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Volume 3



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Foreword

It is with great pride that I present **Capstone Insights: Social Impact and Sustainability – 2025 Volume 3**, the first volume in a series of scholarly compilations that highlight the diverse talents and academic excellence of our students. This publication is a reflection of Britts Imperial University College's commitment to applied, outcome-oriented education and its dedication to preparing students for real-world problem-solving and innovation.

The capstone project represents the culmination of months of rigorous study, research, and collaboration. Each contribution in this volume demonstrates not only subject-matter proficiency but also the capacity to think critically, lead ethically, and act strategically in complex business environments.

We commend the students whose works are published herein, and extend our gratitude to our academic supervisors, faculty members, and editorial board for upholding the highest standards in content selection and presentation.

Let this publication serve not only as an archive of academic achievement but as a source of inspiration for current and future learners.

Gladwyn Victor

Campus Head

Britts Imperial University College

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Editorial Preface

Prof. Sujith Jayaprakash

Academic Editor, The BIG Publisher Capstone Series

This volume was compiled through a multi-stage blind-review process guided by faculty specialists in computer science, engineering and innovation management. Criteria included academic rigor, originality, practical relevance and clarity. The selected projects span artificial intelligence, cyber-physical systems, sustainable engineering and emerging communication networks, illustrating both depth of scholarship and breadth of impact. I extend gratitude to contributors and peer reviewers for maintaining the highest scholarly standards.

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Study of Sustainability Practices in Hotel & Tourism Industry, UAE

By

Mohammad Rizwan Khan

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Abstract

This study has examined the sustainability practices in the hotel sector in Dubai: where economic growth is balanced with environmental stewardship and an evolving tourism landscape. In doing so, this research pinpoints and examines different sustainability initiatives employed by hotels and evaluates them on effectiveness, challenges, and future trends. A systematic review of 20 studies involving three hotels from their sustainability reports illustrates insights provided through credible knowledge on economic and environmental benefits. The findings here are that most hotels continue to adopt very superficial forms of sustainability while there remains a critical need for standardized frameworks and deeper integration of sustainability into operations. A few of the key challenges include a lack of clear understanding of the effectiveness of sustainability, poor project management, and the inability of economic objectives to align with environmental and social concerns. Eco-innovation, green leadership, digital transformation, cultural sustainability, and operational efficiency-all these highlight the research agenda enhancing the sustainability outcomes. Overall, this paper contributes very valuable knowledge about sustainable tourism in Dubai and offers recommendations for improved practice in hotel sustainability.

Keywords: *sustainability, hotel industry, Dubai, eco-innovation, sustainable tourism*

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Chapter 1: Introduction

1. Introduction

The tourism industry has recently been put in the spotlight of sustainability as it adds to environmental degradation, consumption of resources, and carbon emissions significantly (Bohdanowicz et al., 2005). This has resulted in the adoption of sustainable practices in such areas as Dubai, where tourism forms a critical component of economic growth and has emerged as a strategic priority. As Dubai becomes a more and more popular tourist destination, it grows rapidly as a global tourism destination, which has built pressure on its hotel industry to develop sustainability and come up with solutions that constitute economic growth on one hand and environmental stewardship on the other. Sustainability in this regard refers to resource consumption at a minimum, waste reduction, natural resources conservation, profitability, and tourist expectations (Han et al., 2010).

Although such improvements have been made, the hotel sector is yet to overcome challenges toward sustainable ability in the long run. A puzzle of balancing economic objectives and environmental responsibilities will have to come into existence since hotels have to adjust to changing consumer preferences, regulatory frameworks, and technological innovations (Rocio et al., 2023). This paper seeks to analyse the sustainability practice in Dubai's hotel sector, based on economic and environmental gains and investigate existing practices on effectiveness, challenges, and future trends.

2. Background of the Research

The tourism and hospitality industry of Dubai has been booming like never before in the last two decades. The city thus emerged as an ultimate destination for leisure and business travellers all around the world (Henderson, 2006). With its strategic location, luxurious infrastructure, and innovative tourism initiatives, Dubai has emerged as a global brand for millions of tourists every year. This rapid growth has, however, been at a cost in environmental terms through high energy consumption, substantial water usage and waste generation (Becken & Hay, 2007).

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In response to these adverse issues, the Dubai Sustainable Tourism was launched by Dubai as a program aimed at reducing the adverse impacts of tourism on the environment (Giorgadze, 2018). Hotels, the largest stakeholders of the industry, also started embracing green building standards, energy-efficient technologies, and water-saving techniques, even though their efficiency is still unknown because the frameworks are not standardized, varies between individuals, and the cost of the sustainable infrastructure is much higher than its conventional counterparts (Boley & Uysal, 2013).

Today, sustainability is identified as an integral component of CSR in hospitality all over the world. Where tourism in those countries already was a developed area, then sustainability became part of business operations and even gave long-term positive effects like saving energy and building customer loyalty (Al Karim, 2022). At the same time, it started the same way in Dubai's hotel industry, but there is still scope for greater implementation and effectiveness of sustainability practices.

3. Problem Statement

As we all know now we have limited natural resources. A day will come when we will not have enough water to drink, not pure enough air to breathe, and we will not have enough land for crops. With the increase in population and decrease in the availability of natural resources, the cost will go high to curb this sustainability came into existence. Despite Dubai's efforts to promote sustainable tourism, the hotel and tourism industry continues to face significant challenges in achieving long-term sustainability. These challenges include:

- Limited understanding of the effectiveness of existing sustainability practices in Dubai's hotels, leading to inefficient resource allocation and suboptimal outcomes.
- Lack of standardized project management frameworks for implementing and monitoring sustainability initiatives, resulting in delays, cost overruns, and inconsistent performance.

- Inadequate integration of sustainability considerations into hotel operations and decision-making processes, hindering the adoption of innovative solutions and the achievement of ambitious sustainability goals.
- Difficulty in balancing economic objectives with environmental and social concerns in the hotel industry, leading to trade-offs and potential conflicts of interest.

4. Research Aim

This research will seek to evaluate the practices that the hotel industry of Dubai uses to maintain its economic and environmental benefits. The findings of this research shall also explore obstacles associated with the implementation of such practices, analyse the current effectiveness of sustainability measures initiated thus far, and highlight the future trends for sustainable tourism.

5. Research Objectives

- To analyze the economic and environmental benefits of sustainable practices for hotels in Dubai.
- To evaluate the effectiveness of existing sustainability initiatives in the hotel industry.
- To identify and analyze the primary challenges faced by hotels in implementing sustainable practices.
- To examine the project management challenges in planning, executing, and monitoring sustainable tourism initiatives.
- To forecast emerging trends in sustainable tourism in Dubai, including technological advancements, shifts in consumer preferences, and regulatory changes

6. Scope of Research

The survey in this study was conducted among small, local hotels and large, international chains operating in Dubai. Of the sustainability practices involving energy use, water conservation, waste

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management, and CSR activities, the scope covers the majority of practices undertaken by these hotels. Sustainability practices of hotels in the other emirates of the UAE and other sectors of the tourism industry, such as transport and attractions, fall outside of this study's scope. This would enable a focused study on the hotel industry in Dubai, one of the areas that practice sustainability practices in a real and tangible manner.

Chapter 2: Literature Review

7. Theories/Concepts

1. Sustainable Development Theory

Sustainable development according to United Nations (2024), “meets the needs of the present without compromising the ability of future generations to meet their own needs”. In terms of the hotel industry, this theory points out practices that may reconcile economic growth and development, environmental protection, as well as social equity. For instance, hotels may adopt green building standards, minimize energy consumption, and respect local culture as well as involve themselves with the community at large to satisfy all criteria. This strategy meets compliance requirements while also safeguarding brand reputation and customer loyalty (Gössling, 2006).

2. Triple Bottom Line (TBL) Framework

The Triple Bottom Line (TBL) framework extends the traditional reporting framework, which includes both social and environmental performance in addition to financial performance (Elkington, 1998). In hospitality, TBL encourages hotels' activities toward measuring their impacts across people, planet, and profit categories. This holism helps substantiate the incorporation of sustainability into business policies. For example, the implementation of waste management in a venue diminishes the adverse impacts of environmental degradation but also decreases the operation costs and enhances customer satisfaction as outlined by Becken (2013). TBL approach encourages responsiveness and openness leading to choices that are better aligned with the values of stakeholders.

3. Stakeholder Theory

As stakeholder theory argues, organizations must involve and account for the interests of stakeholders from customers to employees, suppliers, communities, and the environment, in procedures related to decision-making (Freeman, 2001). For hotels, this would mean collaboration

with different stakeholders to clarify what they would expect from them concerning sustainability and building collaborative relationships that would help improve practice regarding sustainability. For instance, engaging with local communities enhances resource use and rejuvenates local economies. Thus, this makes a hotel have a better image as well as increases customer loyalty. With recognition of interdependencies in the interests of stakeholders, hotels are even better placed to conceptualize much more holistic sustainability strategies that accommodate a wide scope of interests (Venkataraman, 2019).

4. Resource-Based View (RBV)

The RBV posits that resources and capabilities are the backbone for attaining a competitive edge in a company (Barney, 1991). With regards to sustainability, hotels that better utilize their unique resources, including renewable energy, sustainable supply chains, and green technologies, may enhance their operational efficiency and carve themselves a niche in the market. An example includes hotels that have incorporated solar energy solutions where besides reducing the cost of operation, it appeals to customers that are sensitive to environmental change. The RBV emphasizes strategic resource allocation and innovation processes toward achieving sustainable goals in the long run.

8. Empirical Review

1. Assessing the Impact of Sustainable Practices on Hotel Performance

The relationship between sustainable practices and hotel performance has been one of the discussed topics in scholarly circles that attracted much interest with regards to the depth and breadth of those effects.

One of the widely accepted arguments is the proposition that sustainability can drive financial performance by reducing operational costs, especially in the energy and water sectors. According to Zareh et al. (2023), green practices such as energy-efficient lighting and water-saving technologies can greatly reduce utility costs. Research on mid-scale hotels shows that cost savings directly translate into improved profitability, thus implying a positive correlation between

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sustainable practices and financial performance. However, Meurer et al. (2020) are more conservative in their opinion. They reason that though lowering its cost, conserving water cannot be viable because it consumes a lot of funds during installation, including infrastructure for sustainable systems such as harvesting rainwater.

Pozo et al. (2016) postulate that most hospitality customers prefer hotels with credible sustainability profiles, which boosts customer satisfaction and long-term loyalty. Their study suggests that customers are willing to pay a premium for hotels that are in line with their self-image and sense of the setting, and, as such, can potentially also be used by hotels as a competitive edge to capture sustainability. Iddawala et al. (2024) contradict this reasoning, arguing that although green practices would appeal to a niche group of environmentally conscious visitors, the majority of guests care far more about comfort, convenience, and value than anything else concerning sustainability.

The sustainable practice influence on brand reputation is highly researched area. Sustainability is said to create a better CSR profile for the hotel, which helps get positive media coverage and favorable public perception, according to Khan et al. (2024). Their findings indicate that a sustainability agenda is vital in having trust placed in their hands by both consumers, investors, and local communities. On the other hand, Etikan (2024) suggest that a relationship does not exist between sustainability and brand reputation. They note that however wide the reach of recognition CSR is granted to the large chains, smaller, independent hotels don't have the capabilities to adequately express their sustainability endeavors and therefore stand at a disadvantage in reaping similar reputational benefits.

The other dimension to sustainable practices is employee engagement and retention. According to Simões et al. (2023), any hotel's sustainability initiatives positively influence the employees' attitude toward their job, especially when the staff is somehow involved in the implementation of such initiatives. This finding align with Alreahi et al. (2022) claim that sustainability training programs give employees important competencies, hence positively impacting both the employee and the operation. However, there is relatively less empirical evidence to determine if

sustainability will keep the employee for a longer period at work since compensation, work environment, and opportunity for career development are also essential (Stuer et al., 2019).

The diverse views that cut across the literature suggest that sustainable practices effects on hotel performance are complex and contingent on context. While numerous scholars acknowledge benefits in terms of cost savings, customer satisfaction, reputation, and staff engagement, others have argued that these gains vary in both scope and magnitude depending on how large the hotel is, the type of market the hotel serves, as well as the geographic location. For example, Langgat et al. (2023) argue that the preferences of guests for sustainable hotels have begun to reflect reviews in online platforms, particularly in markets with strong environmental awareness.

2. Challenges in Adopting Sustainable Practices in Hotels

This is paradoxical since tourism operators increasingly declare awareness of sustainability; however, it still does face challenges in being applied more broadly in most hotels. Financial constraints are perhaps the most commonly cited barrier, especially for small and medium hotels. Tanveer et al. (2023) point out that the high front-end costs of installation of green technologies, including renewable energy systems or water recycling infrastructure, may be too expensive to afford at the onset. Al-Aomar and Hussain (2017) support this idea and recorded that large hotel chains are quite capable of absorbing the upfront investment costs and deriving long-term benefits while being small operators, suffer from narrow budgets and short-term priorities.

Regulatory incentives and common standards also hinder the mainstreaming of sustainability practices. Pointing out, Srivastava et al. (2023) observed that other industries have their singular, applied sustainability certification/standards and leave all the industries in confusion and uneven application. Alonso-Almeida et al. (2017) find that separated regulation may give a "greenwashing" phenomenon since hotels will just go through the gestures and minimum sustainable efforts only not to undergo any significant change at all.

Other operational challenges make the change in pattern from a traditional mode of operation to a sustainable one more complex. Some of these include resistance by management and employees to the change of style. Baykal and Divrik (2023) reveal that in places where the needed training or

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understanding of importance on the initiatives is absent, staff participation in sustainability is normally relatively low. Thus, the authors assert that sustainability in a hospitality environment cannot be achieved but through a cultural change that is pioneered at the leadership level and then rolled down to all employees. However, Pereira et al. (2021) point out that it's not an easy shift, especially for a hotel like a traditional or luxury hotel who might have apprehensions that sustainability would negatively impact the guest experience or add operational complexity.

However, Khatter (2023) point out the struggle in balancing the aspirations of sustainability goals with guest expectations, especially in regions that are less environmentally aware. Some hotels might be concerned that using such measures of sustainability will bother guests and bring dissatisfaction as well. A few green-conscious guests will appreciate the efforts, but most others might take them as an annoyance, making the hotel hard to balance between sustainability and service quality.

3. The Role of Technology in Sustainable Hotel Management

Technology is increasingly becoming crucial in countering some of the challenges related to sustainability in the hospitality industry. While the hotel industry undertakes moves to tame operations and reduce footprints, the growing adoption of modern technologies assumes a critical enabler role for responsible management. According to Çeltek (2023), energy and water optimization in hotels are only achieved using digital platforms and smart systems. Technologies such as automated EMS, which monitor and control lighting, heating, and cooling according to the occupancy levels, would help the hotel reduce energy without compromising guest comfort.

According to Jamarani et al. (2024), Big data and Predictive Analytics have been applied by Kang et al. in developing more sustainable hotel management models. This involves analyzing large datasets regarding the behavior of visitors, power consumption trends, and usage of facilities at the hotel. That would mean data-based decisions to support the operational efficiency of a hotel. This might include the prediction of peak power demands, and then the utilization of power with an appropriate balance to reduce wastage and save costs.

Not all researchers are as optimistic about the role of technology. Mercan et al. (2021) advise that while information technologies are "aiding and assisting" sustainability, they also give "risks," such as cost and implementation. Small hotels, who already may have the constraint of limited financial resources to invest in more expensive technologies, will face the potential for unequal access between small and large hotel operators. Wynn and Jones (2022) further suggest that the application of technology is only a step but will not provide sustainability.

Another essential sector affected by the application of technology in sustainable hotel management is guest-facing services. According to Kumar (2021), mobile applications and digital concierge systems can be leveraged to promote sustainability by promoting environmentally friendly guest behaviors during a stay. For example, applications that enable guests to opt for avoiding the daily change of linens or self-adjusting room temperature from their mobile devices help mitigate negative impacts associated with staying at a hotel.

4. Economic Benefits of Sustainable Practices in the Hotel Sector

Salami et al. (2024) argue that hotels that incorporate energy-saving technologies, such as LED lighting and automated temperature control systems, can potentially save considerable amounts regarding operative costs. But financial payoffs for sustainability are not always obvious or easy to achieve. Kularatne et al. (2019) argue that the long-term benefits of sustainable practices, which can become huge, however, a lot of the capital required in the initial go may act as a major disincentive for many hotel operators and owners. Their research on mid-sized hotels in Europe exposes that the economic payback of sustainability is almost always achieved long after several years and leaves very little scope for any short-term thinking by those involved in hotels without significant means to fund the investment.

Economic benefits of sustainability can also be extended beyond cost savings to the generation of revenues through enhanced marketability. According to Sun and Nasrullah (2024), sustainability may serve as a differentiator in a competitive hospitality market, especially for the environmentally responsible traveler. They found that guests were willing to pay more for the comfort of eco-friendly accommodation, thus ensuring a sizeable increase in revenue obtained by hotels that well

market their green credentials. However, according to Camilleri et al. (2023), there is an argument that sustainability does appeal to a niche market but hardly translates into better revenue universally. Their findings indicated that in regions with lower environmental awareness, customers tended to factor in sustainability less in their purchasing decisions, and thus, the financial gains for hotels would not be so financially enhanced in these respective markets.

5. Stakeholder Engagement in Sustainable Hotel Management

Stakeholder engagement has become an important part of a sustainable hotel management system. As Freeman has referred to stakeholder theory in 1984, this will indicate the way in which means the consideration of the interest of all the stakeholders in an organization (Freeman, 2001). These stakeholders include customers, employees, suppliers, local communities, and the environment in decision-making processes. By putting emphasis on understanding sustainability, engaging with various stakeholders toward creating and implementing practices that can work for the hotel as well as others in the community becomes the focus. According to Khuong et al. (2021), these outcomes are maximized on aspects like reputation and customer satisfaction for the engaging hotels in sustainability. Stakeholder engagement increases trust and prompts cooperation, making sustainability more efficient and acceptable in the eyes of the people.

Other scholars note that stakeholder engagement is very complex and presents challenges. According to Khatter et al. (2021), all stakeholders are not easy to get involved in sustainability efforts, especially in huge, multi-national hotel chains where the interests of various stakeholders may vary about one another. For instance, the largest interest of local communities may be environmental conservation whereas that of shareholders in the hotels may be profitability.

Customer involvement is also one critical area through which stakeholder engagement occurs. Abdou et al. (2020) posit that getting customers involved in sustainability work, such as asking them to consume less water or recycle material will help reduce the bad effects the hotel may cause on the environment, as well as improve the relationship between a hotel and customers. According to their findings, customers who are incorporated in the sustainability work of the hotel are more likely to return to the hotel to increase loyalty within a customer base. However, Acampora et al.

(2022) have criticized this assumption as they propose that the degree of involvement of a guest in sustainability is so much contingent upon the demographic profile of the guests.

The second critical factor that influences stakeholder involvement in sustainability refers to employee engagement. Ahmad (2015) established that employee buy-in is a requirement for the effective implementation of sustainable practices since most of these practice applications are done by the employees on a daily basis. The results of their research suggest that hotels that involve employees in education and training on sustainability matters are likely to attain better performance related to both environmental dimensions and employee morale. Kim et al. suggest that such high levels of employee engagement in sustainability are hard to achieve if employees have a perception that the initiatives add up to extra work without adequate compensation or recognition. Thus, they argue that hotels must carefully design their programs for sustainability to motivate and incentivize participation.

2.3 Research Framework

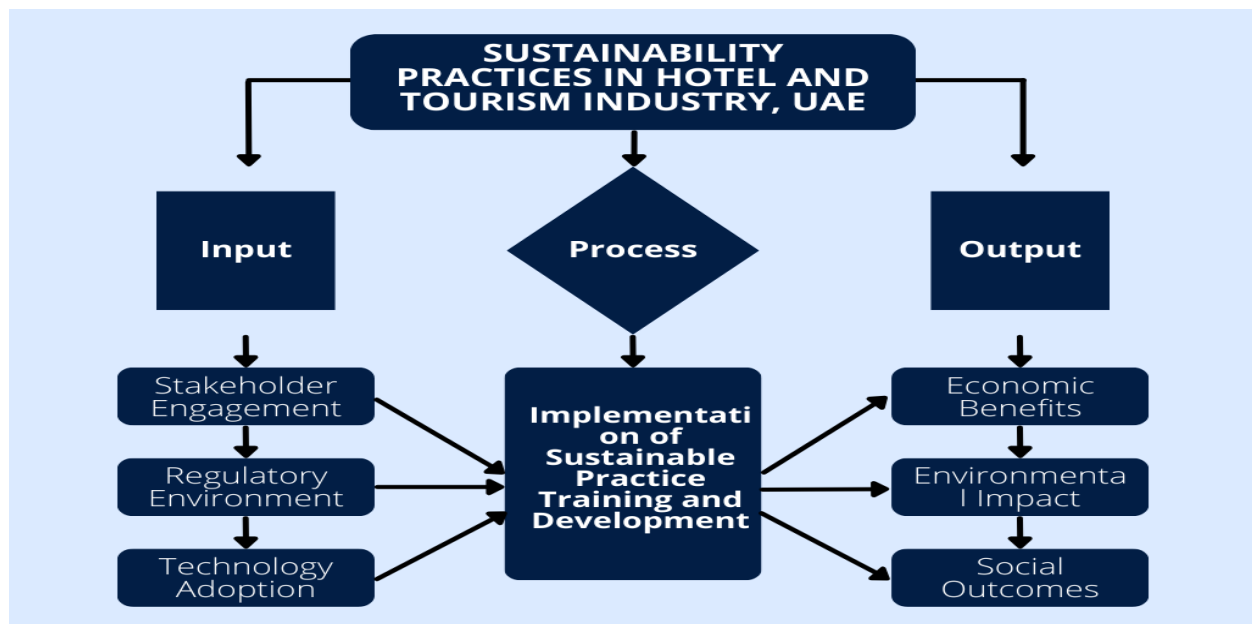


Figure 1: Research Framework

Chapter 3: Methodology

The methodology used in gathering this systematic review on the sustainability of hotel and tourism practices in Dubai is described in this chapter. Based on the framework of PRISMA, which refers to Preferred Reporting Items for Systematic Reviews and Meta-Analyses, this paper adopts a qualitative approach to synthesize previous literature and critically review the economics and environmental benefits of sustainable practices. This methodology includes a structured literature search, well-defined inclusion and exclusion criteria, as well as a systematic process for data collection and analysis. Applying this methodology, this research is presented to elaborately understand the problems and opportunities which arise in sustainability initiatives in Dubai's hotel sector.

3.1 Research Methods

The research method refers to a general approach that guides the overall process of conducting research, and encompasses the techniques and procedures by which data are gathered and analyzed for purposes of answering the research question. It incorporates both qualitative and quantitative methods (Creswell & Clark, 2018). This study takes a qualitative approach by applying the systematic review of literature following the PRISMA framework. This method is useful in synthesizing the existing knowledge about sustainability practice in the hotel and tourism industry in Dubai (Snyder, 2019). The structuring of PRISMA guidelines on conducting a systematic review assures that the results will be reliable and reproducible (Moher et al., 2015).

The systemic review approach helps find and critically assess existing research, reports, and academic papers that will be used to review the economic and environmental benefits of these sustainable practices, the effectiveness of current initiatives undertaken in Dubai's hotel industry, and emerging trends.

3.2 Research Strategy

A research strategy refers to the explicit plan or approach taken for research, indicating how research is to be conducted (Saunders et al., 2019). The research strategy used in this paper is a

systematic literature review guided by the PRISMA framework. This is a structured and thorough process designed for the identification, selection, and critical appraisal of relevant literature on sustainable practice in the hotel and tourism industry (Tranfield et al., 2003).

Some key steps involved in the PRISMA process include:

- Identification: Literature systematic search through various database searches, from Google Scholar, Scopus, and ScienceDirect, using predefined keywords that are bound to relate to the sustainability practices in the hotel industry of Dubai.
- Screening: Inclusion and exclusion criteria were an application used in filtering out or including any study deemed relevant to the answer being sought for (Table 3.1).
- Eligibility: Full-text review of the studies selected for further scrutiny against the aim of research.
- Inclusion: Identifying studies to include in the review based on the relevance and quality of the studies chosen (Moher et al., 2015).

3.3 Research Design

A research design is a research plan that describes methods for data collection, measurement, and analysis. It includes the kind of data needed and the methods of gathering such data; the whole structure of the study, including what might be termed either: descriptive, causal, or correlational designs (Bryman, 2016). The research design employed in this study is descriptive because it mainly deals with narrating a detailed account of sustainability practices within the hotel industry in Dubai. Descriptive designs are very good with systematic literature reviews since they allow the comprehensive collection of information and its organization without an attempt to draw causal relationships (Yin, 2018).

3.4 Data Collection Methods and Tools

Secondary data will be taken from the literature, and most of them will be utilized to collect data for this research. The search and selection follow the framework of PRISMA.

Data collection process involves the following:

- Literature search strategy: Using keywords like "sustainability practices in hotels," "Dubai hotel industry," "green tourism initiatives," and "challenges in sustainable tourism" to find relevant sources.
- Inclusion criteria: Those studies that are published from 2010 and beyond, discuss the sustainability practices in the Dubai or UAE hotel industries, preferably from a peer-reviewed journal articles, industry reports, and government publications (Hart, 2018).
- Exclusion criteria: Those studies that do not focus on sustainability, published before 2010, and are not from peer-reviewed sources (see Table 3.1).

Table 1: Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Time Frame	Studies published from 2010 onwards to ensure relevance and up-to-date data	Studies published before 2010
Geographical Focus	Research focused on sustainability practices in Dubai or the UAE hotel industry	Studies unrelated to the UAE or focused on other regions
Industry Focus	Research specific to the hotel and tourism industry	Studies focused on other sectors such as manufacturing, retail, etc.

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Language	Studies published in English	Studies published in languages other than English
Study Type	Peer-reviewed articles, case studies, industry reports, and government publications	Non-peer-reviewed articles, blogs, opinion pieces, or unverified sources
Relevance to Sustainability	Studies that address economic, environmental, or social aspects of sustainability	Studies that do not focus on sustainability practices
Data Accessibility	Full-text articles accessible through databases like Google Scholar, Scopus, or ScienceDirect	Abstracts or incomplete papers without full access

3.5 Population and Sampling

- Population of interest: All available reviewed academic papers, reports, and case studies in connection with sustainability practices in the hotel and tourism industry related to Dubai and the UAE.
- Sampling technique: A non-probability sampling technique known as purposive sampling, wherein literature is pertinent based on predetermined inclusion criteria (Palinkas et al., 2015).
- Sample size and design: The sample will consist of about 20-25 research papers, reports, and industry publications to ensure that the subject matter is more than adequately covered and, at the same time, not too broad for analysis.

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3.6 Data Analysis

The analysis plan includes a thematic analysis of the chosen literature, as suggested by Braun and Clarke's (2006) criteria. It includes coding and the creation of data categories into key themes relevant to the study objectives such as economic and environmental benefits, challenges in the implementation of sustainable practices among people, and emerging trends. By reviewing the selected articles manually, this study will identify key themes from the literature. These themes will be discussed in detail in chapter 4 discussion chapter.

3.7 Ethical Issues

Since this study is based on secondary data sourced from publicly available literature, ethical issues are also quite minimal in this regard (Vergnes et al., 2010). However, the complete representation of the original work of the authors, the avoidance of plagiarism, and ensuring correct citations and references of all the sources used in the review are also key ethical concerns. The sources' credibility and reliability are also carefully considered to ensure an integrity standpoint of the systematic review (Gough et al., 2019).

Chapter 4: Analysis/Findings/Results

9. Results

A systematic review of literature was conducted to study the sustainability practices in Dubai hotels. A total of 20 studies were selected, including sustainability reports of 3 hotels in Dubai. These studies have been selected based on the inclusion and exclusion criteria of the study.

1. PRISMA Flow Framework

The PRISMA Flow Diagram is an organized summary that describes a systematic review and its process, step by step, from searching up to the final stages of the selection of studies. This is how it is broken down:

- **Identification:** The preliminary search had highlighted as many as 180 peer-reviewed articles in various academic databases, such as Google Scholar, Scopus, and Web of Science. Following specific keywords on sustainability practices in Dubai's hotel industry, it is the retrieving as many relevant studies as possible before any filtering process begins.
- **Screening:** Of the duplicates removed, 120 studies survived. This stage consisted of going through all titles and abstracts to ensure that the criteria of inclusion had been met. For example, other industries and countries from where the study was done outside Dubai were excluded from this stage. Also, only studies focused directly on hotel sustainability remained.
- **Eligibility:** Eligible full texts of 40 articles were subjected to more careful inspection. This stage demands deep scrutiny of methodologies, results, and relevance to ensure that the studies identified in this phase focused on specific objectives developed for this study. In the decisions, sample size, type, design, and year influenced the decision.
- **Inclusion:** After the inclusion/exclusion criteria, 20 studies were finalized for the systematic review. These studies will provide critical insights regarding the economic,

environmental, and social benefits of sustainability practices and challenges faced by the hotel industry in Dubai.

Moreover, the PRISMA framework has been proposed to ensure transparency in the research process and thus enhance the understanding of methodologies entailed in the selection process of studies that might lead to reliability and validity in the review. Not only does this systematic approach filter out irrelevant studies but also offers a high-quality body of evidence that can be synthesized in the findings section. This flow approach in PRISMA helps you maintain scientific rigor; it is hence helpful in recording all the decisions you may have reached when coming up with your findings, thus increasing the reliability of your research.

2. Identification of Findings

The characteristics of included studies is shown in the table below:

Table 2: Characteristics of Included Studies

Author	Objective	Methodology	Key Findings
Giardina (2019)	Examine challenges and future sustainability in luxury hotels post-Expo 2020	Case studies of luxury hotels in Dubai	Expo 2020 posed both challenges and opportunities for implementing sustainable practices in luxury hotels.
Singh & Dutt (2023)	Investigate the adoption of the UN Sustainable Development Goals (SDGs) in Dubai hotels	Surveys of Dubai hotel managers	The adoption of SDGs in Dubai hotels is growing, but gaps remain in operational implementation.

Author	Objective	Methodology	Key Findings
Khan et al. (2017)	Explore smart city initiatives and their application in smart tourism in Dubai	Literature review integrated in and case studies of platforms, Dubai	Smart tourism initiatives, like technology enhance visitor experiences while promoting sustainability.
Khassawneh et al. (2024)	Investigate eco-innovation and customer satisfaction in Dubai's hospitality industry	Surveys with Dubai Green leadership hotel customers and impacts eco-innovation, which managers	positively enhances customer satisfaction.
Latifa et al. (2024)	Analyze UNDP regulatory systems' impact on green hotel practices in Dubai	Regulatory framework analysis	Adoption of UNDP sustainability frameworks has led to positive changes in green hotel operations in Dubai.
AlShamsi Aljaradin (2023)	& Address food waste management practices in Ajman's hospitality sector	Case study in Ajman hotels	Implementing sustainable food waste management strategies is a critical step toward achieving SDGs in Ajman's hospitality sector.
Stanojevic (2020)	Explore how Dubai hospitality brands are embracing sustainability to improve brand positioning	Case studies of Emirates, Jumeirah, and Rotana	Sustainability has helped Dubai-based hospitality brands shift from ordinary to outstanding in terms of global positioning.

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Author	Objective	Methodology	Key Findings
Papadopoulou (2022)	Assess economic development in the UAE tourism sector	Case analysis of tourism policies in UAE	Tourism plays a significant role in the economic development of the UAE, with sustainable tourism being a key driver.
Hassanein et al. (2024)	Explore the link between Green HRM practices and employee retention in UAE hotels	Mixed-methods: surveys and interviews in UAE hotels	Green HRM practices significantly improve employee retention, with green innovation playing a mediating role.
Hussain et al. (2019)	Assess the impact of lean-green practices on hotel supply chains	Survey of hotel supply chain managers	Lean-green practices in supply chains lead to better sustainable chain performance, especially in reducing waste and improving efficiency.
Yas et al. (2020)	Investigate tourism's positive role in Dubai's development	Literature review and case studies	The tourism industry has contributed significantly to Dubai's economic growth and sustainability efforts.
Nadkarni & Haider (2022)	Examine how digital transformation drives operational efficiency and sustainability in UAE hospitality	Case studies and interviews with hotel executives	Digital transformation enhances operational efficiency and enables sustainable business models.

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Author	Objective	Methodology	Key Findings
El-Aidie et al. (2021)	Explore the link between tourism sustainability and competitiveness	Strategic platform development for Dubai's tourism sector	Sustainable tourism practices help improve competitiveness in Dubai's tourism industry.
Al-Aomar & Hussain (2017)	Assess green practices in UAE hotel supply chains	Surveys of UAE hotel supply chain managers	Green practices in supply chains have led to significant cost savings and environmental benefits in UAE hotels.
Jenkins & Karanikola (2014)	Compare environmental communication between hotel chains and independent hotels in Dubai	Content analysis of environmental policies	Hotel chains communicate environmental practices more effectively than independent hotels in Dubai.
Alameeri et al. (2018)	Evaluate sustainable management practices in UAE hotels	Surveys and interviews with hotel managers	Sustainable management and practices are gaining traction in UAE hotels, with notable improvements in water and energy conservation.
Pillai et al. (2024)	Assess the impact of organizational citizenship behavior towards the environment (OCBE) on cost performance	Surveys of hotel employees in UAE	OCBE contributes to better economic cost performance in UAE hotels by fostering sustainable behaviors.

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Author	Objective	Methodology	Key Findings
Almurbati (2020)	Explore cultural sustainability in hospitality interiors	Case studies of UAE hotels	Hybrid heritage designs in hospitality interiors support cultural sustainability in UAE's hospitality sector.
Michael et al. (2023)	Analyze the impact of Emiratization on destination branding in Dubai's hospitality sector	Impact analysis of Dubai's Emiratization policies	Emiratization has improved Dubai's destination branding, although challenges remain in talent retention.
Elmiloudi et al. (2024)	Investigate how sustainable tourism mitigates the negative impacts of tourism in Dubai	Case study of Dubai's tourism industry	Sustainable tourism practices significantly reduce environmental impacts, especially in high-tourism areas of Dubai.

3. Discussion

In Dubai, local regulations embracing the global trend are gaining maximum support within the hospitality and tourism industries, which are now increasingly employing elements of sustainability. A broader analysis of 20 different studies represents the vast continuum of strategic activities within different dimensions: eco-innovation, leadership, green human resource management, digital transformation, and more that aim toward optimum environmental and operational outcomes, coupled with improved customer satisfaction while seeking to overcome the challenges arising from regulatory frameworks and the United Nations' Sustainable Development Goals (SDGs).

1. Adoption of Sustainable Development Goals in Hotels by Dubai

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Many studies indicate that the hotels in Dubai are constantly trying to embrace and adopt the UN's SDG across their business operations. Singh and Dutt (2023) show that despite increasing adoption of the SDGs, there are huge deficiencies at the operational level. For most of the hotels, it is the superficial green practice and not sustainability that has been incorporated at the heart of the business model. Giardina (2019) analyzes how global events, such as Expo 2020, both challenge and offer opportunities for sustainability, especially for luxury hotel properties. More than ever, hotels are under pressure to seem sustainable but the level of actual implementation can vary significantly.

Regulatory power is evident in Latifa et al. (2024, at pp. 282-284): in the research on how the UNDP regulatory framework drives the motivation of embracing greenness in hotels in Dubai. What really comes out clearly is that it plays a key role in making compliance happen, although the hotels face a great challenge in pursuing these achievements in their business strategies, especially in terms of weak enforcement power and less support from governments (Alameeri et al., 2018).

2. Eco-innovation and Green Leadership

Eco-innovation has forward-looking leadership at the forefront of evolving sustainability in the hospitality sector in Dubai. According to Khassawneh et al. (2024), eco-innovation is an issue very much related to customer satisfaction and much more than that, it indicates how sustainability develops as part of the customer experience. Those hotels which look for innovative solutions such as energy-efficient technologies or waste-reduction programs are likely to succeed at maintaining their customers aware of an environmental conscience. This view also gets support in the work of El-Aidie et al. (2021), wherein he finds an observation that hospitality brands with major reputation such as Emirates and Jumeirah not only struggle to be sustainable on account of reducing negative impacts on the environment but were also adopting sustainability as a strategic tool for improving market positions and increasing brand value.

Of course, these innovations would be supported by leadership commitment to sustainability. Green leadership develops a culture of sustainability; thus, according to Khassawneh et al. (2024),

it makes hotels look into long-term solutions in relation to sustainability rather than quick fixes. The difficult part is ensuring that any level of leadership within the organization is working towards sustainability.

3. Green Human Resource Management and Employee Engagement

An increasing body of literature argues that GHRM has a critical role to play in the success of sustainability goals in the hospitality industry. Elmiloudi et al. (2024) suggest that the sustenance of practices deployed for GHRM is essential not only for achieving sustainability but also ensured higher retention rates of employees. Sustainable human resource policies, when integrated with green initiatives in a hotel, help to establish an organizational system of sustainability at every level of an organization. For instance, the programs may include topics about best green practices, incentives to encourage such behavior, and various activities where employees are involved in sustainability projects, which would increase the level of engagement and commitment (Almurbati, 2020).

Of great mediatory is green innovation between GHRM and employee retention. Hassanein et al., (2024) further reckon that employees are bound to be retained in an organization if it promotes sustainability, and in trying to provoke the people into coming out with creative solutions to environmental issues. This makes sustainability both a means of external branding but also internal organizational success.

4. Importance of Digital Transformation

Another significant finding is that of the role of digital transformation in driving further sustainability within hospitality in Dubai. More specifically, Nadkarni and Haider (2022) posit that the value of digital technologies toward improving operational efficiency does boost sustainability efforts. For instance, hotels may use smart systems to track energy consumption, calculate production waste, and optimize water use. Platforms help increase communication of sustainability efforts with employees as well as customers, increasing transparency and accountability.

Khan et al. (2017), in their discussion of the more encompassing concept of "smart tourism" in Dubai, talked about how digital technologies integrated into tourism management can help create sustainable practices. For instance, smart technologies enable personalized services with smart lighting and heating systems, which use their full potential only when the guests are around. As much as they minimize the impact on the environment, these technologies also contribute to making the customer experience better than at any other place and distinguish hotels as a competitive advantage.

5. Waste management and food sustainability: challenges and opportunities

Waste Management, particularly in the food services industry has become one of the major issues the hospitality sector in the UAE is grappling with. AlShamsi and Aljaradin (2023) conclude that a policy priority for 'sustainable food waste management' offers a premium - especially in the Ajman hospitality sector. Their research puts it forward that waste reduction isn't simply a matter of compliance but also steps for achieving overall sustainable goals. Hotels with an effective waste management strategy will contribute less to the environmental footprint and save a great deal of cost (Jenkins & Karanikola, 2014).

Regarding lean-green practices within hotel supply chains, Hussain et al. (2019) focuses more, concluding the better financial performance results from more effective sustainable waste management. Both waste reduction and resource optimization can both improve environmental and economic performance for hotels. Indeed, it would require coordinated effort along the value chain, from suppliers to end-users, as often seems to be a challenge in this high-competition industry, hospitality, as posited by Al-Aomar and Hussain (2017).

6. Cultural Sustainability and the Role of Heritage

However, sustainability within the UAE hospitality industry is not an exclusively environmental notion. Almurbati (2020) highlights cultural sustainability, especially about hotel design and functionality. Hybrid heritage in hospitality interiors may very well preserve local culture and give something distinct to foreign visitors. It will ensure that all this rapid development in Dubai isn't at the cost of cultural heritage, which forms part of the identity of a place. This is especially true

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as the city of Dubai undergoes fast-paced urbanization and globalization. With an ever-increasing influx of foreign visitors into the city, there is a true need to reconcile modern development with preserving cultural heritage. Thus, hotels face both challenges and opportunities in catering for their guests in these diverse environments.

7. Operational efficiency and cost savings through sustainable practices

Sustainable practices in hotel operations may result in savings - immediate and long-term. Savings arise primarily from better management of resources. To identify perhaps the most important cost-saving measure is reduced energy usage. The smart HVAC systems, along with other energy-efficient technologies, significantly reduce energy consumption by self-regulation according to occupancy. Thus, researches such as those by Khan et al. (2017) and Nadkarni and Haider (2022) indicate that smart technologies tend to play a very significant role in optimizing energy use; therefore, cutting operational costs. The introduction of energy management systems provides an avenue through which hotels can make considerable cuts in waste energy levels and, consequently, in utility bills.

Apart from energy efficiency, the reduction of wastes, particularly those concerning food and water management, has remained the pivotal parameter within any cost-saving objective. AlShamsi and Aljaradin (2023) argued that sustainable food waste management becomes inevitable in hotels, saving not only costs for disposal but improving kitchen operations. Lean-green practices in supply chains, according to Hussain et al. (2019), improve further operational efficiency through the reduction of overconsumption of resources and optimization in using materials available, hence, incurring cost reductions in all realms of the supply chain.

8. Long-term investment and financial performance

The initial high cost associated with the adoption of sustainable technologies and practices has a payoff with finite financial benefits compared with the long-run investment. Giardina (2019) states that capital expenditure on luxury hotels using renewable energy systems and sustainable building materials could be capital intensive at the onset, but the long-term benefits of energy savings, improved brand reputation, and the loyalty of customers create sustainable financial benefits. In

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fact, regarding the two-way effect of eco-innovation, Khassawneh et al. (2024) review the matter on how it can enhance customer satisfaction while at the same time decreasing the operational cost; green technology simply allows hotels to operate more efficiently while conforming to expectations about the destination as an eco-friendly place for travel.

Green leadership ensures that sustainability effort, when implemented, does not impinge on enhancing financial performance. According to Michael et al. (2023), eco-leadership has strategically been applied in the most prominent hotel brands in Dubai by implementing green initiatives that balanced cost with returns. Such a leadership style fosters an atmosphere where sustainability is not a cost but an investment since it pays off in the future through lower running costs and increased customer retention.

9. Employee Engagement and Productivity

Performance is further enhanced as a result of sustainability by engaging employees' interest and productivity, reducing direct costs on turnover and training, and GHRM practices do demonstrate that Hassanein et al. (2024) establish an increase in employee retention to have been tied up with environmental responsibility and job satisfaction. Employees that are interested in sustainability programs will be productive in turn reducing excess staffing, and these are all direct contributions to operational efficiency.

Therefore, Pillai et al. (2024) prove that environmental organizational citizenship behavior motivates employees to engage in proactive behaviors aimed at reducing waste and maximizing resource utilization. This reduces the cost of an external sustainability program but also increases the overall operational efficiency of the hotel (Papadopoulou, 2022). For instance, if the employees are showing interest in the savings of energy or less generation of wastes, then the hotel achieves the sustainability goals without having to spend a lot of money on new technologies or third-party services.

Chapter 5: Conclusion

This research sought to establish the sustainability practices of the Dubai hotel industry related to economic and environmental benefits, challenges, and future trends. Based on the findings taken from the selected 20 studies, several conclusions can be drawn.

The results analyzed indicate it has led to enormous cost savings and improvement in operation performance due to practices implemented by the sustainable program. These are hotels that have implemented energy-efficient technologies, eco-friendly waste management systems, and water-saving measures and, based on this action, reduce their operating costs as well as develop an environmental footprint that is decreasing (Singh & Dutt, 2023; Khassawneh et al., 2024). Additionally, these initiatives enhance the brand image of the hotel and get more satisfied customers as travelers who develop awareness for the sustainability of the planet considerably prefer sustainable methods of accommodation choices (Stanojevic, 2020; AlShamsi & Aljaradin, 2023).

This therefore also means that sustainability initiatives currently in place within the hotel industry of Dubai have been successful but with further potential for improvement. . Large hotel groups have been more effective in integrating sustainability into their business than smaller independent hotels (Jenkins & Karanikola, 2014). This gap requires more harmonized and standardized approaches so that all the hotels may totally benefit from sustainability (Hussain et al., 2019).

A significant challenge the hotels have faced in implementing sustainable practices in their businesses has been outlined in the study. These are high investment costs of any green technologies, little expertise to manage sustainability projects, and a resistive cultural change of the organizations (Hassanein et al., 2024; Alameeri et al., 2018). More importantly, regulatory barriers and inadequacy in incentives from the government have limited adoption and implementation among other small hotels that may not even consider paying the high up-front investment costs (Papadopoulou, 2022; Yas et al., 2020).

An in-depth analysis of project management challenges deepens the understanding that the planning, execution, and monitoring of sustainable projects need project management frameworks.

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Hotel operations will be difficult without the services of a skilled project manager to successfully initiate and track the various sustainability initiatives set out (El-Aidie et al., 2021). Project management is very vital in initiating effective sustainability programs that are sustained over long periods to obtain long-term returns.

The research is forth with several trends that are predicted to shape the future of sustainable tourism in Dubai. Amongst them is reliance on more smart technologies that come in the form of the Internet of Things, IoT, to optimize resource use. Consumers demanding environment-friendly accommodation is also foretold (Khan et al., 2017). Regulatory changes and increased interest from the government in achieving the United Nations' Sustainable Development Goals will shape the further sustainability environment and will probably prompt more hotels to go green (Singh & Dutt, 2023).

1. Recommendations

Based on the findings of this study, the sustainability in hospitality industries in Dubai has progressed as follows:

- **Increase usage of Smart Technologies:** Hotels should increase smart energy management and automation technology investment to get better resource productivity. Successfully implementing such systems lowers energy costs. Operationally, its performance is increased, too (Khan et al., 2017; Nadkarni & Haider, 2022).
- **Highlight Waste Management:** Since the saving of food and water is vast, hotels should develop appropriate strategies of waste management. Such action may include enhancing the activity in the kitchen concerning savings of food as well as their utilization of water-saving devices (AlShamsi & Aljaradin, 2023).
- **Strengthen green Leadership and Employee Engagement:** Environmental leadership in hotel management has been found to lead a way where employees become active participants to search for sustainability measures. GHRM practices need to be extended to

help create sense of environmental responsibility among the employees (Hassanein et al., 2024).

- **Stakeholder Sustainability Engagement: Using Sustainability Credentials in Marketing:** This is the engagement of customers in sustainability efforts. Hotels can be using their sustainability credentials as a fundamental marketing tool. By being proactive in touting their eco-friendly initiatives, hotels will attract the environmentally conscious traveler and increase customer satisfaction (Nadkarni & Haider, 2022; Khassawneh et al., 2024).
- **Ensure Implementation of Sustainability into CSR:** Hotel chains should highlight sustainability as an integral part of their overall CSR strategies. This would help hotel chains to better integrate with the global sustainability network, such as the UN's Sustainable Development Goals (Singh & Dutt, 2023).

2. Limitations of Study

To sum up, although this study has managed to yield insights into the effects of sustainability in the context of Dubai's hotel industry wonderfully, indeed, this study has some limitations that need to be acknowledged:

- **Geographical Focus:** This was conducted on the hotel industry in Dubai, which reduces the generalizability of the findings to other regions. In other parts of the UAE or the larger Middle East region, the implementation of sustainability practices may yield different outcomes because of variability in regulatory frameworks, market conditions, and customer preferences.
- **Data Availability:** In most cases, the study relied only on published studies for secondary data, hence limiting the scope and quality of literature. This may result in some reviewed studies not having full data related to cost-benefit analysis, which would improve the scrutiny of the financial impact.

- **Evolving trends:** The hospitality industry is constant and evolving. New sustainability and technological trends are popping up at a highly rapid rate. As this study is based on literature up to 2024, some findings might date quickly when new technologies and practice of sustainability are introduced in the near future.
- **Limited Focus on Customer Perspectives:** While the current study addresses the issue of customer satisfaction, on the lines of sustainability practices, it almost touches nothing about the perception of customers and what this might mean for long-run loyalty and willingness to pay premium prices for eco-friendly services. This study can further be expanded in order to explore the issues in such detail.

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**Analyzing Customer Preference For Beverages, Considering Health
Consciousness, Sustainability, And Flavor Preference As Driving
Factors For Consumer Choice In The UK**

By

Muhammad Muddassir

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Abstract

This research study aims to investigate the factors influencing beverage preferences among UK consumers, specifically focusing on health consciousness, sustainability, and flavor preference. The study utilizes qualitative research methodology, to gain a deeper understanding of consumer attitudes and behaviors.

The findings of the study suggest that health consciousness is a primary driver of beverage choice, with consumers increasingly seeking healthier options that align with their wellness goals. Sustainability is also emerging as a significant factor, as consumers become more aware of the environmental impact of their consumption choices. While flavor preference remains a crucial consideration, it is often secondary to health and sustainability concerns. However, there are still some challenges that need to be addressed, such as the availability and affordability of healthy and sustainable beverage options.

The study reveals that there is a growing demand for plant-based and functional beverages that offer nutritional benefits beyond hydration. Additionally, consumers are seeking brands that demonstrate a commitment to ethical sourcing and sustainable practices. The study highlights the need for beverage manufacturers to innovate and develop products that cater to these evolving consumer preferences. It also emphasizes the importance of transparent

labeling and clear communication about the health and environmental benefits of beverages. This research contributes to the growing body of knowledge on consumer behavior and sustainable consumption. The findings of this study can inform the development of more sustainable and consumer-centric beverage products and marketing strategies.

Keywords: Beverage preferences, health consciousness, sustainability, flavor choice, consumer behavior, UK market, plant-based drinks, qualitative research.

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Chapter 1: Introduction

Problem Statement

The Fast Moving Consumer Goods (FMCG) sector in the United Kingdom (UK) is a multifaceted industry that performs a pivotal position inside the country's economy. It incorporates a wide array of products which can be ate up frequently and quick replenished by means of clients. The UK's Beverage Industry, a significant segment within the FMCG landscape, is characterized by a diverse range of offerings, including soft drinks, alcoholic beverages, and hot beverages such as tea and coffee. With a rich history and a tradition of innovation, the UK beverage market reflects the dynamic preferences and evolving tastes of consumers (Brown & Patel, 2022).

Consumer behavior within the UK presents a fascinating tapestry of influences, preferences, and decision-making processes. As a nation known for its diverse demographics and cultural influences, understanding consumer behavior is essential for businesses operating within the UK market. From socio-economic factors to cultural nuances, various elements shape consumer preferences and purchasing decisions, ultimately driving market dynamics within the beverage industry (Green & Davies, 2020).

In the context of the UK, consumer behavior intersects intimately with the beverage business, inducing product development, marketing policies, and general market trends (Jones & Smith, 2023). With a growing emphasis on health and wellness, sustainability, and sensory experiences, consumers are actively shaping the trajectory of the beverage market. Factors such as changing lifestyles, demographic shifts, and technological advancements further contribute to the complexity of consumer behavior dynamics within the UK's beverage sector (Robinson & Evans, 2019).

As consumer preferences continue to evolve, businesses in the UK beverage industry must adapt and innovate to remain competitive. By understanding the intricate interplay between consumer behavior and market trends, businesses can identify opportunities for growth, develop targeted marketing strategies, and introduce innovative products that resonate with consumers' changing needs and preferences.

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Purpose of the Study

The purpose of this study is to investigate the key factors that influence consumer choice of beverages in the UK market, with a particular focus on health consciousness, sustainability, and flavor preferences. The study aims to provide insights into the evolving dynamics of the UK's beverage industry, where consumers are increasingly seeking products that align with their health and environmental concerns, while also satisfying their taste preferences.

By examining the interplay of these factors, the study seeks to help beverage companies and marketers better understand the nuanced decision-making process of consumers, enabling them to develop and position their products more effectively.

In the context of consumer choices in the UK, the study focuses on three key variables: health consciousness, sustainability, and flavor preference.

Health Consciousness:

In the UK, consumer behavior intersects intimately with the beverage industry, influencing product development, marketing strategies, and overall market trends (Smith, 2020). As consumers become more conscious of their health and wellness, they're more likely to choose drinks that improve their overall health. This shift towards health-conscious choices is evident in the rising demand for beverages fortified with vitamins, minerals, and other functional ingredients (Johnson & Davies, 2019). Consumers are also paying closer attention to nutritional labels and seeking beverages that align with their dietary preferences and health targets.

Sustainability:

Consumer behavior in the UK beverage market is likewise influenced by way of sustainability concerns (Green & Wilson, 2018). With growing concerns about environmental degradation, consumers are seeking beverages produced through sustainable practices. This includes sourcing ingredients ethically, reducing carbon emissions, and using eco-friendly packaging materials. Brands that demonstrate a commitment to sustainability are gaining favor among ecologically

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aware consumers, driving market trends towards more sustainable beverage options (Robinson & Patel, 2017).

Flavor Preference:

Consumer taste preferences play a significant role in shaping beverage choices in the UK (White & Brown, 2019). From classic favorites to innovative flavor profiles, consumers have diverse and evolving tastes. Manufacturers and marketers leverage consumer insights to develop new flavor variants and product offerings that cater to changing preferences and trends (Taylor & Evans, 2020). Personalization and customization options also contribute to consumer satisfaction, as brands strive to offer unique and tailored beverage experiences.

Research Questions

ANALYZING CUSTOMER PREFERENCE FOR BEVERAGES QUESTIONNAIRE

My target audience's gender is 'male,' with an age range of 18 to 25 years old. Given the age-range of the target audience; majority of the individuals are students and they are located in urban areas.

Health Consciousness:

1. Please rate the significance of a beverage's healthiness to you on a scale of 1 to 5, with 1 representing low importance and 5 representing high importance, when making a purchasing decision.
2. When it come to the drinks, Would you be willing to pay a premium price for beverages labeled as organic, healthy, natural ingredients, or low in artificial additives for health
3. reasons?
4. Do you actively seek out beverages that offer health benefits such as vitamins, minerals, or functional ingredients like probiotics or antioxidants?

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5. What specific health-related attributes do you look for when choosing a beverage? (e.g., low sugar, low calorie, high protein, gluten-free, etc.)

Sustainability:

1. Are you concerned about the environmental impact of beverage production and packaging?
2. Do you actively seek out beverages from companies that prioritize sustainability practices, such as using eco-friendly packaging, sustainable sourcing, or reducing carbon emissions?
3. Would you be more likely to purchase a beverage if it had a sustainability certification (e.g., Fair Trade, Rainforest Alliance, Carbon Neutral)?
4. How important is it for you to know the origin of the ingredients in the beverages you purchase, in terms of sustainability and ethical sourcing?
5. Are you willing to make compromises in taste or price to support environmentally friendly beverage options?

Flavor Preferences:

1. What are your favorite flavor profiles when it comes to beverages? (e.g., tea, coffee, fruity, citrusy, herbal, spicy, etc.)
2. When it comes to tea or coffee, do you typically prefer them with or without milk?
3. Do you prefer traditional or familiar flavors, or are you more adventurous in trying new and exotic flavor combinations?
4. Have you noticed any variations in beverage preferences across different regions of the UK? Yes/No
5. How much does the taste and flavor of a beverage influence your decision to purchase it? Yes/No

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Trigger and Methodology

Trigger: The Increasing awareness among consumers about health, environmental sustainability and taste preferences has had a significant impact on their beverage choices. This shift is particularly evident in the UK, where consumers is becoming the beverage of choice. This study is being done to find out how these things health consciousness, sustainability, and flavor preference affect what people buy in the beverage market. By looking at these preferences, the study hopes to give ideas to beverage companies so they can make products that better match what people want.

Examples of triggers:

- **Market changes:** Shifts in consumer preferences, economic conditions, or regulatory landscape.
- **Supplier issues:** Delays, quality problems, or price increases.
- **Technological advancements:** New technologies that could impact your product or market.
- **Internal challenges:** Resource constraints, team conflicts, or project delays.

Methodology: To study beverage preferences in the UK, focusing on health consciousness, sustainability, and flavor, a mixed-methods approach will be used. A quantitative survey will gather data from a broad sample of UK consumers, using Likert scales to measure attitudes toward these factors. Statistical analysis will identify key influences on beverage choices (Bryman, 2016).

Additionally, focus groups and interviews will provide qualitative understandings into consumer motivations and opinions. Thematic analysis will uncover deeper themes (Braun & Clarke, 2006). Combining these methods will offer a comprehensive view of how these factors drive beverage choices in the UK.

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Importance of the Topic

Customer beverages preferences in the UK are important because of health, sustainability and flavour being increasingly important to consumer behaviour. With consumers

increasingly focusing on their health, the rising demand for beverages that support these healthier lifestyles cannot be ignored (Euromonitor International, 2021). Sustainability is also a critical element, as consumers want brands that are doing their part to be environmentally responsible and support ethical sourcing (Nielsen, 2018).

Knowledge about these factors and how they interact with beverage choices is necessary for businesses to produce products that are in line with the values consumers hold. This will

provide a wealth of information for companies to cater their own offerings and marketing strategies more effectively.

Connection to Standards

The project on analyzing UK consumer preferences for beverages focusing on health

consciousness, sustainability, and flavor is closely tied to industry specifications. It supports with the UK Food Standards Agency (FSA) guidelines, which emphasize precise labeling, particularly regarding health claims and nutritional subject (Food Standards Agency, 2021). This connection ensures that products not only influence to health-conscious consumers but also fulfill with regulatory requirements.

The project also connects to sustainability standards such as ISO 14001, which guide

companies in revealing environmental responsibility (British Standards Institution, 2020).

Insights from this research can help businesses align their offerings with both consumer expectations and these key standards.

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Definition of Terms

BEVERAGES: refer to any liquid intended for human consumption; Tea, Coffee

HEALTH CONSCIOUSNESS: Awareness and concern about making choices that promote health and well-being; consumers often make deliberate choices to avoid harmful substances.

SUSTAINABILITY: The practice of producing and consuming in ways that do not harm the environment and ensure future resources: It encompasses environmental & social dimensions.

FLAVOR PREFERENCE: An individual's specific taste preferences in food and beverages.

CONSUMER: A person who purchases and uses goods and services.

UK: (United Kingdom); A country in Europe, consisting of England, Scotland, Wales, and Northern Ireland.

Assumptions and Limitations of the Study

Assumptions of the Study

1. Consumer Awareness:

UK consumers are aware of health, sustainability, and flavor factors in beverages.

2. Honest Responses:

Participants will provide truthful responses in surveys and interviews.

3. Representative Sample:

The study sample represents the broader UK population.

4. Influence of Factors:

Health, sustainability, and flavor significantly influence beverage choices.

5. Stable Market Conditions:

Market conditions and consumer behavior in the UK remain stable during the study.

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6. Access to Information:

Consumers have access to information about health, sustainability, and flavor in beverages.

Limitations of the Study

1. Sample Size:

Limited sample size may affect the generalizability of the results.

2. Self-Reported Data:

Potential bias in self-reported survey and interview responses.

3. Geographic Focus:

Findings are specific to the UK and may not apply elsewhere.

4. Changing Trends:

Rapid changes in consumer preferences could affect the study's relevance over time.

5. Narrow Focus:

Other factors like price or brand loyalty are not considered.

6. Information Access:

Not all consumers may have or understand information about health, sustainability, and flavor.

Overview

This project aims to explore consumer preferences for beverages in the UK, concentrating on how health consciousness, sustainability, and flavor influence purchasing decisions.

In recent years, consumers have become more sensible of the health allegations of their dietary choices, progressively seeking products that affiliate with a healthier lifestyle.

Additionally, there is a growing awareness of sustainability, with consumers drifting towards brands that demonstrate environmental responsibility and honourable sourcing. Taste and level of

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flavor, which have always been part of the equation when choosing a beverage, still play a role, especially as those factors meet with health and sustainability.

This study will use a mixed-methods approach and administer both quantitative surveys and qualitative interviews to obtain an in-depth account of consumer preferences. Based on these determinants, this study provides insights to help beverage manufacturers tailor their

assortment of products and strategies to satisfy the whims and fancies of a consumer. This work is especially pertinent in the UK given shifts in consumer behaviour driven by broader cultural trends, regulatory changes and increasing information access. By providing a better understanding on how the combination of these three will influence consumer behavior, our insights could not just guide industry stakeholders, but also inform future policies.

Chapter 4: Literature Review

Introduction

The UK beverage industry has undergone shifts, in consumer choices due to a rising emphasis on health awareness and sustainability well as a wide range of flavor preferences among customers. Understanding these factors is crucial for companies looking to meet consumer demands and remain competitive, in the market.

1. Definition:

Consumers beverage choices are influenced by a range of factors such, as health benefits, environmental considerations like sustainability in production and packaging and personal taste preferences, for a experience.

2. Benefits:

- Health Consciousness: Consumers are increasingly deciding for beverages that offer health benefits, such as low-sugar, organic, and functional drinks. This trend is driven by a spreading awareness of the negative health impacts of sugary and artificial beverages¹.
- Sustainability: Environmentally conscious consumers prefer beverages with eco-friendly packaging and ethically sourced ingredients. This preference is part of a broader trend towards sustainable consumption².
- Flavor Preference: Diverse and exotic flavors are gaining popularity, catering to consumers' desire for new and unique taste experiences³.

3. Challenges and Barriers:

- Cost: Healthier and sustainable beverages often come at a higher price point, which can be a barrier for some consumers¹.

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- Availability: Limited availability of certain health-conscious and sustainable beverage options can restrict consumer choice².

- Consumer Awareness: Not all consumers are fully aware of the health benefits or environmental impact of their beverage choices³.

4. Strategies:

- Education and Awareness: Increasing consumer awareness through marketing campaigns that highlight the health benefits and sustainability of beverages¹.
- Product Innovation: Developing new products that meet health and sustainability criteria while offering unique flavors².
- Partnerships: Collaborating with suppliers and other stakeholders to ensure sustainable sourcing and production practices³.

5. Best Practices for Implementing:

- Transparent Labeling: Clearly labeling products with health and sustainability information to help consumers make informed choices¹.
- Sustainable Packaging: Using recyclable or biodegradable packaging materials to reduce environmental impact².
- Consumer Engagement: Engaging with consumers through social media and other platforms to understand their preferences and feedback³.

Challenges in implementing

- **Supply Chain Issues:** Ensuring a consistent supply of sustainable and health-conscious ingredients can be challenging².

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- **Regulatory Compliance:** Navigating the regulatory landscape for health claims and sustainability certifications¹.
- **Market Competition:** Competing with established brands that may not prioritize health and sustainability³.

Implications

Understanding consumer preferences for health-conscious, sustainable, and flavorful beverages can help businesses tailor their products and marketing strategies to meet consumer demands. This alignment can lead to increased customer loyalty and market share.

Conclusion:

The shift towards health-conscious, sustainable, and flavorful beverages in the UK presents both opportunities and challenges for the beverage industry. By tackling these issues with creative plans and effective methods, companies can more effectively fulfill consumer wants and help create a healthier and more sustainable future.

Chapter 3: Methodology

Introduction

This research study aims to explore the factors influencing beverage preferences among UK consumers, specifically focusing on health consciousness, sustainability and flavor preferences. By understanding consumer preferences, priorities, and attitudes towards these various aspects of beverages, this study seeks to provide valuable insights for the beverage industry and policymakers.

Hypothesis

H0 - Consumers in the UK prioritize health and sustainability when making beverage purchasing decisions.

H1 - A significant portion of consumers are willing to pay a premium price for healthier and more sustainable beverage options.

H2 - Consumers are increasingly interested in beverages with functional ingredients and health benefits.

H3 - Environmental concerns are influencing beverage consumption choices, with consumers favoring sustainable brands and practices.

H4 - There are minimal variations in beverage preferences across different regions of the UK.

Research Objectives

1. To investigate the factors that influence beverage consumption choices in the UK.
2. To identify consumer preferences and priorities related to health, sustainability, and flavor.
3. To assess the willingness of consumers to pay a premium for healthier and more sustainable beverages.

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4. To examine the impact of regional variations on beverage preferences.
5. To provide recommendations for the beverage industry based on the research findings.

Research Design and Procedures

Design

This research employed a quantitative research design, utilizing an online survey to collect data from a representative sample of UK consumers. The survey included questions related to demographics, beverage consumption habits, preferences, and attitudes towards health, sustainability, and flavor.

Procedure

1. Quantitative Research Design: Utilized an online survey to collect data from a representative sample of UK consumers
2. Structured Survey: The survey included closed-ended questions with multiple-choice options and rating scales.
3. Random Sampling: Participants were selected using a random sampling method to ensure a diverse representation of the UK population.
4. Data Collection: Survey data was collected online.
5. Data Analysis: Descriptive statistics (frequencies, percentages, cross-tabulations) and inferential statistics were used to analyze the collected data.
6. Reporting Results: The results of the survey are reported in a report summarizing the findings.

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Population and Sample

Population: The study targets population for this research was UK residents aged 18 and over. Participants were recruited through online platforms, such as social media and email lists, and the survey was accessible through a web link.

Sample: The sampling strategy ensures diversity in the sample, including individuals from different nationalities, ethnicities, religions, and socio-economic backgrounds.

Instrumentation

A structured online survey was developed to collect data. The survey included closed-ended questions with multiple-choice options and rating scales to measure respondents' attitudes and preferences.

Data Analysis Procedures

Data visualization techniques such as bar charts and pie charts were used to visually represent the data and highlight key findings. This helps to communicate the results of the analysis more effectively to different audiences.

Limitations

It is important to acknowledge that this research has certain limitations. These limitations should be considered when interpreting the results and making recommendations.

Self-reported data: The survey relied on self-reported data, which may be subject to biases.

Sample size: The sample size may not be fully representative of the entire UK population.

Changing consumer preferences: Consumer preferences and priorities may evolve over time.

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Summary

This research aims to investigate the factors driving beverage consumption in the UK. By understanding consumer preferences, attitudes, and priorities, the study seeks to provide valuable insights for the beverage industry. The research will delve into health consciousness, sustainability, flavor preferences, and regional variations in beverage consumption. Through data analysis, the study will identify key trends and inform future industry strategies.

Chapter 4: Results

Introduction

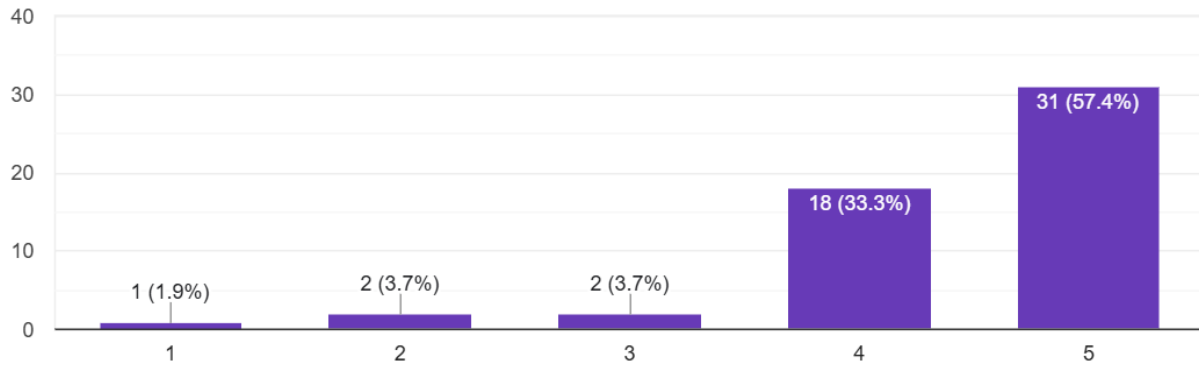
The United Kingdom (UK) is a diverse and multicultural society with a rich history of immigration and cultural exchange. This survey aims to explore the factors influencing beverage consumption habits in the UK. By understanding consumer preferences, priorities, and attitudes towards various aspects of beverages, this research study conducted an online survey of random participants and seeks to provide valuable insights for the beverage industry and policymakers. Through analyzing the survey data, this research will provide a comprehensive understanding of consumer behavior and identify key trends in the beverage market.

Data Analysis

Health Consciousness

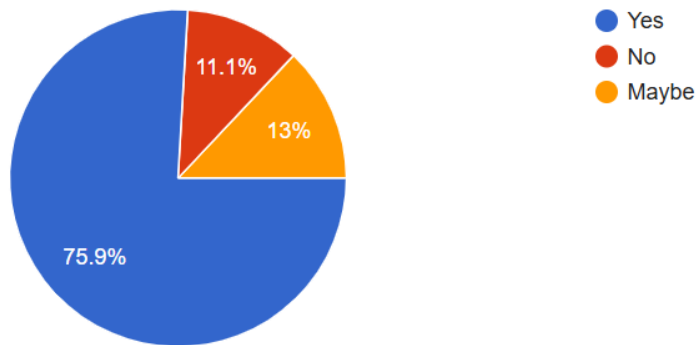
Please rate the significance of a beverage's healthiness to you on a scale of 1 to 5, with 1 representing low importance and 5 representing high importance, when making a purchasing decision.

Respondents indicated a significant majority (57.4%) rated healthiness as highly important when making a purchase, while only a small minority (9.4%) considered it low importance or not important.



When it come to the drinks, would you be willing to pay a premium price for beverages labeled as organic, healthy, natural ingredients, or low in artificial additives for health reasons?

Respondents indicated a significant majority (75.9%) answered "Yes," while only a small minority (11.1%) answered "No." The remaining 13% were unsure or "Maybe."

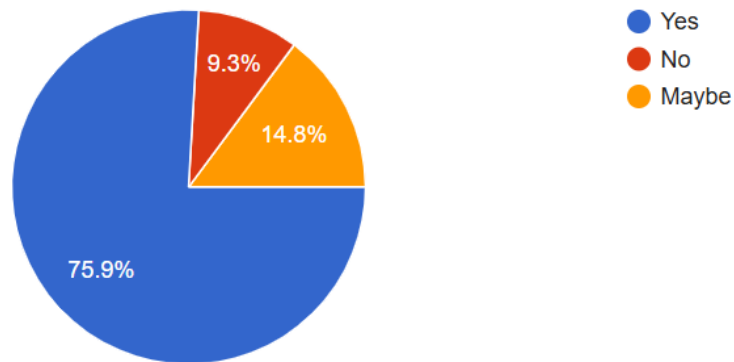


Do you actively seek out beverages that offer health benefits such as vitamins, minerals, or functional ingredients like probiotics or antioxidants?

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Respondents indicated a significant majority (75.9%) answered "Yes," demonstrating a high level of health consciousness and a willingness to prioritize beverages that promote well-being. Only a small minority (9.3%) answered "No," and 14.8% expressed uncertainty.



What specific health-related attributes do you look for when choosing a beverage?

Respondents have prioritize a mix of following health-related attributes important when choosing a beverage:

29.6% chose low sugar

27.8% chose low calorie

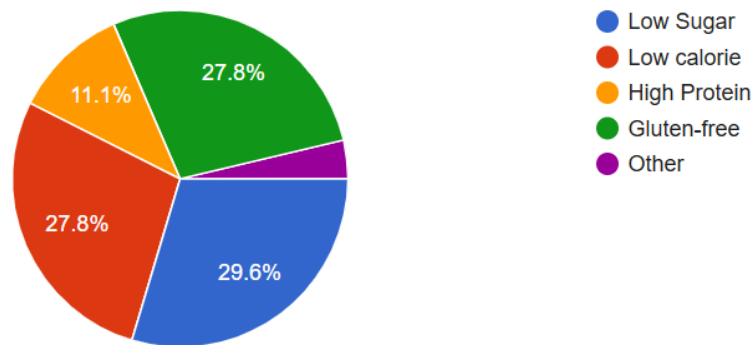
27.8% chose high protein

11.1% chose gluten-free

3.7% chose others

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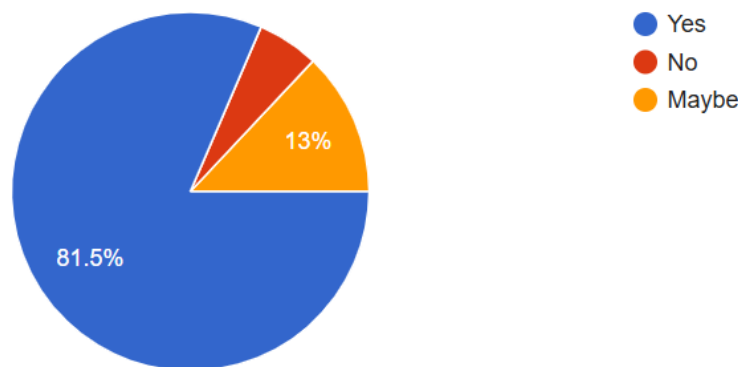
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Sustainability

Are you concerned about the environmental impact of beverage production and packaging?

Respondents indicated a strong concern about the environmental impact of beverage production and packaging. A significant majority (81.5%) answered "Yes," demonstrating a high level of environmental awareness. Only a small minority (13%) answered "No," and 5.5% expressed uncertainty.



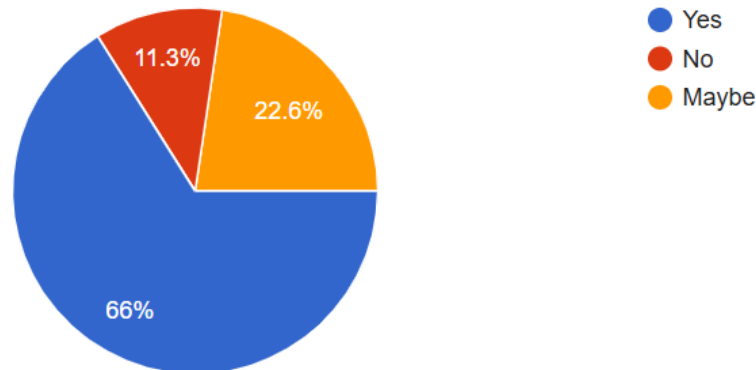
Do you actively seek out beverages from companies that prioritize sustainability practices, such as using eco-friendly packaging, sustainable sourcing, or reducing carbon emissions?

Respondents showed a strong interest in actively seeking out beverages from companies that prioritize sustainability practices. A significant majority (66%) answered "Yes," demonstrating

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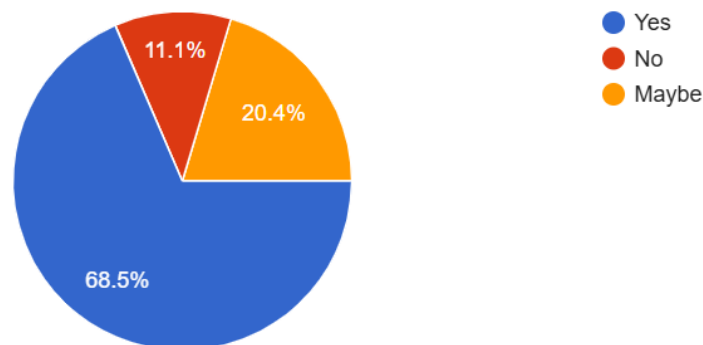
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a high level of environmental consciousness and a willingness to support sustainable brands. Only a small minority (11.3%) answered "No," and 22.6% expressed uncertainty.



Would you be more likely to purchase a beverage if it had a sustainability certification (e.g., Fair Trade, Rainforest Alliance, Carbon Neutral)?

Respondents indicated a strong likelihood of purchasing a beverage with a sustainability certification. A significant majority (68.5%) answered "Yes," demonstrating a high level of environmental consciousness and a willingness to support certified products. Only a small minority (11.1%) answered "No," and 20.4% expressed uncertainty.

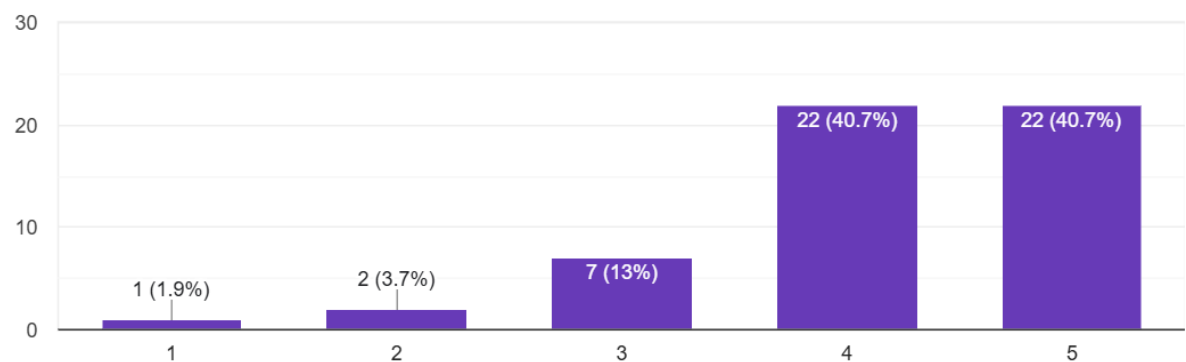


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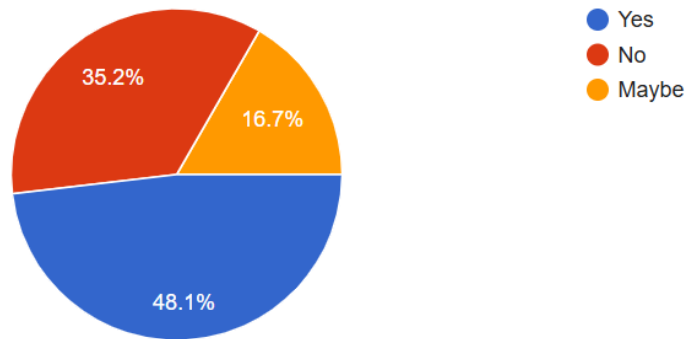
How important is it for you to know the origin of the ingredients in the beverages you purchase, in terms of sustainability and ethical sourcing?

Respondents indicated a strong interest in knowing the origin of the ingredients in the beverages they purchase. A significant majority (40.7%) rated it as highly important (5), while another 40.7% rated it as moderately important (4). Only a small minority (13%) rated it as somewhat important (3), a very small percentage (3.7%) considered it low importance (2) and a few (1.9%) rated not important (1).



Are you willing to make compromises in taste or price to support environmentally friendly beverage options?

Respondents directed a strong willingness to make compromises in taste or price to support environmentally friendly beverage options. A significant majority (48.1%) answered "Yes," demonstrating a high level of environmental consciousness. 35.2% answered "Maybe," indicating a willingness to consider such options but with some reservations. Only a small minority (16.7%) answered "No,"



Flavor Preferences

What are your favorite flavor profiles when it comes to beverages?

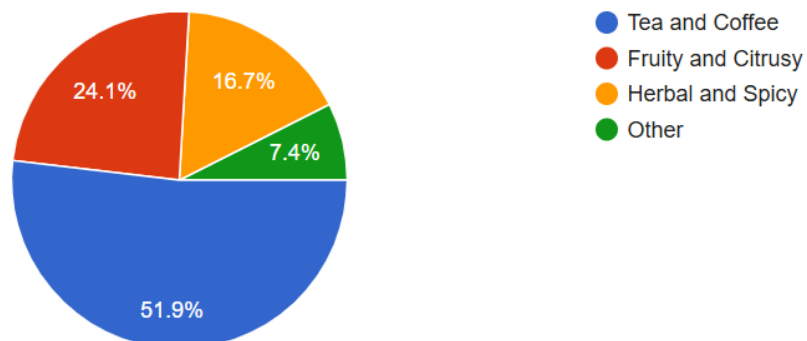
Respondents specified the following favorite flavor profiles for beverages:

51.9% have chose Tea and coffee

24.1% have chose Fruity and citrusy

16.7% have chose Herbal and spicy

7.4% have chose other flavor

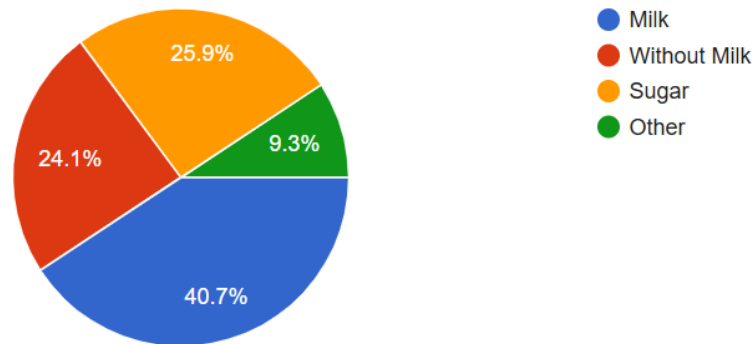


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When it comes to tea or coffee, do you typically prefer them with or without milk?

Respondents showed a strong preference for tea or coffee with milk. 40.7% of respondents chose "Milk," while 24.1% chose "Without Milk. Furthermore 25.9% chose with "Sugar" and 9.3% chose other.



Do you prefer traditional or familiar flavors, or are you more adventurous in trying new and exotic flavor combinations?

Respondents showed the following preferences for beverage flavors:

53.7% have chose Familiar flavors

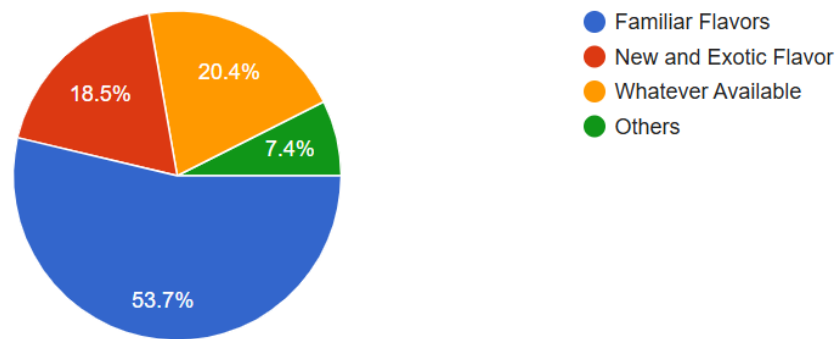
20.4% have preferred New and exotic flavors

18.5% have like Whatever is available

7.4% have chose other preference

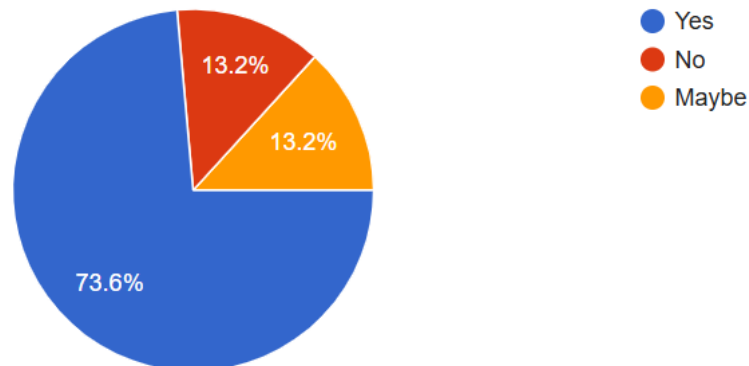
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Have you noticed any variations in beverage preferences across different regions of the UK?

Respondents revealed a lack of significant variation in beverage preferences across different regions of the UK. A majority of respondents (73.6%) answered "Yes," indicating that regional differences are not a major factor in beverage preferences. Only a small percentage (13.2%) answered "No" and "Maybe," suggesting that while there may be some regional variations, they are not significant enough to impact overall trends.

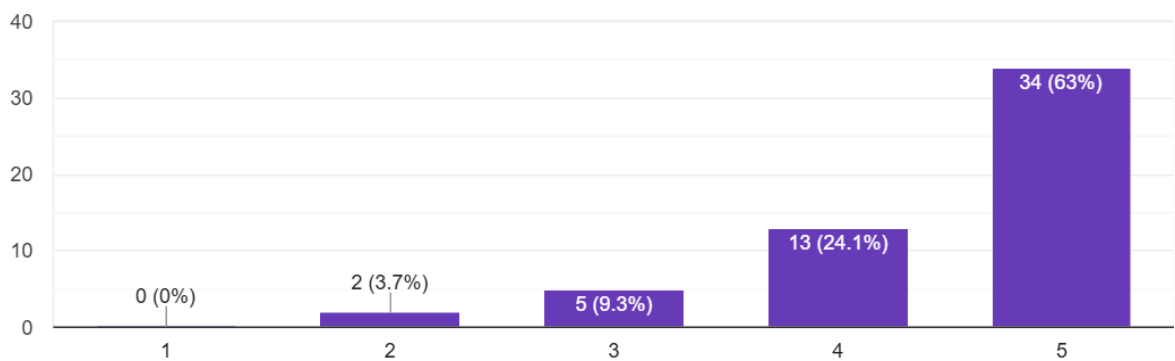


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How much does the taste and flavor of a beverage influence your decision to purchase it?

Respondents indicated that the taste and flavor of a beverage significantly influence their purchasing decisions. A large majority (63%) rated taste and flavor as highly important (5), while 24.1% considered it moderately important (4). Only a small percentage (9.3%) rated it as somewhat important (3), a very small minority (3.7%) considered it low importance (2) and 0% considered it not important (1).



Summary

Consumers in the UK prioritize health when choosing beverages, are willing to pay a premium for healthier options, and actively seek out beverages with health benefits. Sustainability is also a major concern, with consumers favoring companies that prioritize environmental practices and are willing to make compromises for sustainable options. Tea and coffee are popular flavor preferences, with milk being a common addition. While familiar flavors are preferred, there is also a willingness to explore new and exotic options. Overall, the survey results indicate a growing trend towards health-conscious and sustainable beverage consumption in the UK.

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Chapter 5: Summary, Conclusions, and Recommendations

Introduction

This study aimed to explore the preferences and priorities of UK consumers when it comes to beverage selection. By conducting a survey and analyzing the responses, valuable insights were gained into factors such as health consciousness, sustainability, and flavor preferences.

Summary of the Results

The survey results demonstrate a growing trend towards health-conscious and sustainable beverage consumption in the UK. Consumers prioritize health, are willing to pay a premium for healthier options, and actively seek out beverages with health benefits. Environmental concerns are also significant, with consumers favoring companies that prioritize sustainability practices and are willing to compromise on taste or price for sustainable options. Tea and coffee are popular flavors, with milk being a common addition, but there is also a willingness to try new and exotic options. Overall, the findings suggest a shift towards a more mindful and sustainable approach to beverage consumption in the UK.

Conclusions

The findings of this study suggest that UK consumers are increasingly aware of the health and environmental implications of their beverage choices. They prioritize health-conscious options, are willing to pay a premium for sustainable products, and are interested in supporting companies with ethical practices. While familiar flavors remain popular, there is a growing openness to new and exotic options. Overall, the survey results indicate a shift towards a more mindful and sustainable approach to beverage consumption in the UK.

Recommendations

Based on the survey findings, the following recommendations are suggested for the beverage industry:

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1. **Prioritize Health and Sustainability:** Continue to focus on developing healthier and more sustainable beverage options to meet consumer demand.
2. **Highlight Health Benefits:** Clearly communicate the health benefits of products, such as low sugar, low calorie, high protein, and functional ingredients.
3. **Obtain Sustainability Certifications:** Seek relevant certifications (e.g., Fair Trade, Rainforest Alliance) to demonstrate commitment to sustainability.
4. **Invest in Sustainability:** Prioritize sustainable practices throughout the production process, including eco-friendly packaging, sustainable sourcing, and carbon reduction.
5. **Transparency and Ethical Sourcing:** Provide information about ingredient origins and ethical sourcing practices to build consumer trust.
6. **Consider Regional Preferences:** While regional variations are minimal, understanding subtle differences can help tailor products and marketing strategies.
7. **Balance Taste and Health:** Strive to develop healthier beverages that maintain a satisfying taste profile.
8. **Offer Variety:** Provide a diverse range of flavors and options to cater to different preferences and dietary needs.
9. **Educate Consumers:** Educate consumers about the benefits of healthy and sustainable beverage choices.
10. **Engage with Consumers:** Seek feedback from consumers to understand evolving preferences and preferences.

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Implementation Procedures

To effectively implement the recommendations outlined above, the beverage industry can consider the following steps:

1. **Conduct Regular Market Research:** Continuously monitor consumer trends and preferences to identify emerging needs and expectations. Use surveys, focus groups, and social media analytics to gather insights.
2. **Invest in Research and Development:** Allocate resources to develop new products that align with consumer demand for healthier and more sustainable options. Explore innovative technologies and ingredients to create innovative beverage formulations.
3. **Strengthen Sustainability Initiatives:** Develop and implement comprehensive sustainability strategies that address environmental impact, ethical sourcing, and social responsibility. Collaborate with suppliers and partners to ensure sustainable practices throughout the value chain.
4. **Enhance Product Labeling and Marketing:** Clearly communicate the health benefits and sustainable attributes of products on labels and marketing materials. Use storytelling and visuals to highlight the positive impact of products on consumers and the environment.
5. **Engage with Consumers:** Foster open communication with consumers through social media, customer feedback programs, and events. Use consumer insights to inform product development and marketing strategies.
6. **Build Partnerships:** Collaborate with industry organizations, NGOs, and academic institutions to promote sustainable practices and share knowledge. Partner with

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suppliers and distributors who align with sustainability goals.

7. **Educate Employees:** Provide training and education to employees on sustainability initiatives, ethical sourcing, and product knowledge. Foster a culture of sustainability within the organization.
8. **Measure and Monitor Progress:** Establish key performance indicators (KPIs) to track progress towards sustainability goals. Regularly assess the effectiveness of implementation strategies and make necessary adjustments.
9. **Stay Updated on Regulations and Standards:** Monitor changes in regulations and industry standards related to health, sustainability, and ethical sourcing. Ensure compliance with relevant standards and regulations.

Expected Results

The expected results of this research project include:

1. **Increased Consumer Awareness:** The research will contribute to raising awareness among consumers about the importance of health and sustainability in beverage choices. Consumers may become more informed about the benefits of choosing healthier and more sustainable options.
2. **Industry Innovation:** The findings may inspire beverage companies to develop new products that better align with consumer preferences and priorities. Companies may invest in research and development to create innovative and sustainable beverage options.

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3. **Positive Environmental Impact:** The research could encourage the beverage industry to adopt more sustainable practices, reducing their environmental footprint. This could contribute to a more sustainable future and mitigate the negative impacts of climate change.
4. **Improved Consumer Health:** By promoting healthier beverage choices, the research may contribute to improving public health and reducing the prevalence of diet-related diseases.
5. **Enhanced Consumer Trust:** Transparent communication about health and sustainability practices can build trust between consumers and beverage companies. This can lead to increased brand loyalty and customer satisfaction.

Expected Limitations

It is essential to acknowledge and address limitations to ensure a balanced interpretation of the research results and provide appropriate context when making recommendations and drawing conclusions.

1. **Sample Size and Generalizability:** The generalizability of the findings may be limited by the sample size and demographics of the participants. The results may not represent the views of the entire UK population.
2. **Self-Reported Data:** The survey relies on self-reported data, which can be subject to biases and inaccuracies.
3. **Changing Consumer Preferences:** Consumer preferences and priorities may evolve over time, and the findings of this study may not reflect future trends.
4. **Limited Scope:** The survey focused on specific aspects of beverage consumption, and the findings may not capture the full range of factors influencing purchasing decisions.
5. **Regional Variations:** While the survey found minimal regional variations, there may be more pronounced differences in certain areas or among specific demographic groups.

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**Assessing The Accessibility Of Healthcare Services, Quality Of Care
And Health Outcomes In Rwanda**

By

Amanda Ishema

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Abstract

The health sector is an improving sector worldwide and that can't stop in Rwanda. With its past history of the 1994 Genocide against the Tutsi and the fast-growing pace of the community for the past 30 years shows that the community has changed for the better including the health sector. The study was studying on the accessibility of health care services, quality of care received on view of the community, health outcomes and assessing some barriers that they face get the services that they need and expect. The results showed that accessing health care in general was easy but needs improvement, quality of care is not at best as developed countries which provides a room for improving, health outcomes is at best with the majority of the participants and preventive care is delivered to them by healthcare professionals. Some of the barriers are availability of doctors and nurses and the cost of healthcare services. This study highlights the need of healthcare professionals in Rwanda, emphasize on the importance of trained physicians and the use of medical devices on patients. Moreover, the study contributes to ideas and some implementation strategies on how to keep progressing towards advanced healthcare services in Rwanda.

Keywords: Healthcare access, quality of care, health outcomes, healthcare barriers, Rwanda, medical workforce, preventive care, healthcare improvement.

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Chapter 1: Introduction

The UN 2030 Sustainable Development Goals

The UN meeting in 2015 set the 2030 Sustainable Development Goals(SDGs) composed of 17 global goals intended to provide a comprehensive framework of goals and targets and create a shared language with which to understand the complexity of the actions we must take to achieve development that is sustainable across social, environmental, and economic aspects with respect to time. The number 3 goal is about good health and well-being with 13 defined targets including maternity mortality (reduction of global maternity mortality ratio less than 70 per 100 000 live births.), neonatal and child mortality(reduction of neonatal mortality to at least as low as 12 per 1000 live births and under 5 years old mortality to at least as low as 25 per 1000 live births), infectious diseases (end of all infectious disease such as AIDS, tuberculosis, Hepatitis and other communicable disease), noncommunicable diseases (reduction of one third of premature mortality from noncommunicable diseases through prevention and treatment), substance abuse (strengthening the prevention and treatment of substance abuse including narcotic drugs and harmful use of alcohol), road traffic(reduction of a half of global death and injuries caused by road traffic and accidents), sexual and reproductive health (universal access to sexual and reproductive health-care services such as family planning, information and education), universal health coverage (achieve universal health coverage including access to quality essential health-care services, and access to safe, effective, quality and affordable essential medicine), environmental health (reduction of the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination), tobacco control (strengthening the implementation of the WHO Framework Convention on Tobacco Control to all nations), development assistance and vaccine coverage (support the research and development of vaccines and medicines for the communicable and noncommunicable diseases), health workforce (substantially increase health financing and the recruitment, development, training and retention of the health workforce), national and global health risks(strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks) (The Global Health Observatory, 2024).

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The AU Agenda of 2063: The Africa we want

The implementation of the 2030SDGs is done throughout every nation. In the African context, the African Union (AU) “Agenda of 2063: The Africa We Want” and the Sustainable Development Goals elaborated Africa Health Strategy 2016-2030 (AHS 2016-2030) with a vision of an integrated and prosperous Africa free of its burden of diseases, disability and premature death, the goal is to ensure healthy lives and promote well-being; people driven with a particular focus on the most productive segments of society as well as on women, youth, adolescents, children and persons in vulnerable positions. As every institution there is responsibility and accountability which are governed by African Union Commission (AUC), the NEPAD agency, Regional Economic Communities (RECs), Member States and Partners. (Commission, 2015).

Member states in every country are expected to adapt and incorporate the key strategic priorities of AHS 2016–2030 into their national health and multi-sectoral policy instruments. Implement strong leadership initiatives for advocacy, governance, legislative frameworks, and gathering resources to demonstrate ownership.

Rwanda

On this research topic, the case study is Rwanda. Rwanda is a small country of 26,338km², also known as “the country of thousand hills” due to its stunning and hill scenery with a population of 13.2 millions inhabitants (Rwanda, 2023).

Implementation of SDGs goal 3 in Rwanda is managed and directed by the Ministry of Health (MOH) with its affiliated agencies such as Ministry of Economics and Financial Planning (MINECOFIN) and Rwanda Biomedical Center (RBC). The 2030 SDG goal 3 is being executed in the whole country and reported to United Nations in the Voluntary National Review done annually to examine all nations towards all 17 goals of SDGs as well as WHO.

Below is a summary of the report done towards the target of goal 3 in Rwanda by Ministry of Health and the level of achievement.

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Key Health Indicators	Baseline 2019/20	Target 2021/22	Progress	Level of achievement
1. Prevalence of chronic malnutrition (stunting) among under 5 Children.	38	29.9	33% (DHS 2019/20)	On watch
2. Maternal mortality	210 (DHS 2015)	168	203 (DHS 2019/20)	On watch
3. Under 5 mortality	50/1,000 (DHS 2015)	35	45 (DHS 2019-20)	On watch
4. Proportion of Health facilities with water	84	100	97.6% (District report 2021)	On track
5. Percentage of health facilities with electricity	82.8	100	99.01% (District Report 2021)	On track
6. Ratio (Doctor/ population)	1/10,055	1/8,057	1/8,027 (Annual HRH report 2020/2021)	Achieved

7. Ratio (Nurses/population)	1/1,094	1/1,150	1/1,169 (Annual HRH report 2020/2021)	On Track
8. Ratio (Midwives/women aged between 15-49)	1/4,064	1/3,330	1/2,342 (Annual HRH report 2020/2021)	Achieved
9. Prevalence of modern contraceptive use among women in reproduction age (15-49)	48 (DHS 2014/15)	54.6	58 (DHS 2019/20)	Achieved
10. Percentage of eligible population with annual medical community checkup done for NCDs	10	40	85 (Report 2020/2021)	Achieved

Table 1: Progress made towards health sector performance indicators, FY 2021/22 (MOH M. o., 2022)

Problem statement

In Rwanda, there is a total of 2,067 public and private health facilities, out of which 86% (1,788) are public facilities (Rwanda, 2023). The table above (table 1) shows that there aren't enough healthcare practitioners to meet the needs of the 13.2 million population. Which raise a significant issue on how to attain the SDGs goal 3, if there is a significant low number of service providers.

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This will inevitably raise some disparities and inequities in accessing healthcare services. This study aims to understand how healthcare services are provided in Rwanda, analyze what raises the issue of unequal distribution of health services, identify the gap in healthcare service and recommend strategies of how to improve the healthcare access and delivery.

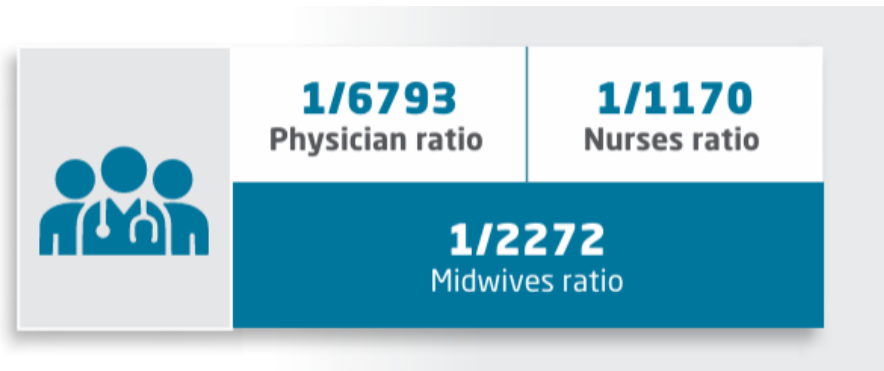


Figure 1: Ratio of physicians, nurse and midwives to the population (MOH M. o., 2022)

Purpose or Rational of the study

This study provides valuable data and insights that guides the Rwandan government in developing effective health policies and interventions. Addressing these disparities is crucial for ensuring that all Rwandans, regardless of their social status or location, have the opportunity to get optimal health. By involving rural and urban communities in the study and addressing their specific needs, the research analyze the communities' the primary barrier and find a reasonable recommendation towards their barriers. Findings from the study will be used to advocate for and design initiatives aiming at strengthening healthcare infrastructure in these communities. Ensuring that their voices are heard in the decision-making process, leading to a more sustainable and community-driven healthcare solutions. This includes building more healthcare facilities, improving transportation networks, and increasing the availability of medical professionals in rural regions.

Rwanda has made significant strides towards universal health coverage which is one of the targets of goal 3 in the 2030 SDGs. This study supports these efforts by identifying gaps and providing actionable recommendations.

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Objectives of the study

How does the Rwandan population perceive the accessibility of healthcare services across public and private facilities? Investigate the key barriers that affect equitable access to healthcare services for all segments of the population, taking into account factors such as workforce shortages, resource allocation, and geographical disparities. Based on the data, make practical recommendations to improve healthcare delivery, minimize inequities, and promote equitable access to excellent health services in Rwanda.

Research questions

This research will answer some questions in the health department of Rwanda.

Starting by;

- How do the population find the accessibility of healthcare services in Rwanda?
- According to the quality of care provided, what is the deductible health outcomes?
- What are the barriers that affect the healthcare services for all?

Definition of Terms

Healthcare: attempts to maintain, restore, or encourage someone's physical, mental, or emotional well-being, especially when performed by organized qualified and certified experts.

SDGs: Sustainable Development Goals; also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity, applicable not only to developing countries but also developed countries, and pledge “Leave no one behind.” through the implementation process.

Inequity vs Inequality: inequality implies differences between individuals or population groups, inequity refers to differences which are unnecessary and avoidable but, in addition, are also considered unfair and unjust.

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Quality of care: Quality of care is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes. Quality health care can be defined in many ways but there is growing acknowledgement that quality health services should be:

- Effective – providing evidence-based healthcare services to those who need them;
- Safe – avoiding harm to people for whom the care is intended; and
- People-centered – providing care that responds to individual preferences, needs and values.

Health outcomes: relates to both physical and psychological well-being, taking into account both life expectancy and quality. Measuring outcomes aids decision-making regarding how to best care for patients. (Lamberski, 2022)

Assumptions and Limitations

The participants are willing to participate in this research study about accessibility of healthcare, quality of care and health outcomes

The population has an idea of how hard or easy it is to access medical services in hospitals.

The participants have knowledge on high and low quality of care, medical devices and its use.

The study focuses on the customers/participants experience about accessing healthcare services, the quality of care obtained, health outcomes after a visit to the hospital and preventive care obtained while in presence of a healthcare professional.

Limitations:

Unavailability of survey forms in rural areas. Accessibility of internet and the use of smart phones or laptops in rural areas is low and that might hinder the comparison of rural and urban areas comparison.

Limited data on the subject due to low number of willing participants.

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The study does not focus on the healthcare professionals experience with patients, it's the opposite.

Overview

Rwanda is a country not only known for its past history of the 1994 Genocide against Tutsi, but also for its fast-growing pace to development. Rwanda is a developing country aiming at the United Nations 17 SDGs goals and targets/Global Goals. This study emphasizes on goal 3; Ensure healthy lives and promote well-being for all at all ages.

The Rwandan health sector has a mission of providing and continually improving affordable promotive, preventive, curative and rehabilitative health care services of the highest quality, thereby contributing to the reduction of poverty and enhancing the general well-being of the population(MOH website). Though goal, they are challenges that are not yet attained such as equal healthcare services to both rural and urban areas.

Currently, healthcare is composed of a total of 2,067 public and private health facilities, out of which 86% (1,788) are public facilities, 12 Health Centers (2.3% out of the total) and 585 Health Posts (52% out of the total) that do not have access to permanent water supply system; and 3 Health Centers (0.5% out of the total) and 403 Health Posts (33% out of the total) with no access to electricity, which are all in rural areas of the country.

This study shall elaborate on the healthcare availability and distribution to those populations located in rural areas, and strategies on how to improve their well-being and wellness.

Looking ahead, there are investments in construction of new health facilities and expansion of services including availing water and electricity supply to ensure service availability and readiness.

Chapter 2: Literature review

Introduction

Rwanda suffered a loss of nearly 1 million people in 100 days, in the 1994 Genocide against the Tutsi (20% of the whole population). An estimation of 250,000 women was raped, and, thus, did HIV become a weapon of war, less than one in four children were fully vaccinated against measles and polio in 1994. Under 5-mortality rate and was higher in Rwanda in that time and life expectancy at birth was the lowest in the world. The majority of health workers were slain or fled the nation, and many who remained were implicated in the genocide. Trust in physicians and nurses was eroded. In 1998, the new government initiated a collaborative process to draft a national development plan, which resulted in Vision 2020. The goal was to achieve middle-income status by 2020, following the mid-1990s tragedy. The strategy promotes inclusive, people-centered development and social cohesiveness. This vision centered on health equity. (Agnes Binagwaho, 2014).

The health workforce has expanded in both quantity and proportion at a rate of 6.9 percent since 2002; data from the Rwanda Population and Housing Census revealed that the health workforce was 15,084 (0.46 percent) in 2002 and 29,413 (0.7 percent) in 2012. (NISR, 2014). Between 2009 and 2015, the number of health workers in Rwanda remained relatively consistent, with 7.8 to 8.9 doctors, nurses, and midwives per 10,000 people (MOH, 2015). In 2019, a research was conducted about the Sexual Reproductive Health(SRH) service providers and the results showed that; 94.3% of health care facilities informed youths about available SRH services, and 51.6% confirmed that services were delivered at low prices. Only 57.2% of respondents stated that adolescents participate in designing feedback methods at their facilities. (Pacifique Ndayishimiye, 2020). During the COVID-19 pandemic, a large number of adolescents and young people reported significant difficulties in accessing SRH information and services, including stigmatization among service providers. Provider prejudices and negative attitudes were repeatedly cited as barriers, and stories collected during the pandemic show how these biases and judgmental attitudes continue to impede young people's access to and use. (Katherine Meyer, 2022).

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A study was conducted on 199 people from two different hospitals, and 31% had hypertension, 31% had diabetes and 31% had both conditions. These patients' records were not followed through because the laboratories had no markers available, thus, no comparison could be established between the two health facilities about a patient's condition. Follow-up is option in district hospitals or referral hospitals, but no interchanging between both. (Jean Damascene Kabakambira, 2022). A retrospective SWOT analysis (2000-2012) assessed six key indicators of Universal Health Coverage (UHC) according to the WHO definition: health insurance and access to care, equity, package of services, rights-based approach, healthcare quality, financial-risk protection, and added Community Based Health Insurance (CBHI) self-financing capacity (SFC). Rwanda achieved 96.15% health insurance coverage with 1.07 visits per capita annually, subsidized 24.8% of the indigent population (nearly 24.1% in extreme poverty), performed excellently in the third, fourth, and fifth metrics, maintained catastrophic health spending at 10.80% (well below the $\leq 40\%$ acceptable limit), and had an 82.55% cost recovery rate for CBHI in 2011/2012, demonstrating convincing UHC achievements. (Medard Nyandekwe, 2014).

Accessing healthcare services and its challenges

The Western Province of Rwanda does not have access to the existing main health facility network by employing three scenarios: walking (26.6%), walking and cycling (58%), and walking to public transportation (34.3%). (Kallestal, 2012). The challenges escalated during the pandemic of Covid-19, where everyone faced barriers in accessing healthcare service; such as lack of emergency care, lack of access to medication and drugs, skipping medical appointments, an increasing of distance from home to healthcare facility. 18.2% of the patients identified positive coping mechanisms to ensure continuation of care, such as walking long distances during suspension of public transport. (Alphonse Nshimiyiryo, 2021).

Quality of care in Rwanda and its challenges

The country has a high health insurance coverage rate, with over 90% of the population insured, which is a stark contrast to the average of 31% in other low-income countries. (Cameron J. Sabet, 2023) Rwanda has excelled in digital health initiatives, such as the partnership with Babyl to

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provide telemedicine services nationwide. This initiative leverages Rwanda's 98% mobile network coverage to offer remote consultations, reducing the burden on health centers and improving healthcare accessibility. (Nyakabau, 2021)

However, challenges remain, particularly in the distribution of specialized care and training of medical professionals. While primary care accessibility has improved, specialized treatments still require patients to travel long distances, and there is a significant shortage of physicians, especially in rural areas. (Nyakabau, 2021) (Cameron J. Sabet, 2023)

Health outcomes in Rwanda and its challenges.

Non-communicable disease have a high rise in many countries as well as Rwanda. Treatment of NCDs is characterized by high consumption of drugs and period visits to the physicians; this is of no difference in Rwanda. A study conducted in the Eastern Province, Kirehe District, reveals that the stock-outs is frequent in rural health facilities than in district hospitals which might be cause by poor management or transport unavailability. (F. Mbonyinshuti, 2021).

Chapter 3: Methodology

Introduction

The healthcare sector in Rwanda is one of the most fragile and growing sector in the country. Thus, understanding its strength and weakness is vital to a continuous and sustainable growth. This research aims to understand and assess the health sector and establish a vision on how to create a more equitable service.

Hypothesis

H1 - There is significant impact in accessing healthcare services, quality of care and health outcomes in Rwanda

H0 – There is no impact of accessing healthcare services, quality of care and health outcomes in Rwanda

Research objectives

The purpose of this study is to understand the healthcare services provided in Rwanda. Analysing and understanding the barriers that both inhabitants and service providers face which inhibits the mission of MOH and its affiliated agencies. This research will specifically answer the following questions:

1. Identification of barriers that affect equitable health for both urban and rural areas.
2. To assess healthcare accessibility including both availability and distribution in rural areas.
3. Investigate how limited access to healthcare services in rural areas directly affects health outcomes.

Research design and procedures

This research employed a quantitative survey methodology. The online survey was distributed to different people of all ages and gender and different professionals in Rwanda and included

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questions that are designed to measure the current level of accessibility of healthcare services, quality of care and health outcomes.

1. Developing survey questions: The survey includes both closed-ended and open-ended questions designed to gauge respondents' knowledge, attitudes, and practices regarding accessibility of healthcare services, quality of care and health outcomes.
2. Administering survey: The survey was administered through an online platform. Participants received a message to complete the survey, as well as a link to the survey.
3. Data collection and analysis: After the survey completion, the data was collected and analyzed using appropriate statistical methods.
4. Reporting Results: The results of the survey are reported in a report summarizing the findings.

Population and sample

The study targets individuals living in Rwanda who once needed healthcare services independent of age, gender and working status, with a population size of 100. Participants received messages through online platforms, such as social media and the survey was accessible through a web link.

The sampling strategy ensures utmost diversity in the sample, including individuals from different locations, age, gender, the result was a sample of 69 participants.

Instrumentation

The survey used both closed-ended and open-ended questions. Closed-ended questions are used to collect quantitative data on the prevalence and distribution of specific attitudes and experiences regarding healthcare services while open-ended questions were used to provide deeper insights into participants' perceptions and experiences on the barriers they face in healthcare services. The survey is designed to ensure that the questions are valid, reliable, and measure the intended constructs accurately.

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Data analysis procedures

Data visualization techniques such as bar charts and pie charts were used to visually represent the data and highlight key findings. This helps to communicate the results of the analysis more effectively to different audiences. This helps to communicate the results more effectively to different audiences.

Limitations

Although an online survey can provide valuable insights into healthcare system in Rwanda, there are some limitations and weaknesses associated with this method of data collection that need to be considered.

Non-Response Bias: Follow-up reminders were conducted to encourage individuals who had not yet responded to complete the survey.

Internet and smart phones: survey questions were required from all parts of the country, including rural and urban areas; nevertheless, the use of smart phones is not common in Rwanda's rural areas. This had a significant impact on the results of this study.

Chapter 4: Results

Introduction

In Rwanda, the health sector is prompting towards development in health posts, health centers, district health facility and referral hospitals as well. This survey was conducted online to better understand the population point of view on the health services provided, where do they face challenges and what can be done to do better.

Data Analysis

Demography

Gender

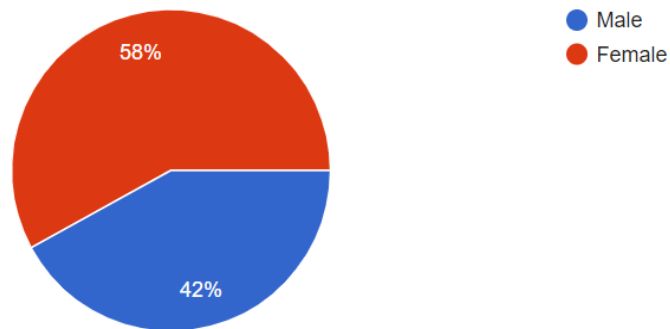


Figure 2: Gender ratio of participants in the survey

58% of participants were female and 42% were male which counts 40 and 29, respectively.

Age

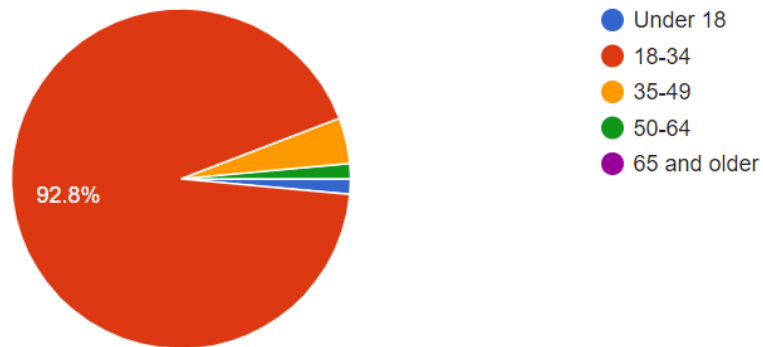


Figure 3: Age variation that participated in the survey

In the survey conducted, most of the responses were youth from a range of 18-34 years old with 92.8% that makes them 64 over 69. Three responses were from 35-49 years old, 1 response from 50-64 years old and 1 response is under 18 years old.

Location

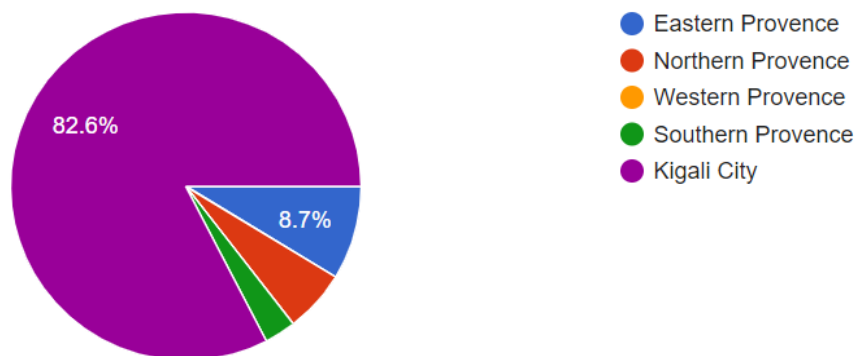


Figure 4: Different location according to provinces in Rwanda that participated in the survey.

Most of the responses obtained reside in Kigali City, known as the capital of Rwanda, with a response rate of 82.6%, which means that 57 of 69 participants are from the City of Kigali. Eastern Province was next with a rate of 8.7% that equals 6 participants. Northern Province has 5.8% that gives 4 responses residing in the North of Rwanda. Then lastly was the Southern Province with a total of 2.9% that gave 2 participants.

Demographically, the respondents of this survey are mainly female from 18-34 years who reside in Kigali.

Accessibility of healthcare services.

Frequency of visits to a hospital

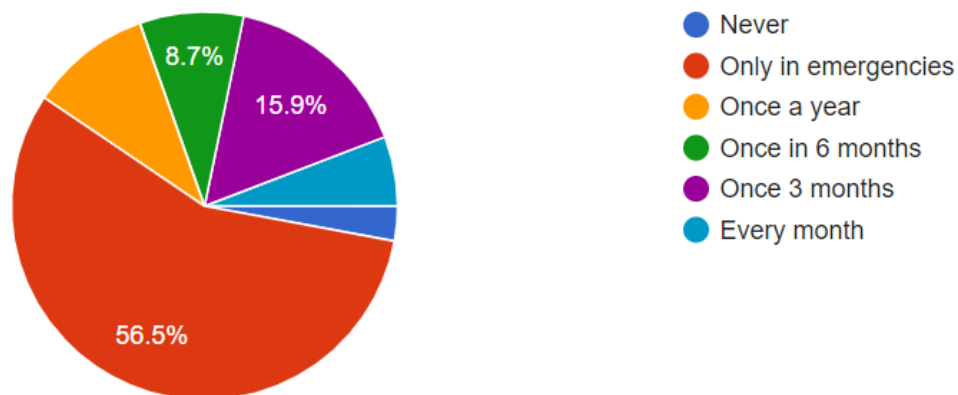


Figure 5: Illustrates the number of times participants visit the hospital.

56.5% of the participants of the survey visit the hospital only when they have emergencies. 15.9% visits the hospital at least once in 3 months, 10.1% visits the hospital at least once a year, 8.7% visits the hospital at least once in 6 months, 5.8% visits the hospital at least once a year, 2.9% never visits the hospital.

Distance

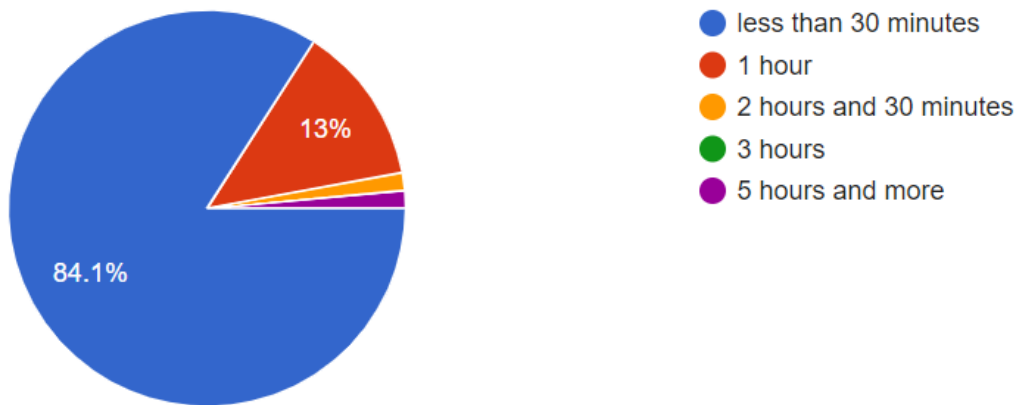


Figure 6: Demonstrates how long participants take to go to the nearest healthcare facility.

Healthcare facilities are near to the participants' residences because 84.1% of them take less than 30 minutes to get to a hospital (both public and private). 13% takes almost an hour to get to a hospital. 1.4% of the respondents take more than 2 hours to get to a hospital.

Availability of doctors and nurses.

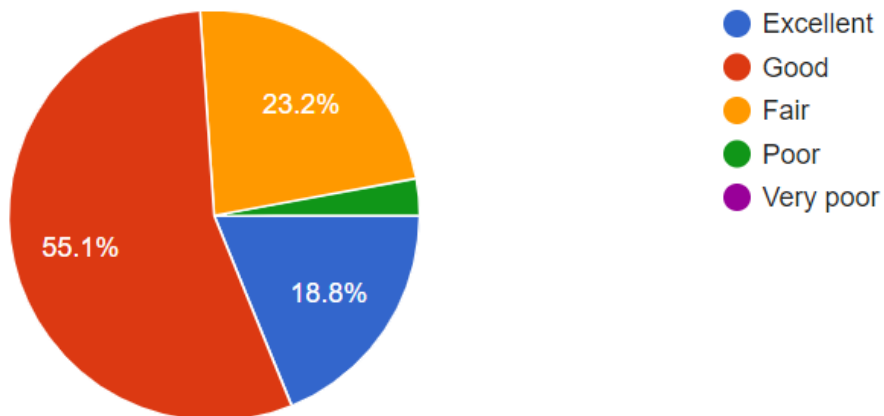


Figure 7: Shows how participants rate the availability of healthcare professionals for service.

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Healthcare professionals are ranked with a high availability, 55.1% response says that doctors and nurses are relatively accessible and sufficient in number, though not necessarily outstanding. 23.2 % of the respondents find doctors and nurses to be adequate but not entirely satisfactory, they may experience some difficulties accessing medical staff but find it manageable. 18.8% of the participants implies that in their experience, there are no significant barriers to accessing healthcare professionals. 2.9 % of respondents, though are the minority, find it difficult to access a nurse or doctor.

Quality of care

Satisfactory level of quality of care provided.

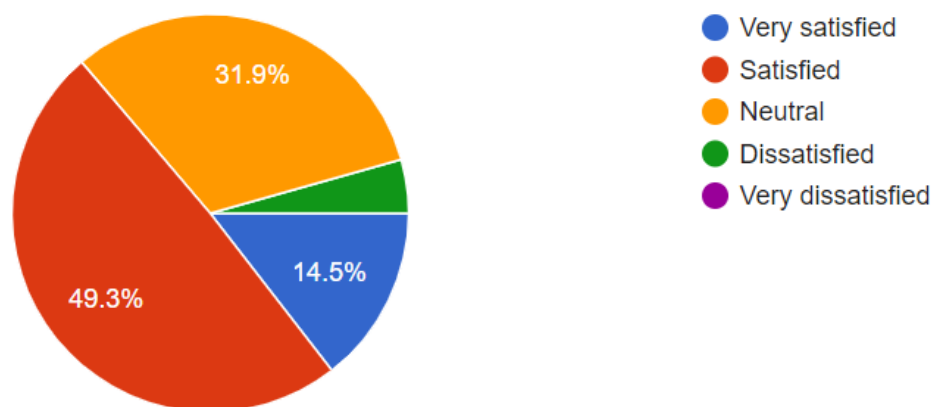


Figure 8: Demonstrates how participants are satisfied with the quality of healthcare services received.

Participants got a chance to rate the quality of care provided. 49.3% are “satisfied” with the quality of care they received though not the best yet. 31.9% rate the quality of care “neutral”, meaning that the quality is appropriate but not entirely content, they may face some challenges throughout it but it is manageable. Another range of respondents rate the quality as “very satisfied” by 14.5%, they are very pleased with the quality of care received when they visit healthcare facilities. 4.3%

rate the quality of care as “dissatisfied”, meaning that they are not pleased with the quality of care received, there are a lot of challenges that need to be studied and improved.

Time spent with doctors

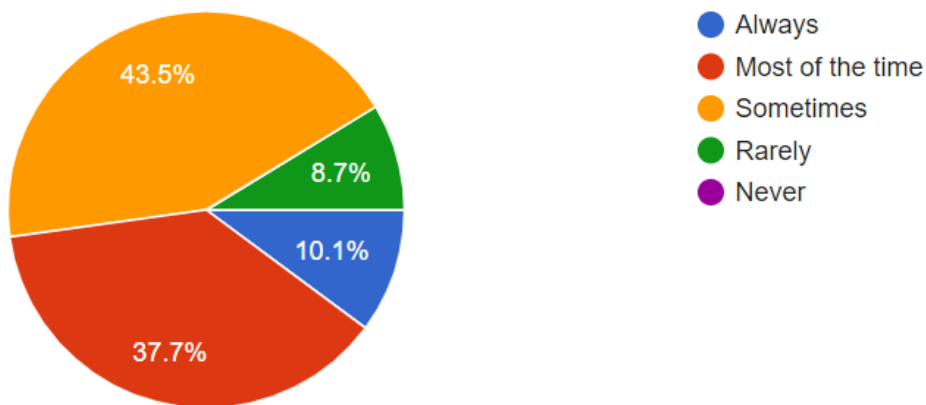


Figure 9: Shows how participants feel about the time doctors/ nurses spend with them .

Quality of care was also rated by defining if time a patient/ respondents spend with a doctor is enough for them. 43.5% of the respondents encounter changeability within the sum of consideration they get from doctors. They may feel that the quality of time went through can be conflicting, possibly depending on factors such as the complexity of their condition or the doctor's workload. 37.7% of the respondents encounter a positive experience in consideration of time though not consistently in every interaction. 10.1% always spend a good amount of time with a doctor in consultation, then 8.7% of the respondents feel rushed or inadequately attended to.

Quality of care in consultation with doctors

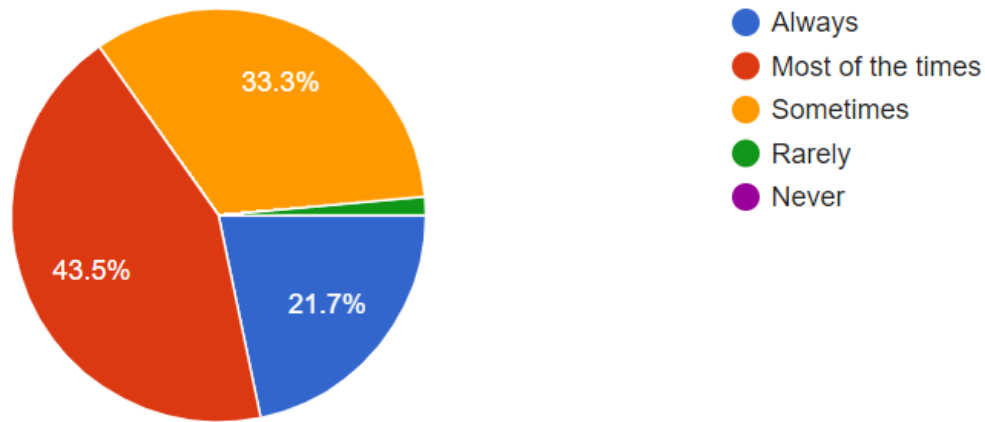


Figure 10: Illustrates the frequency of how the participants' medical needs are addressed.

In this segment of questions, we asked the participants; how often their medical needs were addressed in consultation rooms. According to the response, 43.5% of the respondents feel that their medical needs are addressed well though there is room for improving the delivery of healthcare services. 33.3% of the respondents feel that their medical needs vary according to different factors like healthcare facility, department, queue of patients awaiting, etc., which can be manageable in the future. 21.7% face a positive experience in consultation with doctors. The minority of 1.4% don't get all the attention that they feel they need when in consultation rooms with doctors.

Use of medical devices

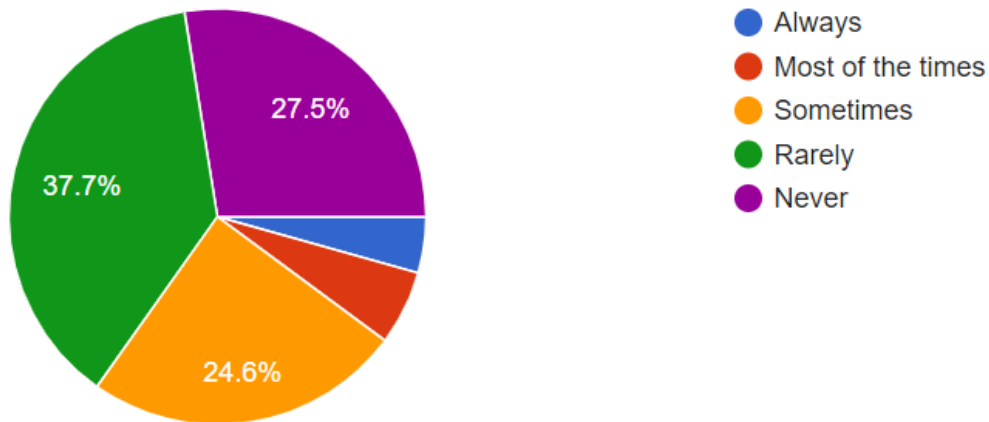


Figure 11: Illustrate how many times the participants were diagnosed using medical equipment.

Participants had to specify how often they get diagnosed using medical equipment in a healthcare facility. The majority of the response of 37.7% rarely do diagnoses involving the use of technology or medical devices. This could imply that many health conditions are diagnosed solely by clinical evaluation, or that these individuals have limited access to diagnostic technology. 27.5% of the respondents do not receive technology-assisted diagnosis, this indicates that their health issues are non-critical or manageable without sophisticated diagnostic tools. 24.6% of the participants occasionally do get diagnosed by the assistance of medical equipment due to the specific nature or severity of their conditions. 5.8% do get diagnosed by the use of medical technology when they visit a healthcare facility and 4.3% of the respondents get diagnosed with medical devices every time they visit a hospital.

Health outcomes.

Rate of overall health

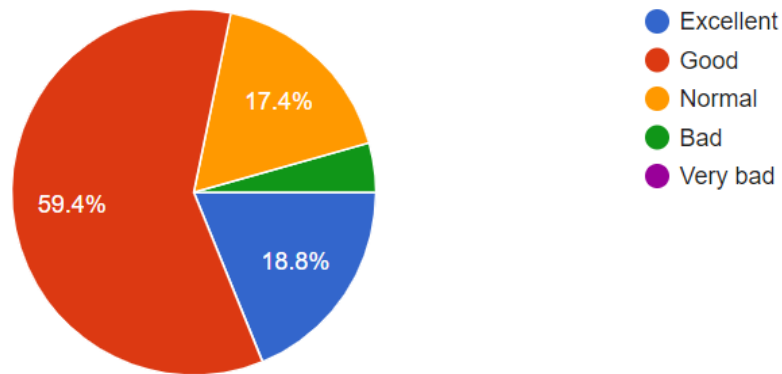


Figure 12: Shows how participants rate their overall health.

Throughout the survey, the participants were asked to rate their overall health in general, 59.4% is good, meaning no chronic disease or constant visits to the hospital, 18.8% of the respondents declared to have an excellent health. 17.4% of the respondents declared to have “normal” health which could mean that their health isn’t as good as they want it to be. 4.3% of the respondents declared to have a bad health, constantly sick and on some medications.

Availability of chronic disease

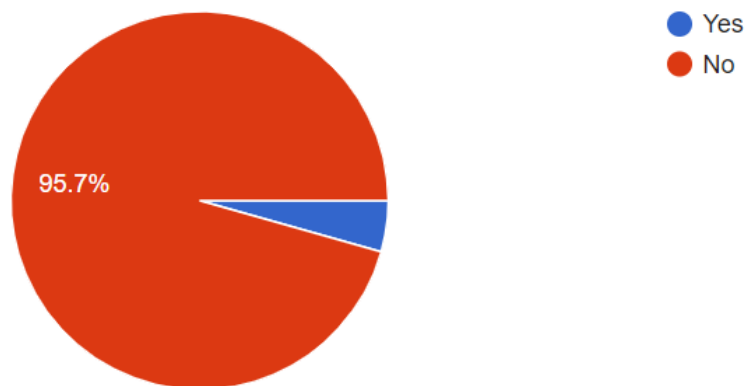


Figure 13: Demonstrated the percentage of chronic conditions within the participants.

95.7% of the respondents have no chronic diseases while 4.3% have a chronic disease.

Management of those chronic conditions

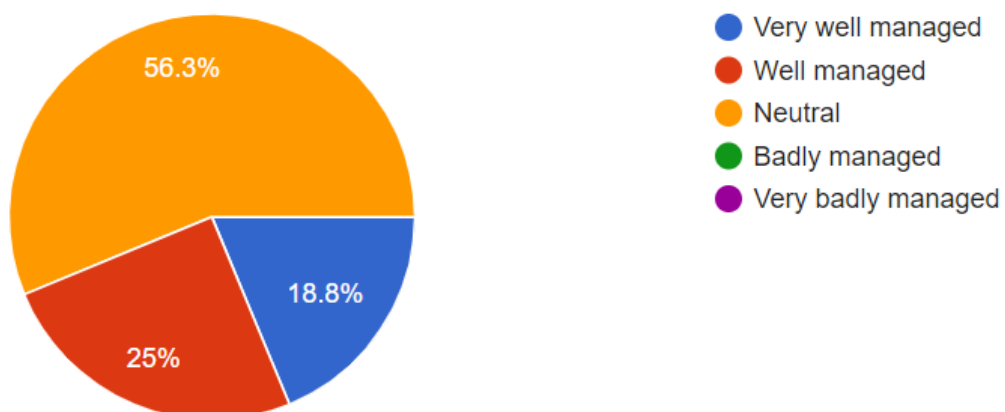


Figure 14: Show the participants' view on how their chronic conditions are being managed.

Most of the participants do not present any chronic condition, only 4.3% do. By answering about the management of chronic conditions, only participants with any chronic condition were allowed

to answer. 18% of the respondents of participants with chronic conditions are very well managed and satisfied by the doctors. 25% of the respondents were well managed, which means that it is not the best yet. 56% of the respondents mostly have no chronic condition.

Easiness in prescribing medications

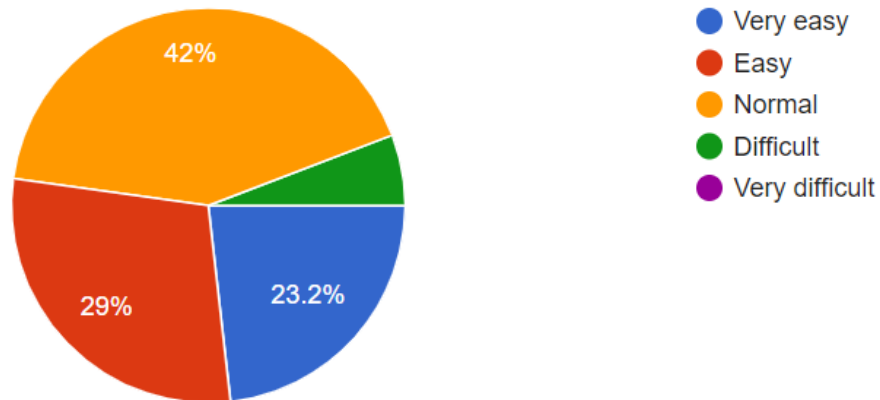


Figure 15: Demonstrate the complexity of obtaining a prescription from a doctor.

The participants of the survey had to answer about the complexity of obtaining a prescription from a doctor at a healthcare facility. 42% of the respondents find it “normal”, meaning that it comes with challenges like availability of doctors, queue of patients, etc. 29% of the respondents find it “easy” to get a prescription from a doctor with some room for improvement. 23.2% find it very easy to get a prescription. 5.8% of the respondents find it difficult to get a prescription from a doctor in a healthcare facility.

Preventive care

Providing preventive care services

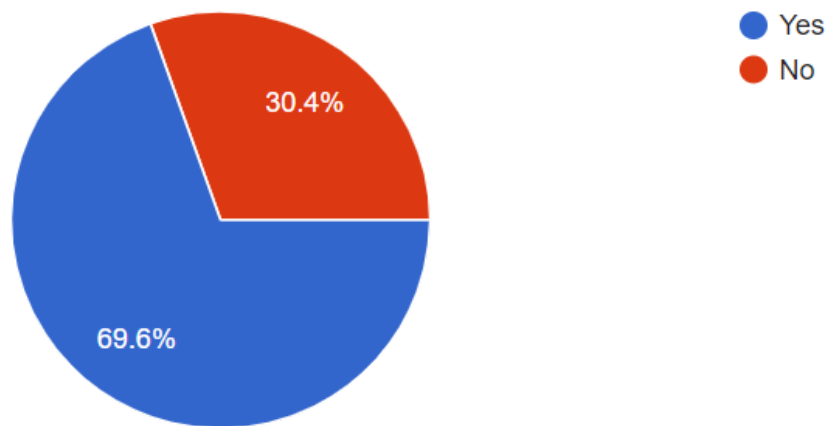


Figure 16: Demonstrate how often do participants receive preventive care services such as vaccines, screening, etc.,

Participating in the survey were asked if they go to a healthcare facility for preventive care, and a majority of 69.6% do go for preventive care and 30.4% don't go to a hospital for preventive care.

Providing health education or preventive advice

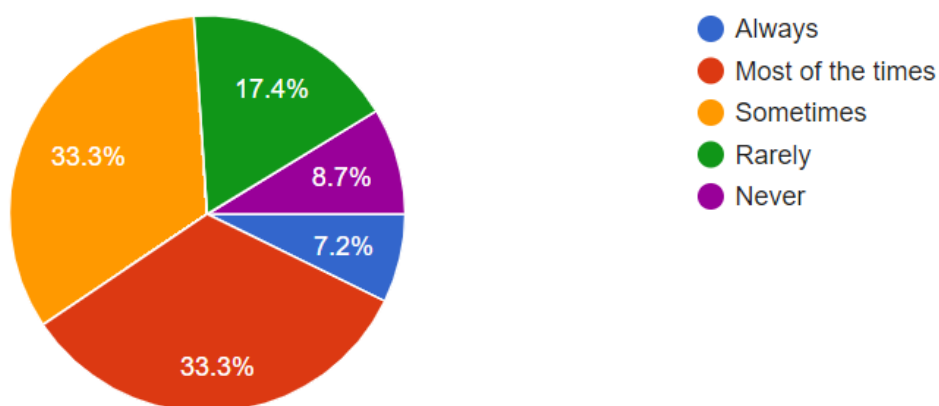


Figure 17: Demonstrate how many times do participants receive health education or advices

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Participants had to answer on how often do healthcare professionals provide some educational health. 33.3% of the respondents answered “sometimes” which indicates that healthcare professionals occasionally provide educational health during consultations, but it is not a consistent part of every interaction. Another set of 33.3% of respondents answered “most of the time” which means that healthcare professionals regularly incorporate advice, health education and prevention into their patient interactions, though not every time. 17.4% implies that a notable portion of the population does not frequently receive guidance on health maintenance or disease prevention from their healthcare providers. 8.7% indicate that they "never" receive such advice, this could reflect a gap in healthcare provision where these respondents are not getting educational or preventive guidance at all. And then 7.2% “always” do receive educational health and preventive advice.

Barriers of accessing healthcare services.

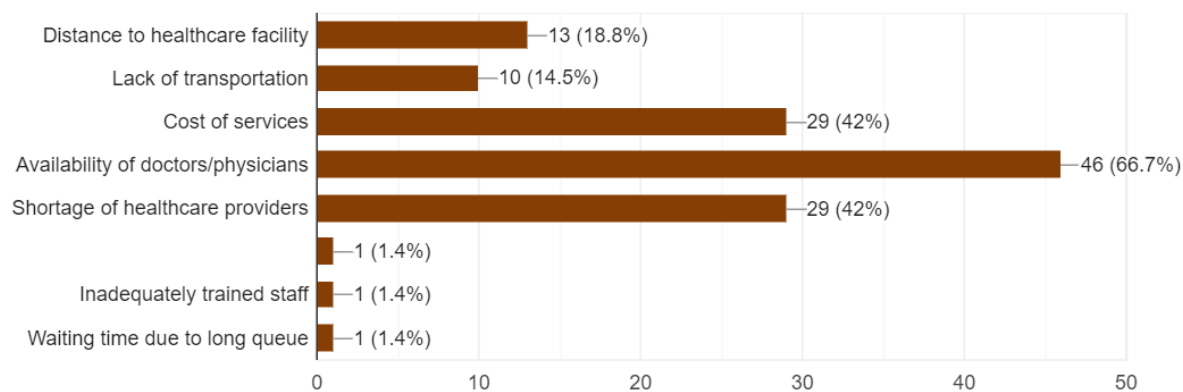


Figure 18: Demonstrates the barriers that the participants face in healthcare services.

Participants were asked to elaborate on what kind of barriers they face that inhibit a positive experience in healthcare. The majority of respondents replied about availability of doctors and nurses in a healthcare facility, healthcare coverage. distance to healthcare facilities, transportation problems and long queue of patients.

Chapter 5: Summary, Recommendation, and Conclusion

Results

The research aims at assessing the accessibility of healthcare services and the main barriers in Rwanda, health outcomes, quality of care and preventive care. While assessing the accessibility of healthcare facilities, distance and availability of healthcare professionals, the majority of 84.1% the respondents reside near a hospital(public or private) by less than 30 mins travel, 56.5% only visit hospitals in case of emergencies and give a positive perception of availability of healthcare professionals by indicating a room of improvement. Assessment of quality of care was observed through assessing how the participants feel about time spent with healthcare professionals, if their medical needs are addressed and the use of medical devices in diagnosis. Majority of 49.3% the participants of the survey are simply satisfied with the quality of medical care they receive, they are satisfied with time spent with doctors during ,they believe that their needs are addressed appropriately, and 65% reveal they have never or rarely been diagnosed with medical devices, indicating limited use of medical equipment in a healthcare facility. The survey identifies that they should be a room for improvement.

A majority of more than 80% of the respondents have a good health with no chronic conditions at all. Those with chronic conditions are well managed with 75% of respondents. And most of the respondents find it easy to obtain a prescription from a doctor. Health education and preventive care is one the key questions that respondents had to answer. The majority of respondents do some check-ups and screening, and take vaccines as a mode of prevention. They answered also that it is not common for them to get some educational health from the doctor.

Majority of barriers faced in healthcare services are availability of health professionals such as nurses and doctors with 66.7% and cost of service by 42%(UHC).

The literature review and data analysis do not align due to limitations such as a sample size of 69 for a population of 13.2 million in Rwanda and a lack of access to rural areas due to the method of data collection, which benefits smart phone users and internet users but limits non-users.

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Recommendation

Building upon the research findings, several recommendations are proposed to enhance the healthcare services in Rwanda:

Increase Access to Medical Equipment: the use of medical equipment should be in most of the diagnostic process to ensure a proper diagnosis, minimizing errors and increase patients' satisfaction. Institution who are responsible for acquisition of medical equipment should ensure a proper distribution from national level to health posts.

Enhance Health Education and Preventive Care: promoting health education is vital for a health community to achieve the 2030SDGs goal 3. Preventive care to the community promotes awareness and reduce health illiteracy. Implementation of community outreach programs that focus on preventive care, such as routine check-ups, screenings, and vaccinations, to improve overall health outcomes.

Improve Healthcare Workforce Availability: another barrier is the availability of workforce which creates work overload to the available professionals and decrease the amount of care and attention dedicated to one patient. Including trainings, incentives and an improved working environment can motivate healthcare professionals.

Promote Chronic Disease Management: providing regular follow-ups, personalized care plans, and patient education on managing their conditions effectively.

Reduce Healthcare Costs: Work to make healthcare more affordable by increasing coverage through Universal Health Coverage (UHC) and lowering patients' out-of-pocket payments. This method has already been initiated by using Community Based Health Insurance or Mutuelle de santé (CBHI).

Implementation strategy

There are some few strategies that can be used to implement the above recommendations and ensure full functionality of all to improve healthcare in Rwanda:

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1. Increase Access to Medical Equipment

- **Standardize Diagnostic Equipment:** By establishing mandatory rules for key medical devices in healthcare facilities, you may ensure that medical equipment is used in all diagnostic procedures.
- **Standardize Acquisition of medical equipment:** by establishing rules and policies that all medical equipment must submit to, to ensure full compliance and minimizing any future risk due to non-compliance.
- **Maintenance and Training Programs:** Implement regular maintenance programs and train healthcare workers on how to use and maintain medical equipment in order to avoid malfunctions and maximize usage, as well as develop regular maintenance plans to extend equipment life.

2. Enhance Health Education and Preventive Care

- **Create and implement community outreach initiatives** centered on preventive care, such as immunizations, screenings, and educational sessions on healthy living and common health concerns.
- **Launch Health Education Campaigns:** Disseminate illness prevention, nutrition, and hygiene information through media platforms, schools, and community centers.
- **Utilize Digital Health Tools:** Use digital platforms (apps, SMS campaigns) to spread health education, share preventive care suggestions, and raise public knowledge of accessible health services.
- **Monitor and Evaluate:** Conduct regular assessments of the effects of health education programs using surveys and health outcomes data to ensure efficacy and adapt techniques as needed.

3. Improve Healthcare Workforce Availability

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- **Increase Workforce Training:** Invest in ongoing education, training programs, and scholarships for healthcare workers, with a focus on rural areas that suffer from shortages.
 - **Improve Working Conditions:** Create a supportive working environment by improving healthcare facilities, providing enough resources, and ensuring acceptable workloads.
4. **Promote Chronic Disease Management**
- **Comprehensive Care Programs:** Implement structured chronic illness management programs that include regular follow-ups, tailored care plans, and ongoing patient education.
 - **Integrate Digital Health Monitoring:** Telemedicine and health monitoring apps can help patients track and manage chronic diseases, decreasing the need for frequent in-person visits.
5. **Reduce Healthcare Costs**
- **Strengthen Community-Based Health Insurance (CBHI):** Improve the efficiency and coverage of programs like Mutuelle de Santé by streamlining enrollment processes and increasing awareness.

Expected results

The expected results for applying the above strategies are:

1. **Improved Diagnostic Accuracy and Patient Satisfaction:** With greater access to medical technology, healthcare providers will be able to make more accurate and timely diagnoses, resulting in fewer errors. This will increase patient trust and satisfaction with healthcare services.
2. **Reduced Preventable Diseases and Health Illiteracy:** By improving health education and preventive care activities, communities will be more aware about health hazards, resulting

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in fewer cases of preventable diseases. This will help to achieve the 2030 SDGs, namely Goal 3 (Good Health and Well-Being).

3. Patients will receive more individualized care if healthcare professionals are more readily available and working circumstances improve. Healthcare professionals will be less overworked, resulting in increased retention rates and better service quality.
4. **Reduced Healthcare Costs and Improved Chronic Disease Management:** By expanding universal health coverage and chronic disease management programs, patients will have fewer out-of-pocket expenses. Better management of chronic diseases will reduce hospitalizations and long-term complications, lowering healthcare costs for both individuals and the system.

Expected limitations

It is essential to acknowledge and address limitations to ensure a balanced interpretation of the research results and provide appropriate context when making recommendations and drawing conclusions.

Funding Constraints: Obtaining appropriate and consistent financial resources to purchase medical equipment, develop the healthcare workforce, and implement preventative care programs can be difficult, particularly in low-income communities. Budget constraints may impede or halt the implementation of some programs.

Infrastructure and Distribution Challenges: Even with increased medical equipment acquisition, poor infrastructure or logistical inefficiencies might cause equipment to be delayed in reaching remote or underserved locations. Maintenance of equipment may also be problematic in places with insufficient technical skills.

Cultural and social barriers: Communities may be resistant to health education and preventative care initiatives due to cultural views, a lack of health literacy, or mistrust of the healthcare system.

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In some places, there may be a reluctance to implement preventive measures or work with healthcare practitioners.

Workforce Retention and Burnout: While improved working conditions and incentives are projected to promote motivation, retaining healthcare workers, particularly in rural locations, may continue to be challenging. Workforce shortages and ongoing high demand for services may result in burnout, compromising the effectiveness of training and incentive schemes.

Conclusion

In conclusion, the findings of this study show that, while Rwanda's healthcare system has achieved tremendous progress in terms of accessibility and quality of care, there are still areas that need to be addressed for further improvement. The majority of respondents are pleased with the healthcare services they receive, notably the closeness to healthcare institutions, convenience of acquiring medications, and management of chronic medical conditions. However, limitations such as underutilization of medical devices, limited health education, and transportation and healthcare professional availability indicate that there is still space for improvement. Addressing these problems, particularly in preventative care and diagnostic resources, is critical to improving healthcare outcomes and providing fair access for all populations. Improving health education and preventive actions may also result in better health outcomes in the long run.

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