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MASTERS IN BUSINESS AND ADMINISTRATION

Master of Business and administration – Final Thesis Research

What are the benefits of applying employee engagement, sustainable green human resource & environment management within pharmaceutical project management, and how can it be accomplished?

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Abstract

As environmental concerns intensify globally, industries are under increasing pressure to incorporate sustainability principles into their operations, balancing profitability with environmental stewardship. The pharmaceutical sector, with its resource-intensive processes and stringent regulatory landscape, faces unique challenges in aligning with sustainability standards. Given these constraints, achieving sustainable project management within the pharmaceutical industry necessitates a strategic approach that integrates internal organizational drivers to promote environmental responsibility and optimize operational efficiency. This study investigates three primary internal factors employee engagement, Green Human Resource Management (GHRM) practices, and environmental management assessing their individual and combined potential to foster sustainability within pharmaceutical project settings.

Grounded in a quantitative methodology, this research draws on survey data from pharmaceutical professionals in Ireland to examine the impact of these factors on project-level sustainability and innovation outcomes. Specifically, the study explores the role of engaged employees in supporting environmental initiatives, the influence of GHRM practices in embedding sustainability into HR policies, and the effectiveness of environmental management practices in reducing project-related ecological footprints. The study's hypotheses propose that each of these factors contributes to sustainable outcomes individually and that, when integrated, they further enhance project performance, particularly in the context of compliance-driven project management.

The results reveal a complex relationship between these factors and sustainability outcomes. While employee engagement showed a weak but statistically significant correlation with environmental management practices, this influence appears constrained within the pharmaceutical sector's regulatory-driven environment. Furthermore, the analysis indicates that GHRM's practices, despite their ability to promote a green organizational culture, but it cannot predict the sustainability of projects or significant innovation outcomes. In the same way GHRM's combined analysis of employee participation and environmental management did not predict improvements in project performance. These factors alone It may not be enough to achieve sustainable project results, the study's findings highlight the limitations of employee engagement and GHRM practices in a highly regulated industry. It emphasizes

the need for a multidimensional approach that integrates leadership. corporate culture and regulatory orientation These findings contribute to the theoretical discourse on sustainable project management by highlighting the contextual factors that shape sustainability efforts in compliance-focused industries. The practical implications for pharmaceutical companies are significant: Targeted engagement programs. Leadership-driven sustainability initiatives and aligning with regulatory goals may be important. To transform sustainability from a theoretical objective to a practical reality, this research not only provides valuable insights into sustainable project management within the pharmaceutical sector. But it also serves as a basis for future studies examining the role of leadership. corporate culture and regulatory interactions in promoting sustainability. By placing this analysis within a compliance-focused industry, this study provides a unique perspective on the organizational strategies required to balance environmental goals with operational constraints. This will ultimately advance the field of sustainable project management in a complex industrial context.

Declaration

Submission of Thesis and Dissertation

National College of Ireland

Research Students Declaration Form

(Thesis/Author Declaration Form)

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Material submitted for award:

(a) I declare that the work has been composed by myself.

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(d) I declare that no material contained in the thesis has been used in any other submission for an academic award of "*Master of Business and administration (MBA)"*

Signature of research student: 

Date: 06/12/2024

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Table of content

Abstract 2

Declaration 4

Acknowledgements 5

Table of content 6

List of tables 7

List of figures 8

List of appendices 9

List of abbreviations ..... **Error! Bookmark not defined.**

1. Chapter 1: Introduction 10
2. Chapter 2: Literature Review 14
3. Chapter 3: Research Question & Methodology 21
4. Chapter 4: Data Analysis 29
5. Chapter 5: Discussion 38
6. Chapter 6: Conclusion 48

Appendices 54

References 62

List of tables

Table 1 - correlation analysis 32

Table 2 - Data Set 54

List of figures

Figure 1 - Question - 1 (Scatter Plot) 56
Figure 2 Question - 2 (Scatter Plot) 57
Figure 3 Question - 3 (Scatter Plot) 57
Figure 4 Question - 4 (Scatter Plot) 58
Figure 5 Question - 5 (Scatter Plot) 58
Figure 6 Question - 6 (Scatter Plot) 59
Figure 7 Question - 7 (Scatter Plot) 59
Figure 8 Question - 8 (Scatter Plot) 60
Figure 9 Question - 9 (Scatter Plot) 60
Figure 10 Question - 10 (Scatter Plot)..... 61

List of appendices

Appendix 1: Data set 54

1. Chapter 1: Introduction

The growing emphasis on sustainability in numerous industries is reshaping conventional commercial enterprise practices and highlighting the want for revolutionary tactics to environmental management. In the pharmaceutical area, sustainability isn't always most effective a regulatory requirement but additionally a strategic priority that can affect organizational competitiveness and reputation. This industry sector operates inside a dynamic and tough surroundings characterized by means of strict regulatory frameworks, rapid technological advancements, and a growing recognition on social and environmental responsibilities. As a result, the integration of sustainability inside pharmaceutical projects is gaining attention as a key aspect for reaching long term successful projects.

In recent years, 3 aspects have emerged as pivotal in advancing the sustainability discussion: worker engagement, Green Human Resource Management (GHRM), and environmental control. Employee engagement plays a vital position in making sure that sustainability projects are embraced and supported by the team of workers. Engaged employees are more likely to be devoted to their organisation’s objectives and actively take part in environmental initiatives, thereby contributing to standard assignment achievement. The alignment of worker engagement with sustainability targets is vital in industries like the pharmaceutical one, in which the outcome of projects will result in environmental and social implications.

Employee engagement is described as the emotional and intellectual engagement of employees in the direction of attaining organizational objectives. When personnel are engaged, they may be much more likely to showcase proactive behaviours, take possession of their tasks, and actively contribute to achieving the vison that the company has committed to. In the context of project management, worker engagement is a crucial determinant of the outcomes we will extract from a project, particularly in projects that involve complex environmental issues. Engaged personnel aren't simplest extra productive but also extra willing to include innovative methods that align with sustainability goals. This research will observe the impact on employee engagement, environmental control practices and its contribution to the sustainability mission.

On the other side, Green Human Resource Management (GHRM) focuses on incorporating environmental considerations into human resources tasks and functions, consisting of recruitment, education, overall performance assessment, and employee improvement. GHRM aims to create a staff that isn't only best professional and effective but additionally environmentally conscious. By integrating green practices into HR functions, groups can domesticate a tradition of sustainability that permeates all realms of the company. For example, green recruitment practices prioritize applicants with a strong commitment to environmental sustainability, while green training programs equip personnel with the abilities needed to implement green practices. This research seeks to explore the position of GHRM in selling a way of life of sustainability within the pharmaceutical sector and its impact on mission results.

Environmental management within a project context includes a systematic technique to minimizing the environmental impact of projects. In the pharmaceutical industry, environmental control practices encompass various strategies, which include waste control, resource optimization, and the incorporation of environmental risk assessment around the project entire cycle. Given the stringent regulatory requirements and environmental dangers related to pharmaceutical projects, powerful environmental management is essential for ensuring compliance and achieving sustainability desires. This research is focused on analysing how environmental control practices can be incorporated with employee engagement and GHRM to improve project sustainability and drive innovation.

Regarding the research goals and questions, we are enquiring, the goal is to explore the benefits of integrating employee engagement, GHRM, and environmental management within pharmaceutical project management discipline. The study seeks to provide a comprehensive knowledge of ways these additives can make contributions to stepped forward into the sustainability of a project, innovation, and usual organizational performance. To attain this objective, the study will deal with the subsequent key studies questions:

- How does employee engagement influence environmental management practices in pharmaceutical project management?

- What role does GHRM play in fostering a culture of sustainability within pharmaceutical companies?
- In what ways does environmental management integrate with and benefit from employee engagement and GHRM?
- What are the best practices for successfully integrating these components into project management to achieve sustainability objectives?
- What challenges do organizations face in integrating employee engagement, GHRM, and environmental management, and how can they be overcome?

The significance of this academic work lies in its ability contributions to both theoretical expertise and sensible applications inside the project management discipline. From a theoretical viewpoint, this study aims to increase current literature via exploring the cross interaction of employee engagement, GHRM, and environmental management within the pharmaceutical industry. While each of them had been studied individually, limited research has targeted on their mixed effect in the context of project management. By analysing the combination of those factors, this research seeks to cope with a essential hole in the literature and provide a holistic expertise of ways sustainability may be efficaciously promoted in project based organizations.

From a practical perspective, the findings of this study are predicted to offer precious insights for managers, project leaders, and HR professionals in the pharmaceutical industry. By figuring out excellent practices for integrating employee engagement, GHRM, and environmental management, this research pursuits to offer actionable strategies for reinforcing challenge sustainability and innovation. These strategies may want to assist companies to enhance their environmental overall performance, align their team of workers with sustainability targets, and advantage a aggressive area in the market. Additionally, this work targets to address the challenges related to imposing these practices, thereby imparting solutions for overcoming capacity limitations to sustainability. The thesis is organized into six most important chapters, every addressing a specific factor of the studies:

- Chapter 1: Introduction to the research study given a solid understanding of what is the intention of the academic work.

- Chapter 2: Literature Review will present a comprehensive evaluation of existing studies on employee engagement, GHRM, and environmental management. The chapter will explore the theoretical frameworks and key findings from preceding research, highlighting their relevance to pharmaceutical venture control. The literature evaluation may even pick out gaps inside the current knowledge and establish the theoretical basis for this study.
- Chapter 3: Research Question & Methodology will describe the studies design and method employed on this research. This chapter will provide an in depth rationalization of the quantitative approach used, which includes the survey layout, records series strategies, sampling techniques, and analytical tools. Additionally, the chapter will cope with issues related to reliability, validity, and moral issues.
- Chapter 4: Data Analysis will gift the consequences of the survey, such as descriptive and inferential statistics. This chapter will analyze the relationships between employee engagement, GHRM practices, environmental control, and challenge effects within the pharmaceutical industry. The analysis will be aligned with the research hypotheses to evaluate the validity of the findings.
- Chapter 5: Discussion will interpret the findings in relation to the studies questions and present literature. This chapter will discuss the results of the outcomes for theory, practice, and policy, highlighting the important thing insights and contributions of the research. Additionally, the chapter will speak the limitations of the research and propose guidelines for future research.
- Chapter 6: Conclusion & Referencing will summarize the important findings of the research and offer pointers for managers and project leaders in the pharmaceutical area. The chapter will finish with very last reflections on the take study contributions and capability effect, as well as tips for new studies.

2. Chapter 2: Literature Review

2.1. Introduction to the Literature Review

The pharmaceutical enterprise operates in an surroundings characterised by using stringent policies, non-stop innovation, and developing pressures to deal with environmental sustainability. Over the past twenty years, this enterprise has confronted growing scrutiny from regulators, stakeholders, and the public to integrate sustainable practices into its center operations. This has caused a shift toward sustainable task control practices, emphasizing the need to minimize the environmental footprint of projects, enhance organizational resilience, and ensure compliance with evolving regulatory requirements.

Sustainability in project management has been an emerging field of research, with studies specializing in integrating environmental, social, and monetary concerns into project planning and execution. Within the pharmaceutical business, sustainability encompasses several dimensions, together with environmental risk assessments, waste reduction strategies, and resource performance. However, achieving sustainability isn't always entirely a count of policy and approach; it additionally requires the active participation of personnel, the alignment of human resources practices, and powerful environmental management structures.

Employee engagement, Green Human Resource Management (GHRM), and environmental control are three interrelated areas which can be critical for attaining sustainable venture control. Employee engagement refers to the level of commitment and exuberance that employees have toward accomplishing their business enterprise's goals, consisting of those associated with sustainability. GHRM entails the mixing of environmental considerations into HR practices, which includes recruitment, schooling, and performance management, to create a group of workers this is each professional and environmentally conscious. Environmental management encompasses the strategic practices and processes that companies adopt to decrease the environmental effect in their initiatives.

The reason of this literature review is to provide a depth examination of these 3 additives and discover their integration inside the context of pharmaceutical challenge management. The following sections will review existing literature on every factor, their

interconnections, and their implications for project sustainability within the pharmaceutical enterprise.

2.2. Employee Engagement and Its Role in Project Management

2.2.1. Conceptualizing Employee Engagement:

Employee engagement, as described by Kahn (1990), encompasses the emotional, cognitive, and behavioural investment of employees in their work. Engagement has developed from a slim recognition on job pleasure to a broader conceptualization involving proactive behaviour, organizational commitment, and the willingness to make contributions to organizational desires. Saks (2006) similarly emphasised the significance of engagement in selling job performance and organizational citizenship behaviour, making it a vital thing in assignment-based industries.

Smith and Bititci (2017) explored the relationship among engagement and overall performance dimension structures, emphasizing that when performance metrics align with sustainability desires, employees are more likely to be prompted and engaged. Their examine determined that normal feedback and clean conversation about sustainability projects play vital roles in enhancing engagement within project management contexts.

2.2.2. Employee Engagement in the Pharmaceutical Sector:

The pharmaceutical industry operates in a highly regulated environment. Successful project implementation depends on the coordination of multiple stakeholders and the ability to innovate. Under constraints, Meredith (2017) argued that participation in pharmaceutical program management is critical. This is because the stakes are high to meet regulatory standards and ensure patient safety. In this context, participation is more than just a personal motivation. It includes collaboration, communication, and shared responsibility.

Todorovic and colleagues (2015) proposed a knowledge framework for analyzing project success. It emphasizes the important role of employees in sharing knowledge and innovation. The research results indicate that organizations A culture of participation should be promoted to improve project outcomes and sustainability. This is especially true in industries where regulatory compliance and risk management are paramount.

2.3. Green Human Resource Management (GHRM) Practices

2.3.1. Definition and Evolution of GHRM:

Green Human Resource Management (GHRM) is an emerging concept that integrates environmental sustainability into HR functions. Rooted in sustainable HRM, GHRM emphasizes aligning HR guidelines with the employer's broader sustainability goals. It consists of green practices including green recruitment, inexperienced schooling, and environmentally aligned overall performance control, aimed at developing environmentally aware personnel (Renwick et al., 2013).

Mishra (2017) described GHRM as a complete technique to embedding sustainability in HR functions. His study highlighted the importance of making a synergy between environmental goals and HR regulations, suggesting that organizations that actively implement GHRM practices enjoy progressed employee dedication to sustainability projects, greater corporate reputation, and more potent environmental performance.

2.3.2. GHRM Policies and Their Impact on Organizational Sustainability:

Ahmed (2015) explores GHRM's rules, focusing on how green recruitment and education can attract and increase personnel aligned with the business enterprise's sustainability objectives. These findings spotlight the role of green education applications in equipping personnel with the capabilities had to undertake sustainable practices, further to aligning rewards and exams with environmental goals. It also reinforces employees' dedication to sustainability. Make it an essential a part of the agency's tradition.

Mousa and Othman (2020) gift a conceptual framework that relates GHRM to sustainable overall performance. It emphasizes its relevance in industries inclusive of healthcare and prescribed drugs. They argue that GHRM practices, specifically training and development, are inexperienced. It plays an crucial role in promoting employee engagement and promoting environmentally aware conduct. These findings advocate that integrating GHRM into an standard sustainability method is important for accomplishing lengthy-time period environmental goals and increasing organizational overall performance.

2.4. Environmental Management in Project-Based Industries

2.4.1. The Role of Environmental Management in Project Sustainability:

Environmental control includes systematically integrating sustainability considerations into an enterprise's operations. In industries were projects are the base of its processes such as prescription drugs, environmental management encompasses strategies to reduce waste, optimize resources utilization, and mitigate environmental dangers. The cognizance isn't best on compliance but additionally on embedding sustainability into task lifecycles.

Aarseth et al. (2017) carried out a scientific review to identify key practices that make a contribution to sustainability in undertaking control. They emphasized the significance of risk tests, resource optimization, and alignment of project goals with broader environmental goals. Their research highlighted that a success environmental control calls for both strategic planning and worker dedication, making it important for corporations to combine those additives.

2.4.2. Environmental Management in the Pharmaceutical Industry:

The pharmaceutical enterprise faces specific environmental demanding situations due to its regulatory standards and capacity environmental influences. Martens and Carvalho (2017) explored key factors of sustainability within task control, highlighting the importance of waste management, useful resource efficiency, and compliance. Their findings indicated that adopting a proactive approach to environmental control can enhance an company's capability to satisfy regulatory necessities and foster a lifestyle of non-stop development.

Pournader et al. (2015) proposed a 3-step layout technological know-how method to increase a unique HR making plans framework, addressing the challenges of aligning environmental desires with mission objectives. Their findings emphasized the role of targeted interventions, worker engagement, and supportive leadership in overcoming resistance to alternate and accomplishing sustainability dreams. This observe underscores the need for comprehensive environmental control strategies that align with HR policies and employee engagement initiatives.

2.5. Interplay Between Employee Engagement, GHRM, and Environmental Management

2.5.1. Synergies and Complementarities Between the Three Components

The integration of employee engagement, GHRM, and environmental management offers a synergistic method to reaching sustainability in project-based corporations. Several studies have examined how those components support each other, creating a holistic framework for sustainable mission control.

Singh et al. (2020) explored the role of green transformational leadership in promoting inexperienced innovation and environmental performance. Their findings highlighted that leadership is critical for aligning HR practices with environmental goals and tasty employees in sustainability tasks. They concluded that organizations with robust management and incorporated GHRM practices are higher placed to acquire their environmental dreams.

2.5.2. Practical Implications for Pharmaceutical Project Management

In the context of pharmaceutical task management, integrating worker engagement, GHRM, and environmental management offers several realistic advantages. Engaged personnel contribute treasured insights and revolutionary solutions to environmental challenges, whilst GHRM practices offer the essential assist to sustain their commitment. Additionally, environmental management practices ensure that initiatives are aligned with regulatory requirements and sustainability desires.

Mousa and Othman (2020) emphasised the significance of adopting a holistic method to sustainability, integrating worker engagement, GHRM, and environmental control. Their findings recommended that companies that efficaciously integrate these additives experience more advantageous project effects, extended employee delight, and advanced environmental overall performance. These benefits are mainly relevant within the pharmaceutical industry, where sustainability is closely connected to regulatory compliance and company reputation.

2.6. Conclusion of the Literature Review

The literature reviewed on this chapter underlines the important function of employee engagement, GHRM, and environmental management in reaching sustainability inside

venture-primarily based industries, especially inside the pharmaceutical sector. The findings recommend that those components aren't just interdependent however also complementary, collectively contributing to more suitable assignment consequences, improved environmental performance, and strengthened organizational resilience.

Employee engagement emerges as a central subject, highlighting the significance of fostering a dedicated and proactive workforce. Engaged employees are much more likely to take possession of sustainability projects, collaborate effectively with crew participants, and make a contribution progressive answers to mission demanding situations. This is especially relevant inside the pharmaceutical industry, in which undertaking fulfillment often relies upon on assembly complicated regulatory necessities and retaining operational performance.

Green Human Resource Management (GHRM) serves as a strategic framework for aligning HR practices with environmental objectives. Studies recommend that GHRM practices which includes green recruitment, training, and overall performance management play a vital position in cultivating an environmentally conscious team of workers. By integrating sustainability into HR guidelines, companies enhance personnel' dedication to environmental goals and create a tradition of duty and continuous improvement.

Environmental management, in flip, gives the strategic direction and operational framework for minimizing environmental damage and accomplishing regulatory compliance. The literature indicates that a success environmental management calls for a proactive approach to threat exams, resource optimization, and waste reduction. In assignment-based totally industries like prescription drugs, wherein environmental dangers are excessive, effective environmental control is essential for achieving sustainability desires.

The interplay between those three components—worker engagement, GHRM, and environmental control—offers a synergistic method to sustainability. Studies advocate that groups that successfully integrate these factors are higher placed to decorate task outcomes, force innovation, and achieve a competitive side. However, attaining this integration isn't with out challenges. Common barriers consist of resistance to change, misalignment of organizational desires, and shortage of worker motivation.

Addressing these demanding conditions calls for a complete and strategic method. Leadership plays a pivotal function in the use of organizational trade, aligning HR policies with sustainability goals, and fostering a subculture of engagement. Strong management can assist to bridge gaps among strategic objectives and employee behaviour, creating a cohesive framework for accomplishing sustainability.

In conclusion, the combination of employee engagement, GHRM, and environmental control gives a promising pathway for boosting sustainability in pharmaceutical project manage. This literature assessment gives a theoretical foundation for exploring the practical implications of this integration inside the next chapters of this thesis. The findings will guide the improvement of research questions, information series strategies, and analytical techniques, ultimately contributing to a deeper know-how of ways businesses can improve their sustainability efforts and attain a aggressive vicinity inside the enterprise.

This chapter highlights the need for groups to adopt a holistic technique to sustainability, leveraging worker engagement, GHRM practices, and environmental control to electricity non-forestall improvement and acquire long-term fulfillment. The next chapters will construct upon those insights, exploring the sensible worrying situations and possibilities associated with imposing the ones strategies in the pharmaceutical area.

3. Chapter 3: Research Question & Methodology

3.1. Introduction

The successful execution of initiatives in the pharmaceutical industry calls for a strategic method to sustainability, mainly considering the industry's regulatory needs and environmental footprint. This chapter outlines the studies query and technique hired to investigate the mixing of employee engagement, Green Human Resource Management (GHRM), and environmental control inside pharmaceutical management control. The chapter targets to set up a scientific framework for exploring the relationship between these additives and figuring out actionable strategies for powerful integration.

The chapter starts offevolved with a restatement of the research query and hypotheses, observed by a detailed dialogue of the studies layout, records series methods, survey questions, and analytical strategies. Additionally, moral concerns, boundaries, and expected challenges are addressed to offer a comprehensive assessment of the research manner.

3.2. Research Question and Hypotheses

The central question guiding this study is:

"What are the benefits of applying employee engagement, sustainable green human resource & environment management within pharmaceutical project management, and how can it be accomplished?"

The research query focuses on information the contributions of worker engagement, GHRM, and environmental control to accomplishing sustainability inside the pharmaceutical enterprise. The aim is to research how those components can be strategically integrated to enhance mission consequences, enhance environmental performance, and drive innovation.

3.2.1. Theoretical Basis for Hypotheses Development

The hypotheses for this research were evolved primarily based on insights from the literature review and theoretical views on sustainability, human aid control, and mission management. The theoretical framework attracts on studies that emphasize the

significance of integrating sustainability into organizational practices and aligning worker behaviours with strategic objectives.

- H1: Employee engagement positively influences the implementation of environmental management practices within pharmaceutical project management.

  This speculation is primarily based on theories of organizational behaviour, which propose that engaged employees are much more likely to showcase proactive behaviours, include organizational initiatives, and contribute to strategic dreams, which include environmental sustainability.
- H2: Green Human Resource Management (GHRM) practices contribute to increased sustainability and environmental performance in pharmaceutical projects.

  The 2nd hypothesis is grounded inside the principles of sustainable human useful resource control, which emphasize the function of HR regulations in selling environmentally responsible behaviour amongst employees. GHRM practices, together with green education and recruitment, are predicted to beautify employees' consciousness and dedication to environmental goals.
- H3: The integration of employee engagement, GHRM, and environmental management enhances overall project performance and innovation within the pharmaceutical sector.

  The third speculation displays a systems-based perspective, suggesting that the integration of these additives creates synergies that improve undertaking consequences, force innovation, and decorate organizational resilience.

3.3. Research Design

3.3.1. Quantitative Research Approach

This research employs a quantitative research layout to take a look at the relationships between employee engagement, GHRM practices, and environmental control inside pharmaceutical assignment control. Quantitative research includes the systematic collection and evaluation of numerical information to discover styles, relationships, and causal outcomes among variables. This technique is nicely-suited for checking out the examine's hypotheses and generating statistically vast findings.

The decision to use a quantitative technique is based totally on the character of the studies question and the observe's objectives. The take a look at seeks to quantify the relationships between more than one variables and identify patterns that could inform realistic techniques for enhancing sustainability in pharmaceutical management control. A quantitative approach enables the collection of standardized facts, facilitating comparisons, statistical analysis, and generalizability.

3.3.2. Cross-Sectional Design

A cross-sectional research layout changed into chosen for this research to seize a photograph of the current state of worker engagement, GHRM practices, and environmental control within the pharmaceutical industry. Cross-sectional research are effective for exploring relationships between variables at a specific point in time, making them well-appropriate for inspecting the modern-day country of sustainability practices in pharmaceutical challenge management.

3.4. Data Collection Methods

3.4.1. Survey Instrumentation

The number one facts collection method for this examine is a established survey, which become designed to seize respondents' perceptions of worker engagement, GHRM practices, and environmental management. The survey instrument consists of 10 questions, each corresponding to key variables in the research hypotheses. The questions have been advanced the usage of a 5-point Likert scale, with responses starting from 1 (Strongly Disagree) to 5 (Strongly Agree). This scale allows for the measurement of respondents' attitudes and perceptions with various stages of intensity.

3.4.2. Development and Validation of Survey Questions

The survey questions were evolved based on key issues identified inside the literature overview and validated contraptions used in earlier studies. The survey is prepared into 5 key sections, every addressing a specific thing of the research question:

- Employee Engagement and Environmental Management

Q1: I feel that my organization values my contributions towards achieving environmental sustainability goals.

This query measures the quantity to which personnel perceive that their efforts in the direction of sustainability are diagnosed and valued through the organization. Employee reputation is crucial for fostering a lifestyle of engagement and inspiring proactive behaviour in sustainability initiatives.

Q2: I am motivated to participate in sustainability initiatives and projects within my organization.
This query assesses employees' motivation and willingness to engage in sustainability initiatives. Motivation is a key indicator of worker engagement and their commitment to environmental goals.

- GHRM Practices

Q3: My organization actively implements green policies in its human resource management, such as eco-friendly recruitment and training.
This query evaluates the quantity to which GHRM practices, together with green recruitment and education, are carried out in the business enterprise. It targets to degree the alignment of HR guidelines with environmental desires.

Q4: My organization's HR practices encourage environmentally responsible behaviour among employees.
This question assesses the effectiveness of GHRM practices in promoting environmentally responsible behaviour. It reflects the company's commitment to integrating sustainability into its HR functions.

- Leadership and GHRM Integration

Q5: Leadership in my organization emphasizes the importance of sustainability and encourages participation in green initiatives.
This query explores the position of management in promoting sustainability and motivating employees to take part in green projects. Leadership assist is a crucial thing within a success integration of GHRM and environmental management.

Q6: My managers lead by example in promoting environmentally conscious practices.
This query measures the volume to which managers show environmentally aware behaviour and set a high-quality example for personnel. Managerial function modelling is crucial for boosting GHRM practices.

- Impact on Project Performance

Q7: I believe that the implementation of green HR policies has improved the sustainability of projects in my organization.
This query evaluates the perceived effect of GHRM practices on project sustainability. It goals to degree the effectiveness of integrating GHRM with undertaking management practices.

Q8: The focus on sustainability has led to innovations that benefit project outcomes in my organization.
This query explores the connection among sustainability projects and innovation. It reflects the capability advantages of aligning sustainability desires with undertaking control practices.

- Challenges and Benefits of Integration

Q9: Aligning employee engagement with sustainability goals improves my organization's environmental performance.
This question assesses the perceived benefits of aligning worker engagement with sustainability desires. It pursuits to degree the impact of engagement on environmental overall performance.

Q10: Integrating GHRM and environmental management practices has positively impacted our projects' overall success and competitiveness.
This question evaluates the perceived advantages of integrating GHRM and environmental management in enhancing challenge effects and organizational competitiveness.

These survey questions have been designed to seize the views of professionals within the pharmaceutical enterprise concerning the combination of worker engagement, GHRM, and environmental management. Each query aligns with the examine’s studies objectives and provides precious insights into the elements influencing sustainability practices.

3.4.3. Data Collection Procedures

The survey may be disbursed via Microsoft Form`s, to attain a wide variety of experts inside the pharmaceutical industry. An invitation email explaining the cause of the observe and asking for participation may be despatched to capacity respondents.

Participants will be assured of the anonymity and confidentiality in their responses to encourage sincere and accurate comments. The survey platform may be configured to prevent the collection of individually identifiable facts, ensuring that respondents' privacy is included.

3.5. Data Analysis Techniques

3.5.1. Descriptive Analysis

Descriptive statistics will be used to summarize key characteristics of the survey data, such as employee engagement levels. Prevalence of GHRM practices and effectiveness of environmental management strategies. Descriptive analysis includes measures of central tendency (mean, median) and measures of variance. (standard deviation, range) to give an overview of the data.

3.5.2. Inferential Analysis

Inferential statistics will be used to test the study's hypotheses and explore relationships between key variables. The following analysis techniques will be used:
Correlation Analysis: Correlation analysis is used to examine the strength and direction of the relationship between employee engagement. GHRM and environmental management practices The correlation coefficient is calculated to determine the degree of relationship between the variables.
Multiple Regression Analysis: Multiple regression analysis is used to determine the extent of employee participation. GHRM and environmental management practices that predict project outcomes The regression model consists of three independent variables (employee participation GHRM and environmental management practices) and one dependent variable representing project outcomes (such as sustainability, innovation, and efficiency).
Exploratory Factor Analysis (EFA): EFA is performed to identify underlying dimensions or factors within survey data. This technique is useful for finding patterns between variables and exploring the structure of the data.

The analysis is performed using Excel, a widely used statistical software. Excel provides a number of analysis tools that can facilitate accurate and reliable analysis of survey data.

3.6. Ethical Considerations

3.6.1. Ethical Approval and Informed Consent

Ethical approval can be obtained from Related Institutional Review Board (IRB) Before starting the dataset Ethical guidelines for conducting research involving human subjects can be strictly followed for the duration of the study. Every contributor is provided with certain statistics regarding their motivations, approaches, and capacity risks. Consent can be obtained from each participant before participating in the survey.

3.6.2. Confidentiality and Anonymity

Participants might be assured that their responses could be anonymous and private. The survey platform can be configured to keep away from the gathering of in my view identifiable facts, and the data can be saved securely on password-included servers. Access to the records can be restrained to authorized individuals of the studies group.

3.7. Anticipated Challenges and Limitations

Several demanding situations and limitations may rise up in the course of this study. Identifying and addressing those challenges is vital for making sure the credibility and validity of the study findings:

Response Rate: Achieving a high reaction rate is regularly difficult in survey-primarily based research. Potential respondents may be reluctant to take part due to time constraints or worries approximately information privacy. To mitigate this, the research at will undertake strategies including sending emails with reminders.

Data Quality: Ensuring the accuracy and honesty of survey responses is a key subject. Measures along with anonymity and confidentiality might be communicated to contributors to encourage straightforward and correct feedback.

Complexity of Constructs: Measuring abstract constructs including engagement, GHRM practices, and sustainability offers challenges associated with operational definitions

and dimension validity. The use of validated survey instruments and pilot testing will help cope with these demanding situations.

Analytical Complexity: The complexity of statistical analyses, together with a couple of regression and element analysis, requires superior know-how of statistical strategies and get entry to appropriated software program.

3.8. Conclusion

This chapter outlined the research query, hypotheses, and the quantitative studies method hired on this observe. The look at's objective is to discover the relationships between worker engagement, GHRM practices, and environmental management inside pharmaceutical task control. A cross-sectional research layout and survey-based totally technique had been selected to collect statistics from a representative sample of specialists in the pharmaceutical enterprise.

The chapter furnished an in depth discussion of the survey instrumentation, sampling approach, statistics series methods, and analytical strategies. Ethical considerations and potential challenges have been additionally addressed, highlighting the measures taken to ensure the validity and reliability of the research. The insights won from this chapter will guide the facts analysis in Chapter 4, wherein the gathered statistics might be analysed to check the research hypotheses and explore the realistic implications of integrating those components inside pharmaceutical mission control.

By setting up a clean research design and methodology, this chapter lays the groundwork for a complete exam of how worker engagement, GHRM, and environmental management can make contributions to sustainable task outcomes and beautify the competitiveness of the pharmaceutical industry.

4. Chapter 4: Data Analysis

4.1. Introduction

In latest years, the worldwide pharmaceutical industry has confronted increasing pressures no longer simplest to innovate hastily however additionally to operate sustainably. This shift is basically pushed by way of mounting regulatory demands, stakeholder expectancies for corporate obligation, and the environmental influences related to pharmaceutical manufacturing. Consequently, sustainability within task management has won strategic importance as companies aim to align operational goals with broader environmental goals (Martens & Carvalho, 2017; Aarseth et al., 2017). This chapter examines the interconnections among worker engagement, Green Human Resource Management (GHRM) practices, and environmental management inside pharmaceutical project management.

The pressure towards sustainability in mission management emphasizes integrating environmental issues into the undertaking lifecycle, from planning and development to implementation and assessment. The pharmaceutical industry, particularly, is known for its complex regulatory panorama, with stringent requirements for environmental compliance and waste control. This necessitates now not only technical modifications to satisfy environmental requirements but additionally organizational shifts that foster a lifestyle of sustainability across all project phases (Meredith, 2017).

Employee engagement is more and more identified as a middle element in accomplishing sustainability. Engaged employees are often more dedicated, influenced, and progressive, contributing to projects that support environmental goals. When employees see a right away connection among their function and the organisation's sustainability objectives, they are more likely to actively assist and take part in inexperienced initiatives (Mishra, 2017; Todorović et al., 2015). Meanwhile, GHRM practices, encompassing eco-friendly recruitment, education, and overall performance management, intention to embed environmental values within an enterprise's subculture. GHRM can facilitate the improvement of a body of workers that not most effective aligns with but also champions sustainable practices (Renwick et al., 2013; Ahmad, 2015).

The primary objective of this analysis is to test three hypotheses:

- Hypothesis 1: Employee engagement positively influences environmental management practices within pharmaceutical project management.
- Hypothesis 2: GHRM practices contribute to increased sustainability and environmental performance.
- Hypothesis 3: The integration of employee engagement, GHRM, and environmental management enhances overall project performance and innovation.

These hypotheses are grounded in sustainability and human resource control literature, which indicates that combining engagement, HR practices, and environmental management offers a more holistic method to sustainable effects than specializing in each component in my view.

This chapter will proceed by providing the technique used for statistics series and analysis, observed by using an in depth exam of every hypothesis the use of descriptive data, correlation evaluation, and regression modelling. These strategies are employed to uncover the character and extent of relationships between the look at variables, shedding light on their implications for sustainable challenge management inside the pharmaceutical sector.

4.2. Methodology

The method for this chapter combines descriptive and inferential information to test every hypothesis carefully. This phase provides an outline of the research design, survey device, and unique statistical strategies used.

4.2.1. Research Design

This study adopts a quantitative research layout, relying on survey information accrued from professionals in Ireland's pharmaceutical sector. The survey tool become designed to capture perceptions and studies related to worker engagement, GHRM practices, and environmental management within the context of venture control. The questions targeted 3 principal regions:

Employee Engagement: Items assessing engagement (e.G., Q1, Q2) discover the extent to which employees experience valued and encouraged to take part in sustainability initiatives.

GHRM Practices: Questions regarding GHRM (e.G., Q3, Q4) look at HR regulations that sell environmental obligation.

Environmental Management and Project Outcomes: Items related to environmental management (Q9, Q10) measure perceptions of ways well those practices align with project goals.

4.2.2. Descriptive Statistics

Descriptive facts are a foundational step in analysing survey facts, supplying a top level view of reaction styles. In this examine, the mean and well-known deviation for every query have been calculated to recognize imperative tendencies and variability. Higher mean values on Likert-scale objects suggest high quality alignment with each construct, while widespread deviations provide perception into the range of responses. Descriptive data assist to perceive which areas (e.G., engagement, GHRM, or environmental control) respondents experience maximum strongly about, placing the stage for further evaluation.

4.2.3. Correlation Analysis

Pearson's correlation evaluation is used to degree the energy and course of linear relationships among pairs of variables. Correlation is specially beneficial on this study for analyzing institutions, which includes the link between worker engagement and environmental control practices. However, correlation by myself does not suggest causation, and therefore those institutions are in addition investigated through regression evaluation.

4.2.4. Regression Analysis

Multiple regression analysis serves as a robust device for analysing the combined consequences of more than one predictors on a given final results. By including worker engagement, GHRM, and environmental management as impartial variables, regression fashions assess how these factors are expecting undertaking results, together with sustainability and innovation. This method is specially fantastic in figuring out which variables make contributions most importantly to desired outcomes even as controlling for the impact of others.

4.3. Data Analysis and Results

This segment info the findings from every statistical check, prepared in step with the study's hypotheses.

4.3.1. Hypothesis 1: Employee Engagement and Environmental Management

Hypothesis Statement: Employee engagement positively influences the implementation of environmental management practices within pharmaceutical project management. Research has counselled that once employees are engaged and feel aligned with an organisation's values, they're much more likely to help and participate in sustainability tasks (Smith & Bititci, 2017).

Table 1 - correlation analysis

Variable Pair	Pearson Correlation Coefficient (r)	p-value
Q1 and Q9	-0.22	0.025
Q1 and Q10	0.06	0.583
Q2 and Q9	0.22	0.025
Q2 and Q10	-0.11	0.257

Interpretation: The correlation analysis famous a modest however statistically sizeable courting between engagement and environmental management. Although susceptible, this locating helps the idea that engaged personnel may additionally make a contribution definitely to environmental projects, albeit as one in every of many capacity factors influencing results. The restricted power of the association shows that whilst engagement has some have an impact on, a greater comprehensive technique can be required to force environmental control practices meaningfully.

4.3.2. Hypothesis 2: GHRM Practices and Project Sustainability

Hypothesis Statement: GHRM practices contribute to increased sustainability and environmental performance.

Research on GHRM emphasizes the role of eco-friendly recruitment, schooling, and HR guidelines in promoting sustainability throughout organizations (Ahmad, 2015; Mousa & Othman, 2020).

- Regression Results for Q7 (Project Sustainability)

- Constant: 4.13, p-value < 0.001
- Q3 (GHRM Policy): Coefficient = -0.09, p = 0.44
- Q4 (Environmental Responsibility HR): Coefficient = -0.17, p = 0.11

- Regression Results for Q8 (Innovation Impact)
  - Constant: 3.37, p-value < 0.001
  - Q3 (GHRM Policy): Coefficient = -0.07, p = 0.47
  - Q4 (Environmental Responsibility HR): Coefficient = 0.04, p = 0.68

Interpretation: Neither GHRM policies (Q3) nor HR practices focused on environmental responsibility (Q4) significantly predict project sustainability or innovation. This suggests that GHRM practices alone may not be sufficient to drive sustainability or increased performance. It emphasizes the potential link between policy actions and practical outcomes. Achieving a more significant impact of GHRM may require a deeper organizational commitment to sustainability.

4.3.3. Hypothesis 3: Integrated Benefits of Employee Engagement, GHRM, and Environmental Management

Hypothesis Statement: The integration of employee engagement, GHRM, and environmental management enhances overall project performance and innovation. Theoretical models propose that combining these factors produces greater results than that specialize in them in isolation (Martens & Carvalho, 2017).

- Regression Results for Q8 (Project Innovation)
  - Constant: 2.89, p-value = 0.003
  - Q1 (Employee Engagement): Coefficient = 0.14, p = 0.14
  - Q2 (Motivation for Sustainability): Coefficient = -0.10, p = 0.20

Interpretation: The lack of sizable predictors in the ones mixed regression analyses shows that integration by myself might not suffice to yield progressed venture effects. This underscores the complexity of accomplishing sustainability, suggesting that elements like management useful resource, organizational culture, or regulatory pressures might also moreover play extra pivotal roles in challenge success inner this corporation.

4.4. Conclusion

The findings from this chapter offer nuanced insights into the relationships among employee engagement, GHRM practices, and environmental management in the context of pharmaceutical assignment control. While the evaluation famous partial assist for a number of the hypotheses, it also highlights limitations inside the predictive strength of those variables, suggesting that attaining sustainability in challenge management is extra complicated than predicted. Each speculation is revisited here, together with interpretations of the statistical effects, to provide a clearer knowledge of the factors driving sustainability within the pharmaceutical sector.

- Hypothesis 1: Employee Engagement and Environmental Management

Hypothesis Statement: Employee engagement positively influences the implementation of environmental management practices within pharmaceutical project management.

Finding: The evaluation offers modest assist for Hypothesis 1, as a susceptible however statistically vast correlation turned into located between employee engagement (Q1, Q2) and environmental management practices (Q9). This suggests that engaged personnel can also certainly be greater willing to guide environmental tasks, although the connection isn't strong sufficient to be exceedingly predictive.

Interpretation: The partial aid for Hypothesis 1 aligns with research suggesting that engaged employees are extra influenced to contribute to organizational desires, together with sustainability (Smith & Bititci, 2017). However, the vulnerable association means that engagement alone may not be enough to power significant environmental consequences in pharmaceutical projects. This might be because of the pretty regulated nature of the industry, in which compliance often takes precedence over voluntary sustainability efforts. Additionally, engagement in fashionable paintings-associated activities won't immediately translate into particular environmental behaviors without centered packages that join those efforts with employees' roles.

- Hypothesis 2: GHRM Practices and Project Sustainability

Hypothesis Statement: GHRM practices contribute to increased sustainability and environmental performance in pharmaceutical projects.

Finding: The information does no longer provide help for Hypothesis 2, as regression analyses display that neither GHRM policies (Q3) nor HR practices encouraging environmental responsibility (Q4) considerably are expecting task sustainability (Q7) or innovation (Q8).

Interpretation: This locating suggests a ability disconnect between GHRM policy adoption and its effect on sensible sustainability effects. While GHRM practices are meant to foster an environmentally aware staff, the lack of extensive consequences implies that these regulations won't be deeply included into the core operations of pharmaceutical projects. This aligns with Mousa and Othman's (2020) announcement that for GHRM to correctly influence sustainability, it ought to be continually implemented and supported through a culture that prioritizes environmental desires. The pharmaceutical enterprise, with its emphasis on regulatory compliance, may additionally require extra layers of organizational support and alignment for GHRM to effect challenge-stage sustainability meaningfully. In this context, GHRM policies on my own may be insufficient, and their influence on sustainability may be restrained with out strong management endorsement and practical packages that hyperlink those HR practices to environmental desires.

- Hypothesis 3: Integrated Benefits of Employee Engagement, GHRM, and Environmental Management

Hypothesis Statement: The integration of employee engagement, GHRM, and environmental management enhances overall project performance and innovation.

Finding: The mixed regression analysis for Hypothesis 3 observed no sizable predictors for mission innovation (Q8) or average project achievement (Q10), indicating a loss of guide for this speculation.

Interpretation: The effects recommend that genuinely integrating employee engagement, GHRM, and environmental control practices does now not always lead to better mission outcomes. This can be because of numerous motives. Firstly, the pharmaceutical area is uniquely characterised by way of its stringent regulatory necessities, which may also override or restriction the impact of inner sustainability practices. Additionally, even as the theoretical models advise for a holistic technique, sensible applications of these mixed practices can be more difficult in an enterprise

where tasks are closely dependent around compliance and operational performance. It is also feasible that different factors, together with organizational way of life, management patterns, or outside pressures (e.G., regulatory frameworks), might also play extra sizable roles in achieving undertaking-stage sustainability. This aligns with findings with the aid of Aarseth et al. (2017), who argued that powerful sustainability consequences in assignment control require multi-faceted processes, extending beyond employee engagement and HR practices. Leadership may be a vital factor lacking inside the modern framework, as leaders who actively sell sustainability can create a greater cohesive organizational alignment in the direction of environmental goals.

4.4.1. Implications and Future Directions

The insights from this chapter endorse that while employee engagement and GHRM practices have theoretical potential to drive sustainability, their sensible effects inside the pharmaceutical region can be confined through contextual elements including regulatory demands and organizational priorities. This suggests a want for destiny studies to discover how additional variables, which includes leadership, organizational tradition, and external pressures, may engage with engagement and GHRM practices to decorate sustainability in pharmaceutical project control.

In exercise, pharmaceutical agencies aiming to attain sustainable task manage may additionally gain from developing centered engagement packages that explicitly join employees' art work to environmental objectives. Additionally, based GHRM rules that are usually applied and strongly supported by using control could be crucial in making sustainability a tangible part of organizational subculture. Future studies could also have a take a look at the characteristic of regulatory impacts in shaping sustainability practices, as compliance-pushed industries can also require unique techniques as compared to sectors with more operational flexibility.

In summary, at the equal time as this check presents valuable insights into the jobs of worker engagement, GHRM practices, and environmental control in pharmaceutical venture sustainability, it highlights the complexity of accomplishing significant outcomes in a incredibly regulated surroundings. Integrating those practices with a supportive organizational tradition, energetic management, and alignment with

compliance requirements can be crucial for companies to successfully stress sustainability of their tasks.

5. Chapter 5: Discussion

5.1. Introduction

In current decades, the concept of sustainability has developed from a niche recognition to a valuable imperative throughout industries, driven by means of a aggregate of environmental, regulatory, and societal pressures. Within the pharmaceutical region, the shift toward sustainable practices is specially essential, given the enterprise's unique responsibilities and its huge regulatory necessities. This shift isn't always simplest an ethical and regulatory obligation but additionally a strategic possibility, as organizations that adopt sustainable practices are frequently capable of improve their operational performance, decorate their company reputation, and appeal to and preserve top talent who are increasingly more concerned with environmental and social impact (Martens & Carvalho, 2017; Aarseth et al., 2017).

This examine has examined three elements worker engagement, Green Human Resource Management (GHRM) practices, and environmental control as ability drivers of sustainability inside task management within the pharmaceutical industry. Employee engagement is increasingly more diagnosed as crucial in achieving sustainability desires, as engaged employees are much more likely to help and actively take part in tasks that align with company values (Smith & Bititci, 2017). GHRM, in the meantime, represents an rising area inside HR that targets to embed sustainability concepts into HR guidelines and practices, encompassing the whole thing from eco-conscious recruitment to green schooling and overall performance management (Renwick et al., 2013; Ahmad, 2015). Environmental management, because the third issue, includes the formal structures and practices aimed toward mitigating environmental effect and promoting resource efficiency within challenge contexts. Together, these elements are theoretically located to pressure sustainable challenge outcomes, in particular when carried out inside the established, compliance-orientated environment of the pharmaceutical zone.

Sustainability within assignment management is in particular pertinent for the pharmaceutical enterprise because of its reliance on rigorous first-rate standards, widespread aid use, and strict regulatory oversight. The industry's environmental footprint is substantial, and there may be a growing name for businesses to comprise

environmental issues no longer simplest in production but across their challenge lifecycles, from improvement via implementation and of entirety. Furthermore, as regulatory frameworks globally an increasing number of reflect sustainability mandates, pharmaceutical organizations have to discover approaches to combine those values without compromising operational performance or compliance (Meredith, 2017).

By focusing at the interconnections among employee engagement, GHRM, and environmental management, this research responds to the growing need for sustainable project control practices which can be each actionable and like minded with the pharmaceutical enterprise's regulatory constraints. The emphasis on those three regions displays a holistic approach to sustainability, spotting that effective trade regularly requires coordinated efforts throughout various organizational levels. From an academic perspective, this observe contributes to a extra nuanced expertise of how sustainability-oriented practices may be embedded within regulated venture environments, and from a realistic perspective, it gives insights that can guide pharmaceutical corporations in enforcing sustainable techniques which might be operationally possible.

This chapter builds on the findings supplied in Chapter 4 by means of discussing their implications considering present literature and industry-specific challenges. Specifically, this chapter will interpret the outcomes of the analyses related to every speculation, explore their alignment or divergence from installed theories, and provide insights into their relevance for the pharmaceutical zone. It may also do not forget the broader implications of those findings, addressing how worker engagement, GHRM, and environmental management practices make a contribution to or fall brief of riding sustainable project results.

To significantly examine the volume to which employee engagement, GHRM practices, and environmental control have an effect on sustainability within pharmaceutical task control this segment will consider every hypothesis personally, inspecting the findings with regards to earlier research.

To identify implications for each concept and practice the dialogue will discover how the findings make contributions to sustainability literature and provide realistic guidelines for enterprise experts and to cope with barriers and advise destiny studies directions

this phase will outline the observe's barriers and endorse avenues for destiny studies that would deepen our expertise of sustainability within regulated task environments.

In satisfying those goals, this chapter objectives to offer a complete evaluation of the research findings and their significance for both researchers and practitioners inquisitive about sustainable challenge control. By addressing those factors, the chapter will in the long run underscore the broader contributions and insights supplied with the aid of this studies, situating it within the ongoing discourse on sustainability in exceptionally regulated industries.

5.2. Interpretation of Findings

The study tested 3 key hypotheses to investigate the extent to which worker engagement, GHRM practices, and environmental control pressure sustainability in pharmaceutical project management.

- Hypothesis 1: Employee Engagement and Environmental Management

Summary of Findings: Hypothesis 1 cautioned that employee engagement would definitely have an impact on environmental control practices within pharmaceutical assignment control. The analysis discovered a weak however statistically massive correlation between engagement and environmental control, indicating that engaged personnel may also guide environmental initiatives to some degree.

Interpretation: These findings align partially with previous research that argue for the significance of worker engagement in attaining organizational dreams, which includes sustainability (Smith & Bititci, 2017). When employees are engaged, they may be much more likely to take part in tasks aligned with organizational values, consisting of green practices. However, the susceptible correlation discovered in this research shows that engagement by myself may not be a decisive issue in selling environmental management practices inside the pharmaceutical region. Given the regulated nature of this industry, the influence of worker engagement can be confined through compliance-pushed operations, which prioritize regulatory necessities over voluntary green practices.

Comparison with Literature: These findings make bigger studies with the aid of Mishra (2017) and Todorović et al. (2015), who emphasized the role of engaged employees in

supporting sustainability. However, in addition they propose that in relatively regulated industries like prescribed drugs, engagement can also want to be mainly directed towards sustainability to impact environmental results substantially. This finding helps the argument that engagement efforts must now not be generalized however rather tailor-made to foster environmental responsibility, mainly in compliance-centric industries.

- Hypothesis 2: GHRM Practices and Project Sustainability

Summary of Findings: Hypothesis 2 posited that GHRM practices would decorate sustainability and environmental performance in pharmaceutical projects. However, the regression analysis did now not find widespread aid for this hypothesis, as neither GHRM guidelines (Q3) nor environmentally orientated HR practices (Q4) anticipated undertaking sustainability (Q7) or innovation (Q8).

Interpretation: The lack of significance for Hypothesis 2 indicates that while GHRM practices may additionally lay the groundwork for sustainability, they may no longer directly lead to tangible sustainability effects without complete organizational assist. This locating is steady with research indicating that GHRM policies frequently require robust cultural alignment and non-stop reinforcement to be effective (Renwick et al., 2013). For instance, Mousa and Othman (2020) argued that GHRM's impact relies upon at the quantity to which it is included into the organizational lifestyle. In the pharmaceutical region, in which tasks are frequently constrained by means of strict operational and regulatory standards, GHRM practices on my own may lack the effect wished to significantly modify undertaking sustainability effects. Instead, a extra holistic approach that entails leadership commitment and organizational-huge alignment with inexperienced values might be essential.

Comparison with Literature: These findings project the assumption that GHRM practices inherently drive sustainability, specially in heavily regulated industries. The limited effect located may additionally reflect a need for greater realistic packages of GHRM policies, which includes green recruitment or inexperienced education applications, that align closely with enterprise-unique desires. This divergence from literature shows that at the same time as GHRM practices preserve theoretical promise, their actualization in

assignment management may also require extra assist from management and a framework that aligns environmental dreams with regulatory demands.

Hypothesis 3: Integrated Benefits of Employee Engagement, GHRM, and Environmental Management

Summary of Findings: Hypothesis three proposed that integrating worker engagement, GHRM, and environmental control could enhance normal assignment performance and innovation. However, the facts analysis did no longer screen good sized predictors for project innovation (Q8) or average challenge success (Q10), suggesting that those factors by myself won't suffice to force improved project outcomes.

Interpretation: The loss of assist for Hypothesis three indicates that the mixed outcomes of engagement, GHRM, and environmental practices might not translate into higher undertaking consequences inside pharmaceutical settings. This finding highlights the complexity of accomplishing sustainability in regulated challenge environments, wherein compliance responsibilities regularly overshadow voluntary sustainability efforts. It additionally shows that even as these practices are precious, they may no longer inherently result in stepped forward project outcomes until they are followed by using supportive organizational systems and management. The findings support the argument that sustainability requires a multi-dimensional technique that goes past engagement and HR practices to consist of strong organizational strategies (Martens & Carvalho, 2017).

Comparison with Literature: These results align with research via Aarseth et al. (2017) and Mousa and Othman (2020), who found that remoted HR or engagement practices won't yield massive challenge-level effects without a robust cultural and organizational basis. This highlights the importance of integrating these practices with broader challenge strategies and management help to create a cohesive framework for sustainability.

5.3. Implications for Theory and Practice

The findings of this research have numerous implications for each theoretical knowledge and realistic packages in sustainable challenge control within the pharmaceutical enterprise.

5.3.1. Theoretical Implications

This look at contributes to the growing literature on sustainability and mission control by imparting empirical evidence on the role of engagement and GHRM in selling environmental practices. It suggests that whilst those elements are useful, they will not fully pressure sustainability without broader organizational assist, particularly in compliance-centered industries. The examine reinforces the idea that sustainability in challenge control is a multi-faceted idea, motivated by means of each inner practices (e.G., HR regulations) and external factors (e.G., regulatory frameworks).

This studies further enriches theories on engagement by using suggesting that its outcomes on sustainability are context structured. In regulated environments, engagement may additionally have limited results on environmental results unless directed closer to precise sustainability dreams. Thus, the take a look at highlights the significance of context when making use of preferred control theories to sustainability efforts.

5.3.2. Practical Implications

For managers within the pharmaceutical sector, this look at offers numerous insights. First, fostering employee engagement without clear links to sustainability goals may additionally have constrained impact. Therefore, engagement packages must be explicitly tied to environmental goals, helping personnel see their contributions to green tasks. Furthermore, at the same time as GHRM practices can foster attention, they will need reinforcement from management and a supportive organizational culture to be impactful.

Pharmaceutical businesses may additionally benefit from leadership development packages that emphasize sustainability, ensuring that chief's model environmentally conscious behaviours and prioritize green desires.

The findings also advocate that sustainability efforts should be woven into the organizational fabric rather than treated as isolated tasks. By growing a supportive environment that aligns HR practices with challenge control targets and regulatory requirements, pharmaceutical companies can construct a extra resilient framework for achieving sustainability.

5.4. Limitations

Several limitations might also have prompted the findings of this examine, bellow we will have a closer to look to every of them:

Sample Size and Generalizability: The sample become confined to experts in the Irish pharmaceutical region, which may limit the generalizability of the effects. Expanding the pattern to encompass multiple areas and industries could decorate the findings' applicability.

Cross-Sectional Data: This research used go-sectional records, taking pictures a unmarried point in time. As a result, it does not account for potential modifications in worker engagement, GHRM practices, or environmental control over the years. A longitudinal observe ought to provide greater complete insights into the dynamics of sustainability practices.

Focus on Self-Reported Data: The reliance on self-stated statistics can also introduce biases, as individuals' responses will be motivated through social desirability. Future studies may contain goal overall performance metrics to reduce such biases.

Limited Scope of Variables: While the take a look at centered on engagement, GHRM, and environmental control, different factors, including organizational lifestyle and regulatory pressures, had been not examined. Including these variables in future research may want to offer a extra holistic information of sustainability in mission control.

5.5. Recommendations for Future Research

To build upon the findings of this look at, destiny research may want to explore one-of-a-kind studies factors such:

Explore the Role of Leadership in Sustainability: Since management is pivotal in fostering an surroundings supportive of green practices, future research need to study how leadership styles impact the effectiveness of GHRM and engagement practices.

Examine Regulatory Influences: Given the regulatory nature of the pharmaceutical area, destiny research may want to discover how regulatory compliance necessities interact with inner sustainability practices.

Investigate Additional Contextual Factors: Incorporating variables consisting of organizational tradition, employee autonomy, and innovation weather should provide a greater comprehensive view of sustainability in mission management.

Conduct Comparative Studies Across Industries: Comparing the pharmaceutical quarter with different industries can monitor whether or not the patterns determined right here are precise to regulated environments or practice broadly.

5.6. Conclusion

The findings from this observe light up the complex dynamics among employee engagement, GHRM practices, and environmental control in selling sustainability within pharmaceutical project control. While sustainability is increasingly identified as a crucial component of undertaking control throughout industries, the regulated nature of the pharmaceutical region introduces unique challenges which can restrict the impact of usual internal drivers, consisting of engagement and GHRM practices.

The effects suggest that even though worker engagement and GHRM practices keep promise as equipment for fostering sustainability, their effectiveness in a pharmaceutical setting may be hindered by using regulatory needs and operational priorities. This chapter has supplied a nuanced interpretation of those findings, bearing on them to present literature and discussing their implications inside a context marked by means of stringent compliance requirements and a strong cognizance on pleasant guarantee.

The research hypotheses had been best partly supported, underscoring that sustainability in challenge control is not completely dependent on employee-driven initiatives but might also require broader, structural changes inside the company:

Hypothesis 1: The modest correlation among employee engagement and environmental control practices suggests that engagement by myself might not power meaningful environmental exchange in a rather regulated setting. Although engaged personnel may also support green projects, their efforts may not translate into impactful practices without a structured, business enterprise-wide commitment to sustainability.

Hypothesis 2: The loss of a enormous courting among GHRM practices and sustainability consequences factors to the potential disconnect between HR

regulations and practical task-level effects. GHRM practices may additionally need stronger alignment with leadership desires and compliance frameworks to have a significant impact on sustainability.

Hypothesis three: The absence of good sized predictors within the integrated version highlights the complexity of achieving sustainability outcomes with the aid of surely combining engagement, GHRM, and environmental management. This locating shows that sustainable project management in the pharmaceutical region may require a multi-dimensional method that consists of leadership, cultural alignment, and targeted regulatory strategies along those internal practices.

These effects highlight the significance of contextualizing engagement and GHRM practices inside an industry's precise operational and regulatory landscape. In the pharmaceutical region, the findings imply that sustainability efforts might also benefit from a complete, pinnacle-down approach wherein engagement, HR policies, and environmental practices aren't remoted initiatives but instead included components of a strategic, organization-huge commitment to environmental desires. The take a look at underscores that whilst engagement and GHRM are essential components of a sustainable way of life, they are unlikely to yield massive consequences with out sturdy assist from leadership, powerful organizational alignment, and a cohesive sustainability strategy that debts for regulatory obligations.

Theoretically, this research contributes to the literature by means of illustrating the contextual obstacles of engagement and GHRM practices as sustainability drivers in regulated industries. While preceding studies have emphasised the benefits of these practices for sustainability, this research indicates that their effectiveness can be confined in environments wherein compliance and operational efficiency are paramount. The findings call for a extra incorporated theoretical version that considers both worker-pushed and structural factors along with leadership and regulatory pressures in expertise sustainability outcomes within undertaking management.

For pharmaceutical corporations, these findings spotlight the significance of fostering a way of life that prioritizes sustainability from the top down. While engagement applications and GHRM practices have intrinsic cost, their effect on mission sustainability can be restrained if they're no longer supported by leadership and aligned

with the agency's strategic dreams. Effective sustainability practices might also require that leaders actively champion green goals and embed those values into the employer's lifestyle, linking character roles and obligations to broader environmental goals.

Further, pharmaceutical companies may additionally discover that reinforcing GHRM regulations with clear, established pointers aligned with compliance necessities should bridge the space between HR intentions and realistic outcomes. Building a subculture of sustainability, particularly in a zone with excessive regulatory needs, requires a steady message from leadership and a supportive organizational surroundings that integrates sustainability into every aspect of operations.

6. Chapter 6: Conclusion

6.1. Summary of Findings

This research aimed to explore the roles of employee engagement, Green Human Resource Management (GHRM) practices, and environmental management as drivers of sustainability in pharmaceutical task management. Given the unique regulatory and operational constraints within this region, the study examined how those internal elements contribute to mission-degree sustainability effects. The findings discovered a complicated image, with restricted assist for the hypotheses, suggesting that sustainability in pharmaceutical tasks calls for greater than engagement and HR-driven practices. Instead, it can necessitate a complete method related to management aid, cultural alignment, and regulatory compliance. The key findings are as follows:

Employee Engagement: A weak however statistically large correlation become discovered between employee engagement and environmental management practices. While engaged employees might also aid green projects, engagement by myself does not seem like a significant driver of sustainability in this regulated industry.

GHRM Practices: Contrary to expectancies, GHRM practices did now not substantially are expecting sustainability or innovation results in pharmaceutical projects. This suggests a ability disconnect among the adoption of green HR regulations and their sensible impact on task control.

Integrated Influence: The combined evaluation of worker engagement, GHRM, and environmental control revealed no giant predictors for more desirable challenge effects. This suggests that integrating those practices with out structural guide won't suffice to reap meaningful sustainability outcomes in the pharmaceutical context.

6.2. Theoretical Contributions

This observe makes numerous theoretical contributions to the fields of sustainable project management and organizational behaviour, which are provided under:

Contextualizing Engagement and GHRM in Regulated Industries: The findings challenge the generalizability of engagement and GHRM as drivers of sustainability with the aid of illustrating their confined effect within a compliance-driven enterprise. This look at emphasizes the want to recall regulatory and operational constraints while making use

of wellknown sustainability theories to precise industries. In the pharmaceutical area, where compliance is vital, the capability of engagement and GHRM practices to pressure sustainability may be limited until they are cautiously aligned with regulatory demands.

Expanding Sustainability Theory with External Constraints: The study underscores the importance of a multi-dimensional framework that includes no longer only inner drivers like worker engagement and GHRM however additionally outside elements including regulatory pressures. The constrained predictive electricity of engagement and GHRM within this examine highlights a gap in modern sustainability theories, which regularly do now not account for industry-particular constraints. This studies suggests that sustainable mission control in regulated industries may require a greater complete model that consists of outside pressures and compliance requirements as key contextual variables.

Integrating Organizational Culture and Leadership into Sustainability Models: The findings suggest that organizational lifestyle and management commitment are essential for achieving sustainability in pharmaceutical projects. While theories on sustainable challenge management have traditionally focused on employee-pushed projects, this examine indicates that effective sustainability might also depend upon cultural alignment and strong management, specifically in industries where environmental targets need to coexist with regulatory mandates.

6.3. Practical Implications for Pharmaceutical Project Management

For practitioners, this study provides numerous sensible insights into enhancing sustainability within pharmaceutical undertaking settings, inclusive of:

Tailoring Engagement Programs to Sustainability Goals: While employee engagement has intrinsic cost, the findings advocate that engagement efforts can be greater powerful if they're explicitly tied to sustainability targets. Pharmaceutical organizations could broaden applications that help employees apprehend the relationship between their roles and the company’s environmental goals, consequently fostering a more potent dedication to green practices.

Aligning GHRM with Organizational and Regulatory Goals: The limited impact of GHRM on challenge sustainability suggests that HR policies may need to be reinforced with

unique suggestions that align with each organizational and regulatory dreams. For GHRM practices to persuade project results meaningfully, they will require active support from management and integration into the organizational subculture.

Building a Culture of Sustainability through Leadership: The look at highlights the importance of leadership in selling a sustainability-orientated tradition. Leaders inside the pharmaceutical quarter can play a pivotal function by means of modelling environmentally responsible behaviours, placing clear sustainability desires, and growing an surroundings in which employees feel stimulated to make a contribution to these targets. Leadership training focused on sustainability can be useful, equipping managers with the talents to integrate inexperienced practices into task control.

Adopting a Holistic Approach to Sustainability: Given the regulatory constraints of the pharmaceutical industry, sustainability efforts might also require a holistic technique that aligns environmental dreams with operational and regulatory desires. By embedding sustainability into the business enterprise's operational framework, corporations can create a subculture that helps environmental initiatives while adhering to compliance necessities.

6.4. Limitations

Sample Scope and Generalizability: The look at became restrained to experts within Ireland's pharmaceutical enterprise, which may additionally restrict the generalizability of the findings. Pharmaceutical assignment control practices can vary notably between regions and companies, and increasing the sample to encompass different geographic contexts may want to provide a extra comprehensive expertise.

Cross-Sectional Data: The use of pass-sectional records limits the observe's capacity to seize temporal adjustments in engagement, GHRM practices, and environmental control. Sustainability is an evolving process, and a longitudinal design could provide greater designated insights into how those practices have an effect on challenge effects through the years.

Self-Reported Data: The reliance on self-said survey data might also introduce biases, as members may also overstate their engagement in sustainability practices because of social desirability. Future studies could combine goal statistics sources, along with

sustainability overall performance metrics, to provide a more accurate illustration of venture-level sustainability outcomes.

Narrow Scope of Variables: This look at centered on three unique factors—employee engagement, GHRM, and environmental management. However, other relevant variables, inclusive of organizational way of life, management styles, and outside pressures, were no longer tested. Including these additional factors in future research ought to provide a extra nuanced information of the conditions required to power sustainability in challenge management.

Industry-Specific Constraints: The pharmaceutical industry's regulatory requirements might also have encouraged the findings, suggesting that the results may not be completely relevant to less-regulated industries. Comparative research across industries with varying degrees of regulatory oversight may want to help decide the volume to which those findings are precise to the pharmaceutical sector.

6.5. Directions for Future Research

The limitations and findings of this research suggest several avenues for future studies:

Investigating the Role of Leadership in Sustainability: Given the significance of management recognized in this observe, future studies should examine how distinct management styles, together with transformational or green management, impact the effectiveness of engagement and GHRM practices. Leadership dedication may serve as a essential enabler of sustainability in compliance-pushed industries.

Exploring Regulatory Influences on Sustainability: The regulatory panorama drastically shapes the pharmaceutical area's approach to sustainability. Future research could check out how regulatory frameworks engage with internal sustainability practices and whether groups can discover modern ways to align environmental desires with compliance requirements.

Comparing Sustainability Practices Across Industries: Conducting comparative studies throughout industries with various tiers of regulatory oversight should reveal whether or not the patterns determined in this examine are unique to the pharmaceutical area or follow broadly. This should help identify enterprise-precise challenges and solutions for embedding sustainability in undertaking management.

Incorporating Additional Contextual Variables: Future research should increase the scope of variables to encompass organizational culture, innovation weather, and worker autonomy. Examining those elements along engagement and GHRM should offer a more complete expertise of the contextual factors that shape sustainability efforts in venture control.

Longitudinal Research on Sustainability Practices: Sustainability is inherently a long-term endeavour, and a longitudinal approach should offer precious insights into the dynamics of engagement, GHRM, and environmental practices over the years. Observing adjustments in sustainability practices and project effects over a couple of years should screen traits that cross-sectional research are not able to capture.

6.6. Final Reflections and Overall Conclusion

In conclusion, this look at gives insights into the capacity and boundaries of worker engagement, GHRM practices, and environmental control as gear for fostering sustainability in pharmaceutical task control. While those practices are theoretically valuable, the findings indicate that their effectiveness in a compliance-driven enterprise like pharmaceuticals is confined until they are part of a greater complete, organisation-wide dedication to sustainability.

The examine underscores that attaining sustainability in undertaking control calls for a holistic approach that combines worker-driven practices with structural and regulatory alignment. For pharmaceutical companies, this indicates fostering a supportive organizational culture, providing energetic management for sustainability goals, and finding modern ways to combine environmental objectives inside the constraints of regulatory compliance. By adopting this multi-faceted technique, pharmaceutical organizations can navigate the complex course in the direction of sustainable venture control, contributing now not handiest to environmental stewardship however also to more desirable corporate resilience and social obligation.

This research contributes to the academic literature with the aid of emphasizing the need for contextualized processes to sustainability and imparting sensible tips for pharmaceutical managers. As the call for for sustainable practices continues to grow, it is was hoping that these insights will manual destiny research and encourage new

strategies for integrating sustainability into assignment management throughout industries.

Appendices

Appendix 1: Data set

Table 2 - Data Set

Answers	Questions									
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
P1	3	5	3	3	4	3	3	3	3	4
P2	4	4	4	3	3	4	3	2	3	3
P3	3	3	3	4	4	2	2	4	4	4
P4	2	1	4	3	4	4	4	2	3	3
P5	5	2	4	4	4	3	4	4	3	3
P6	3	4	4	4	2	2	4	2	4	4
P7	2	4	5	3	3	3	4	4	4	2
P8	4	3	3	3	4	3	3	3	4	4
P9	3	1	4	2	3	3	3	4	2	3
P10	3	3	3	4	5	1	3	4	3	3
P11	4	3	4	3	2	3	3	3	3	2
P12	3	2	3	2	4	3	4	3	3	4
P13	4	4	3	4	4	1	2	3	3	2
P14	3	4	3	2	4	4	3	3	4	2
P15	4	1	3	3	4	3	4	4	2	2
P16	4	4	5	3	3	4	5	4	3	3
P17	3	3	4	2	4	1	3	2	4	4
P18	3	4	3	3	2	4	4	3	4	1
P19	3	2	3	4	2	4	4	3	4	3
P20	3	3	2	4	3	3	3	3	2	4
P21	3	1	4	3	4	2	4	4	3	4
P22	3	3	5	4	3	4	3	3	3	1
P23	2	4	4	3	4	4	4	2	3	3
P24	4	3	2	4	4	5	3	3	2	4
P25	3	3	4	1	2	4	4	4	4	3
P26	2	4	4	4	3	3	3	4	3	1
P27	3	2	4	4	4	3	2	3	3	4
P28	4	4	3	3	4	3	3	4	3	2
P29	4	3	3	3	3	4	3	3	2	3
P30	3	4	3	1	4	5	4	3	4	3
P31	3	3	5	2	3	4	4	3	4	2
P32	3	2	4	3	4	1	3	4	2	3
P33	3	4	3	4	4	2	3	3	4	3
P34	4	3	2	4	3	4	3	4	3	4
P35	4	3	3	1	4	3	4	2	4	4
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P37	1	3	4	4	4	3	2	3	4	4
P38	4	3	2	4	4	3	3	3	4	4
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P40	1	2	4	1	4	3	5	3	2	4
P41	4	3	2	3	4	4	3	4	3	4
P42	3	3	4	2	4	3	3	4	3	4
P43	4	2	4	3	3	4	4	3	2	4
P44	1	4	3	3	4	2	5	3	4	3
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P46	4	3	4	3	3	4	3	4	2	5
P47	3	4	3	3	2	4	4	3	4	3
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P49	3	4	3	3	4	4	3	2	3	4
P50	4	3	4	2	1	3	4	3	4	3
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P52	4	3	3	2	3	4	3	3	4	2
P53	3	2	4	3	4	4	2	3	3	4
P54	4	3	4	3	4	2	3	4	2	3
P55	4	4	3	2	3	4	4	3	3	4
P56	3	4	3	3	4	2	4	4	4	3
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P62	2	3	4	3	4	3	2	3	4	4
P63	4	3	2	4	3	4	3	4	3	2
P64	3	4	3	4	3	2	4	3	4	3
P65	4	3	3	4	2	4	1	3	4	4
P66	3	4	3	5	4	3	4	4	2	3
P67	4	2	4	3	3	4	3	4	2	4
P68	3	1	3	4	4	3	3	4	3	3
P69	4	3	4	3	2	3	3	4	3	4
P70	5	4	3	4	3	3	4	2	1	3
P71	4	3	4	1	3	4	2	3	3	4
P72	3	4	3	2	4	3	4	3	3	2
P73	2	4	3	4	4	2	3	3	4	3
P74	4	1	2	4	3	4	3	4	1	4
P75	3	4	3	3	4	2	4	4	2	3
P76	4	3	4	3	3	4	3	2	4	3
P77	3	3	4	2	4	3	4	3	3	4
P78	3	4	3	4	3	2	4	3	4	3
P79	4	3	4	3	2	4	3	3	4	3
P80	3	4	3	4	3	2	5	3	3	4
P81	3	4	3	3	4	2	4	3	4	3
P82	4	3	2	3	4	3	3	4	3	2
P83	3	1	3	3	4	2	4	3	4	2
P84	4	3	4	3	2	3	4	2	4	3
P85	3	4	3	3	4	4	3	2	4	3

P86	4	3	4	4	3	4	2	3	4	3
P87	2	3	4	3	4	3	4	3	4	3
P88	4	3	4	3	3	4	3	3	5	2
P89	3	4	3	4	2	3	4	3	3	4
P90	3	2	4	3	3	4	2	4	3	4
P91	3	4	3	4	3	2	4	3	3	4
P92	4	3	2	4	3	3	3	4	3	3
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P94	3	4	3	4	3	2	4	3	4	3
P95	4	3	3	4	2	4	3	3	4	4
P96	3	4	3	3	4	3	4	4	2	3
P97	4	2	4	3	3	4	3	4	2	4
P98	3	4	3	4	4	3	3	4	3	4
P99	4	3	4	3	2	3	3	4	3	4
P100	3	4	3	4	3	3	4	2	4	3
Median	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Average	3.25	3.11	3.40	3.17	3.31	3.17	3.29	3.24	3.24	3.22
Variance	0.63	0.86	0.54	0.70	0.71	0.80	0.67	0.46	0.62	0.63
Standard Dev.	0.79	0.93	0.73	0.84	0.84	0.90	0.82	0.68	0.79	0.79

Appendix 2: Scatter plot graphics and R^2

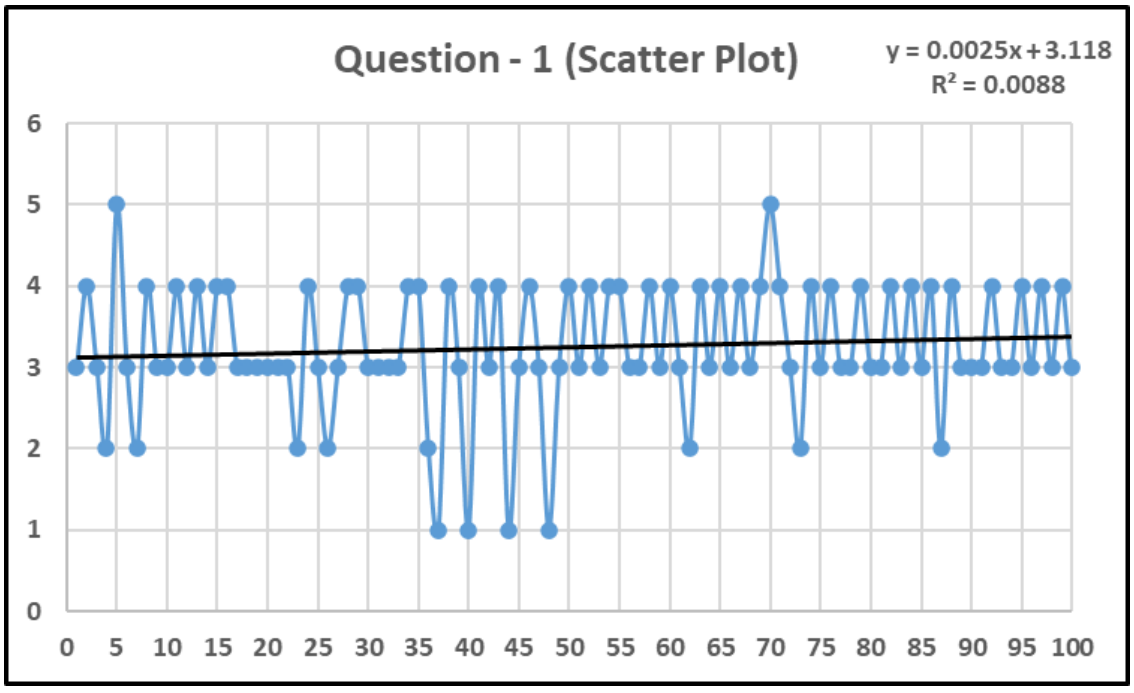

Figure 1 - Question - 1 (Scatter Plot)

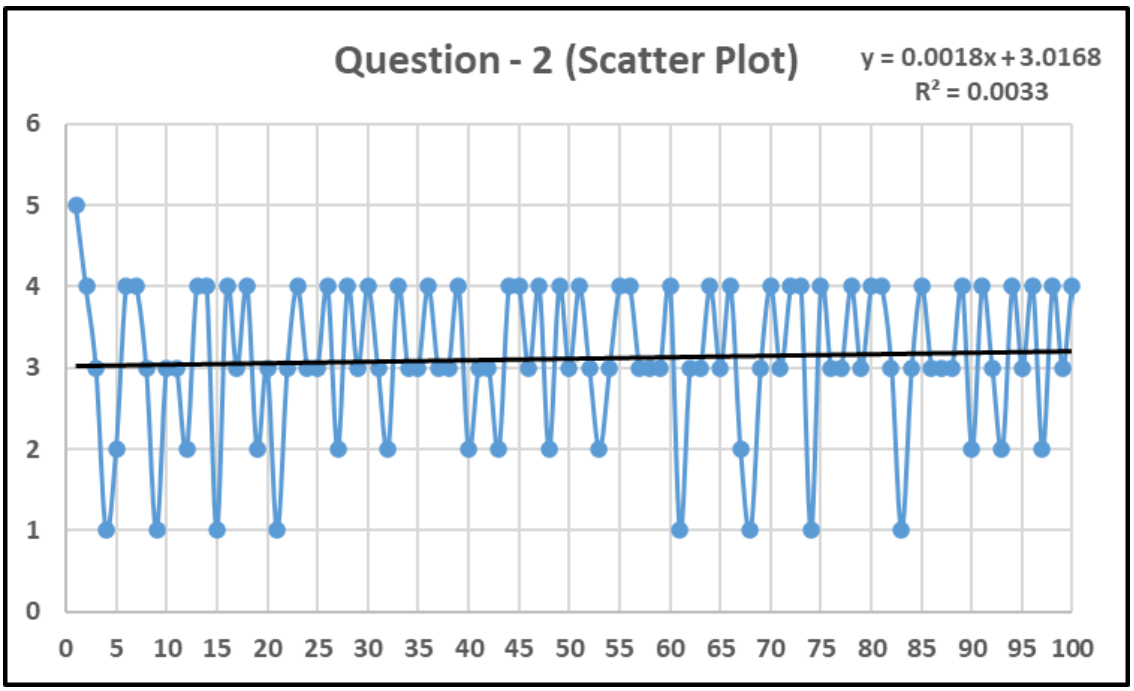

Figure 2 Question - 2 (Scatter Plot)

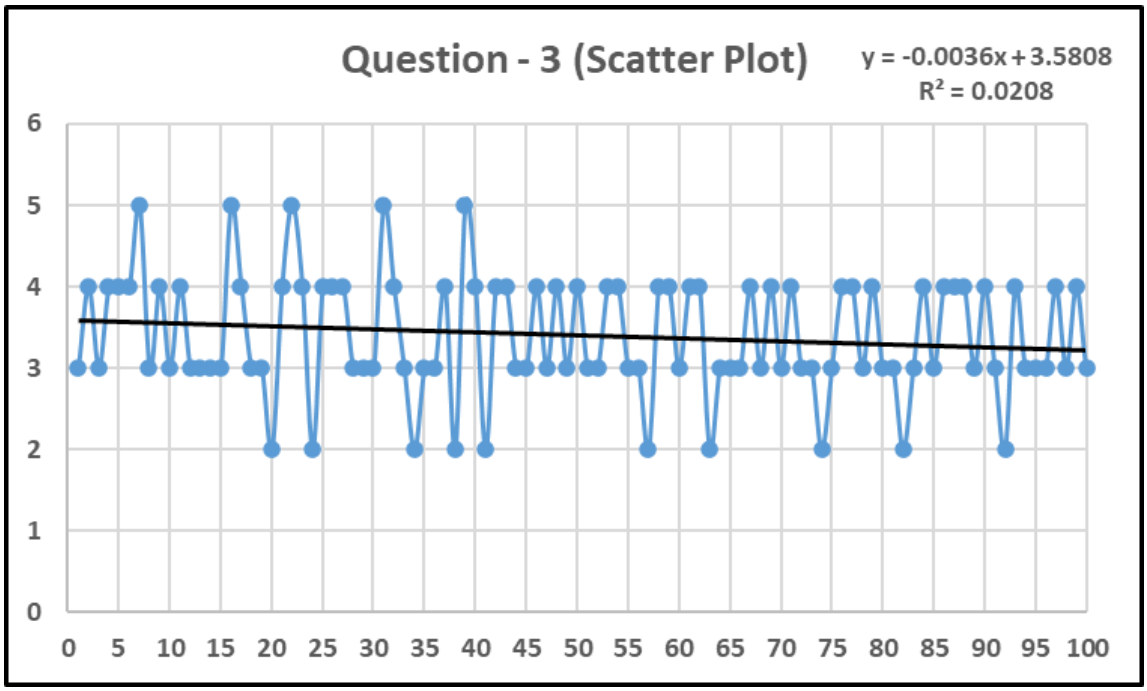

Figure 3 Question - 3 (Scatter Plot)

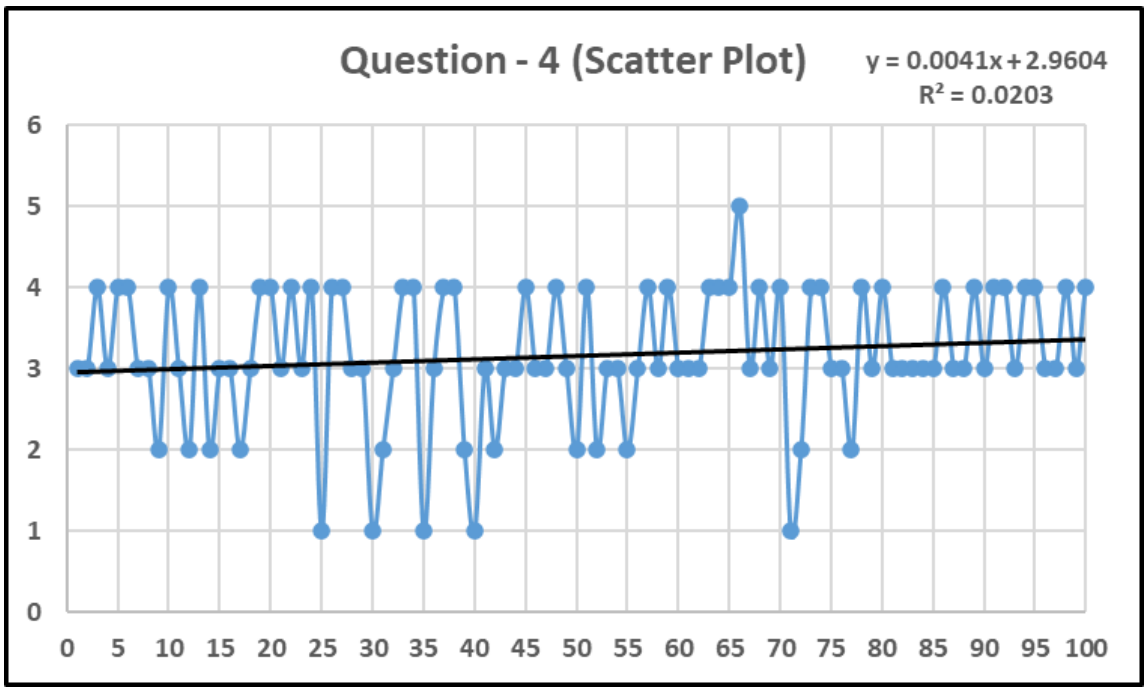

Figure 4 Question - 4 (Scatter Plot)

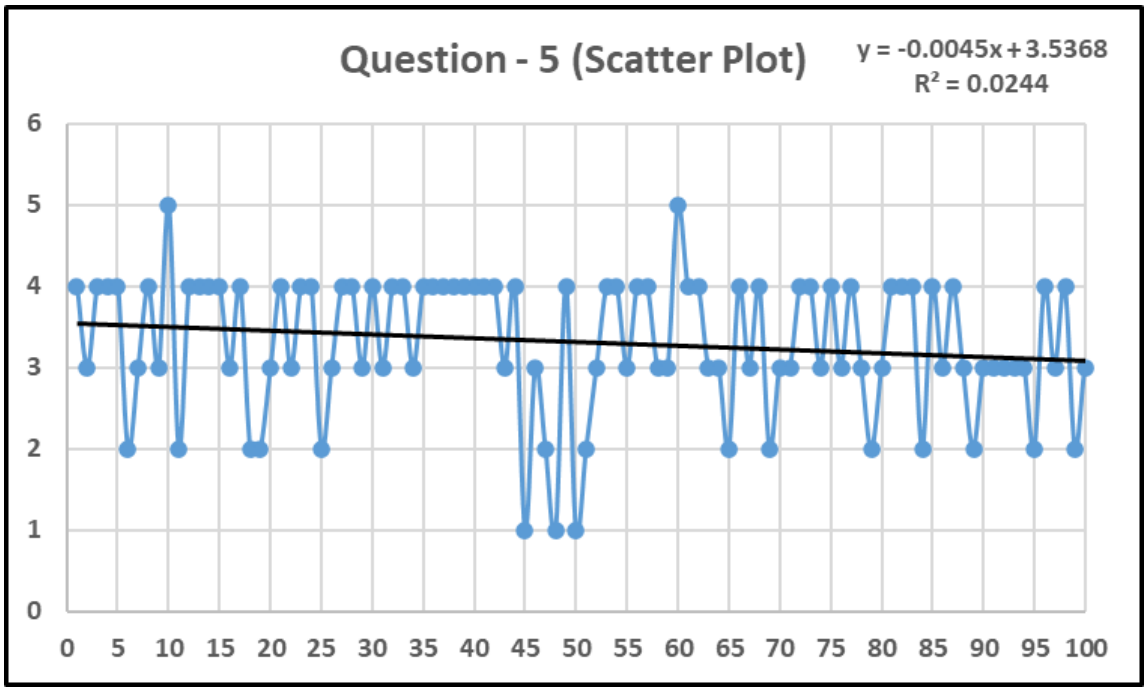

Figure 5 Question - 5 (Scatter Plot)

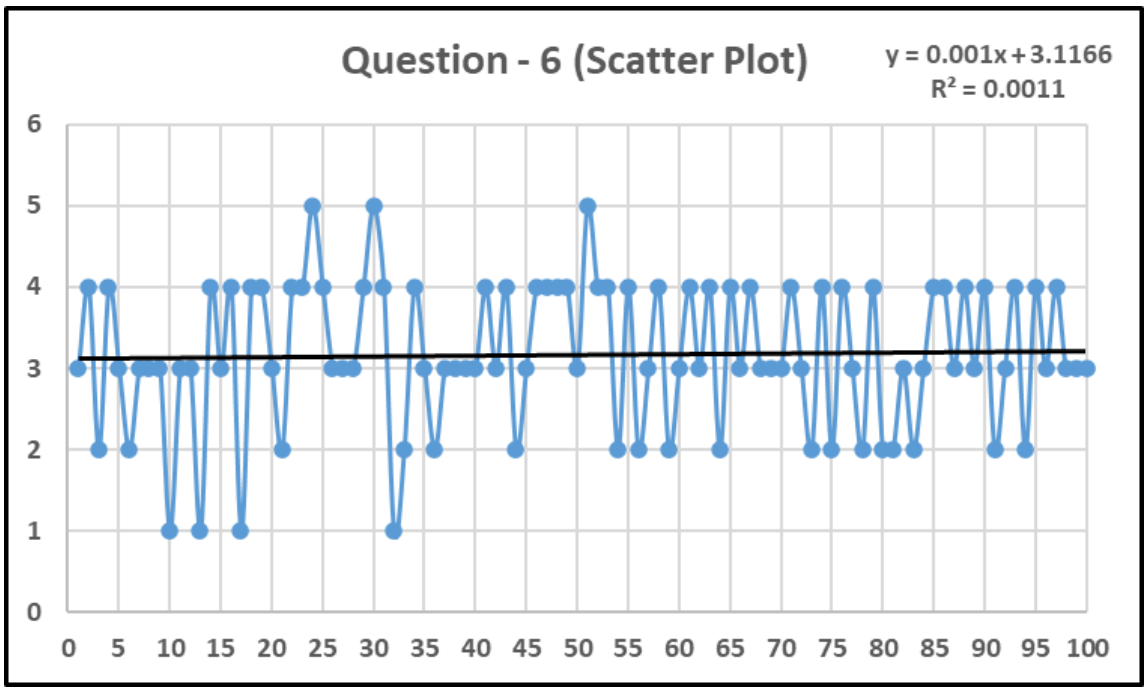

Figure 6 Question - 6 (Scatter Plot)

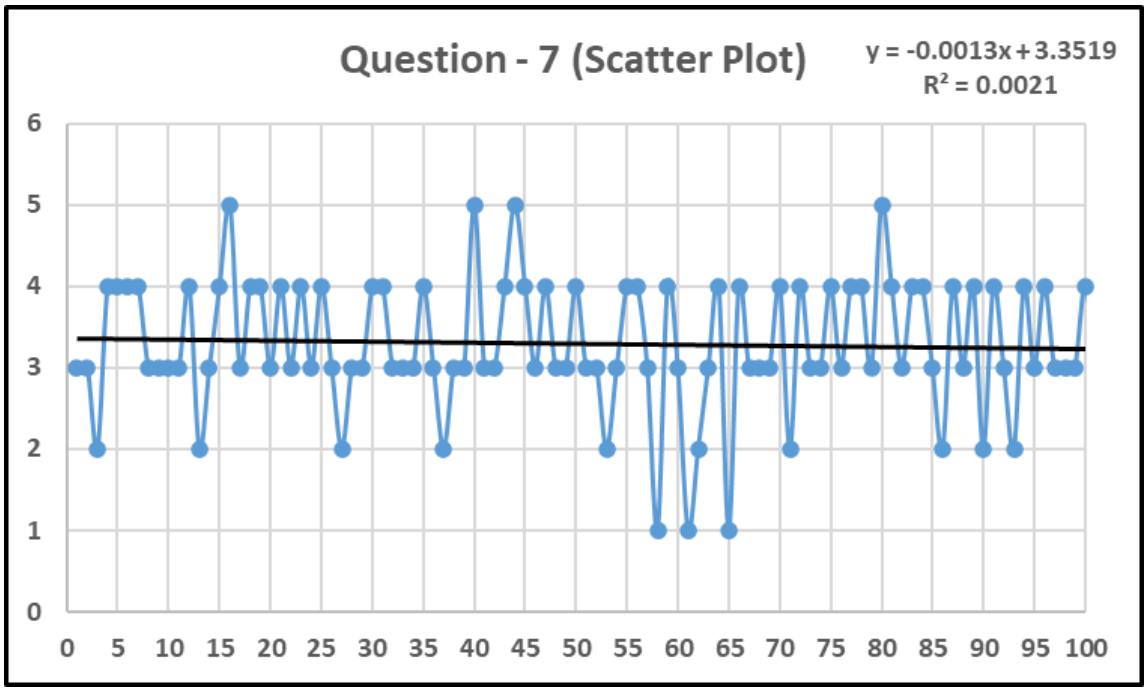

Figure 7 Question - 7 (Scatter Plot)

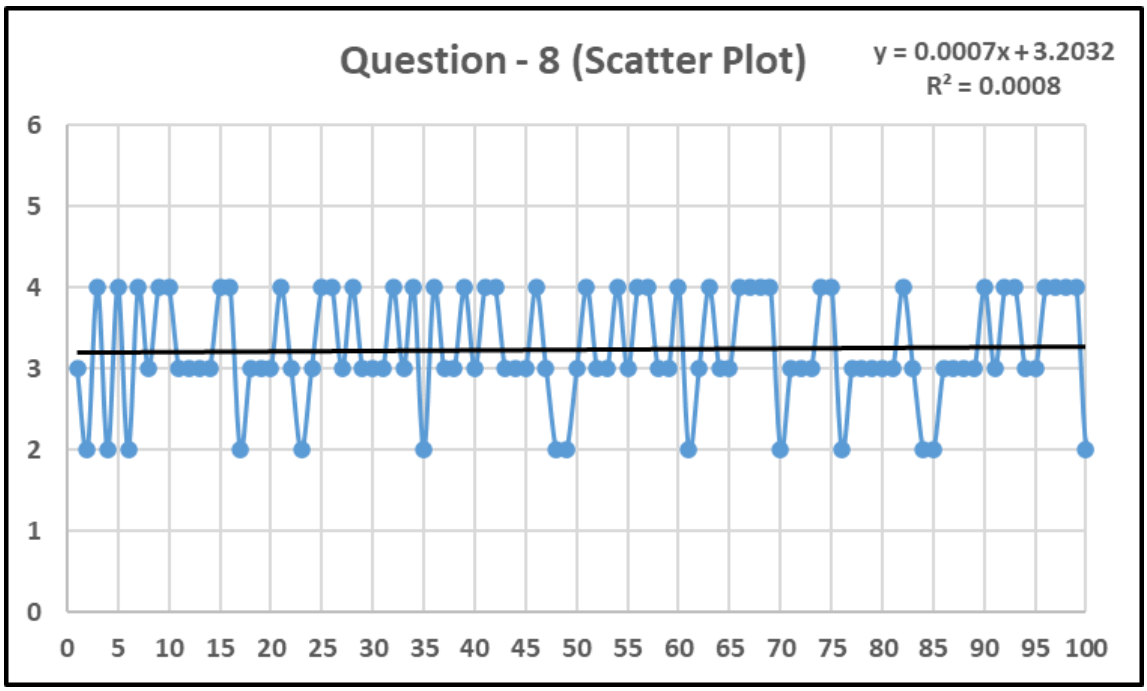

Figure 8 Question - 8 (Scatter Plot)

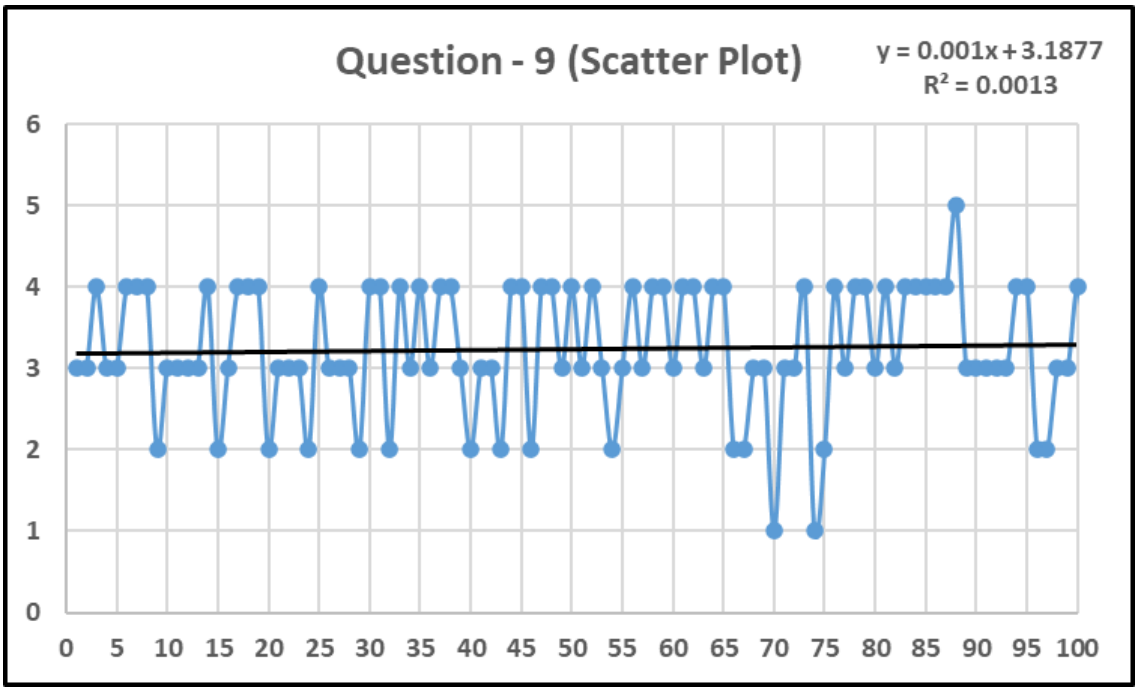

Figure 9 Question - 9 (Scatter Plot)

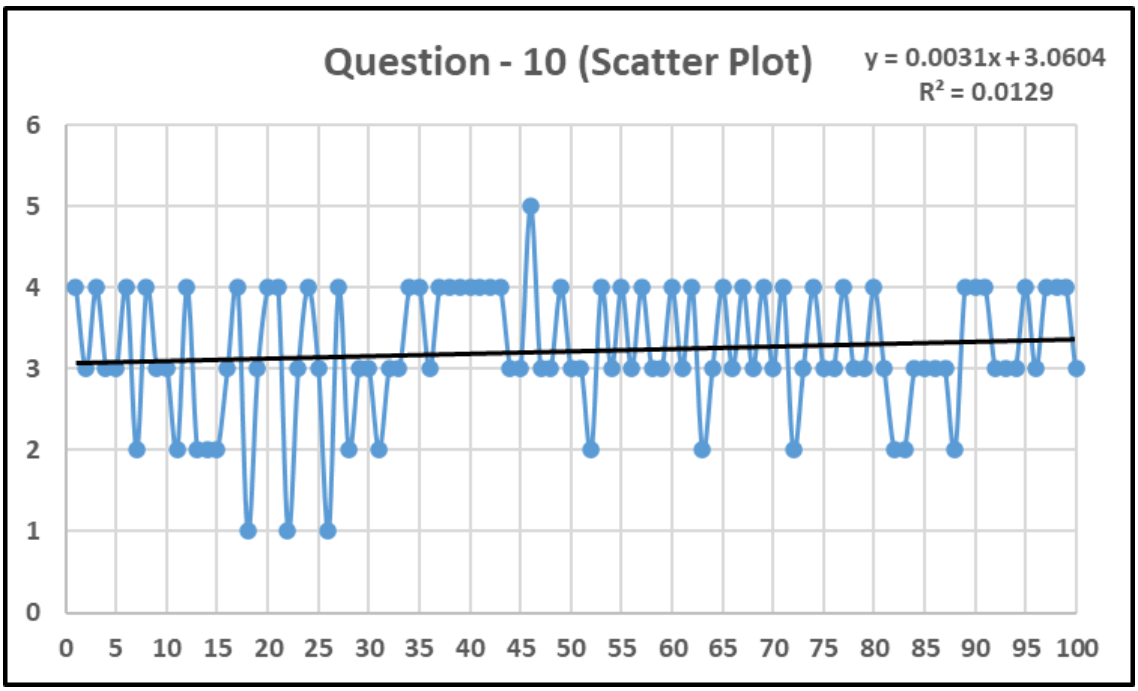

Figure 10 Question - 10 (Scatter Plot)

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