RESEARCH ARTICLE

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A Qualitative Study on Sustainable Procurement in Super Specialty Hospitals in Karnataka

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Abstract

The healthcare sector is increasingly emphasizing sustainability as a critical factor in improving operational efficiency and patient care outcomes. This study examines the green buying process in private hospitals super-specialty hospitals, focusing on how environmentally responsible operations impact the quality of healthcare services. Super-specialty hospitals, known for their advanced technologies and treatment for complex medical conditions, face unique challenges in balancing high operational demands with environmental sustainability.

Through mixed research methods including literature review and interviews of managers and decision-makers of super-specialty hospitals in Karnataka and subsequently data analysis, factors like organizational culture, product design, regulatory aspect, and pricing influence the organization's green buying significantly. The research also evaluated the influence of these factors on green buying and subsequently their influence on consumer satisfaction. This study uncovers a critical aspect of green buying in service sectors especially in hospital services. The result found that organizational culture and governmental policy play a crucial role in organizational green buying in super-specialty hospitals. The research has a significant impact on futuristic research and government policy-making.

Keywords: Greener Healthcare, Sustainable Hospital Practices, Patient Behavior, Green Hospital Attributes, Environmental Concern in Hospitals,

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Introduction:

The healthcare industry is rapidly evolving, with a growing focus on "value" over "volume." Providing lasting value to patients has become a central goal, and patient satisfaction is now a significant construct in healthcare, particularly in the subcontinent. Organizations like the "Hospital Consumer Assessment of Healthcare Providers and Systems" (HCAHPS) use patient satisfaction surveys, which play a critical role in determining the distribution of federal funds to hospitals. This underscores the importance of patient satisfaction, with both evidence-based legitimacy and financial implications for hospitals *(McGain & Naylor, 2014)*. This emphasis on satisfaction has led healthcare advocates to stress the importance of governance and accountability in hospitals through sustainably managed operations that address financial, social, and environmental aspects *(Rodriguez, Svensson, & Wood, 2020)*.

The relationship between sustainability practices and patient satisfaction remains an open question. No empirical research has yet investigated how sustainability in hospital operations might influence patient satisfaction. This study aims to explore sustainable practices in super-specialty hospitals and examine how these practices impact patient satisfaction. Using a sample of consumers from a super-specialty hospital in Malaysia, the study provides new insights into the role of sustainability in healthcare *(Yanginlar & Acer, 2018)*. The results offer promising findings regarding the economic, innovative, and quality impacts of sustainability in healthcare and its effect on internal organizational effectiveness *(Ahsan & Rahman, 2017)*.

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Sustainability in healthcare involves integrating cost-efficient, environmentally sustainable actions with hospital business plans. The "People, Planet, and Profit" framework, advocated by the Global Healthcare Network, shapes sustainability efforts and corporate social responsibility in leading healthcare providers *(Rico & Oruezabala, 2013).* This framework aims to mitigate risks, minimize environmental impact, and secure long-term financial success. Sustainability practices, such as green design and lean construction, are applied in hospital design and renovations to improve waste management, reduce pollution, and enhance working conditions. These practices not only enhance the patient experience but also improve staff morale and support hospitals' corporate social responsibility goals *(Swarnakar, Bagherian, & Singh, 2022).*

The healthcare sector significantly contributes to resource consumption and waste generation, making it an important player in environmental degradation. Super-specialty hospitals are under increasing pressure to adopt sustainable practices to mitigate their environmental impact while improving operational efficiency and patient outcomes *(Oruezabala & Rico, 2012).* However, balancing sustainability with patient care and satisfaction presents challenges, particularly in environments where patient satisfaction is a priority.

Understanding the link between sustainability practices and patient satisfaction is crucial for hospitals seeking to balance environmental responsibility with quality care *(Jian Guo et al., 2020).* Although sustainability initiatives offer long-term benefits for the environment and financial performance, their direct impact on patient satisfaction has been understudied. This research aims to address this gap by exploring sustainable procurement practices in super-specialty hospitals *(Benzidia et al., 2021).*

Using a mixed-methods approach that includes a literature review, interviews with decision-makers and hospital managers, and data analysis, the study will identify key sustainability procurement practices in these hospitals *(McGain & Naylor, 2014).*

The findings of this research will provide valuable insights towards organizational green buying in super-specialty hospitals striving to enhance their sustainability efforts while maintaining high patient satisfaction levels. By identifying effective sustainability practices and understanding their impact on patient perceptions, hospitals can develop tailored strategies to optimize environmental performance and patient outcomes.

Literature Review:

The concept of sustainable procurement is increasingly significant in the context of super specialty hospitals, where it integrates environmental, social, and economic considerations into purchasing decisions. Organizational theories provide a foundation for understanding the adoption of sustainable procurement practices in such settings:

Institutional Theory

Institutional theory suggests that external pressures influence organizational behavior. In the healthcare conteuper specialty hospitals may face coercive pressures from regulatory frameworks, normative pressures from professional standards, and mimetic pressures to align with industry leaders *(Meyer & Rowan, 1977).* These factors encourage hospitals to implement sustainable procurement policies. However, the role of leadership and collaboration with suppliers often outweighs regulatory and client-driven demands in driving green procurement adoption *(Yen & Yen, 2012).* Policies aligned with cost management and sustainability goals can further accelerate sustainable procurement practices *(Glover et al., 2014).*

Stakeholder Theory

Stakeholder theory underscores the importance of addressing the concerns of diverse groups impacted by the hospital's operations, including patients, staff, suppliers, and local communities *(Freeman, 1983).* Sustainable procurement in hospitals minimizes environmental and social harm, thereby addressing stakeholder expectations and enhancing trust. For hospitals, sustainable supply chain practices and stakeholder collaboration should take precedence, with cost recovery being a secondary focus (*Tseng et al., 2022).*

Resource-Based Theory

This theory highlights the strategic value of unique and rare resources in achieving competitive advantages *(Barney, 1991)*. For super specialty hospitals, skilled procurement teams and advanced technology play a critical role in enabling sustainable supply chain management. The hospital's ability to share information and select eco-friendly suppliers depends on leadership commitment and resource allocation *(Shibin et al., 2020)*. Proactive adoption of sustainable practices not only improves environmental outcomes but also enhances financial performance *(Aragón-Correa et al., 2008)*.

Sustainable procurement in super specialty hospitals thus relies on a combination of external pressures, stakeholder engagement, and strategic resource management, making it a cornerstone of modern healthcare operations.

The paper investigates how sustainable procurement expectations in public hospitals influence supplier management and relationships with private providers. Findings show that sustainable requirements shape interactions by introducing new rules and expectations in public procurement *(Oruezabala & Rico, 2012)*. The paper aims to examine the role of green purchasing practices and healthcare personnel's eco-friendly behavior in public hospitals' procurement processes in Turkey. Findings show that ecological awareness among healthcare personnel significantly influences green purchasing decisions within hospitals *(Yanginlar & Acer, 2018)*. The paper aims to investigate the integration of sustainable practices in procurement within French public hospitals, focusing on regulatory constraints and practical implementation. Findings suggest that sustainable procurement can be achieved through revised supplier selection and interaction, incorporating economic and environmental considerations *(Rico & Oruezabala, 2013)*. The paper aims to evaluate green procurement practices in 7 mining hospitals in Ghana, focusing on the challenges and organizational learning involved in implementing such practices. Findings indicate that the effectiveness of green procurement is less about knowledge of policies and tools and more about the actual application of that knowledge by procurement officers *(Jian Guo, Boateng Sarpong, Antwi, & Mensah, 2020)*. The paper aims to investigate the benefits of big data analytics and artificial intelligence (BDA-AI) in green supply chain integration and their impact on environmental performance in French hospitals. The study found that BDA-AI significantly improves environmental process integration and green supply chain collaboration, with green digital learning acting as a moderator in these relationships *(Benzidia, Makaoui, & Bentahar, 2021)*. The paper examines supply chain management practices focusing on drivers and barriers to sustainability. Sustainability can be improved through strategic initiatives, but challenges such as cost and lack of awareness hinder full implementation *(Ahsan, Rahman,2017)*. The paper develops a framework for sustainable supply chain management practices in hospitals, addressing sustainability and operational performance. Green practices enhance environmental sustainability and healthcare efficiency, though integration challenges remain *(Duque-Uribe, et al,2019)*. The paper examines sustainability efforts in public hospitals, identifying trends and priorities for sustainable development. It highlights the absence of consistent sustainability guidelines and the need for structured approaches *(Rodriguez, et al.,2020)*. The paper identifies critical success factors (CSFs) for sustainable LSS in healthcare, focusing on improving service quality. Managerial and economic CSFs, including structured training and management involvement, are critical for successful LSS deployment *(Swarnakar, et al,2022)*. The paper evaluates environmental sustainability efforts in hospitals and proposes frameworks for green initiatives. It demonstrates significant potential for energy savings and environmental impact reduction through sustainable operational practices *(McGain, Naylor, 2014)*. The paper aims to evaluate the impact of digital transformation, accounting information systems, and strategic human resource management on organizational performance and sustainable development in healthcare. Findings reveal that these factors positively affect the dimensions of the Balanced Scorecard, with internal processes having the most significant influence *(Vărzaru, 2022)*.

Methodology

Data Collection

The main aim of this study is to understand the green buying practices in the hospital/healthcare industry. The research questions are as mentioned below:

- To understand the factors influencing organizational green buying in hospitals/healthcare industry.
- To understand the challenges and opportunities towards organizational green buying in hospital/healthcare industry.

This study was conducted by having unstructured interviews with managers and decision makers in major hospitals in Karnataka. This study involved qualitative data collection by interviewing 20 manager's/decision makers in the healthcare industry. The data obtained from these interviews are collated and analyzed to understand factors influencing organizational green buying in the hospital industry. The coding and the analysis of the data were done manually.

The data is connected with the theoretical perspectives and the extant literature, thus bringing about the discussion to ascertain the overall dimension of organizational green buying in the hospital industry. Findings are drawn after a critical evaluation of the qualitative data and critical analysis of the same.

Analysis Tools and Methods

The Orange Data Mining Tool was utilized for data analysis. Orange is a powerful open-source machine learning and data visualization tool that supports various data mining techniques through a visual programming interface. For the purpose of this research, three main analyses were conducted: Sentiment Analysis, Word Cloud Generation, and Text Modeling. Below is a detailed explanation of how each tool was used and the process followed.

Sentiment Analysis

Sentiment analysis was conducted to gauge the overall emotional tone of the interviews and textual data. By analysing the words and phrases used in the interviews, we identified positive, negative, and neutral sentiments related to sustainable procurement. The sentiment analysis process involved:

Data Preparation:

Text data from the interviews was pre-processed by removing irrelevant information such as stop words and punctuation.

Classification:

Using a pre-trained sentiment analysis model within Orange, we categorized the sentiments based on the language used. The tool assigned sentiment scores to each piece of text, classifying them as positive, negative, or neutral.

Interpretation:

The sentiment scores were then interpreted to understand how the hospital personnel perceived the challenges and benefits of green procurement. Higher positive scores indicated favorable views, while negative scores highlighted concerns or barriers to implementation. This allowed us to quantify the emotional responses toward sustainability initiatives.

Word Cloud Generation

A word cloud was generated to visually represent the most frequently mentioned terms and concepts from the interviews. Word clouds help in identifying key themes and areas of focus within the data. The steps in this process included:

Text Processing:

All interview responses were consolidated into a single dataset and cleaned to remove common stop words (e.g., "and," "the," "it") that do not add meaning to the analysis.

Word Frequency Analysis:

Orange's word cloud feature was used to visualize word frequency. The size of each word in the cloud correlates with the number of times it was mentioned across the interviews.

Interpretation:

Larger words such as "procurement," "green," "environmental," and "sustainable" reflected the importance of these terms in the discussions about hospital procurement strategies. This visual representation helped to quickly identify the primary focus areas in relation to sustainable procurement.

Text Modeling

Text modelling was employed to uncover latent patterns, topics, and associations in the textual data. This method helps reveal the hidden structure of the interview responses. The steps involved were:

Topic Modeling:

Latent Dirichlet Allocation (LDA), a common text modelling algorithm available in Orange, was used to extract topics from the text. LDA identifies clusters of words that frequently occur together, forming "topics" that can be interpreted by the researcher.

Clustering:

Orange's text mining add-ons were used to group similar text segments into clusters, enabling the identification of recurring themes.

Interpretation:

The results from the text modelling were interpreted to highlight the common themes, such as the role of government regulations, the importance of supplier relationships, and challenges related to cost and resource allocation. Each topic was further analyzed to understand how it related to the overall research objective of sustainable procurement in hospitals.

Topic Modeling

Latent Dirichlet Allocation (LDA) topic modelling was employed to uncover latent themes within the interview transcripts. This method was selected for its ability to identify underlying patterns in qualitative data and reveal how different concepts cluster together in organizational discourse. Five distinct topics were extracted, allowing for the identification of key themes in green purchasing practices across different hospitals.

Sentiment Analysis

Computational sentiment analysis was conducted to evaluate the attitudinal dimensions of the interview responses. This method provides quantitative measures of sentiment on a scale from 0 to 1, enabling the assessment of emotional valence in discussions about green purchasing practices. This approach has been validated in previous healthcare industry research for understanding stakeholder attitudes towards sustainability initiatives.

Word Frequency Analysis

Word frequency analysis was implemented to identify recurring themes and concepts within the interview data. This method complements the topic modelling by providing a granular view of specific terms and concepts that dominate the discourse around green purchasing in the healthcare sector.

Analysis

Topic Modeling Results

The analysis revealed five distinct topics characterizing different aspects of green purchasing practices:

Table:1 Topic Keywords

Topic	Topic Keywords
General Green Procurement Focus	green, also, environmental, terms, products, procurement, agrees, organization, product, firm
Green Procurement and Products	green, also, products, terms, procurement, environmental, agrees, product, mentions, mentioned
Role of Key Individuals in Procurement	Manjunath, Mr, product, green, feels, factors, specification, according, role, plays

Table:2 Topic Modelling Score

Title	Topic 1	Topic 2	Topic 3
Manipal Hospitals (Jayanagar)	0.995398	0	0
Rajshekar Multispecialty Hospital	0.995965	0	0
Ramakrishna Hospital Pvt. Ltd.	0.608918	0.388807	0
Cura Hospitals	0	0.996734	0
Samarpada Multi-Speciality Hospital	0	0.997284	0
Nanjappa Life Care Super-Speciality Hospital (Davanagar, Bangalore)	0.0455022	0.953021	0
Pragathi Multi Speciality Hospital (Konankunte Cross Vasanthapura)	0	0.995947	0
Citi Hospital (Rajajinagar, Bangalore)	0	0.995526	0
Ananya Hospital Pvt. Ltd. (M.G. Road, Bangalore)	0	0.995459	0
Astha Super Speciality Hospital	0	0.996039	0
Naanjappa Life Care (Shivamogga)	0	0.996649	0
Amrutha Life Line (Shimoga)	0	0.995272	0
Sandhyashree Hospital (Vijayanagar, Bangalore)	0	0.995625	0
Usha Multispeciality Hospitals	0	0.995495	0
Cloudline Hospital	0	0.995424	0
ZYMUS Hospital (Road Bangalore)	0.996118	0	0
Divakars Speciality Hospital (JP Nagar Bangalore)	0	0.998557	0
Sushodha Institute of Gastroenterology (Shivamogga)	0	0.99424	0
Manjunatha (product in charge)	0	0.574469	0.422903

Source: Created by Authors

The analysis of the topic modelling results reveals distinct perspectives on sustainable procurement among the decision-makers in the super specialty hospitals.

Dominant Topics

General Green Procurement Focus (Topic 1):

This topic is prevalent across many hospitals, indicating a strong awareness of sustainable procurement practices. Hospitals like Manipal Hospitals (Jayanagar)

and Rajshekar Multispecialty Hospital exhibit very high scores (0.995398 and 0.995965 respectively), suggesting that decision-makers prioritize discussions around general environmental concerns and procurement strategies.

Green Procurement and Cost (Topic 2):

This topic, while less dominant overall, is particularly emphasized in specific hospitals like Samarpada Multi-Speciality Hospital and Nanjappa Life Care Super-Speciality Hospital, with scores of 0.997284 and 0.953021 respectively. This indicates a significant concern regarding the cost implications of sustainable procurement decisions, especially in medical product purchasing.

Sustainability Practices and Procurement (Topic 3):

This topic shows moderate representation, with hospitals like Cura Hospitals focusing on sustainability in their procurement practices, as indicated by a score of 0.996734. Although this topic is less frequent, it highlights the role of sustainability in long-term procurement strategies.

Key Perspectives

The keywords associated with each topic suggest that decision-makers in hospitals are primarily concerned with:

General Awareness:

A broad understanding of sustainable procurement principles.

Cost Concerns:

The financial implications of adopting green or sustainable products.

Sustainability Practices:

Specific operational strategies for implementing sustainable practices within hospital operations.

The overall trend indicates that while general awareness of green procurement is prevalent, cost concerns significantly influence purchasing decisions, which may slow the adoption of comprehensive sustainability practices in the healthcare sector.

Examining the Drivers and Barriers Related to Each Topic

Drivers:

General Green Procurement Focus:

The growing societal demand for environmentally friendly practices is driving hospitals to adopt sustainable procurement strategies.

Green Procurement and Cost:

The potential for long-term cost savings through resource-efficient products can motivate hospitals to explore green options.

Sustainability Practices and Procurement:

A commitment to sustainability can enhance the hospital's brand reputation, attracting eco-conscious patients and stakeholders.

Barriers:

General Green Procurement Focus:

Lack of specialized knowledge or training among hospital staff can hinder the effective implementation of sustainable procurement practices.

Green Procurement and Cost:

High initial costs associated with green or sustainable products can deter hospitals from making sustainable choices, especially when immediate budgets are tight.

Sustainability Practices and Procurement:

Limited access to suppliers offering sustainable medical products may restrict options for decision-makers.

Exploring Variations Between Hospitals

The distribution of topics across the hospitals reveals significant variations in focus:

Manipal Hospitals (Jayanagar) and Rajshekar Multispecialty Hospital prioritize general green procurement, indicating a foundational commitment to sustainability.

Samarpada Multi-Speciality Hospital and Nanjappa Life Care Super-Speciality Hospital emphasize cost-related discussions, suggesting a more cautious approach toward adopting green practices due to financial concerns.

Cura Hospitals shows strong associations with sustainability practices, reflecting their strategic focus on integrating sustainable procurement into their operations.

Sentiment Analysis

Table:3 Sentimental Analysis

Hotel Name	Designation	Sentiment	Sentiment
Manipal Hospitals	Operations Head	Positive	0.722612
Rajshekar Multispecialty Hospital	Maintenance Manager	Positive	0.686894
Ramakrishna Hospital Pvt. Ltd.	Central Head	Positive	0.707386
Cura Hospitals	HR & Operations Manager	Positive	0.879776
Samarpada Multi-Speciality Hospital	Operations Head	Positive	0.550424
Nanjappa Life Care Super-Speciality Hospital	Biomedical Department	Positive	0.704424
Pragathi Multi Speciality Hospital	Manager	Positive	0.807672
Citi Hospital	AGM-General Manager	Positive	0.803232
Ananya Hospital Pvt. Ltd.	General Manager	Positive	0.798477
Astha Super Speciality Hospital	Service Manager	Positive	0.683195
Naanjappa Life Care	Assistant Manager	Positive	0.781718
Amrutha Life Line	Service Manager	Positive	0.726124
Sandhyashree Hospital	Family Physician	Positive	0.778625
Usha Multispeciality Hospitals	HR Manager	Positive	0.854665
Cloudline Hospital	Assistant Manager	Positive	0.884342
ZYMUS Hospital	General Manager	Positive	0.745682
Divakars Speciality Hospital	Manager	Positive	0.63275
Sushodha Institute of Gastroenterology	Administrative Officer	Positive	0.838669
Metro hospital	procurement Incharge	Positive	0.789669

Source: Created by Authors

The sentiment analysis of interviews conducted with various personnel from super specialty hospitals in Karnataka reveals a strongly positive attitude towards sustainable procurement practices. All sentiment scores are positive, indicating that hospital personnel view sustainable procurement favourably. This suggests a growing recognition of sustainability's importance in the healthcare sector, aligning with broader trends in ethical and responsible sourcing of products and services.

While the overall sentiment is positive, there are variations in the strength of this sentiment across the interviews. Sentiment scores range from 0.550424 to 0.884342, reflecting varying degrees of enthusiasm and commitment to sustainable procurement. This variation indicates that although personnel in all hospitals support sustainable initiatives, some hospitals may be more proactive or effective in implementing sustainable procurement practices than others.

Interpreting Variations in Sentiment Strength

The range of sentiment scores provides insight into the underlying attitudes and circumstances surrounding sustainable procurement practices:

High Sentiment Scores:

Hospitals like *Cloudline Hospital* (0.884342) and *Cura Hospitals* (0.879776) exhibit notably high sentiment scores. This suggests a strong commitment to sustainability, potentially driven by successful procurement policies, dedicated staff training on sustainable practices, or established partnerships with eco-friendly suppliers. These hospitals may also benefit from positive feedback from stakeholders and patients who appreciate sustainability efforts, enhancing their reputation and community trust.

Moderate Sentiment Scores:

Hospitals like *Usha Multispeciality Hospitals* (0.854665) and *Pragathi Multi Speciality Hospital* (0.807672) also show relatively high sentiment, indicating positive engagement with sustainable procurement but potentially with room for further improvement in policies or training.

Lower Sentiment Scores:

On the other hand, hospitals such as *Samarpada Multi-Speciality Hospital* (0.550424) and *Divakars Speciality Hospital* (0.63275) have the lowest positive sentiment scores. These lower scores could imply challenges in implementing sustainable procurement practices effectively. Possible reasons might include limited resources, lack of staff training on sustainability, or fewer supplier options that meet eco-friendly criteria. These hospitals may also adopt a less proactive approach to integrating sustainability into their procurement and operational strategies.

Word Frequency Analysis Results

This report analyzes the results of a word frequency analysis conducted on interviews with Operations Heads, General Managers, and other relevant personnel from various Super Specialty Hospitals in Karnataka, focusing on their experiences and practices related to **sustainable procurement**. The analysis identifies key themes, explores relationships between concepts, and assesses the scope of discussions surrounding sustainability within the healthcare sector.

Identifying Key Themes and Concepts

The most frequently mentioned words, such as "green," *"environmental," "procurement," "products,"* and *"organization,"* indicate a strong focus on the importance of environmentally friendly purchasing practices within hospitals. The prominence of *"green"* and *"environmental"* in these discussions reflects the growing awareness of sustainability and its practical implications for hospital procurement processes.

Managerial Focus and Practices

The presence of terms like *"procurement," "organization," "practices,"* and *"manager"* suggests that much of the conversation is centered on the managerial perspective of implementing *sustainable procurement* strategies. Managers seem to recognize the need for sustainability but emphasize how it integrates into their day-to-day operations and overall hospital strategy. Words like *"products"* and *"service"* highlight the practical nature of these discussions, with specific

reference to the goods and services being procured under the green procurement initiatives.

External Pressures and Compliance

The frequent appearance of terms such as *"government," "policy,"* and *"regulations"* implies that external pressures, especially governmental regulations, are significant factors driving green procurement decisions. This suggests that compliance with regulations surrounding sustainable practices plays a critical role in shaping how hospitals choose to purchase goods and services. Moreover, *"governmental incentives"* may encourage organizations to actively adopt *sustainable procurement* as a strategic advantage.

Broader Environmental Impacts

Additionally, the prominence of terms like *"reduction," "waste,"* and *"energy"* reflects an awareness of the broader environmental impact that comes with healthcare operations. These words resonate with existing literature on sustainability in the healthcare sector, particularly in areas like *waste management and energy conservation*. Hospitals are not only looking at the immediate benefits of *green procurement* but are also considering their contributions to larger environmental goals.

Practical Implications

The word frequency analysis also reveals terms like *"price," "incentives,"* and *"cost"*, indicating that *cost-effectiveness* is a recurring theme in discussions around green procurement. While sustainability is viewed positively, decision-makers are mindful of the financial implications of implementing *green practices*. This aligns with the challenges some hospitals may face when balancing the need for *sustainability* with *budget constraints.*

In summary, the word cloud analysis reflects a growing consensus among Super Specialty Hospitals in Karnataka regarding the importance of *sustainable procurement.* Hospital personnel demonstrate a *positive attitude* towards *green purchasing,* influenced by *regulations, environmental awareness,* and the desire to align with *sustainable practices.* However, the presence of terms like *"cost"* and *"price"* suggests that financial considerations remain an essential factor when implementing these initiatives.

Fig No: Word cloud explaining the key words that are prominent in green buying in hospitals

Source: Created by the authors by using orange software

Exploring Relationships Between Concepts

Word Associations:

The co-occurrence of words such as *"green," "product,"* and *"procurement"* indicates a clear relationship between the procurement strategies of super specialty hospitals and their commitment to environmentally friendly products. This suggests that hospital administrators and procurement managers are actively seeking sustainable products as part of their purchasing processes. Similarly, the association between terms like *"policy," "incentives,"* and *"governmental"* highlights the role of external policies and incentives in motivating hospitals to adopt *green procurement* practices. This shows that *government regulations* and *incentives* are major driving forces behind sustainable initiatives in the healthcare sector.

Bridging Terms:

Terms such as *"manager," "leadership,"* and *"organizational"* serve as connectors between *strategic planning* and the *practical implementation* of sustainable procurement initiatives in hospitals. They suggest that effective leadership and commitment from the management team are crucial in fostering a *culture of sustainability* within healthcare organizations. It indicates that *organizational support* and *managerial leadership* are key to ensuring the successful integration of sustainability goals into the hospital's procurement strategies.

Tensions and Trade-offs:

The frequent mention of both *"green"* and *"price"* signals potential tensions between *sustainability initiatives* and *cost considerations* in the hospital procurement process. This reflects a common challenge in the healthcare sector where administrators and managers must balance *environmental objectives* with *budgetary constraints*. Such trade-offs are often necessary to ensure that the hospital can maintain both *financial sustainability* and *environmental responsibility*, echoing concerns in existing literature about the financial implications of adopting green practices in healthcare procurement.

Findings:

Internal and External Drivers of Sustainable Procurement:

The study reveals that sustainable procurement in super specialty hospitals is influenced by both internal factors such as hospital management's commitment, operational efficiency goals, and external pressures like government regulations and market demands. Hospitals with higher sentiment scores (indicating positive management attitudes toward sustainability) were more proactive in implementing green procurement practices.

Challenges in Implementation vs. Perceived Benefits:

Hospitals faced several challenges in adopting sustainable procurement, including cost constraints, supplier cooperation, and resource availability. However, the positive sentiment analysis results (ranging from moderately positive to highly positive) suggest that despite these challenges, hospitals acknowledged benefits like improved brand reputation, reduced environmental footprint, and better patient and staff satisfaction.

Stakeholder Influence on Sustainable Practices:

Stakeholders, especially patients and hospital staff, played a significant role in influencing hospitals to adopt sustainable procurement practices. The sentiment analysis indicated that hospitals with visible sustainable efforts were perceived more positively, enhancing trust and loyalty among patients, particularly in those concerned about environmental responsibility.

Role of Regulatory and Market Pressures:

Governmental and regulatory pressures, along with market competition, were found to be critical drivers for hospitals to move toward sustainable procurement. Hospitals that adopted eco-friendly procurement practices to comply with regulations experienced positive sentiment shifts from both internal and external stakeholders.

Sustainable Procurement as a Competitive Advantage:
Hospitals that actively pursued sustainable

procurement, particularly those implementing eco-friendly technologies and sustainable supplier relationships, gained a significant competitive advantage. These hospitals were perceived as more innovative and responsible, which was reflected positively in the sentiment analysis results.

The study on sustainable procurement in super specialty hospitals in Karnataka reveals a growing recognition of the importance of sustainability within healthcare procurement. While challenges such as cost constraints, supplier collaboration, and operational limitations exist, the study shows a positive shift toward integrating sustainable practices in procurement processes. Hospitals with strong internal management support, clear environmental goals, and commitment to complying with regulatory standards are better positioned to implement sustainable procurement successfully. Sentiment analysis highlights a predominantly positive outlook among stakeholders, indicating that hospitals are motivated by both internal drivers, such as operational goals and efficiency, and external pressures, including regulatory demands and market trends. These hospitals not only benefit from improved operational efficiency, reduced environmental impact, and enhanced brand reputation but also experience increased patient loyalty and satisfaction when visible sustainability efforts are made. The research demonstrates that sustainable procurement practices are a crucial component for long-term success in the healthcare industry rather than just a passing trend.

Discussion

Drivers of Green Purchasing

Internal Drivers:

Management Commitment:

Leadership plays a pivotal role in embedding sustainability within hospital operations. The data reveals that management's intrinsic motivation, with green purchasing rooted in core values rather than external incentives, is a key driver. For instance, super specialty hospitals in Karnataka emphasize the importance of adopting sustainable procurement practices as a reflection of their commitment to environmental responsibility. This commitment is evident from the positive sentiment surrounding hospital managers' focus on green purchasing strategies.

Operational Efficiency Goals:

Hospitals focus on integrating energy-efficient technologies and waste reduction mechanisms to improve operational performance while aligning with sustainability goals. For example, hospitals with advanced waste management systems and efficient resource use are able to optimize operational efficiency and contribute to sustainability initiatives simultaneously.

External Drivers:

Regulatory Requirements:

Regulatory compliance emerges as a significant motivator for sustainable procurement practices in super specialty hospitals. Frequent mentions of "governmental policies" in the word frequency analysis indicate that adherence to environmental laws and guidelines is crucial for the hospital's operational legitimacy. Hospitals must align with environmental standards to maintain compliance and avoid penalties.

Market Demands and Supplier Relationships:

The competitive advantage of sustainability is highlighted by the growing market demand for eco-friendly products and sustainable supply chains. Hospitals in Karnataka are recognizing that partnering with green-certified suppliers and vendors not only meets regulatory requirements but also enhances their reputation in the healthcare industry.

Implementation Mechanisms

Policy Development:

Incorporating environmental criteria into procurement policies is essential for hospitals. Super specialty hospitals prioritize screening suppliers for sustainability credentials, with preference given to vendors holding ISO certifications or similar credentials. This ensures

that the procurement process is aligned with green practices, as emphasized by the word associations between "green," "product," and "procurement."

Resource Allocation:

Budget Considerations:

Cost concerns remain a barrier to green procurement in some hospitals. Hospitals with constrained budgets highlight financial challenges in adopting sustainable practices consistently. However, others demonstrate leadership-driven financial support for sustainability initiatives, recognizing the long-term benefits of green procurement.

Cost-Benefit Analysis:

Positive impacts on service output and operational efficiency are often reported, with green procurement practices enhancing overall hospital performance. For example, advanced technologies for energy efficiency and waste reduction not only align with sustainability goals but also yield significant operational benefits for hospitals.

Operational Integration:

Staff training plays a vital role in the successful implementation of sustainable procurement. Super specialty hospitals dedicate significant resources to employee education on sustainability initiatives, ensuring that procurement teams and other stakeholders are fully aware of the environmental criteria and practices to be adopted. This operational integration fosters a culture of sustainability across all levels of hospital operations.

Outcome Measures

Environmental Impact:

Metrics such as waste reduction and energy efficiency are widely implemented in super specialty hospitals. Hospitals adopt practices such as renewable energy usage and advanced waste management systems, directly contributing to their environmental goals. These practices not only reduce the hospital's carbon footprint but also align with broader sustainability objectives.

Organizational Performance:

Enhanced brand reputation is a recurring outcome of adopting sustainable procurement practices. Hospitals that incorporate green practices into their procurement processes improve their reputation, build trust among stakeholders, and demonstrate leadership in environmental responsibility. Cost savings through efficient resource use, such as reduced energy consumption, are another notable benefit observed in several super specialty hospitals.

Stakeholder Satisfaction:

Patient Experience:

Sustainable initiatives improve patient satisfaction by contributing to a healthier environment within the hospital. Green procurement practices, such as the use of eco-friendly materials and technologies, lead to better patient care environments, which, in turn, enhance patient satisfaction.

Regulatory Compliance:

High compliance with environmental regulations is crucial for the hospital's operational legitimacy and maintaining stakeholder trust. Hospitals that prioritize sustainability are better positioned to meet regulatory requirements and demonstrate a commitment to both environmental and social responsibility.

Scope And Limitations

Scope

- The study focused on a hospital in Karnataka, India
- Research examined primarily star-rated and established hospitals
- Analysis concentrated on procurement practices between 2023-2024

- Study included perspectives from 20 Hospital managers/decision-makers

Limitations

- Geographic concentration limits generalizability to other regions
- Sample size of 20 managers may not represent all hospital categories
- Qualitative approach restricts statistical generalization
- Focus on management perspective excludes other stakeholder views
- Research timing during post-pandemic recovery may affect findings
- Limited access to financial data constraints cost-benefit analysis

Future research could address these limitations through broader geographic sampling, quantitative methods, and multi-stakeholder perspectives.

Conclusion & Implications

The implications of the study suggest that hospitals must stay updated with evolving regulatory requirements to ensure compliance and foster sustainable practices in procurement. Management's commitment is vital, as the study emphasizes that hospitals with active management support are more successful in integrating sustainability into their procurement strategies. Furthermore, while cost considerations remain a challenge, sustainable procurement can lead to long-term cost savings through efficiency gains and waste reduction. Hospitals must focus on educating their procurement teams about the financial benefits of sustainable purchasing. Engaging stakeholders, including patients, staff, and suppliers, is essential for the success of sustainable procurement initiatives. Building strong relationships with suppliers who prioritize sustainability and involving patients and staff in sustainability programs can help hospitals make significant strides in their green procurement efforts. Additionally, effectively communicating sustainability efforts can serve as a tool for market differentiation, particularly when it resonates with patients' preferences for eco-friendly healthcare providers. Future research could further explore the financial implications of sustainable procurement and examine its long-term impact on hospital reputation and patient outcomes. In conclusion, sustainable procurement is not only a moral and environmental responsibility for super specialty hospitals but also an economic strategy that can drive operational excellence, enhance brand reputation, and improve patient satisfaction in a highly competitive healthcare market.

References

i. Ahsan, K., & Rahman, S. (2017). Green supply chain management in healthcare: A case for the health service industry. *Journal of Cleaner Production, 142*, 129-145. https://doi.org/10.1016/j.jclepro.2016.07.123

ii. Benzidia, S., Makaoui, N., & Bentahar, O. (2021). The role of BDA-AI technologies in green supply chain integration and environmental performance in hospitals. *Technological Forecasting and Social Change, 163*, 120483. https://www.sciencedirect.com/science/article/abs/pii/S0040162520313834

iii. Duque-Uribe, V., Sarache, W., & Gutiérrez, E. V. (2019). Sustainable supply chain management practices and sustainable performance in hospitals: A systematic review and integrative framework. *Sustainability, 11(21)*, 5949. https://doi.org/10.3390/su11215949

iv. Jian Guo, D., Boateng Sarpong, P., Antwi, H. A., & Mensah, I. A. (2020). Evaluation of green procurement practices among mining hospitals in Ghana. *Environmental Health Insights, 14*, 1178630219843115. https://journals.sagepub.com/doi/full/10.1177/1178630219843115

v. McGain, F., & Naylor, C. (2014). Sustainability in healthcare: A systematic review of environmental performance. *Journal of Health Services Research & Policy, 19(2)*, 114-120. https://doi.org/10.1177/1355819614534836

vi. Oruezabala, G., & Rico, J.-C. (2012). The impact of sustainable public procurement on supplier management – The case of French public hospitals. *Industrial Marketing Management, 41(4)*, 573-580. https://www.sciencedirect.com/science/article/abs/pii/S0019850112000879

vii. Rico, J.-C., & Oruezabala, G. (2013). Sustainable supply management within public hospitals: Exploring procurement

processes and guidelines. *Public Money & Management, 33(2)*, 133-140. https://www.tandfonline.com/doi/abs/10.1179/2047971912Y.0000000013

viii. Rodriguez, R., Svensson, G., & Wood, G. (2020). Sustainability trends in public hospitals: Efforts and priorities. *Evaluation and Program Planning, 78*, 101731. https://doi.org/10.1016/j.evalprogplan.2019.101731

ix. Swarnakar, V., Bagherian, A., & Singh, A. R. (2022). Prioritization of critical success factors for sustainable Lean Six Sigma implementation in Indian healthcare organizations using best-worst-method. *The TQM Journal, 35(3)*, 630-653. https://doi.org/10.1108/ijqrm-04-2021-0099

x. Vărzaru, A. A. (2022). An empirical framework for assessing the balanced scorecard impact on sustainable development in healthcare performance measurement. *International Journal of Environmental Research and Public Health, 19(22)*, 15155. https://doi.org/10.3390/ijerph192215155

xi. Yanginlar, G., & Acer, A. (2018). Green purchasing practices in public hospitals: Impact of environmentally friendly behavior of healthcare personnel. *The Online Journal of Science and Technology, 8(3)*, 22-30. https://tojsat.net/journals/tojsat/volumes/tojsat-volume08-i03.pdf#page=22