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# Internal Audit and Business Resilience in Power Sector. A Case of Geothermal Development Company

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## Abstract

Over years, internal auditors' roles are changing from checking compliance issues to giving a strategic view of the organization processes. Internal auditors play noble role in evaluating the anticipated level of success of a project. This research sought to establish how risk management, business controls, governance and business advisory contribute to business resilience in Geothermal Development Company Limited. The study was anchored on the balanced score card, strategic choice theory, transient advantage theory, the strategic management theory, complexity theory and the normal accident theory. The study focused on 3 GDC operation regions with a target population of 200 staff based in the office and in the field. The research study used primary data collection method employing a semi-structured questionnaire. Post collecting data, descriptive and inferential statistics were employed in the analysis. Correlation and regression analysis was conducted to establish the relationships between the variables. The presentation of results was through tables and figures. The study found that risk management had a positive and significant effect on business resilience of GDC; business advisory had a positive and significant effect on business resilience of GDC; internal controls had a positive and significant effect on business resilience of GDC; and governance had a positive and significant effect on business resilience of GDC. The study concluded that the internal audits positively and significantly influenced business resilience of GDC. From the study, internal audit plays a critical role in enhancing business resilience at GDC through effective risk management, robust governance, and reliable internal business controls. The study recommended organizations to place internal audit functions at strategic hierarchical positions as well as implement its recommendations. To bolster business resilience at GDC, it is recommended the company strengthen risk management practices, enhance governance structures, and improve internal business controls. Investing in internal audit capacity building and expanding business advisory services can further optimize the internal audit function. Additionally, GDC should consider benchmarking and collaborating with peer organizations to identify areas for improvement and share best practices within the power sector.

**Keywords:** *Internal Audits, GDC, risk management, business advisory, business controls, governance, business resilience*

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### 1.1 Background of the Study

Businesses are vulnerable to risk arising from natural disasters and human errors, the resulting direct impacts include damage to equipment, property, machinery and inventory. The indirect impacts comprise the decline in value of property, stock market volatility, off-site business disruption and negative reactions from environmental and sociological issues (Olshansky & Chang, 2009). Over time, the effects of business risks on firms have been escalating and growing (Krell, 2006). According to Disaster Recovery Services in Kenya (2020), today's 'always-on' world downtime is unforgiving when it comes to business or service disruption any downtime is unacceptable. Business downtime impacts on brand reputation and company credibility, and hence the drive to push for zero downtime.

Business resilience differs from business performance in that it is the organization's ability to adapt to disruptions and maintain normal business operations while safeguarding the assets and stakeholders of the business (Efendi, Zulmi & Rangkuty, 2021).

Business resilience involves disaster recovery as well as strategies used after disaster has occurred in order to avoid expensive downtime, safeguard the business from their weaknesses as well as to guarantee business activities are running, as they should (Hasan, Aizan & Azamri, 2022). In contrast,business performance is mainly viewed through the lens of revenues and profits made by the business. Effectively, business performance refers to the achievement of optimal efficiency concerning costs and revenues (Lima, McMahon & Costa, 2021). Good performance is characterized by less inputs and more output and vice versa (Pathiranage, 2019). The two are related in that good business performance will result in resiliencein the event of the unforeseen. Moreover, business versatility empowers organizations and associations to be solid and to continue to go in any event, when conditions are not smooth. This way, organizations are able to adapt and survive (Tibay et al., 2018).

Firms operate in a business environment that is erratic in assessing the nature, time and the vastness of disturbances that might arise. It's in this way fundamental for organizations to ponder embracing a proactive way to deal with manage the vulnerability by making a risk counter support model to cushion themselves the adverse effects of unforeseen circumstances (Akwah, 2014).

GDC is responsible for the development of steam fields and the sale of geothermal steam to KenGen and other private investors who include independent power producers (GDC website 2022). When geothermal surveys are completed and availability of geothermal resource identified, groundbreaking is done using rock bit. The rock bit is attached to the drilling rig and is rotated under pressure. The process continues until the well is completed. The ultimate goal for drilling is to access the resource for exploitation (Ngugi, 2016).

### 1.2 Statement of the Problem

In Kenya, the government, external partners and the private sector partners majorly fund energy projects. For government, energy related establishments are financed through National Treasury allocations, while for external partners it is through loans and grants. Geothermal developments are capital intensive and require huge upfront investment costs. Averagely, one exploration well costs over USD 1 million to completion. The resulting wells can yield little or no steam; this surrounds it with some degree of uncertainty. The risk of hitting a dry well and volcanic exposures make geothermal activities high risk. The uncertainties surrounding geothermal drilling have led private partners to be reluctant in committing funds in exploration and appraisal stages.

Consequently, many financial institutions areunwilling to insure energy related activities coupled with expensive equipment and levies. The resultant effect is; expensive and uncompetitive electricity (Kollikho & Rivard, 2013).

Despite a lot of planning going into drilling activities, discrepancies occur which work against the set plans. According to Mungai and Ngosi (2014), non-productive time in Menengai accounts for 23.5% of the total drilling time. Companies can never be 100% resilient to effects of mishaps anticipated or not in the planning phase, however, the firms can enhance their level of preparedness to minimize equipment downtime and stop an incident from resulting to crisis. Hence, business resilience should be an active role in everyday operations as recovery from downtime is costly (Cooper 2018).

According to Sheffi and Yosi (2010), enhancing the competitiveness of a firm involves developing a resilient enterprise guided by well-established and executed strategic initiatives. Thus to achieve resilience in a firm, the business vulnerabilities can be reduced by installing a redundancy framework while enhancing firm operations flexibility. According to Raza (2019), redundancy is needed to augment system's resilience, and to ensure that a system recovers after a downtime. Redundancy measures the robustness of the system components to withstand a systemfailure. Internal auditors play important role ascertaining project/organization success. The team investigates the possible causes of project failure and rounds up possible remediation strategies. In addition, they make sure that proper project governance practices are being followed so as to minimize project failure resulting from project related risks (Saunders, 2019).

Internal auditors analyze the structure of the organization to get a view of how it operates alongside its facets. They sit at a strategic position, where they are able to give their perspective as well as ability to understand the manner in which the business operates. They have the role of making sure that the programs are functioning as required and comply with the standards and practices (Trollope, 2015).

From review of other literature, there is no previous studies conducted linking internal audit with business resilience in the geothermal sector, for a government owned entity. Due to the high risk and investment incurred in GDC operations, resilience of the processes is crucial. According to Laczkowski (2017), governance attributes to the success of businessresilience and has to be driven from top to bottom under watch of firm management. A team is expected to form the nerve center, which is expected to take various operational circumstances, assess, evaluate and bring out diagnostics and interventions to address organization needs. Internal audit should have a lead role in this process. In this research, business resilience drivers of resilience were intrinsic and focused on self-motivation.

### 1.3 Objectives of the Study

i. To determine how risk management affects business resilience at Geothermal Development Company Limited.

ii. To find out the impact of business advisory on business resilience at Geothermal Development Company Limited.

iii. To examine how internal business controls builds on business resilience at Geothermal Development Company Limited.

iv. To assess the role of governance on business resilience at Geothermal Development

Company Limited.

### 2.1 Theoretical Review

The main theory underlying this study are the balanced score card, strategic choice theory, transient advantage theory, complexity theory, normal accident theory and strategic management theory.

#### 2.1.1 Balanced Scorecard Model

Dr. Robert Kaplan and Dr. David Norton developed Balanced Scorecard model. To provide managers and executives with a more balanced perspective of organisational performance, the idea was created as a performance assessment framework that included strategic non-financial performance measurements to standard financial metrics (Boge, 2010).

The four views that make up BSC are as follows: A) the financial viewpoint, which discusses how shareholders see the company and the financial objectives they aspire to. b) The customer viewpoint examines how the company is seen by its clients and how well it is servicing them in order to fulfil its financial goals. b) The internal process view focuses on the procedures that are most important for meeting the needs of consumers and shareholders. To succeed, the company must focus its efforts on these processes. d) The learning and growth viewpoint emphasizes how the company must develop, innovate, and learn in order to achieve its goals (Kiriiri, 2015).

BSC aims to address both long-term and short-term business issues as a framework for strategy management. Without losing sight of the long-term plan guiding the accomplishment of an organization's vision and goal, it successfully assesses short-term targets(Carolin & Shoko, 2021). According to Harvard Business review journal *'putting the Balanced Scorecard to Work (2022),'* beyond measurement of performance, balanced scorecard is a management system that can motivate breakthrough upgrades in such basic regions as item cycle, client, and market development. The speed of progress and rivalry in the business world is occurring quickly to the point that a business needs to continually change to stay in presence (Boge, 2010).

The BSC was relevant to the study since it uses innovation as a variable to bring competitive advantage and hence survival. By using the balanced scorecard model, a company can improve its business resilience by knowing the risks that they are exposed to and the resources that the organization has at their disposal.

#### 2.1.2 Strategic Choice Theory

The theory takes into account how changes in the external environment affect corporate strategies for competitiveness. The theory acknowledges the connections between actions at various levels of the system and aids in tracing the causes of any internal inconsistencies or conflicts.

The theory takes into account the influence different strategic choices have on the various system actors. It promotes examination of the roles that employees, managers, rivals, and other stakeholders play in one another's fields of expertise and pursuits (Njeri, 2020). Strategic choice theory is relevant since it reviews how business relates with the environment and its adaptability to changing needs. Drastic environmental demands creates operational turbulences. The theory paints a picture of how an entity corresponds to risk management, management choices and performance (Child, 1972).

### 2.1.3 Transient Advantage Theory

McGrath proposed the theory in 2013. It is based on premise of sustainable competitive advantage. The theory proposes that the pace of change is drastic in business world resulting to turbulence environment. According to HBR magazine titled *'competitive advantage'* (2013) the theory challenges traditional assumptions about creating long term strategy, which would be created over a period of time and would consequently be revised on an infrequent basis. This theory contends that prospects for exploiting competitive advantage are fleeting given how the current business environment has developed. As a result, the strategy lifespan is brief, which makes quick responses to changing market circumstances necessary.

Strategies to manage disaster recovery need to be proactive this ensures the organization can withstand the effects and fasten on the recovery process (Samuel, 2017). Business resilience as a practice should be essential for the day-to-day administration and activity of the undertaking. The theory was relevant to the study with regards to the readiness of businesses to adapt to changes in the business environment.

### 2.1.4 Complexity Theory

This theory posits that all processes reorganizes themselves into a system (Kelly, 1999). The resulting system develop trends resulting from a number of simple rules being applied repetitively. The complex behaviour follows some order but has some complex interactions (Goldberg & Markoczy, 1998).

More often, small change is ignored by entities though this can result to bigger issue. Nonetheless, the right kind of reaction at the beginning of the disastrous condition can spring an entity to positive feedback (Nilson, 1995). Being agile in operations is essential as it will provide a critical benefit in the long term (Koch, 2000; Hamel, 2000). To be a fruitful first mover, an organization should perceive the trend and identify the natural signs that demonstrate which dynamics have significant impact to behavioral change (Ball & Asbury, 1989; Morrison & Quella, 1999).

Complexity theory acknowledges that business processes cannot operate in silos. The entity is a system by itself. The processes are integrated and they impact on each other. The theory puts it that the business environment is volatile and is subject to various external and internal impacts. In an inquiry structure, the hypothesis asks for replies to this: For what reason do a few affiliations crumble despite verifiable levels of constant strain while others thrive and foster more shrewd and prepared to deal with future troubles? The answer to the above question invites a discussion about business resilience (Weick & Sutcliffe, 2001).

A paper published by Mazars- a global consultancy firm titled *'internal audit during and beyond the covid-19 crisis' (2020)* indicates that internal audit team should contribute to organization's versatility including reviewing existing emergency and business continuity plans. Firms work in a persistently changing climate with the need to prepare and get ready for a wide extent of indispensable and practical risks, and respond quickly to crises. Building business adaptability is fundamental for all affiliations and requires a fruitful blend of systems. The complexity theory is relevant to the study since it highlights how businesses in the modern day are exposed to multiple risks at any time and that there are multiple aspects of business operation that need to come together for business performance and business resilience to be enhanced.

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#### 2.1.5 Normal Accident Theory

Perrow coined the theory in 1984. It was as a result of attempting to comprehend the disaster at Three Mile Island. From this disaster, it was identified that the systems engaged may be so complex and tightly coupled that an accident is, perhaps, the inevitable result. Big and separated frameworks with subsystems that associate are bound to have impromptu and new phenomenon resulting to complicated transformation processes. Events in linearly interactive systems are simpler to foresee and comprehend.

Less complex frameworks are effectively controlled in light of the fact that communications are basic, changes are less and clearer, moreover, the number and assortment of members included is less (Perrow, 1999). Normal accident theory argues that complex system catalyzes the occurrence of risky incidents (Roberts & Rousseau 1989; Weick and Roberts 1993; Sagan 1993; Perrow 1999).

According to Blankenship (2005), geothermal drilling is a complex activity, and variation of many variables involved result to project scope creep. Project Management Institute (PMI) defines scope creep as small, continuous process stretching beyond the expected scope. The project change requests eat into the project budget, ruins deadline estimations and result to one or more deliverables not being achieved. The normal accident theory is therefore relevant in the study as internal auditors need to assess the adequacy of planning process in corporate projects and evaluate if value for money is realized. A successful project is likely to be prepared for turbulence. Internal audit process needs to be more agile to help address business needs (George, 2020).

#### 2.1.6 Strategic Management Theory

The theory was first developed in the 1950s and 1960s. The theory hypothesizes that strategic management is the process and approach of specifying the objectives of a business or an organization, creating policies, programs and plans that will help to achievethe objectives. In addition, it also includes the allocation of resources for the implementation of policies, programs, paradigms and plans (Rashid, Ali & Hossain, 2020).

In general, strategic management can be defined as the process is the defining, developing, implementing and monitoring competitive objectives by a business in order to achieve sustained performance (Hitt, Arregle & Holmes Jr, 2020). It is intended to integrate an organization's operations in order to increase its competitiveness.

Benefits of using the strategic management theory for firms include the fact that it provides an objective assessment and gives a model that can be used to make decisions. It provides an organizational framework and offers a method of measuring progress (Bogers, Chesbrough, Heaton & Teece, 2019). In contrast, some of the disadvantages of the strategic management theory includes the fact that the future rarely unfolds as planned. Moreover, it limits flexibility and can be very expensive to actualize (Kabeyi, 2019). The theory of strategic management is relevant to the study in that internal audits can be used to evaluate how inspiring corporate objectives are as well as preparedness to unforeseen events.

### 2.2 Empirical literature review

The section below describes numerous studies conducted on risk management, governance, internal business controls, business advisory and business resilience.

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### 2.2.1 Risk Management and Business Resilience

The section below describes numerous studies conducted on ISO 31000, define risk as the impact of vulnerability on goals. Risk has either a positive or a negative deviation of goals based on what is generally anticipated. The positive deviation results to opportunities while the negative lead to threats. Managing risks imply an arranged plan of tasks and strategies to be employed to organize the foundation and to manage the numerous risks that can impact capacity to achievement of strategic goals.

The pace of business is changing drastically resulting to widespread business disruption. This has spurred entities to focus on acquiring the agility to remain in business as well be competitive. Organizations have resulted to building flexible risk management frameworks that can anticipate for the shifts as well as bring long-term success (Simone, 2016). By building a risk management framework, effect of vulnerabilities is foreseen which constructs a flexibility framework (Bhamra et al., 2011, Wright et al., 2012).

Resilience can be in two ways, a) Operational resilience is required to attain short-term goals b) Strategic resilience is required for longer-term sustainability. Flourishing associations need a proactively supervised blend of the two qualities across different periods. The shortfall of the blend firms will disadvantage the business in time of disasters (Aggerholm et al., 2011). Regardless of whether it's to moderate dangers related with a significant fiasco, or more typical risks in the space of business assignments or data availability, affiliations need to embrace a thorough and deliberate enterprise risk management strategy to hazard alleviation. Such a methodology needs to assess and address the needs and abilities of the business. Depending on business processes, risk could be classified as either: a) Business-driven risks b) Data-driven risks c) Event-driven risks (Risk mitigation for business resilience White paper, 2007).

Aldianto et al., (2021) sought to provide a business resilience framework by exploring the behaviors, capability and knowledgeof startups. The study found that the management of risk is an important method for startups to conquer disconnected pressures concerning business strength in expecting and managing choppiness because of Covid-19. The study was conducted on Indonesian startups and therefore presents a contextual gap.

Soroka et al., (2020) explored the concept of regional resilience as the resilience of individual firms within the same region. The study looked at the capabilities, adaptation and reconfiguration of businesses within the economic environment. The study investigated the utility of the Quiscore credit indicator to measure firm resilience. The economic indicator was used to gauge credit risk. The study concluded that the Quiscore indicator is an effective indicator of the economic resilience of organizations and that it can be used effectively as a warning sign of economic stress in a region. The study also established that risk management was an effective method of enhancing the resilience of a business.

Sulasi (2021) conducted a study to investigate risk management in the oil and gas industry in Malaysia. The choice of the industry was due to its volatility, uncertainty, and complexity. The research established that the sector is inherently risky. This makes risk management in the industry a critical component of its daily running operations. Improved risk management resulted in the enhancement of business performance. Given the study was conducted in Malaysia it presented a contextual gap. Moreover, the study focused on the effect of risk management on business performance rather than on business resilience, presenting a conceptual gap to be filled.

### 2.2.2 Governance and Business Resilience

Corporate governance refers to a set of rules, process and practices by which an institution is directed. The popular view that corporate governance regulates firm success and shields the welfare of shareholders has led to increasing universal comprehensive attention (Mayer 1997). Proper governance influences positively on longstanding corporate success (Cooper, 2014). Guaranteeing business progression is one of the main concerns of any association's senior leader group. The management is considered answerable for building corporate worth. That value ought to be obtained and saved to rescue during seasons of defenselessness.

A research done by International Monetary Fund (IMF) in 2011 to examine the global financial crisis of year 2007, planned to respond to the topic of why corporations neglected to plan for the emergency. By exploration of reasons given, the principle explanation was *'an overall attitude that a significant financial problems in huge progressed economies was far-fetched'*. Findings of the research were analyzed and found that IMF leadership was composed of men/women who shared a close socio-demographic features lacking heterogeneity (Wagner 2010; Momani 2007; Seabrooke and Nilsson 2015). The findings of the research demonstrated a link between a firm's preparedness and governance.

A board of governance should be loaded up with numerous points of view to allow for imagination. Good thoughts arise while disturbing the norm, which create an environment of dynamism. Strategic management furthermore, anticipating business versatility remains one of the key responsibilities of the governing team (Conlon & Smith, 2011).

Lamprinakis (2018) sought to introduce embeddedness as a governance strategy, highlighting its connection with strategies of CSR as well as to show its importance in securing and strengthening business resilience. The study showed that a strong embedded organization becomes deeply rooted to its natural and socio-economic environments, it is thus able to ably participate in high level CSR activities, that can yield CSR related privileges and hence improving the resilience of a business.

During the height of the Covid-19 outbreak in Indonesia, Safira (2021) conducted research on the impact of corporate social responsibility and corporate governance on firm resilience. The IDX80 index posted on the Indonesia Stock Exchange was the main subject of the study, which used quantitative research. The research found that CSR significantly impacted business resilience in terms of economic and social transparency. The research also shown that the board of directors had a big impact on corporate toughness. The research provides a contextual gap since it was carried out in Indonesia.

### 2.2.3 Internal Business Controls and Business Resilience

COSO framework defines internal control as a process that guides the monitoring, evaluation, measurement and management of risks in an organization. Hooks (1994), depicts the control climate as a center piece of operationalization of association culture. Control climate incorporates the mentalities, mindfulness, and activities of tone at the top. Control exercises are the strategies and methods that assist with guaranteeing that administration orders are completed to address chances that undermine achievement of organization objective. Control exercises could be either robotized or manual (ISA 315).

Connie (2017), investigated the business resilience of family owned business in Mexico and it was found out that it is the *'familiness'* that supports a family firm for a more extended timeframe (not really past a subsequent age) and it is the absolute absence of inward controls that eventually crushes the firm. On many occurrences, Mexican family SMEs need inward control framework in light of the fact that the organizer, proprietor as well as top manager(s), know nothing about its significance, are inexperienced with the idea and, as a general rule, need ability. The study concluded that Mexico, like in many other markets in the world, resilience and success of family businesses would depend on the firm's capability to respond to changes in the business environmentand existence of well-structured controls.

A research by Sathyamoorthi (2001), on business internal controls directed that it is critical to have inside control framework over all enterprise exercises, irrespective of the mode of business ownership. A fittingly done control structure ensures security of company's resources against hazard, waste and misappropriation.

Serfontein and Govender (2021) explored how stakeholders in the aviation industry perceived the link between organizational resilience and organizational control systems. Data from 203 stakeholders was gathered for the study. Descriptive and inferential statistics was used. The findings revealed that there exists a strong positive relationship between organizational control systems and organizational resilience. Organizational control systems like quality assurance and corporate governance have an effect on the organization's internal environment. The study's conclusions showed that a company's internal control structure is far less resilient when quality assurance and corporate governance are separate.

Alao and Gbolagade (2020) undertook a research on frameworks for the recovery of enterprises during and after crises like the Covid-19 pandemic and other comparable calamities. Processes that enable companies and organizations to successfully react to unforeseen disruptions was also considered. The study was guided by the theoretical methodology and analyzed multiple articles and survey results. The findings showed management of business continuity, liquidity and stakeholders' safety are key aspects in building of business resilience. The study recommended that business management should adopt accounting and internal controls in order to enhance performance and resilience. The study purely relied on secondary data and therefore constitutes a methodological gap.

### 2.2.4 Business Advisory and Business Resilience

IPPF standards of 2017 define advisory services as consulting activities agreed upon with the client. The services are intended to enhance firm's governance, risk management, and internal controls. The internal auditor is expected to be independent and not assume management responsibilities during conduct of these services.

In practice, there is a contention between giving confirmation services (needed by the board) and giving counseling advice (needed by the firm management), this result to the desire for particular guidance to internal auditing. Whether internal auditing to provide assurance and consulting services, will largely rely on firm's governance maturity (Allegrini et al., 2006). The balance on the extent of advisory and assurance services offered is meant to protect independence and objectivity of the internal auditor.

IIA journal, *'The complementary competencies of conflicting professionals logics',* 2015 indicates that there are no auditors that explicitly call themselves "consultant", but almost all auditors provide advice at some point in some way or other. Business clients ask for the advice of which auditors enjoy sharing their insights by consulting and thereby generating additional value for the organization. Robson and Bennett (2000) noted that business advisers are employed frequently

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when entities are in trouble as opposed to other situations. Hence by giving a call for internal auditors to be pro-active and strategic in their services to be utilized in all seasons.

Ramdani et al., (2020) conducted a study to explore how investment banks changes in response to challenges in their environments. The study showed that investment banks can achieve resilience by changing their business models in order to solve challenges that they face both internally and externally. While choosing the right model can present a challenge, the use of business advisors and consultants was positively linkedto business resilience. Specifically, the findings revealed that investment banks could adjust their business models by deploying different combinations of activities.

Beninger and Francis (2022) conducted a study to evaluate role of professional advisors in business resilience with a bias to Covid-19 period. . The research focused on 10 capital frameworks drawn from academia and industry practice. The findings identified that using professional advisors helped in reinforcing business resilience and concluded by providing insights into how businesses can use this framework to become more resilient. The use of the Integrated Capital Frameworks (ICF) creates a methodological gap. The data used was historical.

Long-term employment had the best economic resilience but was accompanied with reduced dependence on the gas industry. In addition, local businesses did not necessarily follow the traditional cycle of mini-booms and busts and as such they could not manage cyclical effects. The findings revealed that in order for businesses to manage the unpredictable cyclical effects, they must be flexible yet still maintain coping mechanisms for unforeseen circumstances. The study concluded that timing is important in deciding whether or not busts are small or whether or not they transcend local resilience. The study argued that consultants take a critical role during seasons of vulnerability. The use of advisors was positively linked to business resilience.

### 2.2.5 Business Resilience

Asbjornslett (2009) defines resilience as the ability to resume operations after disturbance. According to Wright (2013) resilience is the “capacity to adapt” and not based on fixed strategies as business conditions change in due course. A reasonable degree of versatility in specific conditions can be satisfactory; however, changes in working environment can call for changes to resilience strategies. Sheffi (2005) indicates that resilience can be attained by redundancies in processes, flexibility and risk pooling. Developing resilience is certainly not a one-time occasion, yet rather ranges over the long run from pre-occasion procedures to post-occasion recuperation. Those cycles connected with strength incorporate the capacities and undertakings to forestall, ensure, react, and recover after crisis (Wreathall, 2006).

There are diverse proposed methodologies looking on how to measure enterprise resilience and there is no one generally agreed methodology. This is because resilience is a dynamic concept as firm’s condition revolves around delicate - hostile – delicate. In these transitions, survival remain at the center stage (Taleb, 2012).

Measuring enterprise resilience require an understanding of the firm interrelationship (Ozgur et al 2010). Henry & Ramirez-Marquez (2010) recommended quantifying resilience quantitatively as the proportion of recuperation and misfortune. Misfortune is the decay from the first state after the interruption and recuperation is the cost incurred to spring back from the problematic state to the recuperated state.

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Erol, et al. (2010) advocated measuring of resilience using recovery time, recovery level, anticipated vulnerability and aggregate loss averted. Nonetheless, it does not specify how they are measured. Cristina, Adolfo and Gabriel (2017) argue that to measure the resilience level, it is recommended assessing it depending on recovery ratio. Recovery ratio need to include both organizational performance and organizational capabilities. Measuring these traits, aptitudes, talents, or skills allows businesses to survive shocks both known and unforeseen.

Mohammed (2018) defined resilience as a strategic objective that is intended to help organizations survive. The study highlighted that the resilience of the employees influenced the resilience of the organization as a whole. The study concluded that if the leader or management of SMEs were resilient then the organization would also be resilient. Moreover, the social skills and social capital that the organization's management has have an effect on the resilience of the organization or business. The study focused on resilience of SMEs particularly in developing countries. The study overviewed business resilience articles between 2000 and 2018. The study concluded that resilience literature varies indefinition and measurements. In addition, the study concluded that studies on the factors affectingbusiness resilience were inconclusive.

Gianiodis et al., (2022) studied resilience across different contexts including at micro and macro levels. The study reviewed papers on resilience and the findings showed that businesses undertake psychological, economic and organizational changes in order to respond to challenges they face. For the context of GDC, resilience will be measured in the Company's ability to spring back in the following context: recovery within the acceptable downtime, recovery cost, data loss within acceptable limits, existence of alternative models for processes continuity and management of litigations.

### 2.3 Conceptual Framework

This study makes use of a conceptual framework to lay out the main concepts and variables to be examined, and the connections that exist between them. To put it another way, a conceptual framework is a method for organizing ideas to accomplish the goals of a study.

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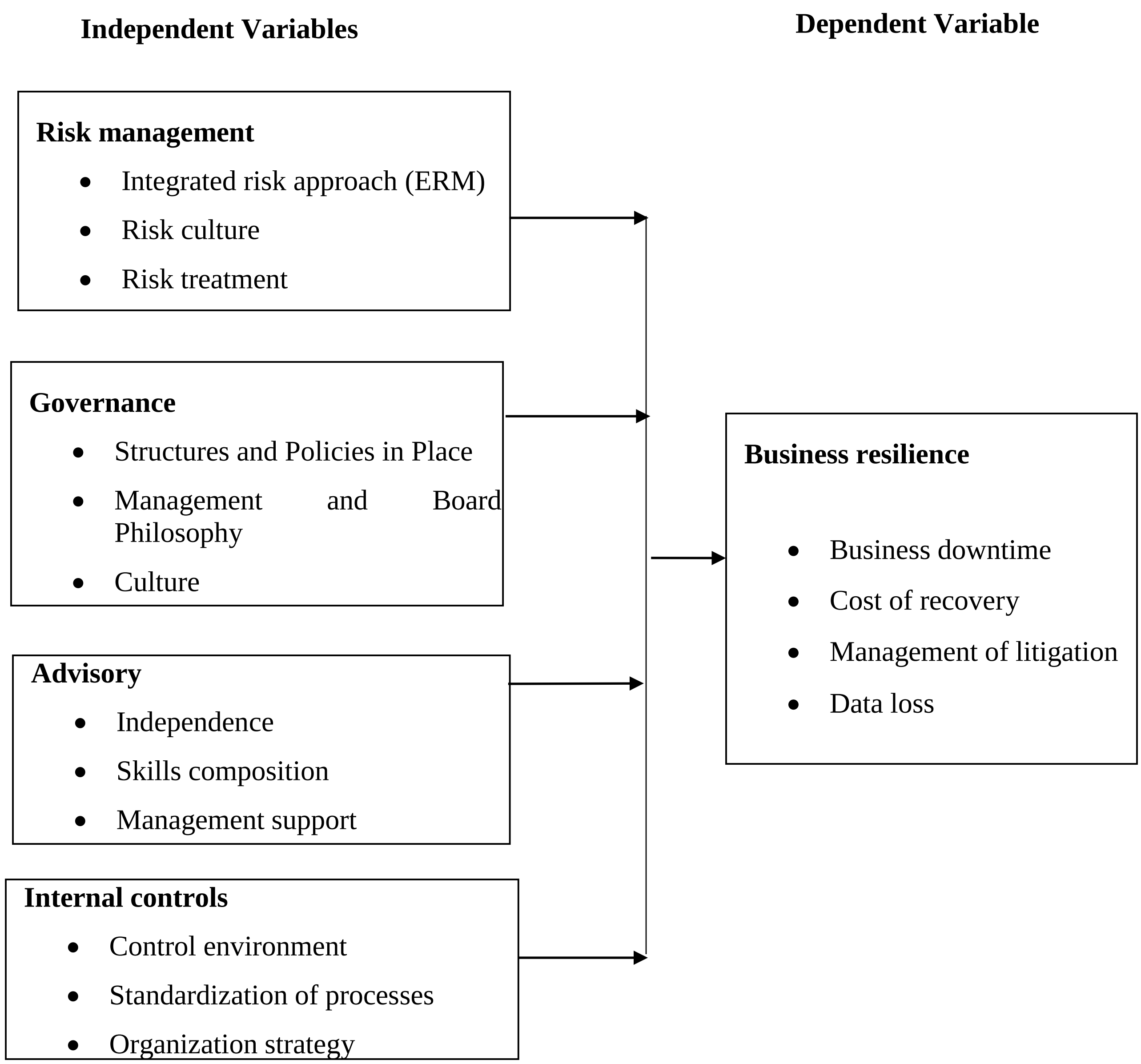


**Figure 1: Conceptual Framework**

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## 3.0 Research Methodology

To seek the relationship between internal audit and business resilience of power sector in Kenya, case of GDC, this design was considered effective. Data was collected through a questionnaire and subjected to both descriptive and correlational studies. The study target population was 200 office and field-based staff in all the 3 GDC operational sites of Nairobi, Nakuru and Baringo. The study used Census approach given the target population was 200. Hence the target population of 200 therefore formed the sample. The study aimed at exploring how internal audit contributes to business resilience for power sector companies in Kenya, and a specific analysis of GDC, thus a questionnaire is appropriate.

To confirm the validity and reliability of the questionnaires before they are given to the participants, the researcher conducted a well before. For also before the, a small sample of 10 people was selected at random. Cronbach alpha technique was used by the scholar to assess dependability. Increased dependability is indicated by a higher Cronbach's alpha value, which ranges from 0 to 1. All items tested indicated alpha Cronbach of greater than 0.7 which confirms, data collection instruments are valid and reliable

The study utilized multiple linear regression analysis for making inferences to the survey. The following regression analysis model was used;

Descriptive statistics entailed the means, percentages, and dispersion measures. Businessresilience of GDC processes in all the 3 operational areas was regressed against four variablesnamely risk management, governance, internal controls and advisory. The variables were analyzed using correlation and regression analysis to demonstrate their relationship. The equation forbusiness resilience and various elements of internal audit was modeled as:

$Y= \beta0+ \beta_1X_1+\beta_2X_2+ \beta_3X_3+ \beta_4X_4 + \varepsilon i$, where, Y=Business resilience of GDC operations. $\beta_0$ = constant (coefficient of intercept)

$X_1$ = Risk management

$X_2$ = Advisory services

$X_3$ = Internal controls

$X_4$ = Governance

$\beta_1\ldots, \beta_4$ = regression coefficient of four variables.

$\varepsilon i$ = Statistical noise/error,

The findings were presented in form of tables and figures.

## 4.0 Findings and Discussions

This section discusses the data analysis as well as the interpretation of the findings. The general objective of the study was to determine the effect of internal audits on business resilience of Geothermal Development Company.

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### 4.1 Correlation Analysis

A correlation study produces a correlation coefficient that ranges between -1 and +1. A coefficient of 1 indicates a complete positive linear relationship between two variables, while a coefficient of -1 indicates a complete negative linear relationship. A coefficient of 0 means that there is no linear relationship between the variables. When the coefficient falls between 0.25 and 0.50, it suggests a weak association between the variables, while a range above 0.6 indicates a strong relationship (Gogtay & Thatte, 2017).

The study employed correlation analysis to examine the relationship between the study variables of risk management, business advisory, internal controls, governance and business resilience.

**Table 1: Correlation Analysis**

| | | **Business Resilience** | **Governance** | **Internal Controls** | **Business Advisory** | **Risk Management** |
|---|---|---|---|---|---|---|
| Business Resilience | Pearson Correlation | 1.000 | | | | |
| | Sig. (2-tailed) | | | | | |
| Governance | Pearson Correlation | .530** | 1.000 | | | |
| | Sig. (2-tailed) | 0.000 | | | | |
| Internal Controls | Pearson Correlation | .562** | .428** | 1.000 | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | | | |
| Business Advisory | Pearson Correlation | .509** | .333** | .346** | 1.000 | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | | |
| Risk Management | Pearson Correlation | .630** | .506** | .523** | .413** | 1.000 |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | |

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 1indicates that there is a significant and positive correlation ($r=0.530$, $p<0.05$) between governance and business resilience at GDC. This means that when governance at GDC is improved, the company's business resilience also improves. This finding is consistent with the research conducted by Lamprinakis (2018), who found that strong governance in an organization that is closely integrated with its environment can lead to successful participation in high-level corporate social responsibility (CSR) activities, which in turn can enhance the resilience of the business.

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The research findings indicate a significant and positive correlation between internal controls and business resilience at GDC (r=0.562, p<0.05). This suggests that enhancing internal controls can lead to improved business resilience at GDC. These findings align with those of Connie (2017), who established that business resilience and success are contingent on a company's ability to adapt to changes in the business environment and have well-structured controls in place.

Furthermore, a significant positive correlation was observed between business advisory and business resilience at GDC (r=0.509, p<0.05). This suggests that an enhancement in business advisory services leads to an improvement in business resilience. These findings align with the research conducted by Beninger and Francis (2022) who discovered that employing professional advisors contributed to strengthening business resilience. They further provided insights on how businesses could utilize this framework to enhance their resilience.

The results of the study indicate a strong positive and significant association between risk management and business resilience at Geothermal Development Company (GDC) (r=0.630, p<0.05). This suggests that improving risk management at GDC can lead to an improvement in business resilience. The findings align with those of Sulasi (2021) who concluded that enhanced risk management can improve business performance and, consequently, business resilience.

**4.2 Regression Analysis**

To determine the statistical significance and link between the independent variables and the business resilience at the Geothermal Development Company, regression analysis was used in this research. The business resilience at GDC and the results of the regression analysis are as shown in this section.

**Table 2: Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .742a | 0.551 | 0.539 | 0.43557 |
| a Predictors: (Constant), Risk Management, Advisory, Governance, Internal Controls | | | | |

Table 2 shows that the coefficient of determination (R squared) is 0.551 and adjusted R squared of 0.539 at 95% significance level. This implies that the internal audit factors explain about 55.1% of the variation in business resilience at GDC. The adjusted R squared of 0.539 means that the internal audit factors (Risk Management, Business Advisory, Internal Controls and Governance) still explain a significant proportion of the variation in business resilience even after adjusting for the number of independent variables in the model. This suggests that the model with the internal audit factors is a good fit for the data and provides a reasonable estimate of the relationship between internal audit and business resilience at GDC. This also means that the remaining 44.9% of the variation in the dependent variable is explained by factors not included in the study.

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**Table 3: ANOVA**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 35.115 | 4 | 8.779 | 46.272 | .000b |
| | Residual | 28.648 | 151 | 0.19 | | |
| | Total | 63.762 | 155 | | | |

a Dependent Variable: Resilience
b Predictors: (Constant), Risk Management, Business Advisory, Governance, Internal Controls

Table 3 indicates that the model used was statistically significant in explaining the influence of internal audits on the business resilience of Geothermal Development Company (GDC), as indicated by a p-value of 0.000. This suggests that the relationship between internal audits and business resilience at GDC is not due to chance and that the model is a good fit.

**Table 4: Regression Coefficients**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -0.283 | 0.302 | | -0.938 | 0.350 |
| | Risk Management | 0.317 | 0.072 | 0.312 | 4.41 | 0.000 |
| | Business Advisory | 0.232 | 0.06 | 0.235 | 3.842 | 0.000 |
| | Internal Controls | 0.254 | 0.072 | 0.235 | 3.545 | 0.001 |
| | Governance | 0.205 | 0.069 | 0.193 | 2.955 | 0.004 |

a Dependent Variable: Resilience

The regression model therefore became;

$$\mathbf{Y = -0.283 + 0.317X_1 + 0.232X_2 + 0.254X_3 + 0.205X_4}$$

Where:
Y= Business Resilience
$X_1$= Risk Management
$X_2$= Business Advisory
$X_3$= Internal Controls
$X_4$= Governance

Table 4 demonstrates that risk management had a positive and significant impact on the business resilience of GDC (β =.317, p=.000<.05). The calculated t-statistic of 4.410 is greater than 1.96, provides support for the statement. The result suggests that a one-unit improvement in risk management leads to a 0.317 unit improvement in resilience. Therefore, risk management significantly affects the resilience of GDC. These findings back Aldianto et al. (2021), which found that managing risk is an essential approach for startups to overcome diverse pressures related to business strength, particularly in anticipating and managing uncertainty due to the Covid-19 pandemic.

Business advisory as an internal audit had a positive and significant effect on the business resilience of GDC ($\beta$ =.232, p=.000<.05). An estimated t-statistic of 3.842, which was higher than the crucial t-statistic of 1.96, confirmed this. This implies that, a unit improvement in business advisory results into an improvement in business resilience by 0.232 units. The results implies further that business advisory significantly affects the business resilience of GDC. These results back Ramdani et al., (2020) who established that the use of business advisors and consultants was positively linked to business resilience.

In addition, internal controls had a positive and significant effect on the business resilience of GDC ($\beta$ = .254, p = .001 < .05). An estimated t-statistic of 3.545, which was higher than the crucial t-statistic of 1.96, confirmed this. This implies that a unit improvement in internal controls results in an improvement in resilience by 0.254 units. These findings are in line with the findings of Sathyamoorthi (2001), who found that it is critical to have an internal control framework over all enterprise activities, irrespective of the mode of business ownership, to ensure the security of the company's resources against risk, waste, and misappropriation.

The study ultimately determined that governance had a positive and significant impact on the business resilience of GDC ($\beta$ =.205, p=.004<.05). This suggests that a unit improvement in governance resulted in a corresponding improvement in business resilience by 0.205 units, indicating that governance significantly affects the business resilience of GDC. These findings align with those of Lamprinakis (2018), who found that effective governance enables an organization to integrate with its natural and socio-economic environments, participate in high-level CSR activities, and reap associated benefits that can enhance business resilience.

## 5.0 Conclusions

In conclusion, this study has established the critical role of internal audit in enhancing business resilience in the power sector, specifically in the case of Geothermal Development Company Limited (GDC) Kenya. The findings have demonstrated that risk management, governance, internal business controls, and business advisory all have a positive and significant impact on business resilience.

The study concludes that risk management had a positive and significant effect on business resilience at the Geothermal Development Company (GDC) Limited. This means that when other factors affecting business resilience are held constant, risk management will improve business resilience at GDC. The study highlights the importance of risk management in identifying, assessing, and mitigating potential risks and uncertainties that may impact GDC's operations. By proactively addressing these risks, the internal audit function plays an essential role in building business resilience and ensuring the continuity of power supply in the face of adverse events. This is because, the organization will be able to forecast any risks that they may be exposed to and plan for them and to take mitigating measures to protect the organization from the said risks. These conclusions are in line with the findings of Lamprinakis (2018) who showed that governance in a strong embedded organization becomes deeply rooted to its natural and socio-economic environments, it is thus able to ably participate in high level CSR activities, that can yield CSR related privileges and hence improving the resilience of a business.

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The study also concludes that business advisory measures had a positive and significant effect on business resilience at the Geothermal Development Company (GDC) Limited. This is an implication that when business advisory improves business resilience when other factors affecting resilience are held constant. The study underscores the significance of business advisory services provided by internal audit in supporting GDC's decision-making processes. By offering insights and recommendations, the internal audit function enables the company to make informed strategic choices that strengthen its long-term resilience. This is because organizations that seek professional business consultancy and advisories get providing strategic guidance, operational support, and risk management expertise that help to enhance the business resilience of the organization. The findings back Connie (2017) as well as with the findings of Ramdani et al., (2020) who established that the use of business advisors and consultants was positively linked to business resilience.

The study further concludes that internal controls had a positive and significant effect on business resilience at the Geothermal Development Company (GDC) Limited. This implies that an increase in internal controls results in enhanced business resilience at GDC. Internal business controls, by design, assist GDC in maintaining a consistent and transparent financial management system, ensuring compliance with regulations, and detecting potential fraud or errors. These control measures, when effectively implemented and monitored by internal audit, serve as a vital safeguard for the company's assets and reputation, which in turn contributes to its overall resilience. Internal controls provide a system of checks and balances to help prevent errors, fraud, and other forms of financial loss. By applying internal business controls, organizations become safer and more resistant to external shocks. In addition, internal controls improve financial management and enhance operational efficiency of the organization. The findings were in line with those of Beninger and Francis (2022) who identified that using professional advisors helped in reinforcing business resilience and concluded by providing insights into how businesses can use this to become more resilient. In addition, the results back Sathyamoorthi (2001) who found that it is critical to haveinside control framework over all enterprise exercises, irrespective of the mode of business ownership. A fittingly done control structure ensures security of company's resources against hazard, waste and misappropriation.

Finally, governance has a positive and significant effect on the business resilience of Geothermal Development Company (GDC) Limited. Governance includes the organizational structure, decision-making processes, and policies and procedures. Governance, as another key factor, ensures that GDC maintains a robust organizational structure, with clear roles and responsibilities, effective communication channels, and adherence to ethical practices. These strong governance practices contribute to a solid foundation for the organization, supporting its ability to withstand shocks and adapt to change. These structures and policies can affect the ability of the business to respond to unexpected events and adapt to changing market conditions. With the right governance structure and practices in place, a business becomes more resilient in the face of changes in its operating environment. The results back the findings of Sulasi (2021) who established that improved risk management resulted in the enhancement of business performance and consequently of business resilience. The results also back Lamprinakis (2018) who showed that governance in a strong embedded organization becomes deeply rooted to its natural and socio-economic environments, it is thus able to ably participate in high level CSR activities, that can yield CSR related privileges and hence improving the resilience of a business.

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In summary, this study emphasizes the crucial role that internal audit plays in fostering business resilience at Geothermal Development Company Limited. By focusing on risk management, governance, internal business controls, and business advisory, GDC can better prepare for and manage potential disruptions, ultimately ensuring the company's sustained growth and success within the power sector.

## 6.0 Recommendations

The following recommendations are proposed to further strengthen the role of internal audit in enhancing business resilience at Geothermal Development Company Limited (GDC) and other organizations within the power sector: The study recommends that GDC should continuously review and update its risk management framework to ensure it remains comprehensive, proactive, and relevant. This may involve conducting regular risk assessments, incorporating emerging risks (such as cyber threats or climate change), and integrating risk management into strategic decision-making processes.

In addition, GDC should periodically evaluate its governance framework to ensure clarity in roles and responsibilities, adherence to ethical standards, and effective communication across the organization. This may involve regular board evaluations, the implementation of a robust code of conduct, and promoting a culture of transparency and accountability. GDC should also continually monitor and update its internal control systems to guarantee compliance with relevant regulations, safeguard assets, and detect fraud or errors. This may involve adopting advanced technology solutions, such as data analytics or artificial intelligence, to identify potential control weaknesses or instances of non-compliance more efficiently.

Moreover, it is important that GDC should leverage the expertise of internal audit to provide more in-depth and proactive business advisory services. This may involve collaborating with other departments to identify areas for improvement, offering insights on industry trends and best practices, and providing strategic guidance on matters such as digital transformation or environmental, social, and governance (ESG) considerations. GDC should prioritize the professional development of its internal audit staff, ensuring they possess the necessary skills and competencies to perform their roles effectively. This may involve providing regular training opportunities, sponsoring certifications, or facilitating knowledge-sharing forums.

Additionally, GDC should promote a culture of resilience across the organization, where employees understand the importance of risk management, governance, internal controls, and adaptability. This may involve integrating resilience concepts into employee training programs, promoting open communication, and celebrating successes in overcoming challenges. Finally, GDC should consider benchmarking its internal audit practices against industry standards and peer organizations to identify areas for improvement. Additionally, GDC can benefit from collaborating with other organizations in the power sector to share knowledge, experiences, and best practices in building business resilience. Implementing these recommendations will help GDC further enhance its internal audit function, ultimately contributing to greater business resilience and long-term success within the power sector.

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