeks to (analyze, record, and publish) after collecting the data.

What are the possible risks of being in this research study?

The study involves minimal risk (psychological risks and breach of confidentiality) on behalf of the participants.

- Participants' personal information will remain confidential; hence there is neither personal risk associated nor a negative influence on their organizational position by participating in this research. The researcher will not ask any questions that may jeopardize their professional roles. The researcher has gone to great lengths to ensure participants' identities remain confidential, but there is always a risk of a breach of confidentiality.
- There are no more than minimal emotional risks for this study, such as the possibility of mild fatigue. The audiences have a right to drop in the participants at any time.

What are the possible benefits to you?

There is no direct benefit for participants in this research.

What are the possible benefits to other people?

The value of employee-driven social responsibility factors influences innovation and can contribute to both theory and practice. This research may highlight how medical device business leaders foster innovation through employee-driven social responsibility. Outcomes from this study can benefit the U.S. In-vitro medical diagnostics manufacturers in social innovation and competitive advantage.

How will information about you be protected?

Reasonable steps will be taken to protect your privacy and the confidentiality of your data. All your identification will be removed via the survey administration tool to protect your identity. Pseudonyms and numbers will replace organization names and participants' names if an error occurs to ensure confidentiality before analyzing the data. The data will be collected and stored electronically through a password-protected secure server with Sonicwall Security System and firewall. The collected data from the online self-administrated survey will be downloaded to Excel and stored securely on the hard drive in a locked cabinet at the researcher's office. Data will be held for at least five years, as the university requires, and it will be deleted after five years.

The collected data will only be seen by the research team during the study and until complete. The only persons who will have access to your responses are the researcher and the Institutional Review Board (IRB), as required by law. The information from this study may be published in scientific journals or presented at scientific meetings. Still, the data will be reported as a group or summarized data, and your identity will be kept strictly confidential. The researcher will not share the participants' identities. The researcher will not use participant information for any purposes outside of this research.

What are your rights as a research subject?

This study is voluntary. You are free to accept or refuse the invitation. The researcher respects your decision of whether or not you want to participate in this research. No one within your professional association or organization will treat you differently if you decide not to participate in this study. If you participate in this study now, you can change your decision later. If you feel stressed during the survey, you may stop at any time. You may skip any question that you think is too stressful, personal, or may damage you or your organization. The signed consent will allow you to participate in questionnaires.

You may ask questions concerning this research and have those questions answered before agreeing to participate in or during the study. You may ask any questions you have at any time. The researcher's contact information is Sofia Beglari; Mobile Phone: 818-383-6878; Email: Sofiabeglari@pepperdine.edu. The researcher's doctoral study chairperson is Dr. James Dellaneve. You can email him with any questions or clarification. Dr. James Dellaneve E-mail: james.dellaneve@pepperdine.edu.

For questions concerning your rights or complaints about the research, contact the Institutional Review Board (IRB):

Phone: 1(310)568-2305

Email: gpsirb@pepperdine.edu

What will happen if you decide not to be in this research study or choose to stop participating once you start?

You can decide not to be in this research study, or you can stop being in this research study ("withdraw") at any time before, during, or after the research begins for any reason. Deciding not

to be in this research study or choosing to withdraw will not affect your relationship with the researcher or with Pepperdine University. You will not lose any benefits to which you are entitled.

Documentation of informed consent

You are voluntarily deciding whether or not to be in this research study. Signing this form means that (1) you have read and understood this consent form, (2) you have had the consent form explained to you, (3) you have had your questions answered, and (4) you have decided to be in the research study.

You are voluntarily deciding whether or not to participate in this research study. By clicking on the, I Agree button below, your consent to participate is implied, and you can answer questionnaires.

I agree

I disagree

My signature certifies that all elements of informed consent described on this consent form have been explained thoroughly. I have at least three years of experience working in the medical diagnostics industry, and I am 19.

E-Signature of Person Obtaining Consent

Date

APPENDIX C

Letter of Permission



Sofia Beglari 'student' <sofia.beglari@pepperdine.edu>
to ylle.ybius, Marcia, ylle.ybius ▾

Sep 10, 2020, 1:01 PM ☆ ↶ ⋮

Dear Dr. Ubius,

Good afternoon. This is Sofia Beglari from Pepperdine University in California. I am a Doctoral candidate, and I would like to get permission to use your CSR and innovation climate survey. Please advise.

...

Sofia Beglari
8183836878
sofia.beglari@pepperdine.edu



Ülle Übius <ylle.ybius@gmail.com>
to me, ylle.ybius, Marcia ▾

Sep 10, 2020, 9:41 PM ☆ ↶ ⋮

Dear Sofia

Yes, of course, please use it.

Best regards

Ülle Übius

...

APPENDIX D

CITI Human Subjects Training



Completion Date 08-Dec-2019

Expiration Date 06-Dec-2024

Record ID 34456963

This is to certify that:

Sofia Beglari

Has completed the following CITI Program course:

GSEP Education Division

(Curriculum Group)

GSEP Education Division - Social-Behavioral-Educational (SBE)

(Course Learner Group)

1 - Basic Course

(Stage)

Under requirements set by:

Pepperdine UniversityVerify at www.citiprogram.org/verify/?wacddef80-0f54-4c8b-985a-9eb03974e4a9-34456963

APPENDIX E

IRB Notice of Approval

Pepperdine University
24255 Pacific Coast Highway
Malibu, CA 90263
TEL: 310-506-4000

NOTICE OF APPROVAL FOR HUMAN RESEARCH

Date: February 21, 2022

Protocol Investigator Name: Sofia Beglari

Protocol #: 21-12-1727

Project Title: IMPACT OF EMPLOYEE-DRIVEN CORPORATE SOCIAL RESPONSIBILITY FACTORS ON THE EMPLOYEE'S INNOVATION CLIMATE IN THE MEDICAL DIAGNOSTICS INDUSTRY

School: Graduate School of Education and Psychology

Dear Sofia Beglari:

Thank you for submitting your application for exempt review to Pepperdine University's Institutional Review Board (IRB). We appreciate the work you have done on your proposal. The IRB has reviewed your submitted IRB application and all ancillary materials. Upon review, the IRB has determined that the above entitled project meets the requirements for exemption under the federal regulations 45 CFR 46.101 that govern the protections of human subjects.

Your research must be conducted according to the proposal that was submitted to the IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit an amendment to the IRB. Since your study falls under exemption, there is no requirement for continuing IRB review of your project. Please be aware that changes to your protocol may prevent the research from qualifying for exemption from 45 CFR 46.101 and require submission of a new IRB application or other materials to the IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite the best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the IRB as soon as possible. We will ask for a complete written explanation of the event and your written response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the IRB and documenting the adverse event can be found in the *Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual* at community.pepperdine.edu/irb.

Please refer to the protocol number denoted above in all communication or correspondence related to your application and this approval. Should you have additional questions or require clarification of the contents of this letter, please contact the IRB Office. On behalf of the IRB, I wish you success in this scholarly pursuit.

Sincerely,

Judy Ho, Ph.D., IRB Chair

cc: Mrs. Katy Carr, Assistant Provost for Research

APPENDIX F

Recruitment Script

Dear Participants,

My name is Sofia Beglari, and I am a doctoral candidate in the Graduate School of Education and Psychology at Pepperdine University. I am conducting a research study examining employee-driven social responsibility factories on the employees' innovation climate in the medical device business, and you are invited to participate in the study. If you agree, you are invited to participate in the survey process. The survey will be conducted from the USA Medical Device database via a self-administrated Survey. Participation in this study is voluntary. Your identity as a participant will remain confidential during and after the study. Confidentiality will be maintained using a password-protected laptop to store all data collected, including informed consent and the collected data. All data will also be identified using a pseudonym that will be assigned to each individual response. In addition, all IP addresses will be removed. If you have questions or would like to participate, please contact me at Sofia.beglari@pepperdine.edu.

Thank you for your participation,

Sofia Beglari

Pepperdine University, GSEP

Doctoral Candidate

APPENDIX G

Recruitment Flyer

What does Motivate You Toward Innovation in Your Company?

Join us as a participant. Your Opinion Matters

Employee' motivation to innovation matters.

Corporate social responsibility strategies are critical leadership abilities to motivate employees to innovate. This research aims to find what factors motivate employees toward innovation during the respiratory syndrome coronavirus disease (COVID) pandemic. It is essential to determine what company activities encourage employees toward innovation. This research examines the relationship between employee-driven factors such as reward on employee innovation in U.S. medical diagnostic. You have been invited to this research study. If you agree, please apply now.



PEPPERDINE EDUCATION & PSYCHOLOGY

The researcher name is Sofia M Beglari, and she is a doctoral candidate in the Graduate School of Education and Psychology at Pepperdine University in Organizational Leadership.

PEPPERDINE

APPENDIX H

SPSS Result

Table H25

SPSS Correlation Result

		Correlations									
		Innovation	JOBS	Empowerment	LeadershipRelationships	DecisionMakingInvolvement	Horizontalcommunication	Verticalcommunication	Training	Reward	Tools
Pearson Correlation	Innovation	1.000	.466	.257	.129	.269	.296	.223	.230	.043	.050
	JOBS	.466	1.000	.551	.414	.697	.580	.678	.419	.460	.505
	Empowerment	.257	.551	1.000	.458	.642	.553	.496	.275	.303	.318
	LeadershipRelationships	.129	.414	.458	1.000	.557	.599	.506	.431	.341	.316
	DecisionMakingInvolvement	.269	.697	.642	.557	1.000	.755	.686	.535	.466	.528
	Horizontalcommunication	.296	.580	.553	.599	.755	1.000	.604	.556	.401	.479
	Verticalcommunication	.223	.678	.496	.506	.686	.604	1.000	.392	.514	.483
	Training	.230	.419	.275	.431	.535	.556	.392	1.000	.463	.309
	Reward	.043	.460	.303	.341	.466	.401	.514	.463	1.000	.718
	Tools	.050	.505	.318	.316	.528	.479	.483	.309	.718	1.000
	Sig. (1-tailed)	Innovation		<.001	.006	.109	.005	.002	.016	.013	.342
JOBS		.000		.000	.000	.000	.000	.000	.000	.000	.000
Empowerment		.006	.000		.000	.000	.000	.000	.004	.002	.001
LeadershipRelationships		.109	.000	.000		.000	.000	.000	.000	.000	.001
DecisionMakingInvolvement		.005	.000	.000	.000		.000	.000	.000	.000	.000
Horizontalcommunication		.002	.000	.000	.000	.000		.000	.000	.000	.000
Verticalcommunication		.016	.000	.000	.000	.000	.000		.000	.000	.001
Training		.013	.000	.004	.000	.000	.000	.000		.000	.000
Reward		.342	.000	.002	.000	.000	.000	.000	.000		.000
Tools		.319	.000	.001	.001	.000	.000	.000	.001	.000	
N		Innovation	93	93	93	93	93	93	93	93	93
	JOBS	93	93	93	93	93	93	93	93	93	93
	Empowerment	93	93	93	93	93	93	93	93	93	93
	LeadershipRelationships	93	93	93	93	93	93	93	93	93	93
	DecisionMakingInvolvement	93	93	93	93	93	93	93	93	93	93
	Horizontalcommunication	93	93	93	93	93	93	93	93	93	93
	Verticalcommunication	93	93	93	93	93	93	93	93	93	93
	Training	93	93	93	93	93	93	93	93	93	93
	Reward	93	93	93	93	93	93	93	93	93	93
	Tools	93	93	93	93	93	93	93	93	93	93

Note. Table H25 illustrates the SPSS result for Correlations between employee-driven factors

Table H26

Collinearity Diagnostics

		Collinearity Diagnostics ^a												
		Eigenvalue	Condition Index	(Constant)	Variance Proportions									
Model	Dimension				JOBS	Empowerment	LeadershipRelationships	DecisionMakingInvolvement	Horizontalcommunication	Verticalcommunication	Training	Reward	Tools	
1	1	9.839	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	2	.037	16.287	.00	.00	.02	.10	.00	.02	.00	.05	.11	.13	
	3	.035	16.768	.01	.01	.09	.00	.00	.00	.01	.54	.02	.00	
	4	.021	21.690	.01	.05	.07	.72	.01	.00	.00	.08	.02	.02	
	5	.019	23.027	.57	.01	.03	.01	.01	.03	.19	.00	.00	.00	
	6	.015	25.581	.17	.05	.26	.01	.01	.07	.29	.00	.00	.11	
	7	.013	27.407	.14	.00	.34	.02	.01	.21	.03	.02	.23	.11	
	8	.009	33.015	.09	.58	.01	.14	.00	.21	.19	.02	.07	.07	
	9	.007	38.518	.01	.27	.05	.00	.03	.36	.21	.20	.46	.43	
	10	.006	41.997	.00	.03	.14	.00	.93	.09	.08	.08	.09	.12	

a. Dependent Variable: Innovation

Note. Table H26 illustrates the SPSS result for Collinearity Diagnostics between employee-driven factors

APPENDIX I

SPSS Result-Residuals

Table I27

*Casewise Diagnostics and Residuals' Statistics***Casewise Diagnostics^a**

Case Number	Std. Residual	Innovation	Predicted Value	Residual
30	-3.445	1	3.28	-2.276
38	-4.163	2	4.75	-2.751

a. Dependent Variable: Innovation

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.30	5.36	4.62	.412	93
Residual	-2.751	1.427	.000	.628	93
Std. Predicted Value	-5.640	1.790	.000	1.000	93
Std. Residual	-4.163	2.160	.000	.950	93

a. Dependent Variable: Innovation

Note. Table I27 illustrates the SPSS result for calculating Casewise Diagnostics and Residuals' Statistics