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Editorial

On behalf of the Editorial Board, we are glad to present Volume 21, Issue 1 of our journal, Pragyaan: Journal of Management (Pragyaan: JOM). It continues to gain appreciation and accolades as it provides a platform that stimulates and guides the intellectual quest of management scholars and practitioners.

Pragyaan: JOM is a bi-annual, double blind reviewed, open access journal that brings to the readers high quality research in Management that should help to address the challenges of 21st century. The journal contributes to the development of theory and practice in the field of management and presents literary work in the form of academic papers, case studies, and articles that contribute to contemporary research and practice. The journal aims to facilitate researchers, scholars, resource persons and practitioners to come together on a common platform and share the findings of their research with academia and practitioners so that research findings may be utilized to improve businesses and society at large.

The current issue taps the empirical and conceptual research work that deals with topics such as: Analysis of emerging technologies and sustainability initiatives used by organizations: The case of Amazon; Effect of working capital management on profitability of bottler's Nepal (TERAI); Deep learning and arima modeling analysis for SBI stock price prediction: a comparative study for risk management and investment decision; Provision for household water supply in India; Influencer marketing strategy of a startup as a provider of fast-moving consumer goods (FMCG) in India and Empirical study of candidate's personal factors impacting recruitment process in staffing companies.

We are deeply thankful to the authors for their scholarly contributions to the journal. We express our gratitude to the panel of referees for the time and thought invested by them and for giving us sufficient insights to ensure the quality of   papers. A heartfelt special thanks goes to Dr. Gurdip Singh, Chancellor, Brigadier (Dr.) M Srinivasan, Vice Chancellor, Dr. Ravikesh Srivastava, Pro Vice Chancellor, members of the Editorial Board and the members of the Board of Management for their constructive feedback, warm encouragement, and never-ending support. We would like to express our gratitude to the Associate Editors for their valuable contribution in ensuring the quality and rigour of the journal and preparing the reader-friendly manuscript for the Press.

Further, we are thankful to the faculty members of the School of Management for their cooperation and support.

We hope our readers find the contents, findings and suggestions contained in this issue of Pragyaan: JOM to be informative, thought-provoking and of practical relevance. We invite comments and suggestions from our readers to enable us to continuously improve our efforts for upgrading the quality of the journal.

Dr. Parshuram G Dangwal
Dr. Pankaj Misra
Editors

Pragyaan: Journal of Management

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Analysis of Emerging Technologies and Sustainability Initiatives used by Organizations: The Case of Amazon

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ABSTRACT

This analysis delves into the strategic integration of emerging technologies and sustainability initiatives within organizations, with a specific focus on Amazon. In the contemporary landscape, businesses are compelled to address the dual challenges of technological advancement and environmental stewardship. Through an examination of Amazon's practices, this study elucidates the symbiotic relationship between harnessing cutting-edge technologies and championing sustainable practices. The analysis explores Amazon's adoption of renewable energy solutions, waste reduction measures, supply chain optimizations, and innovative approaches to logistics, underscoring how these endeavors not only elevate the company's environmental performance but also resonate with its long-term business strategy. By extrapolating insights from Amazon's journey, this analysis contributes to a broader understanding of how organizations can navigate the evolving terrain of technology while safeguarding the planet's ecological equilibrium.

Key Words: Sustainability, Amazon, Artificial Intelligence, Renewable energy, Emerging technologies

1. Introduction

Amazon's pioneering efforts in merging emerging technologies with sustainability initiatives offer valuable insights for organizations across industries. It serves as a beacon, guiding companies towards a future where innovation is intrinsically linked with environmental stewardship. The lessons from Amazon's journey emphasize that by harnessing technological prowess while embracing responsible practices, businesses can contribute to a more sustainable and prosperous world. Amazon's unwavering commitment to sustainability is prominently exemplified through its substantial investments in renewable energy. This resolute dedication not only underscores the company's responsibility to address its environmental footprint but also signifies its active role in fostering the expansion and prevalence of clean energy resources on a global scale. Through the establishment of solar and wind energy projects, Amazon has positioned itself as a pivotal player in the transition towards sustainable energy practices. Collaborating with renowned renewable energy developers and forging strategic partnerships, the company has successfully woven a tapestry of solar installations and wind farms into its operational fabric. This integration of renewable energy infrastructure has resulted in the generation of a substantial quantity of clean electricity, steering the company's energy consumption in a more environmentally conscious direction.

A remarkable aspect of Amazon's approach lies in its adept utilization of the unique attributes of different geographical regions. The intricate strategy of siting projects in areas with abundant sunlight or consistent wind patterns optimizes energy output. Solar projects thrive in sun-soaked regions, while wind farms flourish where the wind's kinetic potential can be harnessed effectively. This strategic diversity enhances the reliability and resilience of Amazon's renewable energy portfolio. Central to Amazon's agenda is its audacious pledge to achieve 100% reliance on renewable energy sources within a defined timeframe. This ambitious commitment underscores not only the company's goal to expand renewable energy generation but also its resolve to enhance energy efficiency and curtail overall energy consumption across its vast operations.

2. Emerging Technologies

a) **Artificial Intelligence (AI):** Artificial Intelligence (AI) is a revolutionary technology that enables machines to mimic human intelligence, learn from data, and perform tasks like problem-solving and decision-making. Machine learning and neural networks are key components, driving applications in diverse fields. In business, AI enhances

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efficiency, powering chatbots for customer service and data analytics for insights. Healthcare benefits from AI-driven diagnostics and drug discovery. AI also transforms education through adaptive learning and language translation. However, ethical concerns like bias and job displacement must be addressed. AI's future includes autonomous vehicles, climate modeling, and creative applications. Responsible development and collaboration are vital to shaping AI's impact on society positively.

b) AI-Enhanced Supply Chain Optimization: In addition to AI-powered customer recommendations, Amazon has also harnessed the power of artificial intelligence to optimize its complex supply chain operations. The integration of AI technologies into its supply chain management has led to enhanced efficiency, reduced costs, and improved customer satisfaction.

c) Robotics: As of 2021, Amazon has over 200,000 robots in its warehouses worldwide, with plans to add more in the coming years. The use of robots has helped Amazon increase efficiency and productivity, leading to faster order fulfillment and delivery times.

d) Blockchain: In 2019, Amazon filed a patent for a blockchain-based system that would allow customers to verify the authenticity of products they purchase online. Amazon has also partnered with blockchain startup Kaleida to develop a blockchain platform for supply management.

e) Internet of Things (IoT) Amazon has embraced the transformative power of the Internet of Things (IoT) to redefine user experiences and operational efficiencies. Through a diverse range of IoT devices, including Echo smart speakers and Ring doorbell cameras, Amazon has created a seamless ecosystem of connected devices that offer voice-activated controls, real-time monitoring, and interactive features. In its vast supply chain, Amazon leverages IoT technology to optimize processes. Smart sensors and RFID tags track inventory, ensuring accurate stock levels and efficient logistics. Within its warehouses, Amazon employs IoT-enabled robotics and sensors to automate inventory management and enhance order fulfillment accuracy.

Furthermore, Amazon's integration of IoT devices into smart homes empowers users to control various aspects of their living environment through voice commands, promoting convenience and connectivity.

By harnessing IoT-generated data, Amazon gains valuable insights into user behaviors and preferences, allowing for tailored recommendations and optimized product offerings.

As a pioneering force in IoT, Amazon's commitment extends to its cloud services. Amazon Web Services (AWS)

provides IoT solutions, enabling businesses to develop and deploy IoT applications with robust security measures.

However, Amazon is vigilant about privacy and security concerns tied to IoT, employing encryption and authentication protocols to safeguard user data. With ongoing investments in IoT innovation, Amazon continues to redefine how users interact with technology and how businesses can optimize operations in an increasingly interconnected digital landscape.

3. Sustainability Initiatives

Amazon's sustainability initiatives showcase a comprehensive commitment to minimizing its environmental footprint. Through efforts such as transitioning to renewable energy sources, including solar and wind, optimizing packaging to reduce waste, and spearheading eco-friendly product design, Amazon aims to exemplify responsible business practices. The company's dedication to sustainability extends to its operations and logistics, with a focus on energy-efficient technologies and emissions reduction. By engaging in projects like reforestation and investing in electric delivery vehicles, Amazon strives to align its operations with long-term sustainability goals. These initiatives not only demonstrate Amazon's commitment to environmental stewardship but also serve as a model for fostering positive change within the business landscape.

4. Investments in Renewable Energy

Shifting towards renewable energy sources stands as a paramount strategy in effecting substantial reductions in carbon emissions. In consonance with its unwavering pledge to attain net-zero carbon emissions, Amazon is diligently advancing towards a pivotal milestone: the complete powering of operational activities using 100% renewable energy by the year 2025. Notably, this ambitious timeline will position Amazon five years ahead of its initial target set for 2030.

The crux of this approach revolves around ensuring that every facet of the electricity consumed is unequivocally linked to renewable energy origins. This entails a comprehensive reconfiguration of energy-sourcing framework, fostering a holistic transition that reflects company's commitment to environmental stewardship. As Amazon progresses steadfastly on this trajectory, its endeavor to harness renewable energy sources underscores the dedication to curb its carbon footprint, ultimately contributing to a more sustainable future for both Amazon's operations and the broader global community.

5. Solar and Wind Energy Projects

Solar and wind energy projects have emerged as pivotal players in the global shift towards more sustainable and

renewable energy sources. These projects harness the abundant and naturally occurring power of the sun and wind to generate electricity, presenting a host of benefits for both the environment and society at large. Solar energy projects involve the deployment of photovoltaic (PV) panels that convert sunlight directly into electricity through the photovoltaic effect. These panels, often mounted on rooftops, open fields, or solar farms, capture solar radiation and produce clean energy without emitting greenhouse gases or other pollutants. The scalability of solar installations, ranging from small residential systems to large utility-scale arrays, allows for diverse applications across residential, commercial, and industrial sectors.

Wind energy projects, on the other hand, rely on the kinetic energy present in moving air masses. Large wind turbines, typically situated onshore or offshore in wind farms, feature rotating blades that convert wind energy into mechanical power through a generator. This mechanical power is then converted into electricity, contributing to the power grid. Wind energy projects offer the advantage of being able to generate substantial amounts of electricity, making them suitable for supplying entire communities or regions with clean power. Both solar and wind energy projects contribute significantly to reducing reliance on fossil fuels, mitigating climate change, and achieving energy security. They provide a reliable and consistent source of energy, and once the initial infrastructure is in place, the operational costs are relatively low. Additionally, these projects create job opportunities in manufacturing, installation, maintenance, and research.

However, challenges persist in the solar and wind energy sectors. The intermittent nature of these resources necessitates effective energy storage solutions to ensure a steady supply of electricity even during periods of low sunlight or calm winds. Technological advancements in energy storage systems, such as batteries, are addressing this issue. Additionally, the integration of renewable energy into existing energy grids requires sophisticated grid management and regulatory adjustments to maintain stability and balance. Solar and wind energy projects symbolize a fundamental shift towards sustainable energy production. These projects not only harness nature's abundance but also contribute to cleaner air, reduced greenhouse gas emissions, and increased energy independence. As technological innovations continue to advance, the role of solar and wind energy in our energy landscape is poised to expand, fostering a greener and more sustainable future.

6. Renewable Energy Procurement

Amazon's commitment to sustainability is underscored by its significant efforts in renewable energy procurement.

The company has taken substantial steps to integrate renewable energy sources into its operations, demonstrating a dedication to reducing its carbon footprint and mitigating the effects of climate change. Amazon's renewable energy procurement strategy encompasses a multifaceted approach. One of the primary methods is the establishment of solar and wind energy projects. Through partnerships with renewable energy developers and investments in these projects, Amazon has been able to generate a substantial amount of clean electricity. Solar installations, consisting of photovoltaic panels, and wind farms, with their towering turbines, contribute to the company's renewable energy portfolio.

By strategically locating these projects in various regions, Amazon can tap into the unique energy potential of each area. Sunny regions are harnessed for solar energy, while areas with consistent wind patterns are utilized for wind energy generation. This diversity of sources enhances the reliability and resilience of Amazon's renewable energy supply. To accelerate the transition to renewable energy, Amazon has made ambitious commitments. One of the standout goals is the company's commitment to be powered by 100% renewable energy by a specific target year. This involves not only increasing the generation of renewable energy but also focusing on energy efficiency and reducing overall energy consumption.

Amazon's renewable energy procurement extends beyond its operations. Through initiatives like the "Amazon Web Services (AWS) Cloud and Sustainability," the company is dedicated to providing cloud computing services while minimizing the associated environmental impact. AWS has set goals to power its data centers with renewable energy and has been investing in large-scale renewable energy projects to achieve these objectives. Moreover, Amazon's commitment to renewable energy procurement goes hand in hand with its dedication to innovation. The company is continually exploring and implementing advanced technologies to improve the efficiency of renewable energy systems, energy storage solutions, and smart grid integration.

Amazon's renewable energy procurement efforts showcase its leadership in sustainability within the corporate sector. By leveraging its scale and resources, Amazon is contributing to the growth of renewable energy capacity, driving down costs, and inspiring other companies to adopt similar sustainable practices. This commitment not only aligns with Amazon's long-term environmental goals but also sets an example for others to follow in the global transition to a cleaner energy future.

7. Frustration-Free Packaging Initiative

Amazon Certified Frustration-Free Packaging represents a

commitment to sustainability by ensuring that packaging is both environmentally friendly and devoid of unnecessary materials. This innovative packaging solution is not only recyclable but also eliminates excess packaging, aligning with company's dedication to reduce environmental impact. Importantly, the product contained within this Certified Frustration-Free Packaging remains unchanged from the original manufacturer's version, and all components that would typically be found in the original packaging are included.

For those seeking to maintain the element of surprise when sending a gift, Amazon offers convenient options during the checkout process. Customers can choose the "gift" option if available, or they can opt to "Ship in Amazon box" directly on the checkout page if the choice is presented. By selecting this preference, the item will be dispatched within an Amazon.com box, and this additional service is provided without incurring extra charges.

In instances where the dimensions of larger gift items preclude their shipment within an Amazon box, it is advisable to consider designating an alternate delivery address. This approach ensures that the intended recipient can still experience the joy of a surprise while receiving their gift. Amazon's dedication to delivering a seamless and delightful customer experience remains at the forefront of these options, ensuring that both the presentation and sustainability aspects are harmoniously addressed.

Amazon's Transformative Investments in Renewable Energy

Amazon's investment in renewable energy showcases its dedication to mitigating its environmental impact while promoting the growth of clean energy sources. By incorporating solar and wind projects and partnering with renewable energy providers, Amazon is taking active steps toward a more sustainable future.

It is noteworthy that Amazon's commitment extends beyond its immediate sphere of influence. Through the pioneering "Amazon Web Services (AWS) Cloud and Sustainability" initiative, the company strives to provide cutting-edge cloud computing services while minimizing the ecological impact associated with data centers. AWS's endeavors to power its data centers with renewable energy sources symbolize Amazon's aspiration to extend its commitment to renewable energy to all facets of its operations.

Furthermore, Amazon's dedication to renewable energy investments is intertwined with its ethos of innovation. The company continually explores and integrates advanced technologies, such as energy storage solutions and smart grid integration, to optimize the efficiency of its renewable

energy systems.

Amazon's investments in renewable energy radiate a compelling message to the corporate world and beyond. By harnessing its immense scale and resources, Amazon not only spearheads the expansion of renewable energy capacity but also endeavors to lower the economic barriers associated with clean energy adoption. This resounding commitment sets a precedent, encouraging other entities to embrace sustainability and collectively usher in an era of clean energy dominance, thereby fortifying the march towards a more sustainable and harmonious planet.

Renewable Energy: As of 2020, Amazon has invested in over 6.5 GW of renewable energy capacity, with plans to reach 10 GW by 2025. The company also has 127 solar and wind projects in operation or development worldwide.

Sustainable Packaging: Amazon's Frustration-Free Packaging program has eliminated over 900,000 tons of packaging materials since its launch in 2008. In 2020, the company also launched the Climate Pledge Friendly program, which highlights products that have sustainable certifications or meet other sustainability standards.

Carbon Footprint Reduction: In 2019, Amazon launched a fleet of electric delivery vehicles, with plans to have 100,000 electric vehicles in operation by 2030. The company has also invested in renewable energy and energy efficiency projects to reduce its carbon footprint. As of 2021, Amazon has reduced its carbon intensity by 35% compared to 2015 levels. Overall, it is clear that Amazon is taking its environmental impact seriously and is committed to using emerging technologies to drive sustainability. It will be interesting to see how these efforts continue to evolve in the coming years, and how other organizations will follow in Amazon's footsteps to prioritize sustainability in their operations.

8. Challenges and Considerations: Ethical and Regulatory Aspects:

Ethical and regulatory dimensions intricately interlace with the integration of emerging technologies and sustainability initiatives. Amazon's case illuminates several challenges and considerations that warrant careful attention.

Amazon's expansive use of data-driven technologies raises ethical concerns regarding data privacy and security. The substantial data collected, especially through IoT devices, demands rigorous safeguards to ensure the protection of user information. Striking a balance between data utilization and individual privacy emerges as a significant challenge that organizations must navigate.

Furthermore, the adoption of AI in decision-making processes necessitates transparency and accountability.

The potential for bias in AI algorithms underscores the importance of regular audits and ethical assessments to prevent discriminatory outcomes. The responsible deployment of AI-driven solutions demands a clear understanding of potential biases and their implications.

In addition, the regulatory landscape presents a complex hurdle. Emerging technologies often outpace existing regulations, creating uncertainty about compliance. Amazon's experience underscores the necessity of proactive engagement with regulatory bodies to shape frameworks that promote both innovation and responsible practices.

Global operations, like Amazon's, entail adherence to diverse regulations across jurisdictions. This intricacy calls for an intricate understanding of regional variations, ensuring that sustainability initiatives and technology deployments align with local legal frameworks and cultural norms.

Moreover, the responsible management of supply chains demands vigilance. The sourcing of materials for IoT devices, electronics, and renewable energy projects must adhere to ethical standards that prevent environmental degradation and human rights violations.

the integration of emerging technologies and sustainability initiatives is entwined with ethical and regulatory challenges. By addressing data privacy, transparency in AI, compliance with evolving regulations, global nuances, and responsible supply chain management, organizations can proactively navigate these intricate considerations. Amazon's journey offers a valuable lesson in approaching these challenges with foresight and integrity.

Amazon is actively addressing the climate change challenge by progressively incorporating electric trucks into its operations. This strategic move exemplifies the e-commerce behemoth's commitment to advancing sustainability.

The goods transportation sector, a rapidly expanding and essential component of the global economy, poses a substantial challenge in the pursuit of sustainability. Emissions stemming from heavy-duty vehicles have exhibited a consistent annual increase of 2.2% since the year 2000. Consequently, regulatory bodies at regional levels are consistently implementing new guidelines aimed at curbing emissions. Initiatives such as the European Green Deal and California's Advanced Clean Cars II rule are pivotal in steering the industry toward an emissions-free future, yet it remains the responsibility of private enterprises to diminish their environmental footprint while maintaining the stability of this vital sector.

Amazon, a frontrunner in e-commerce, has demonstrated
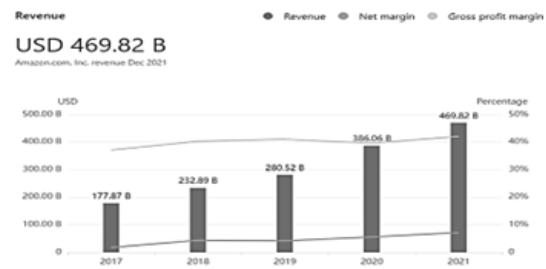
Fig.1: Amazon.com Inc. Revenue as on Dec 2021
Source: Openaccessgovernment.org/amazon-leads-ecommerce-sustainability-with-electric-truck-rollout

a laudable commitment to sustainability and the reduction of its climate impact. In 2019, Amazon played a co-founding role in establishing the Climate Pledge, a commitment that pledges Amazon to achieve carbon neutrality by the year 2040-ten years ahead of the targets outlined in the Paris Agreement.

To meet these ambitious objectives, Amazon has harnessed its culture of innovation. Amazon experienced significant growth during the pandemic, capitalizing on the shift in consumer behavior towards online retailers. The company's revenue surged by an impressive 67.5% from 2019 to 2021. Nonetheless, this remarkable success was accompanied by adverse environmental ramifications, as Amazon's carbon emissions surged by 19% in the year 2020.

In response to these environmental challenges, Amazon demonstrated agility by swiftly transitioning to sustainable distribution methods. In 2021, the company deployed a fleet of more than 3,000 fully electric vans for deliveries throughout Europe. Furthermore, earlier this year, Amazon introduced a significant milestone in its UK operations by integrating five new electric Heavy Goods Vehicles (HGVs) into its fleet, thereby preventing the emission of 170 tons of CO_2. Additionally, Amazon has plans to introduce an additional four electric HGVs by the end of the current year.

Notably, DAF, a prominent truck manufacturer, is the provider of Amazon's latest electric HGV fleet in the UK. DAF has made substantial investments in innovation to disrupt the electric heavy goods vehicle market.
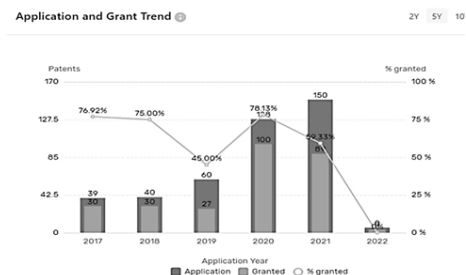
Fig.2: Patent Application and Grant Trend
Source: https://www.openaccessgovernment.org/

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Meanwhile, on the opposite side of the globe, Amazon has recently unveiled a fresh lineup of fully electric vans, marking a significant expansion of its eco-friendly delivery efforts across the United States. The company is making substantial strides to deploy a thousand electric vans in over 100 cities by the conclusion of this year, with a grander ambition to introduce 100,000 such vehicles throughout the United States by 2030.

This ambitious launch has been made possible through Amazon's strategic collaboration with Rivian, a cutting-edge automotive company specializing in high-tech solutions. Rivian has attracted substantial investment in recent years, amounting to a total of $19.3 billion in funding, with a notable contribution of $4.5 billion stemming from Amazon's commitment to fuel the growth of this transformative platform.
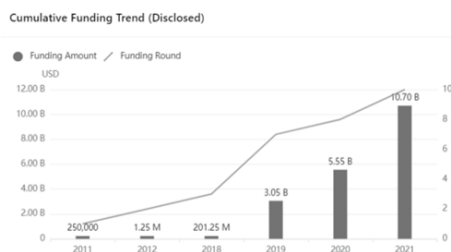
Fig.3: Cumulative Funding Trend
Source: https://www.openaccessgovernment.org

It's worth noting that Amazon is not alone in recognizing the significance of investing in electric vehicles (EVs). The broader EV market was estimated to be valued at approximately $196.42 billion in 2021, and it is anticipated to sustain a robust growth trajectory, with an expected year-over-year expansion rate of 17.39%. This underscores the increasing recognition of the potential and importance of EVs across various industries and markets.

9. Data-Driven Decision-Making: Enhancing Efficiency and Impact

The intersection of emerging technologies and sustainability initiatives has given rise to a powerful tool: data-driven decision-making. Amazon's approach to harnessing data exemplifies how this strategy can significantly enhance operational efficiency and the impact of sustainability efforts.

At the core of Amazon's success is its adept utilization of data analytics. The company's vast operations generate copious amounts of data, which, when properly analyzed, offer valuable insights into customer behaviors, market trends, and operational patterns. By harnessing this wealth of information, Amazon has been able to make informed decisions that drive efficiency in various domains, including supply chain management, inventory optimization, and logistics.

Emerging technologies, particularly Artificial Intelligence (AI) and the Internet of Things (IoT), play a pivotal role in data collection and analysis. IoT devices gather real-time information from diverse sources, enabling Amazon to monitor factors such as energy consumption, product lifecycles, and environmental conditions. These data points empower the company to identify inefficiencies, streamline processes, and minimize waste, ultimately contributing to its sustainability goals.

The synergy between data-driven decision-making and sustainability initiatives is strikingly evident in Amazon's drive towards renewable energy. The precise analysis of energy consumption patterns, aided by IoT sensors and data analytics, has enabled the company to strategically invest in renewable energy projects, optimizing the utilization of clean energy sources. This integration minimizes reliance on non-renewable energy, thereby lowering carbon emissions.
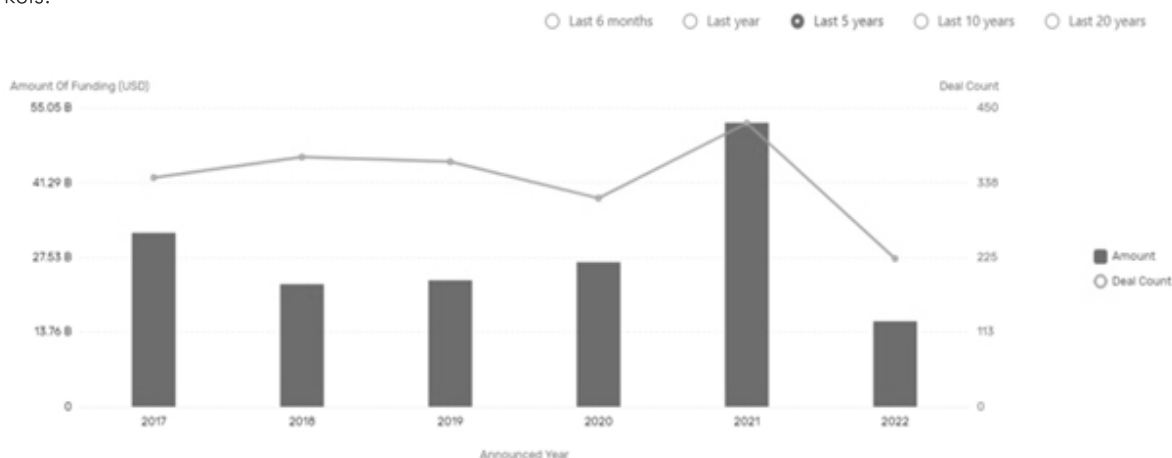
Fig.4: Amount of Funding (Yearwise)
Source: https://www.openaccessgovernment.org/wp-content/uploads

Furthermore, the data-driven approach enhances Amazon's customer experiences. By analyzing purchase history, browsing behavior, and preferences, the company tailors product recommendations and personalized offers. This alignment of technological insights with customer desires fosters engagement, customer satisfaction, and loyalty, all of which are instrumental in a sustainable business model. In essence, Amazon's adept utilization of data-driven decision-making underscores how emerging technologies can amplify the efficiency of operations while magnifying the impact of sustainability endeavors. This holistic approach serves as a model for organizations aiming to optimize resource utilization, streamline processes, and align their practices with environmental stewardship.

Amazon's model underscores the significance of scalability and innovation. Its renewable energy investments and waste reduction efforts demonstrate that even global-scale operations can make substantial contributions to sustainability. Moreover, Amazon's continual innovation showcases that transformation is an ongoing process, with companies needing to stay agile and receptive to evolving technologies.

However, Amazon's journey also highlights the necessity of addressing ethical, regulatory, and privacy considerations. The responsible use of emerging technologies necessitates a careful balance between innovation and accountability. Amazon's paradigm of industry transformation serves as an illuminating example for organizations seeking to integrate technology and sustainability. Through visionary leadership, holistic integration of emerging technologies, data-driven decision-making, customer-centricity, scalability, and innovation, Amazon offers valuable lessons that can guide organizations in their pursuit of a sustainable and transformative future.

10. Conclusion

Amazon's remarkable journey presents a multifaceted blueprint for organizations seeking to harness the potential of emerging technologies while fostering sustainability. The amalgamation of cutting-edge technological innovation and a forward-looking commitment to sustainable practices has not only elevated Amazon's position in the business landscape but also yielded vital lessons for industries at large.

Central to Amazon's success is the visionary leadership that instilled innovation and sustainability as intrinsic components of its corporate DNA. This top-down commitment created a cultural alignment that propelled the company's transformation. This resonates as a crucial lesson: that industry transformation necessitates leadership that champions both technological advancement and environmental responsibility.

A pivotal takeaway from Amazon's model is the comprehensive integration of emerging technologies. Amazon's utilization of artificial intelligence (AI), the Internet of Things (IoT), and data analytics traverses its supply chain, customer experience, and operational efficiency. By adopting these technologies as part of a cohesive strategy, Amazon has demonstrated the profound impact of a holistic approach to industry transformation.

Data, the lifeblood of the digital age, emerges as another critical lesson from Amazon's journey. The company's effective data utilization has enabled informed decision-making, personalized customer experiences, and enhanced sustainability practices. This underscores the value of data-driven insights in achieving targeted sustainability objectives while staying competitive. Moreover, Amazon's customer-centric approach shines as a beacon of guidance. By leveraging technology to enhance customer engagement and satisfaction, the company has proven that sustainable practices can align seamlessly with user preferences. This underscores the importance of understanding customer needs and tailoring sustainability initiatives accordingly. The journey of Amazon in seamlessly integrating emerging technologies with sustainability initiatives exemplifies the transformative potential of innovative practices in shaping a more sustainable future. Through a careful analysis of Amazon's case, it becomes evident that the convergence of these two dimensions holds the key to navigating the challenges of modern business while contributing to environmental responsibility.

Amazon's model underscores that visionary leadership, unwavering commitment, and the alignment of technology with sustainability goals are essential components of success. By leveraging technologies such as Artificial Intelligence, the Internet of Things, and data analytics, Amazon has redefined the boundaries of efficiency, transparency, and engagement. These technologies have enabled informed decisions that optimize operations, reduce waste, and enhance customer experiences.Moreover, Amazon's journey underscores the significance of holistic integration. The interconnectedness of emerging technologies across various aspects of operations magnifies their impact. Supply chain management, customer engagement, energy consumption, and waste reduction are just a few areas that have been revolutionized through this integration.

The ethical and regulatory considerations inherent in this transformation demand conscientious navigation. Amazon's experience highlights the need for proactive engagement with these dimensions, ensuring that

innovation is coupled with transparency, accountability, and adherence to global regulations.

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Effect of Working Capital Management on Profitability of Bottlers in Nepal (TERAI)

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ABSTRACT

This study aims to investigate the effect of working capital management on Bottlers Nepal Limited (Terai) Nepal. It seeks to identify key factors that impact the choice of financing options, the right quantity of current assets, and how effectively they are used. Employing a quantitative approach, the study uses secondary data from different secondary sources. The study reveals that there is a significant relationship between profitability and RCP (Receivable Conversion Period) and PDP (Payable Deferral Period). It is indicated there is an insignificant relationship between profitability, ICP, and CCP. The study contributes to the working capital management of Bottlers Nepal by examining the impact of various financial metrics and working capital management. This study focuses on how working capital management is applied in Nepal, particularly at Bottlers Nepal (Terai) Limited within the dynamic and competitive bottler industry of Terai. The findings offer practical insights for policymakers, and the bottlers industry and will be able to comprehend in a better way how perception and perceived risk can be used to advance working capital management in Nepal's Terai Region.

Key Words: Bottler's Nepal, Firm's Profitability, Liquidity, Working Capital (WCM), Quantitative Benchmarks.

1. Introduction

Working capital is the life blood for an organization; no business can be run successfully without it. Since there is an inverse relationship between liquidity and profitability, a firm should maintain a delicate balance of working capital so that smooth operations can be conducted without disturbing profitability. There are studies proving both the relevance and irrelevance of working capital management with profitability (Sarwat. S., 2017).

Working capital is a financial measure that represents operating liquidity available in a business. Working capital is the capital of a business used in its daily trading operations. Decisions about working capital and short-term financing are called working capital Management (WCM). WCM ensures a company has sufficient cash flow to meet its short-term debt obligations and operating expenses. These involve managing the relationship between a firm's short-term assets and its short-term liabilities. The goal of working capital management is to ensure that the firm can continue its operations and has sufficient cash flow to satisfy both maturing short-term debt and upcoming operational expenses. (Sujeewa Kodithuwakku, 2015).

Working on capital management is a challenging task since it consists of managing various concepts of current assets, and current liabilities along with managing cash, stock movement, trade receivables, and trade payables.

All these elements are interconnected and affect each other; therefore, there is always a risk to be managed. Managing one component in working capital may affect the other components and hence increase the delicacy of the task; this means that there is always a risk-return trade-off involved with working capital decisions. (Al-Debi's, 2013).

Working Capital management explicitly impacts both the profitability and level of desired liquidity of a business. Hence, it may have both a negative and positive impact on a firm's profitability, which in turn, has a negative and positive impact on the shareholders' wealth (Raheman& Nasr, 2007). If a firm invests heavily in working capital, i.e., more than its needs, the profits that can be generated by investing these resources in fixed or long-term assets diminish. Moreover, the firm must endure the cost of storing inventory for longer periods and handling excessive inventory (Arnold, 2008).

Similarly, Raheman and Nasr (2007) posit that a company must determine the equilibrium between liquidity and profitability because increasing profits at the expense of the liquidity of the firm can be harmful in terms of insolvency and bankruptcy of the firm. Accordingly, the three components of the cash conversion cycle are each managed in diverse ways to improve profitability. This is due to firm-specific (industry-wise) distinctive characteristics. Each of the researchers that have

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conducted case studies in different countries found different results on how the profitability of a firm is related to the cash conversion cycle and its three components. As far as is known, there has been no study on working capital management and its impact on the profitability of multinational manufacturing companies in Nepal. It is in this consideration that the research plan in this paper will be directed to the following research question: "What is the relationship between the working capital management components and profitability of Bottlers Nepal (Terai)?"

2. Literature of Review

Jaworski, & Czerwonka, (2022) identified the relationships between measures of working capital management (cash conversion cycle /CCC/, working capital value /WC/ and the financial liquidity /CR/) and profitability of companies listed on the Warsaw Stock Exchange. The research material consisted of data from 326 companies from 1998-2016. The analysis revealed a significant non-linear relationship between WC, CR, and profitability. When WC and CR values grow, profitability increases, but at a slower pace. However, there is a linear negative relationship between CCC and profitability. The results are influenced by industry and GDP (Gross Domestic Product) growth. This indicates that profit-driven entrepreneurs try to delay payments to suppliers. They pay off bank loans from the funds thus generated. This study contributes to the verification of theories linking profitability with working capital management with an emphasis on the influence of the industry. The results have practical implications: companies with growing profitability should not lose sight of the shortening CCC when paying off short-term loans; in some industries decreasing profitability while CR values grow may mean problems with the efficient use of current assets.

Sensini, & Vazquez, (2021) evaluated the influence of working capital management policies on Argentine agro-industrial firms' profitability. To test our hypotheses, we analyzed a sample of 326 companies selected with a stratified random method based on an economic criterion. The data was collected through a structured questionnaire. From a methodological perspective, we used the individual determinants of working capital (DSO, DSI, DPO and CCC) as independent variables, while EBITDA represented the dependent variable. Additionally, we used leverage as a control variable. To assess the impact of individual determinants on corporate profitability, we used the dynamic panel data methodology. This approach has the advantage of controlling the unobservable effects that can influence profitability and endogeneity problems. We also checked the robustness of our results. The results offer several interesting insights. In particular, the results of the variables

(DSI, DPO and CCC) showed a negative relationship with firms' profitability, suggesting that investing in inventory and requesting greater extensions from suppliers leads to additional costs that cannot offset the resulting benefits.

Hossain, (2021) analyzed the impact of efficient working capital management on the profitability of the manufacturing firm in Bangladesh. Fifty-two manufacturing companies listed with Dhaka Stock Exchange (DSE) have been selected randomly from 2012 to 2017. Return on Assets (ROA) and Return on Equity (ROE) are used as indicators of profitability, while the inventory conversion period (ICP), the average collection period (ACP), the average payment period (APP), and the Cash Conversion Cycle (CCC) are used as the independent variables which are used as a measurement of working capital management of the firm. Ordinary Least Squares regression models and Pearson's Correlation are used to establish the relationship between working capital management and profitability. The results revealed a significant negative relation between ROA and CCC, ACP; a significant negative relationship exists between ROE and CCC, APP. Manufacturing companies can increase profitability by decreasing the cash conversion cycle, average payment period, and average collection period. It also revealed that ICP is also positively related to ROA and ROE. Therefore, this research concludes that efficiently and effectively managing working capital is especially important for increasing manufacturing companies' profitability.

Basyith, Djazuli, & Fauzi, (2020) attempted to examine the impact of working capital management (WCM) on profitability and examine the working capital conditions of several companies listed on the Indonesia Stock Exchange (IDX). The sample used is 135 listed firms and were selected from each sector, such as plantation, pharmaceutical, telecommunication, investment, retail, and the cement and metal industries from 2000 to 2019. The variables employed in this study are working capital investment strategy (WCIS), working capital financing strategy (WCFS), cash conversion cycle (CCC), days sales outstanding (DSO), days inventory outstanding (DIO), days payable outstanding (DPO), debt ratio (DR), size, age, and current ratio (CR). The ordinary least squares (OLS) were employed to analyze the data. The results revealed that the working capital investment approach has a positive and significant effect on return on assets (ROA) in all regression models used; the working capital financing approach has a negative effect on ROA but not significant; the working capital investment approach to the gross profit margin in all models shows a negative and significant coefficient; and the working capital financing approach shows a negative and significant sign for all capital used. Based on the type of industry, companies that

use a lot of aggressive working capital investment approaches are the agriculture industry and the infrastructure, utility, and transportation industries. Meanwhile, companies that mostly take a conservative working capital investment approach are the consumer goods industry, the basic chemical industry, and the miscellaneous industry.

Aryawan, & Indriani, (2020) analyzed the relationship between working capital management and profitability (return on assets) as a dependent variable and cash conversion cycle (CCC), inventory conversion period (ICP), average collection period (ACP), and average payment period (APP) as independent variables with leverage, liquidity, and size as the controlling variables. The sample of this study is manufacturing companies in the Indonesian Stock Exchange 2013-2017. The analysis using OLS showed that the ACP has a negative and significant effect on ROA and the APP has a positive and significant effect on ROA, meanwhile, CCC and ICP have a negative and insignificant effect on ROA.

Pham, Nguyen, & Nguyen, (2020) examined the influence of working capital management (WCM) factors on the profitability of steel companies listed on the Stock Exchange of Vietnam. Data was collected from audited financial statements of companies for 10 years, from 2010 to 2019. The number of samples eligible for research is 20 out of 26 companies, which is equivalent to 76.9%. With the help of dedicated software Stata version 14, the impact determination of WCM (through 8 independent variables: DIO, DPO, DSO, CCC, SIZ, CR, LEV, GRO) to the firm's profitability (through the dependent variable) is performed through multivariate regression models. Research results from companies in the steel industry in Vietnam during this period indicate that WCM has a strong impact on the profitability of businesses. Among 8 factors affecting the profitability of steel enterprises, factors DPO, DIO, DSO, CR, SIZ, GRO have a positive impact, boosting profitability; 2 factors CCC and LEV have a negative impact on profitability; in which, the effect of CCC is negligible. This conclusion contrasts with many previously published studies due to the industry's specifics and the distinct stages of economic development associated with the economic management policies of the State.

Goฏaฏ, (2020) examined the causative link between Working Capital Management (WCM) and Return on Assets (ROA) in milk processing companies. Days Sales of Inventory (DSI), Days Sales Outstanding (DSO), Days Payable Outstanding (DPO) and the Cash Conversion Cycle (CCC) were used as WCM metrics. The study was based on micro-data for Polish dairy companies from 2008-2017, retrieved from the Emerging Markets

Information Service (EMIS) database. Based on panel regression models, it was demonstrated that extending the DSI and CCC had an adverse effect on ROA, whereas extending the DSO and DPO had a beneficial impact on ROA in dairy companies. Such relationships were mostly characteristic of SMEs which form the largest group of businesses in Poland.

Fernández? López, Rodeiro? Pazos& Rey?Ares, (2020) conducted research and examined that Working capital management (WCM) is a key question for firms' profitability, especially for small and medium enterprises faced with severe financial restrictions and whose current assets account for significant part of their investments. These features describe most firms in the livestock industry. However, studies on WCM related to these firms are scarce. Using a sample of 444 Spanish cheese-manufacturing companies during the period 2010-2016 and applying a dynamic panel data methodology, this paper analyzes the extent to which the main components defining the WCM policies-days sales outstanding, days inventory outstanding (DIO), days payable outstanding (DPO), and cash conversion cycle (CCC)-affect firms' profitability. Empirical evidence reveals a negative effect of DIO and the CCC on firms' profitability, suggesting the need to reduce the level of inventory of cheese-manufacturing companies. Similarly, the empirical evidence confirms a negative relationship between DPO and firms' profitability.

Fejzullahu, & Govori, (2020) demonstrated that the profitability of the manufacturing companies in Kosovo is impacted by the management practices in the working capital. We use multiple regression analyses to estimate the effect of working capital indicators on profit. The Pearson correlation is used to calculate whether the variables are positively or negatively correlated and to what extent. The sample includes thirty-six manufacturing companies for the period 2012-2013. The data show that the increase in the cash conversion cycle (CCC) and extension in the receivables term positively influenced operating profit and net return on assets. On the contrary, the increase in payables days had a negative effect on the operating profit and the net return on assets. The rise in inventory days led to increased profit. Therefore, the companies' competitiveness is maintained by extending trade credit terms to their customers and keeping the cash engaged longer in operating activities.

Chalmers, Sensini, & Shan, (2020) analyzed the relationship between working capital and company performance, deepening this relationship for each of the elements that make up working capital. The SMEs analyzed are those present in the IPO (Initial Public Offers) index of the Bombay Stock Exchange (BSE) for six years,

from 2012 to 2017 included. Two criteria were used to select companies to be analyzed. Firstly, the companies had to have all the information needed for this study during the reporting period. Secondly, the companies were not part of a group. Based on these criteria, 42 SMEs were analyzed. The analysis highlighted a negative and significant relationship between net working capital (NWC), accounts receivables (AR), and profitability. Conversely, accounts payable (AP) and inventory (INV) are positively related to profitability. The robustness checks confirmed the validity of our outcomes. The results of this study enrich the existing literature, providing further empirical evidence related to the specific context analyzed. In addition, the results can be helpful for Indian SME owners and managers to guide financial decisions on working capital management.

Evci and ?ak, (2018) Examined that the Findings show the existence of tradeoff working capital management profitability. A negative relationship exists between return on assets and payables deferral period, cash conversion cycle, the ratio of short-term financial debts to short-term debts, and the ratio of fixed assets to total assets while return on assets is positively related to inventory conversion period and sales growth. This study aims to reveal the tradeoff between working capital components and a firm's profitability by using the data of the firms listed on the Borsa Istanbul Industry Index in Turkey. Annual data of 41 firms are used for 2005-2016 in the study. The working capital components and the firm's profitability tradeoff were examined via the fixed effects panel regression model. The dependent variable is defined as return on assets; independent variables are cash conversion cycle, inventory conversion period, and payables deferral period; and control variables are sales growth, the ratio of short-term financial debts to short-term debts, and the ratio of fixed assets to total assets.

Sathyamoorthi (2018) The results showed that only three variables out of the seven independent variables were statistically significant, namely Average Payment Period, Current Ratio, and Quick Ratio. The remaining four variables were found to be statistically insignificant. The above findings have implications for the management of the listed retail store in Botswana. This study focused on the effect of working capital management on the profitability of the listed retail stores in the Botswana Stock Exchange for the period 2012-2016. The financial statements of the listed Retail Stores were used as the main source of data. Return on Assets was used as the dependent variable to measure profitability and the components to measure working capital management comprised of Average Collection Period, Inventory Conversion Period, Average Payment Period, Cash Conversion Cycle, Debt, Current and Quick Ratios. Correlation analysis revealed that a few

variables were significantly correlated with each other. Average Payment Period and Inventory Conversion Period were found to be positively and significantly correlated and the Cash Conversion Cycle was significantly and positively correlated with the Inventory Conversion Period.

Naskar and Guha (2017) Examined that all components of working capital namely Receivable days (RD), Payable days (PD), Inventory holding periods (ID), Current ratio (CR) and Quick ratio (QR) have a strong impact on profitability. The cash conversion cycle (CCC) is negatively related to profitability, Firm size is also linked with working capital. If the firm's size increases, the need for working capital will be greater. It has been found that the firm size also has a significant impact on EBIT but an insignificant impact on ROA and ROE. Finally, the study has established a relation between working capital management and a firm's profitability. This study sought to examine the effect of working capital management on the profitability of select companies listed in BSE. The study used a sample of 53 companies. The study used secondary data for 5 years from 2011 - 2015. The data have been analyzed using the Pearson correlation and the multivariate regression analysis.

Marobhe (2014) has assessed the relationship between working capital management and profitability of twelve manufacturing companies listed in the East African Stock Exchange during the period, 2005-2012. This study used ROA and Operating Margin as dependent variables whereas Current ratio, Quick ratio, Cash Cover Ratio, Inventory holding period, Receivables Collection Period, Payable Deferred Period, and Cash Conversion Cycle are used as independent variables, while Sale growth, Debt ratio, and Company size are used as control variables. It was observed that there exists a notable relationship between cash conversion components and profitability using Pearson correlation and multiple regressions.

Almazari (2013) has examined the relationship between Working Capital Management (WCM) and firm profitability in 13 Saudi cement manufacturing companies from 2008-2012, a period of 5 years. He proposed a model that addressed four hypotheses namely; H1: Liquidity position has a significant impact on profitability, H2: Size has a notable impact on profitability, H3: There is a significant relationship between debt financing and profitability, and H4: Working capital management has a noteworthy impact on profitability. The study results proved that the current ratio affects profitability, and as the size of a firm increases, profitability also increases. Moreover, when debt financing increased, profitability declined. He analyzed that, the linear regression test confirmed a higher degree of association exists between working capital management and profitability.

Mohamad and Saad (2010) analyzed the effect of working capital management on the profitability of 172 firms over a five-year period (2003-2007) listed on Bursa Malaysia. They found a negative relationship between working capital management components (cash conversion cycle, current liabilities to total asset ratio, current assets to current liability ratio, profitability captured by return on equity (ROE), and return on total asset (ROA)). On the other hand, they also concluded that there is a significant positive relationship between the current assets to total assets ratio and firms' profit.

2.1 Conceptual Framework

Below (Figure 1) is a schematic conceptual framework of the relationship between working capital management measures and the profitability of Bottlers Nepal (Terai):
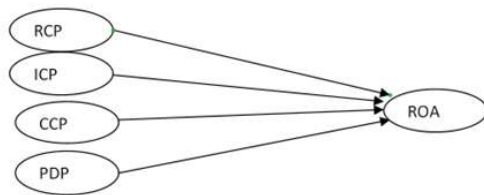
Figure 1: Conceptual Framework

3. Research Methodology

In the study, secondary data were employed. The information was gathered from one (1) listed Nepali multinational manufacturing company. One has been used as a sample size out of the three mentioned multinational manufacturing companies in Nepal. The data gathered from one company was examined using descriptive and causal research techniques. Statistical Package for Service Solution (SPSS) version 21.0 analyzes the data gathered. The influence of independent variables on the dependent variable was investigated and compared using descriptive, correlational, regression analysis, and t-test methods.

4. Data Presentation and Analysis

This study analyzed the working capital management and its impact on the Profitability of Bottlers Nepal (Teari) between the years 2014 to 2023. In the study variables included are Return on Assets (ROA), Inventory conversion period (ICP), Receivable conversion period (RCP), Cash conversion period (CCP), and Payable deferred ratio (PDR). This study analyzes the variables involved and presented in Table 1:

Explained Variables	Description
ROA	Return on Assets
Explanatory Variables	Description
ICP	Inventory conversion period
RCP	Receivable conversion period
CCP	Cash Conversion period
PDP	Payable deferred period

Table 1: Explained and Explanatory Variables

4.1 Data Analysis

The collected data has been analyzed by descriptive statistics and inferential statistics. Firstly, data are analyzed by descriptive statistics. Mean and standard deviation are used in the descriptive statistics.

Descriptive Statistics and Correlation Statistics

The descriptive and correlative statistics of the explanatory and explained variables in this study are presented in Table 2. It is based on a panel dataset organized from mine Bottlers Nepal Limited (Terai) in the Nepalese financial market during the period from 2014 to 2023. Looking at them the statistics indicators of the impact of working capital management on the profitability of Bottlers Nepal Limited (Terai).

Variables	Mean	S.D.	RCP	ICP	PDP	CCP	ROA
RCP	16.64	12.16	1				
ICP	98.24	12.99	-.519	1			
PDP	84.70	43.85	.213	.658*	1		
CCP	30.18	46.64	-236	-.541	-.972**	1	
ROA	4.48	2.37	-.719*	-.043*	-.481*	.685*	1

*Correlation is significant at the 0.05 level (2-tailed)
Table 2: Descriptive Statistics and Correlation

This shows that positive Cash Conversion Cycle and Inventory Conversion Period will lead to an increase in profitability and vice versa. It can be observed that Return on Equity is negatively correlated with Receivable Conversion Period and Payable Deferral Period. It indicates that any increase in any of these factors will reduce the profitability of the company. It shows that the payment period has a negative significant relationship with profitability, which means if companies delay their payments they will earn less profit. The reason behind this is that firms can take advantage of discounts by paying soon. We can also see that the Cash Conversion Cycle and Inventory Conversion Period are positively correlated with Return on Equity. This shows that a positive Cash Conversion Cycle and Inventory Conversion Period will

lead to an increase in profitability and vice versa.

The above table describes about correlation matrix between variables under investigation. There is a significant negative relationship between ROA and RCP (r = -0.701, p<0.05)

There is a significant positive relationship between ROA and ICP (r = 0.181, p<0.05)

There is a significant negative relationship between ROA and PDP (r = - 0.576, p<0.05)

There is a significant positive relationship between ROA and CCP (r = 0.691, p<0.05)

Regression Analysis with ROA

Coefficients

Model	Unstandardized coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.033	.410		2.523	.045		
RCP	-0.10	.004	-.729	-2.43	.041	.354	2.824
ICP	-.002	.003	-.203	-.586	.579	.265	3.768
PDP	.027	.005	.367	3.678	.023	.124	8.070
CCP	.002	.002	.403	1.323	.334	.343	2.916

Dependent variable: ROA
<div align="center">Table 3</div>

Thus, the analysis predicts the average ROA with about 90% explanatory power by the following model:

ROA = 1.033+ -0.10RCP +- 0.02ICP+ 0.027PDP + 0.002CCP+ z

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.899a	.809	.713	.145

Predictors: (Constant), RCP, ICP, PDP, CCP.
<div align="center">Table 4</div>

The R-square is a measure of the goodness of fit of the working capital management variables in explaining the variations in the profitability of Bottlers Nepal Ltd (Terai). The regression analysis of ROA on working capital management has been separately analyzed above. It includes the major results extracted from the analysis of data to determine the impact of working capital management on the profitability of Bottlers Nepal Ltd. during the period starting from 2014 to 2023.

The results of the analysis are based on a significance level (α) of 0.05, a degree of freedom (df) of 4, and a two-tail test. The impact of all four independent variables is tested together on the dependent variable (ROA). From the model summary, (Table 4) the value of R-square =0.809. It indicates that the four independent variables can explain approximately 80.90% of the changes in the dependent variable. However, 19.10% of changes are still left to be explained by these independent variables taken into

consideration in this study.

Similarly, the Table 3 shows the coefficients, standard errors, standardized coefficients (betas), t-values, and p-values for the independent variables (CCP, ICP, RCP, and PDP) in relation to the dependent variable (ROA). The Receivable Conversion Period (RCP) has a negative impact on profitability. For each unit increase in RCP, the Return on Assets (ROA) decreases by 0.010. The negative standardized coefficient indicates that RCP is negatively associated with profitability. The p-value (0.041) suggests that the relationship is statistically significant at 5% level of significance.

The Inventory Conversion Period (ICP) has a negative impact on profitability. For each unit increase in ICP, the Return on Assets (ROA) decreases by 0.002. The negative standardized coefficient indicates that ICP is negatively associated with profitability. However, the p-value (0.579) suggests that the relationship is not

statistically significant at a 5% level of significance.

The Payable Deferral Period (PDP) has a positive impact on profitability. For each unit increase in PDP, the Return on Assets (ROA) increases by 0.027. The positive standardized coefficient indicates that PDP is positively associated with profitability. Here, the p-value (0.023) suggests that the relationship is statistically significant at a 5% level of significance.

The Cash Conversion Period (CCP) has a positive impact on profitability. For each unit increase in CCP, the Return on Assets (ROA) increases by 0.002. The positive standardized coefficient indicates that CCP is positively associated with profitability. However, the p-value (0.334) suggests that the relationship is not statistically significant at a 5% level of significance.

5. Conclusion

From the above study, we can draw the following conclusion that there exists a highly negative and significant relationship between the receivable conversion period and profitability. It means any increase in the receivable conversion period will lead to a decrease in profitability while there is a significantly low negative relationship between ROA and ICP. However, there is a positive and significant relationship between ROE and ICP. It signifies that the inventory conversion period directly influences the return on equity whereas any increase in the inventory conversion period will lead to a decrease in profitability. The relationship between the payable deferral period and profitability is moderately negative and significant. It indicates that the shorter the payable deferral period, the greater will be the profitability. Also, there exists a moderate positive and significant relationship between the cash conversion cycle and profitability. It means that the shorter the cash conversion cycle, the greater the profitability.

There is a negative beta coefficient between the Receivable Conversion Period and Profitability, indicating that any increase in RCP will decrease profitability. Similarly, the beta coefficient between the Inventory Conversion Period and Return on Assets is also negative, indicating that any increase in ICP will reduce ROA. However, there is a positive beta coefficient between Inventory Conversion Period and Return on Assets which indicates that their ICP directly influences ROE.

The beta coefficient of the Cash Conversion Cycle and Profitability is positively related. It signifies that the shorter the cash conversion cycle, the greater the profitability will be. There also exists a positive beta coefficient between the Payable Deferral Period and Profitability which indicates that firms can enjoy cash discounts by making timely payments and hence enhance profitability or can extend payment by enlarging credit days in turn.

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Deep Learning and ARIMA modelling analysis for SBI stock price prediction: A Comparative study for Risk Management and Investment decision

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ABSTRACT

Stock Price Prediction is a crucial and challenging task for investors as well as traders because it involves volatile market conditions, government policy, financials results and news related to company. Forecasting of stock prices helps investors to make better investment decision and reduces their financial risk. In this research paper, we are using machine learning algorithms and tools to compare past two year data of stock by applying time series analyses techniques namely deep learning (LSTM) and ARIMA Modelling for predicting stock prices. Results of our study shows that the (1) Deep learning models predicted more accurately then ARIMA Modeling because LSTM can capture non-linear relationship between the stock prices and learn from the past by observing the historical patterns (2) Number of layers in LSTM model has significant impact on predicted value.

Key Words: ARIMA Modeling, Long & Short-Term Memory, News Sentiment analysis

Introduction

India is witnessing its growth story and banking sector is leading Indian economy to achieve its target of 5 trillion-dollar economy by 2030. Banking sector is considered as the Backbone of an economy because directly or indirectly every business or industry depends upon banks for its smooth operations.

The public banks which were earlier regarded as most stagnant and laggard because of high NPAs, low loan growth and more operating expenses than income, this deteriorates their balance sheet. But now those banks are regarded as the most trust worthy and prominent banks because it can be seen that the profits of PSUs banks are surpassing the overall banking sector. Additionally, in 2023 SBI (State Bank of India) the largest government bank became the No.1 company in India with highest ever profit surpassing the Reliance industries with Rs. 19222 crores (Business Standard).

All thanks to digitalization and strong government rebound policies that made their balance sheet strong. The State Bank of India plays a major role in the economy in the following ways:

1. It acts on the behalf of both central as well as state governments.

2. They receive and deposit money on the behalf of the government and all government transactions take place through the State bank of India

3. All government employees' salary is given through the State Bank of India and their public provident fund is also deposited in the State Bank of India.

4. All direct and indirect tax is collected in the State Bank of India.

5. All government loans and advances are given by the State Bank of India

Stock Price Prediction is a crucial and challenging task for investors as well as traders because it involves volatile market conditions, government policy, financials results and news related to company. Forecasting of stock prices helps investors to make better investment decision and reduces their financial risk. As we have so many machine learning algorithms for forecasting. But, for forecasting it is necessary to understand how to accurately predict the prices and decide which model is best on the basis of accuracy.

Therefore, the main objective for this research is to find out the answer of the following questions:

1. Can we accurately predict the future stock price?

2. Which Model is better LSTM or ARIMA Modelling?

3. Is the number of layers in the model affects its predicted value?

From various available machine learning algorithms, we have chosen two model ARIMA Model (Auto Regressive

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Integrated Moving Average Model) and LSTM (Long &
Short-term Model)

ARIMA Modelling (AR, I, MA)

It is Auto Regressive Integrated Moving Average Model
that means auto function automatically depicts the order
for auto regressive, differencing and moving average by
looking at the lowest value of AIC (Akaike Information
Criteria) that measures the predictor to the statistically
goodness fit of the model (Khan & Gupta, 2020). It
captures the following key elements -

1. AR - it is the auto regression model that uses the
    dependencies between an observation and a number
    of lagged observations.

2. I - Integrated is used to make the time series stationary
    by measuring the differences of observations at
    different time.

3. MA - Moving average takes into account the
    dependency between observations and the residual
    error terms when a moving average model is used to
    lagged observations.

Before stepping into the building algorithm for ARIMA
modelling, we use auto and partial correlation factor
analysis on time series data to check whether data is
having auto correlation or not (i.e., its next value is
depended upon its previous value or not) (Chujai et al.,
2013). For this purpose, we look at two blue dotted lines
that signify significant levels if spikes are within these
ranges, then it depicts data is not correlated and if spikes
cross these significant levels, then it depicts data is auto-
correlated and if data is correlated then we have to
remove it.

And finally, we use ADF test (Augmented Dickey-Fuller test
to know whether the time series data of the state bank of
India share price is stationary or not which means the time
series data does not have any trend and have constant
variance over time then it is known as stationary data
series and if time series data follows a trend and it time-
dependent that does not follow constant variance over
time then it is known as non-stationary data. For this
purpose, we look at p - the value and if p - value is less
than 0.05 then we reject the null hypothesis and accept the
alternate hypothesis and come to the conclusion that time
series data is stationary whereas if p - value is greater than
0.05 then we accept the null hypothesis and come to the
conclusion that time series data is non-stationary. For
forecasting, if time series data is non-stationary then it
needs to convert to stationary data series by using
differencing (Alghamdi et al., 2019).

B. LSTM

It is long short-term memory. This model learns from its

previous values and treats its previous values as input for
forecasting the next value. It is specially designed for
handling sequential data or time series data. It is a special
kind of Recurrent Neural Network with additional feature
to memorize the data (Shah et al., 2018). In Recurrent
Neural Network, a memory cell is introduced that act as a
container for holding information for a period of time in
order to make Long short-term memory model. These
memory cell act as a passing line for transporting and
storing past data for future use (Shumway et al., 2017).
Owing the large amount of sequential data, it is very
important to retain only selective or important data and to
discard the irrelevant information from the network of cell
(Moghar & Hamiche, 2020). So, for this purpose, three
types of gates are involved in LSTM to control such data or
information:

1. Forgot Gate - in this input is passed through an
    activation function which gives a binary value either 0
    or 1 in order to understand which information is not
    useful in the cell and have to remove out of it and
    which information is useful to kept in the cell,
    respectively.

2. Input Gate - in this, new data or useful information is
    added or stored to the cell. Using the sigmoid
    function all the information is regulated and filtered
    to choose which values to be modified and finally
    using a tanh function a new vector is created for all
    possible values that gives an output from -1 to +1

3. Output Gate - in this, all the relevant data or
    information is presented from the cell state on the
    basis of the sigmoid and tanh function or we can say
    Input Gate (Cipiloglu Yildiz et al., 2022).

Research Methodology -

1. The following study aims at analyzing the past 1-year
    share price data of State Bank of India in order to
    forecast the price for the next 3 months. So, the
    following study involves use of descriptive analytics,
    predictive analytics and Quantitative analytics

2. It is Empirical Research type study that is based on or
    concerned with, or verified by observation or
    experience rather than theory or pure logic

3. All the research study is taken place by using R
    programming for ARIMA Modelling and Python
    programming for Deep Learning Model and for
    analyzing data we are using time series analysis.

4. We are using secondary source of data that is already
    available and published on various websites say
    yahoofinance.com or nseinida.com.

5. The duration of the data is from 01-01- 2021 to 31-
    08-2023.

Dataset:

The snapshot of the dataset that contains the share Price of State Bank of India along with Date, Opening Price of day, High Price of day, Low price of day, Closing price of day, Adjusted Closing Price and Volume of the day is shown in figure 1.

	Date	Open	High	Low	Close	Adj.Close	Volume
1	01-01-2021	274.90	280.00	274.40	279.40	267.3938	24531791
2	04-01-2021	281.85	283.90	277.75	281.05	268.9729	31450608
3	05-01-2021	278.05	282.45	277.00	281.75	269.6428	27393072
4	06-01-2021	283.00	289.15	281.40	285.05	272.8010	40765708
5	07-01-2021	289.00	291.80	287.00	287.70	275.3372	30546600
6	08-01-2021	290.10	291.40	285.20	286.00	273.7102	32543357
7	11-01-2021	288.00	288.20	279.60	282.50	270.3606	29703173
8	12-01-2021	280.00	293.85	277.90	292.50	279.9309	44307145
9	13-01-2021	296.00	308.00	294.50	306.80	293.6164	78042133
10	14-01-2021	306.70	309.25	303.80	307.25	294.0471	40123498
11	15-01-2021	306.80	310.90	301.30	303.85	290.7932	35307601
12	18-01-2021	303.50	308.65	292.20	294.45	281.7971	54969750
13	19-01-2021	297.65	302.50	296.40	298.60	285.7688	35803901
14	20-01-2021	298.80	304.70	296.85	302.55	289.5490	33759304
15	21-01-2021	304.00	305.15	291.50	294.85	282.1799	29991203
16	22-01-2021	295.50	298.00	282.40	283.70	271.5091	44440810
17	25-01-2021	284.50	288.00	277.05	280.95	268.8772	34034630
18	27-01-2021	280.20	284.85	272.70	275.65	263.8050	39211107
19	28-01-2021	271.90	283.35	269.50	282.35	270.2170	48717297
20	29-01-2021	285.60	290.65	279.10	282.10	269.9778	42300984
21	01-02-2021	285.10	313.90	282.75	310.70	297.3488	103414068
22	02-02-2021	315.00	337.40	315.00	333.10	318.7863	121434166
23	03-02-2021	333.75	339.90	325.80	335.95	321.5138	66420168
24	04-02-2021	334.40	358.00	331.10	355.10	339.8409	145203439
25	05-02-2021	387.00	408.35	385.15	393.10	376.2080	214965688
26	08-02-2021	398.00	407.80	394.75	397.05	379.9883	79389205
27	09-02-2021	396.75	403.50	389.00	394.80	377.8349	63869990
28	10-02-2021	394.05	397.90	388.00	392.25	375.3945	54163507
29	11-02-2021	391.80	396.95	388.25	390.15	373.3847	36392708
30	12-02-2021	391.00	399.35	385.55	393.15	376.2558	53589755

Data Analysis and Interpretation:

ARIMA Modelling Algorithm

Auto ARIMA is based on the linear regression model that is best suited for simple forecasting that does not require to manually type the order of auto regressive, differencing and moving average. As on the basis of the lowest value AIC (Akaike information Criteria) it automatically depicts the order of AR, I and MA.

Using this, we've uploaded data into R studio using read.csv function and store it in a variable called SBI. This SBI variable helps to read the data stored in the excel sheet that contains date, opening price, closing price, High price, low price and Volume for a particular date.

Then, we have converted the excel sheet data into time series data using tseries library in which we have taken closing price as basis for further analysis and data is started from 01-January-2023 to 31-August- 2023.

```
Fitting models using approximations to speed things up...

ARIMA(2,1,2) with drift      : 4651.657
ARIMA(0,1,0) with drift      : 4649.82
ARIMA(1,1,0) with drift      : 4652.109
ARIMA(0,1,1) with drift      : 4651.07
ARIMA(0,1,0)                 : 4649.61
ARIMA(1,1,1) with drift      : 4653.454

Now re-fitting the best model(s) without approximations...

ARIMA(0,1,0)                 : 4653.821

Best model: ARIMA(0,1,0)
```

In this figure, we have used auto arima function to build model for forecasting and it has also given the order value of AR, I and MA and suggest which model is best on the basis of lowest AIC value that is 4653.8

```
Forecasted_values <- forecast(Sbi_auto_arima,
level=c(95),h=30) Plot(Forecasted_values)
```


Forecasts from ARIMA(0,1,0)
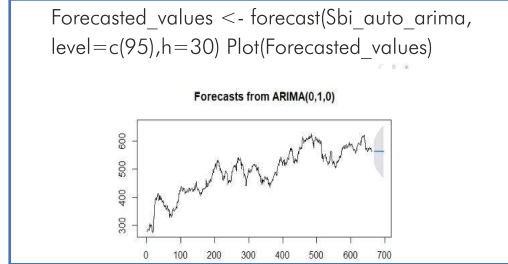
Using this algorithm, we have forecasted values for the next 30 days at 95% confidence interval using sbi.auto.arima model and finally plot it to show the forecasted values along with all previous values.

LSTM Algorithm

LSTM is based on the recurrent neural network that has the capability to learn and store past information to forecast the future values. In this analysis we are using 90% of the data for training and 10% of the data for testing. Before developing algorithm for LSTM we need to install following libraries such as pandas, numpy, matplotlib, sklearn, Sequential, Dense, LSTM, Dropout. Here is the algorithm for developing LSTM Model -

```
import pandas as pd import numpy as np
import matplotlib.pyplot as plt from sklearn import metrics
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense,LSTM,Dropout
df = pd.read_csv('/content/drive/MyDrive/
SBI.csv',parse_dates=True,index_col='Date')  sbi_close =
df['Close']
sbi_close.reset_index(drop=True,inplace=True)
sbi_close = pd.DataFrame(sbi_close)
```

Using this algorithm, we have imported data into google colab using read_csv function from the google drive. And load the sbi closing price into sbi_close variable

```
train = sbi_close.iloc[:600] test = sbi_close.iloc[600:]
scaled_train = scaler.transform(train) scaled_test =
scaler.transform(test)
```

Using this algorithm, we have divided the closing price into training and test data that contains 90% of data and 10% of data respectively, remember it is important to scale these training and testing data using scaler function.

In this algorithm, we have build LSTM model with 55 layers and drop out ratio of 0.2 that means it will not consider 1 value out 5 values for forecasting and suggest forecasting after consider loss on the basis of mean squared error and optimizing using Adam optimizer.

```
length = 66
generator = TimeseriesGenerator (scaled_train, scaled_train,
length= length,batch_size=1) validation_generator =
TimeseriesGenerator(scaled_test,scaled_test,length=length,ba
tch_size=1) model = Sequential()
model.add(LSTM(55,input_shape=(length,n_features)))
model.add(Dropout(rate=0.2))
model.add(Dense(1))
model.compile(optimizer='adam',loss='mse')
test_prediction = []
first_eval_batch = scaled_train[-length:]
current_batch = first_eval_batch.reshape
((1,length,n_features) for i in range(len(test)) :
current_pred = model.predict(current_batch)[0]
test_prediction.append(current_pred)
current_batch = np.append(current_batch [:,1:,:],
[[current_pred]],axis=1)


true_prediction2 = scaler.inverse_transform(test_prediction)
test['LSTM_predictions'] = true_prediction2  test.plot(figsize=
(12,8))
```

This plot shows the closing price of state bank of India along with forecasted value using LSTM model with 55 layers and it is showing the forecasted value ranges between Rs. 585 to 588.
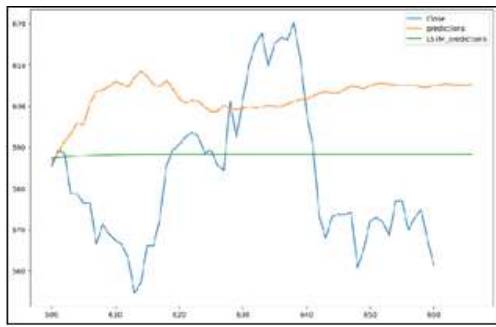
This plot shows the closing price of state bank of India along with forecasted value using LSTM model with 80 layers and it is showing the forecasted value ranges between Rs. 573 to 578.
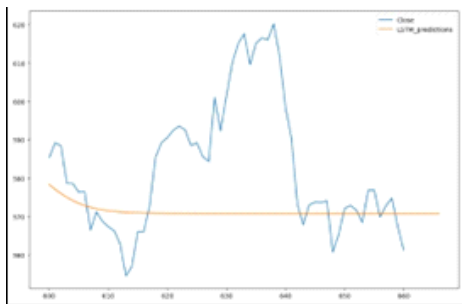
Limitations of the research study:

Well, we cannot deny some limitations while using technology or machine learning algorithms for forecasting the future possible price because of the following reasons-

1. There is always presence of some error range between 5% - 8%.

2. It does not apply to stocks which are more volatile during trading hours.

3. Stock Market events are majorly affected by macro-economic events.

4. The coding is sophisticated and difficult to understand for the non tech retail investors.

5. It is very time consuming to decide the exact number of layer for LSTM to get desired results.

Results & Findings:

Deep learning LSTM model is more accurate as compared to ARIMA modelling because ARIMA modelling has more statistical error than ARIMA modelling. The number of layers in LSTM model affects the forecasted values. Also one cannot accurately predict the price of the share price due to the presence of macro events and demand & supply factors but we can accurately predict the trend of the price.

Conclusion:

Time Series analysis on State bank of India's share price helps to forecast the future values on the basis of their past behavior by analyzing data in a more statical manner. Both the model ARIMA and LSTM had predicted values but with presence of some degree of error so we should not completely rely on these predicted values and we should only take it an advice or to identify the trend of the share price for managing our risk and taking investing decision.

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Provision for Household Water Supply in India

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ABSTRACT

Sustainable development goal six (especially target 6.1) describes about safe and affordable drinking water for all. In line with goals, the government of India was also keep on advancing its reforms and at the earliest comes with adopting service delivery approach and community management to achieve the target water for all. The objective of this study is to understand the status of drinking water supply in urban and rural India. It is found that a significant issue with India's urban and rural water supply is the inadequate cost recovery and coverage; apart from these issue unreliable water supply and high non-revenue water are the other issues. As per the NSSO's household access to improved water source shows a improved picture both in urban and rural area. Still access to safe water within their premises is a serious problem in rural areas as compared to urban areas.

Key Words: Drinking water supply, Coverage, Sustainability, Household access, Cost recovery

1. Introduction

The Bhor committee of 1946 and Environment Hygiene Committee in 1949 has put light on the poor drinking water both in quantity and quality of rural and Urban India and recommend the provision of safe drinking water for the health need of the country (Government of Idia,1950; Duggal,1991). The constitution of India in 1950 specifies water as a state subject.

According to the National Portal of India (2021), the 73rd Amendment Act to the Indian Constitution placed the duty of providing potable water to the Panchayat Raj institution in 1992, and the 74th Amendment Act gave that duty to the Urban Local Bodies (ULBs). Especially since the 73rd Amendment to the Constitution, decentralisation of essential service delivery to rural families has been a hot topic. Local governments, known as Panchayats or Panchayati Raj Institutions (PRIS), have been given more authority and responsibility to carry out programmes to improve infrastructure such water and sewage systems, sanitation, and lighting (De, 2009).

Sustainable development goal six (especially target 6.1) describes about safe and affordable drinking water for all. The recognition of water as an economic and social good in the Dublin conference 1992 and the human right to water in 2010 gives an argument for equitable distribution of water (Dublin, 1992; Hall, Koppen & Houweling, E, 2014).

Broadly, government, private, community, NGO and a mixed type are the different institutional arrangement available for providing water services to household. Household, itself, work as an institution for providing water service to its member by creating sources within its premises. Most of the country has adopted community-based management as an institutional arrangement to provide water supply to the rural household. But in case of urban area the arrangement quite differs on the basis of region. There can be multiple arrangements found within a country, but a particular arrangement is meant for a specific region, because the provision of water supply is capital intensive in nature. It is cost effective to place one type of arrangement to serve the household within a specific region.

The institutional structure of water distribution differs from state to state and even within a single state. There are a variety of organisations around the country that work to ensure that everyone has access to clean water, but the majority of them are "state departments, state level boards and corporations, statutory and non-statutory authorities at the city level, and urban local bodies" (Tiwari & Gulati, 2011). Water distribution is a local government responsibility that varies from state to state.

In 1987, the Government of India's Ministry of Water Resource created a national water strategy with the goal of protecting India's water supply and getting the most out of it. Priorities shifted, therefore the policy was updated in 2002 and again in 2012. In every iteration of the NWP, the drinking water requirements of humans and other animals have been prioritised above all others. Both NWP1987 and NWP2002 stress the importance of recovering O&M costs and a portion of capital costs through user charges

to ensure the long-term financial and physical viability of the service. To improve the utilities' financial stability, the Indian government mandated a change from partial cost recovery to full cost recovery in its Water Policy 2012 (GOI, 1987; 2002; 2012).

1.1 Characterisation of water supply industries

Water supply industries are characterized by natural monopoly. Existence of economies of scale, potable water service as merit good and with information issues i.e., "many people are unaware of the need for consuming safe water supply and a source of X-inefficiency are the other characteristic of found with water supply industries (Dalhuisen, Groot, Rodenburg, & Nijkamp, 2002; Santhakumar, 2010; Gracia & Thomas 2001).

Individual and community contributions, government spending, ODA, loans, grants, international private sector investments, domestic small-scale provider investments, and international private sector investments are just some of the sources of money that go into the water industry. Annamraju, Calaguas, and Gutierrez (2001) found that in most countries, the central government provides the bulk of funding (i.e.70-75%) for water infrastructure.

"There is no universal model which can be applied in all situations. It varies from region to region and according to cultural practices. Hence our task is to design such institutions through social experiments. This is the challenge facing the sector" (Pushpangadan, & Murugan, 1997).

Every institutional arrangement has its own merit and demerits. The success or failure lies with the circumstances in which they are operating (Jeffery, 1994). Public owned utilities suffer with x-inefficiency, high financial cost and revenue generation. Although introduction of privatization in water supply has benefited in terms of improving the health benefit to its consumer but has created inequality for its high price. The next alternative mechanism i.e. community water supply has evidence of creating health benefit to its consumer. It has also evidence of rising socio-economic inequality, because of the monetary contribution in access to the resource. There is evidence which has success story as well as failure to supply water and maintain the financial sustainability.

Despite of the development different institutional framework to achieve the target safe water for all, it is estimated that globally by 2017, "785 million people still lack a basic water service among them 144 million people are still collecting drinking water directly from rivers, lakes and other surface water sources. The poor and the rural household are least likely to use basic water service. 5.3 billion people used safely managed services, i.e.

accessible on premises, available when needed and from contamination. 1.4 billion used a basic water services i.e. improved sources within 30 minutes per round trip to collect water. Over a quarter of a billion (206 million) used 'limited service where water collection from an improved source exceeded 30 minutes. In most countries the burden of water collection continues to fall mainly to women and girls. Seven out of 10 people used a safely managed drinking water service" (UNICEF & WHO, 2019).

This study tries to understand the status of drinking water supply in urban and rural India.

2. Urban water supply in India

According to the findings of Anand (2010), Raj (2013), Sastry (2006), Tiwari & Gulati (2011), and Water Aid India (2005), as well as the findings of a number of other studies, the urban water supply in India has a number of problems that need to be remedied. Inadequate resource allocation, ineffective operations and maintenance practises, tariff systems that are economically prohibitive, and inefficient collection are only a few of the difficulties that lead to inadequate water quality and quantity. Inadequate resource allocation, inefficient operations and maintenance practises, and inefficient collection are all problems. An examination into the urban water situation in India was carried out by a variety of international and bilateral financial institutions (IFIs). They came to the conclusion that the state-dominated paradigm, in addition to a failure to recover capital and management costs, is to blame for the poor water supply in India's urban areas. The International Financial Institutions (IFIs) conducted research and made recommendations based on their findings about institutional, governance, economic, and financial changes. On the other hand, the research came to the conclusion that the attempts that the government of India undertook to restructure the economy and the institutions that control it had been fruitless. This was the result that was reached by the study. Protests against the Municipal Corporations of significant cities were organised in Latur and Mysore as a response to the modifications in prices that were made by the ULBs. These cities can be found in the country of India. In addition to the one in Tripura, public-private partnership (PPP) efforts that were carried out in Chandanpur, Nagpur, and Latur were also unsuccessful. The failure of economic and institutional reform in ULBs may be traced back to the fact that investment in infrastructure was given higher priority than the provision of services by the respective local governments. This is the key reason why the attempt was unsuccessful. The reforms that were made by the Chennai Metropolitan Water Supply and Sewerage Board were successful in providing customers with the promised

services and in allowing investors to recoup their initial investments. This is in contrast to the reforms that were implemented by the Tamil Nadu Urban Development Fund, the Greater Bengaluru Water Supply and Sewerage Board, and the Chennai Metro Water Supply and Sewerage Board. In 2009, the Ministry of Urban Construction (MoUD) of the Indian government shifted its focus on urban water supply from the construction of infrastructure to the provision of services. This shift was made in response to an ongoing crisis. This change was made with reference to the provision of water in metropolitan areas. The government has developed service-level targets in an effort to improve the overall quality of the services supplied to individual families (GOI, 2009). This will help improve the overall quality of the services offered. The SLB measurements are presented for your consideration in Table 1.

Table 1: Service Label Benchmarking Indicators

S. No	Indicators	National Benchmark
1	Coverage of water supply connection	100%
2	Per capita supply of water	135 litter per capita per day (LPCD)
3	Extent of metering of water connections	100%
4	Extent of non-revenue water	20%
5	Continuity of supply	24 hours
6	Efficiency in redressal of customer complaints	80%
7	Quality of water	100%
8	Cost recovery in water supply services	100%
9	Efficiency in collection of water-related Charges	90%

Source: Ministry of Housing & Urban development Department, government of India, 2009

Accelerated Water Delivery Programme (AUWSP), Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in 2005, and the Urban Infrastructure Development Scheme (UIDSSMT), to name a few of the state-level programmes that have prioritised the distribution of water in urban areas as their primary objective, are just a few examples of the state-level initiatives that have been put into place. These are just some of the examples of the state-level initiatives that have been put into place. The fundamental reason that contributes to poor service delivery is a lack of available capital money, which in turn results in insufficient management and care of physical infrastructure. This cycle continues until the problem is resolved. According to Bakshi (2017), in order for a system to be self-sustaining, bulk metres need to be installed, water audits has to be undertaken in high NRW ULBs, and the system needs to be run and maintained on a consistent basis. Additionally, Bakshi (2017) states that a system must have regular operations and maintenance performed on it. Support from the PPP model of the Nagpur Orange City water supply project and the scientific methodology of leakage mapping by the Surat Municipal Corporation have allowed the ULBs to decrease their NRW and improve service performance. Public-private partnerships (PPPs) enhance governance since regulation and monitoring are separated from service provision. When there is maximum culpability, full accountability, and complete planning, more water is available, losses are decreased, and consumers are delighted. "Service delivery issues are being addressed by enhancing infrastructure and expanding elevated service reservoir capacity," says NMC. "Water revenue is increased, and commercial losses are decreased as a result of replacing connections and identifying unauthorised connections." The citizens of Nagpur may now enjoy a greater standard of living because to the city's improved access to water. The ULB appreciates OCWPL's 24-hour call centre and zone-level kiosks for managing bill payments and customer service inquiries. To determine the degree of non-revenue water and to maintain NRW at no more than 20% of total water use, the Surat Municipal Corporation set up an NRW cell. The NRW cell has prioritised leakage mapping, which involves gathering recent citizen complaints and evaluating the situation on the ground. Leakage mapping and corrective action, such as repairing the necessary piping and faulty valves, reduced the number of leaks per km of pipeline, decreased customer complaints, and conserved water (Niti Aayog, 2017).

2.1 Urban household access to water

According to Pushpangadan (2003), the qualities of a reliable water delivery system are proximity, adequacy, sufficient, and water quality.

According to the census report from 1991, 81% of homes had access to improved drinking water; by 2001, that number had risen to 97.8%, but by 2011, it had fallen back down to 89%. The drop can be attributed to the distinction between piped-in treated water and untreated, unprotected water. The percentage of homes with access to running water has increased from 68.7% in 2001 to 70.6% in 2011. Seventy-one percent of these homes have access to running water within their own residence, while twenty-seven percent have such access within walking distance. Slum residents can reach the community's piped water supply via a stand post (Water Aid, 2018). In metropolitan areas of India, piped water is the primary supply of potable water. Table 2 provides information from the 76thRound NSSO survey on the availability of potable water in metropolitan areas (GOI, 2019).

Table 2: Urban Household access to drinking water

S.No	Urban household access to drinking water	Percentage
1	Piped water into dwelling as principal source of drinking water	40.9
2	Exclusive access to principal source of drinking water	57.5
3	Sufficient water source from principal water source throughout the year	90.9
4	Drinking water facilities within the household premises	80.7
5	Improved source of drinking water	97.4
6	Use of Improved source of drinking water located at the household and available trough out the year	72

Source: NSS 76th Round, NSS Report No. 584(76/1.2/1) available at
*http://www.mospi.gov.in/sites/default/files/publication_reports/Report_584_final_0.p*df

Table-3 presents data on the availability of drinking water sources to urban households from the National Family Health Survey and the National Survey of Science and Obesity, 1998-2018. In metropolitan areas of India, piped water has always been the primary supply for human consumption. There was a steady transition from piped water to bottled water as the primary source of drinking water in homes.

Table 3: Urban household use of drinking water source(In percentage)

Major Source of Drinking Water	1998-99	2002	2005-06	2008-09	2012	2015-16	2018
	NFHS2	NSS58[th]	NFHS3	NSS65[th]	NSS 69th	NFHS 4	NSS 76th
Bottled Water			0.9	2.7	5.2	5.1	12.2
Piped Water/Tap/Public Tap/ Standpipe	74.5	73.6	71.0	74.3	69.1	69.0	65.0
Tube Well/ Hand Pump	18.1	19.6	21.3	17.5	19.9	17.4	17.1
Well	6.0	5.1					
Protected			1.8	2.1	1.1	3.7	1.7
Unprotected			2.9	1.2	2.2	1.0	2.4
Rainwater (Harvested or Improved)			0.0	0.0	0.0	0.1	0.0
Surface Water (River/Canal/Lake/Tank/Pond)	0.4	0.3	0.8	0.3	0.1	0.4	0.2
Spring		0.1	0.2	0.1	0.0	0.3	0.1
Other Source	1.0	1.3	1.1	1.9	2.4	3.0	1.3

Source: NSO, Envistats-India 2020: Vol.I, Government of India New Delhi, 2020
http://mospi.gov.in/download-reports
NFHS: National Family Health Survey, NSS: National Sample Survey, NSO: National Statistics Office

However, there are still regional and municipal disparities in India, despite the fact that 93% of the population has access to water. Because of a lack of available supplies, more and more city residents are relying on ground water that has been privately taken, which is depleting aquifers. People living in poverty in urban areas continue to be the most heavily impacted by a lack of water access (Niti Aayog, 2019). The demand for piped water supply in urban households is expected to rise in tandem with the rapidity with which cities are expanding. Water aid (2018) warns that urbanisation, city planning that ignores water resources and the water rights of inhabitants, and a lack of

1991 the NRDWM was renamed as Rajib Gandhi National Drinking Water Mission (RGNDWM). In 1999-2000 the reform in the sector initiated to involve community participation in the rural water supply. The Scheme Swajaladhara was started in the year 2002 with the aim to provide water supply to rural habitation in a sustainable manner through community participation. The scheme revised as per the government guideline and renamed as National Rural Drinking Water Programme (NRDWP). The programme shifted the coverage criteria from habitation to household and emphasises on water quality, sustainability and O&M of the scheme as support

Table 4: Rural Household access to drinking water

S.No	Rural household access to drinking water	Percentage
1	Hand pump into dwelling as principal source of drinking water	42.9
2	Exclusive access to principal source of drinking water	48.6
3	Sufficient water source from principal water source throughout the year	87.6
4	Drinking water facilities within the household premises	58.2
5	Improved source of drinking water	94.5
6	Use of Improved source of drinking water located at the household and available trough out the year	51.4

Source: NSS 76th Round, NSS Report No. 584(76/1.2/1) available at
http://www.mospi.gov.in/sites/default/files/publication_reports/Report_584_final_0.pdf

regulation all pose a threat to water supplies in the same metropolitan region.

3. Rural water supply in India

Ministry of Jal Shakti (previously known as Ministry of Drinking water & Sanitation) is the mainly responsible for planning, financing, policy formulation for the rural water supply in India. Provision of universal access to safe and adequate water for drinking cooking and other domestic uses within the premises is the vision to achieve through community participation (Government of India, 2019).

National rural drinking water programme with the technical support from UNICEF in 1969 is the first attempt of the government to provide drinking water service to rural areas through bore well and pipe water supply scheme. Accelerated rural water supply programme (ARWSP) is the major intervention of the government that emphasises upon water quality, accelerate coverage, and adoption of appropriate technology The scheme was renamed as National Rural Drinking Water Mission (NRDWM) in 1986 with the aim to accelerate the coverage of water supply in the rural areas. In the year

activity. This is one of the flagship programmes of Bharat Nirman (Government of India, 2015).   One of the objectives of NRDWP is to facilitate rural household access to sufficient and safe water within the household premises by 2030.It was found that 18.33% of the rural household have piped water connection by 31 March 2019.

In order to achieve the NRDWP target by 2024 the NRDWP is restructured and named as Jal Jeevan Mission (JJM). The aim of the scheme is to provide functional tap connection to every rural household with reliable, adequate and potable water supply (through technological intervention) and improve service delivery approach of water supply. In order to encourage sense of ownership among community and long-term sustainability of the scheme, the mission has emphasised the implementation of the scheme by GP or VWSC or Pani Samiti with a 10 percent capital cost contribution either in form of cash or kind. NGO, Voluntary organisations, women SHG under NRLM or SRLM will act as partner to facilitate and implement the scheme in mobilisation of rural community and protecting the rural water resource (JJM, No date).

3.1 Rural household access to drinking water

According to the National Sample Survey's 76th round estimates (July 2018-December 2018), the vast majority of rural households rely on a hand pump for their drinking water needs. Next to hand pump pipe water is the second major principal source. 11.3 percent of the household have access to pipe water into the dwelling 10.3 percent use pipe water into yard, one percent use pipe water from neighbour and 10.3 percent use public stand post as their principal source of water (GOI, 2019). The table 5 represents the rural household access to drinking water.

From the data in the table, we can conclude that 87.6% of homes have year-round water availability and that 94.56% use an improved water source for consumption. These results indicate that the vast majority of homes have ready access to a safe and reliable supply of drinking water. However, there is still an absence of year-round access to safe drinking water, of drinking water facilities in private homes, and of sole ownership of the main source of drinking water. Table 5 displays the results of the NFHS and NSS surveys for the drinking water sources of rural households during 1998-2018. Insight into the year-to-year availability of clean water for rural dwellings will be provided.

Table 5: Rural household use of drinking water source(In percentage)

Year	1998-99	2002	2005-06	2008-09	2012	2015-16	2018
Major Source of Drinking Water	NFHS 2	NSS 58 TH	NFHS 3	NSS 65TH	NSS 69TH	NFHS 4	NSS76th
Bottled Water			0.1	0.5	1.6	2.1	4.0
Piped Water/Tap/Public Tap/Standpipe	25.0	27.5	27.9	30.1	31.2	33.7	32.9
Tube Well/ Hand Pump	47.3	51.3	53.2	54.7	52.4	50.9	53.8
Well	23.5	17.9	2.8	5.5	2.7	3.6	2.9
Protected			12.4	6.3	9.0	6.0	4.4
Unprotected			0.2	0.1	0.2	0.2	0.2
Rainwater (Harvested or Improved)			0.2	0.1	0.2	0.2	0.2
Surface Water (River/Canal/Lake/Tank/Pond)	3.5	2.3	2.1	1.8	1.1	0.8	0.9
Spring		0.8	1.1	0.7	0.7	1.0	0.6
Other Source	0.7	0.3	0.1	0.3	1.1	2.7	0.3

Source: NSO, Envistats-India 2020: Vol.I, Government of India New Delhi, 2020
http://mospi.gov.in/download-reports
NFHS: National Family Health Survey
NSS: National Sample Survey
NSO: National Statistics Office

From the table 5, it is evident that there is a decline in percentage of household use of well (both protected and un protected), surface water, and spring as major source of water for drinking and rise in household use percentage in tube well or hand pump, pipe water supply, and bottle water. There are households using harvested rain water for drinking and the percentages remain same for all survey. Tube well/ hand pump is the first major source of drinking water in all the survey round.

A sustainable rural water supply includes sustainability in a. finance, b. sources, c. technology, d. quality, e. institution and f. human behaviour under the scheme (Eliamringi & Kazumba, 2017). Each scheme is an improvement over the previous one to achieve the target of safe and adequate water to the household in a sustainable manner. Although there is little achievement in terms of coverage and adequacy the failure lies with implementing sustainable water supply. Here we mean financial sustainability, i.e. retain O&M cost through user charges. NRDWP emphasises upon the community management of rural water supply. Why there is a failure in community management. Why users are not paying the

tariff are the questions? Therefore, it is essential to find out reason for failure of institutionalisation of community in provision of water supply to household.

India is diverse in religion and culture; therefore, the community and their behaviour in managing resource do differ. Therefore, the case of each supply scheme is an addition to the knowledge.

4. Conclusion

Water distribution is a state subject and the solution to its problem must adhere locally. From the discussion it is clear that a significant issue with India's urban and rural water supply is the inadequate cost recovery and coverage. Although there is different initiative taken by the government through various plan and programme to make water for all. But the consequence of all these economic and institutional reform comes out as protest, as because these reforms are not as par with the consumers interest. Researchers have shown that low tariff is one cause of inadequate cost recoupment. Similarly, raising prices without making any changes to how services are delivered does not ensure that those prices are being recouped. Finally, the service led approach and community management was adopted to enhance the performance of water distribution network.

As per the NSSO's still there are households do not have access to safe water and do not have access within their premises. The figure relates to it, is quite better for urban household as compared to rural household.

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Influencer Marketing Strategy of a Start-up as a provider of Fast-Moving Consumer Goods (FMCG) in India

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ABSTRACT

Numerous contemporary organizations utilize digital marketing strategies, including the implementation of influencer marketing techniques. The objective of this study is to ascertain and delineate the strategy employed in influencer marketing. The Indian start-up firm, which operates as an application-based provider of fast-moving consumer goods (FMCG) products, employed a qualitative technique and conducted a descriptive study to facilitate the sale of perishable FMCG items such as fruits, vegetables, milk, and other related products. The study's results indicated that the influencer marketing strategy employed by a fast-moving consumer goods (FMCG) product supplier, which is based on an application, can be divided into four distinct stages: decision-making, relationship management, campaign monitoring and evaluation, and measurement The data obtained from the third phase, known as assessment or measurement, is utilized to develop influencer marketing strategies for future campaigns.

Key Words: Influencer Marketing; Marketing Strategy; Start Up Company, FMCG products.

1. Introduction

The shift from traditional (offline) to digital (online) platforms has brought about a revolution in business marketing, particularly in product advertising. The current market requires an increase in sales volume. As a means of endorsing businesses or services in cyberspace, the use of an influencer marketing strategy is on the rise. Global businesses that employ influencer marketing strategies stand to gain significant advantages in the present day. (Khamis et al., 2016) The proliferation of social media platforms such as Instagram, Facebook, and YouTube has facilitated the ability of ordinary people to disseminate their ideas and perspectives on a global scale. Brown & Fiorella (2013) define social media influencers as those with a sizeable online following and the ability to affect the perspectives and attitudes of their followers. Influencers have the ability to effectively persuade their audience to embrace novel experiences, including the utilization of already familiar products and services. Influencer marketing entails the strategic utilization of influential individuals within a particular industry to endorse and advocate for a company. This study seeks to examine the impact of using influencers as a brand promotion strategy, establishing strong relationships with influencers, and achieving marketing objectives by utilizing influencers' services (Brown & Fiorella, 2013). This study examines the implementation of an influencer marketing strategy by an Indian application based online shopping service that specializes in fast-moving consumer goods (FMCG) that have a limited shelf life and are susceptible to deterioration, such as fresh produce, fruits, and various meats. Start-up company uses the influencer marketing strategy in promoting its products on social media during the COVID-19 pandemic in India. In a year ravaged by Covid-19, influencer marketing witnessed a massive growth in spending by leading brands and agencies to the tune of over 40 percent (year-on-year) growth. Insights delivered from a nationwide survey conducted by Zefmo Media Private Limited indicate that during the lockdown, influencer marketing became the go-to strategy for brands to reach out to their target audiences. Here's more on influencer marketing data for 2022. Numerous studies on pertinent topics have been conducted previously. According to the researchers' list, there were a total of five studies carried out during the outbreak. It is essential to emphasize that Ratnapertiwi and coworkers (2021) investigate the significance of influencers and digital content in the context of marketing during the COVID-19 pandemic. Yuliana et al. (2022) conducted a study on the impact of influencers on pandemic-related product sales. How to Succeed in the Age of Influencer Marketing on Instagram, TikTok, and Beyond (Haenlein et al., 2020) is a publication in which the authors discuss strategies for achieving success in the domain of influencer marketing across various social media platforms. Al Shehri (2021)

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examined the significance of gender, age, and product type in the context of influencer marketing in a recent study. This discussion focuses on influencer marketing and its function in supporting sales promotions.

1.1. Promotional Efforts.

According to Kotler and Armstrong (2018), Successful organizations recognize the significance of creating value for consumers in order to extract value from them. According to Dharmmesta and Irawan (2008), marketing is viewed as an essential task for business proprietors, as it plays a crucial role in ensuring their survival, growth, and financial success. In conclusion, marketing is a business activity that suppliers engage in to meet the wants and needs of consumers. A company's success depends on the implementation of a meticulously crafted marketing strategy or plan. The marketing mix incorporates a variety of marketing strategies or plan components. The integration of four essential components, namely products, price, promotion, and distribution, according to Kotler and Armstrong (2018), is the foundation of an effective marketing strategy, which influences consumer behavior. According to this viewpoint, the marketing blend is comprised of the 4Ps. The 7Ps, which include product, pricing, location, promotion, proof (tangible evidence), and people (procedures), are a collection of marketing instruments that have evolved alongside the progress of marketing research.

1.2. Promotional Communication

According to the Institute of Internal Auditors' (IIA) Standards for the Professional Practice of Internal Auditing, any entity that is observable, tangible, acquirable, or utilized by the general public qualifies as a form of marketing communication. According to Kotler and Keller (2016), influencer marketing is a strategic approach to marketing communication that seeks to both inform and persuade consumers. There are several elements in marketing communication shown by figure 1.

Figure 1 Elements of Marketing Communication

- Advertising, Business-to-consumer marketing communication refers to a strategic approach that seeks to promote ideas, products, and services for

financial gain while avoiding direct human interaction.

- Direct marketing, Direct-to-consumer (D2C) refers to the practice of selling items or services directly to end consumers, bypassing the involvement of intermediaries, with the aim of eliciting an immediate response.

- Digital or internet marketing, Digital marketing refers to the promotional activities conducted on internet-based platforms, encompassing various strategies such as social media marketing, mobile marketing, and interactive media.

- Social media marketing, mobile marketing, and interactive media are only few of the promotional tactics that fall under the umbrella term digital marketing.

- The primary goal of public relations is to increase positive perceptions of an organization and the values it espouses (Belch & Belch, 2017). This study concentrates on influencer marketing, which refers to the promotion of products or services via digital platforms or the internet.

2. Digital Marketing

The practice of marketing involves the distribution and sale of products on a larger scale due to a heightened understanding of the specific preferences of local clientele (Chaffey & Smith, 2017). Two results of digital marketing are the expansion of distribution channels and the increase in sales. Digital marketing may be defined as the practice of marketing products that are in close proximity to customers, achieved via a comprehensive awareness of their demands (Chaffey & Ellis-Chadwick, 2016). In summary, digital marketing is a marketing strategy that leverages technology and digital media to enhance sales and improve customer convenience. To leverage digital platforms for the promotion of products and services, Chaffey and Smith offer a variety of digital channel shown in figure 2.

- Search engine marketing (SEM) which is useful for placing messages in search engines and driving clicks to websites when users use keywords to search for something.

- Online public relations via brand mentions and product placement on third-party websites such as media sites, social networks, and blogs that the target audience may visit.

- Long-term online partnerships with third parties, such as online sponsors and cobranding.

- Interactive advertising which uses online display ads to raise brand awareness and drive clicks to specific websites.

Figure 2 Variety of Digital Channel

Figure 3 Stages of Influencer marketing Strategies

- Email marketing is defined as an offer or information sent directly to a user's email to increase awareness or direct response.

- Social media marketing (SMM) to strengthen messages through social network comments and sharing, viral marketing, or word-of-mouth marketing (Chaffey & Smith, 2017). This research focuses on an influencer marketing strategy that is included in social media marketing (SMM) channels.

3. Influencer Marketing

The concept of influencer marketing refers to a form of advertising that relies heavily on social media platforms and online endorsements. According to Brown and Fiorella (2013), the Internet and social media have facilitated the emergence of individuals who can serve as news sources, thought leaders, and influencers. According to Brown and Hayes (2008), influencers are non-responsible third parties that have a significant impact on a consumer's purchasing decision-making process. Influencer marketing is a contemporary public relations strategy that prioritizes the engagement of individuals whose advice and recommendations are sought after by one's target audience. These Influencers influence the purchasing decisions of those who seek and value their expertise, read their blogs, interact with them on discussion forums, attend their presentations at industry events, etc. (Brown & Hayes, 2008).

4. Discussion

Fast-moving consumer goods (FMCG) are products that sell quickly but are consumed by the buyer rather than resold (Sugiarta, 2011). The FMCG market consists of products that are low priced, widely available, and rapidly consumed (Leahy, 2011). Research results showed that influencer marketing strategy conducted by the provider of FMCG products based on application consisted of four stages.it is shown in figure 3.

4.1. The Influencer Marketing Determination of FMCG Products

To facilitate the trickle phase, brands develop buyer personas that include information such as target demographics, geographic areas, shopping preferences, the technology that allows brands to adapt to influencers, and the message that should be delivered to the influencer's audience (Brown & Fiorella, 2013). According to the findings of the in depth interviews with each source, the branding specialist in the branding department has the final say when it comes to identifying key opinion leaders. At this point, the branding expert and the product marketing and merchandising group have to work together to decide which products will be highlighted. Then, develop a central concept that connects the influencers' own brand identities to the product being pushed. Management, the Chief Creative Officer, and the rest of the branding team may all contribute ideas and insights based on demographics, geography, consumer habits, and technological developments, as the research shows.

4.2. The Influencer Marketing Management of FMCG Products

The seven-step second management phase consisted of product, knowledge, calendar, message, platform, alternate, and feedback (Brown & Fiorella, 2013). According to the authors of the study, partnering with influential individuals involves more than simply checking a box on a collaboration agreement; it involves cultivating meaningful relationships that can result in future advantages for both parties. It is important to consider the following factors when managing influencers: the influencers' familiarity with the company and its products; the influencers' preferred platform for uploading content; a backup plan in case their audience reacts negatively to what they share; and the influencers' feedback gleaned from their interactions with the audience and the company's products.

4.3. The Influencer Marketing Monitoring of FMCG Products

In order to assess the effectiveness of their influencer marketing efforts, brands should diligently consider and analyze several monitoring indicators, such as measurements of awareness, reaction, and action (Brown & Fiorella, 2013). The branding specialists conducted a study to monitor three specific time points following the publication of an influencer's content on the internet: immediately after it was published, three days thereafter, and seven days thereafter. The PR Package is a tool used to monitor the number of influencers that voluntarily provide brand-related material without receiving any form of payment. The data of compensated influencers was monitored, encompassing metrics such as their reach, impressions, profile visits, and link clicks. Additionally, the concept of conversion, which exclusively pertains to compensated influencers, was examined by tracking the frequency with which their audience utilized the influencer's unique code after it was incorporated into content.

4.4 The Influencer Marketing Measurement of FMCG Products

The fourth stage is the evaluation (measure) stage, in which brands must evaluate each influencer's completed marketing campaign to improve or create new strategies if previous targets were not met (Brown & Fiorella, 2013). Therefore, brands need to evaluate two core metrics for each influencer marketing campaign:

i. Investment, resources, and the end product can all be used as brand measures. The value of the campaign can be measured by comparing the influencers' individual budgets. The number of employees assigned to an influencer is a good proxy for the available resources. Finally, the cost of providing samples of the product to influencers during the marketing campaign can be used as a proxy for the product's value.

ii. Influencer metrics that incorporate both the frequency and magnitude of impact. The ratio can be determined by quantifying the number of audience presentations that incorporate uploaded content from influencers. The term sentiment or "brand sentiment" refers to the evaluation of individuals' emotions towards a brand or product as well as their response to the marketing strategies employed. The assessment of impact can be conducted through the examination of several indicators, such as the level of engagement observed in the company's marketing efforts on the Instagram platform, the extent of user-generated

content pertaining to the purchase of fast-moving consumer goods (FMCG) facilitated by the application, and the quantification of sales resulting from the utilization of the influencer's unique promotional code. Each influencer involved in the marketing campaign would be provided with a unique code to distribute among their followers, with the sole purpose of facilitating their participation.

5. Conclusion

In this paper FMCG start up's influencer marketing is found in four phases. We find the first step is to create a list of potential influences for the FMCG product's marketing campaign. During the second phase, we are known as influencer marketing management, seven components are put into effect: products, knowledge, calendars, messages, platforms, alternatives, and feedback. Products are sent to influencers on their big days (such as when they have children, get married, or celebrate significant holidays like Holi, Diwali, Eid Mubarak, and Christmas) as a way to maintain positive relationships with them. In the third phase, we found the influencer's marketing efforts by looking at two metrics: brand mentions and conversions. Finally, ratio, sentiment, and effect are used to evaluate influencer marketing efforts. Unfortunately, the Indian application based FMCG provider has not examined brand KPIs. Based on the results obtained, it can be concluded that this strategy follows a cyclical pattern. We found in the final phase that it will shape the subsequent campaign's influencer marketing. Researchers and startup firms can promote affiliate marketing to their clients to advertise FMCG products, increase influencer loyalty, and motivate influencers to push products to produce sales. This type of company may also partner with traditional market sellers to target offline community members.

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Empirical study of Candidate's Personal Factors impacting Recruitment process in Staffing Companies

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ABSTRACT

Indian staffing industry is growing at 28% percent on year-to-year basis with the adoption of the data-driven recruitment process is an emerging trend. The present paper studied the differentiation of various factors that impact recruitment process and outlined the process of Indian staffing agencies. The study assessed the selection of a candidate being impacted by various candidate specific factors such as communication, qualification, empathy, and adaptability, and its influence on decision making of the client servicing team. The quantitative study gathered data on screeners' impressions and their perspectives on the phases conducted during recruitment process Exploratory factor analysis was used to analyze candidates' personal factors (attributes) that impact the recruiters' decision considering different positions they were recruiting. The result states that the Indian staffing industry is heavily influenced by a combination of factors, including communication, educational qualifications, empathy, and adaptability.

Introduction

Impacts of COVID-19 on the labour market is one of the organization's biggest challenges. The organization's requirement for human resources should be ascertained by successful human resources. Finding possible applicants for current or upcoming organizational vacancies is known as recruitment (Miller, 2018). Alternatively, it could be seen as a connecting activity that brings together people looking for work and those with open positions. The best recruitment strategy will draw in a lot of skilled candidates who will accept the position if it is offered (Miller, 2018).

The recruitment procedure seeks to deliver the best candidates with top-notch credentials and qualifications. Recruiter main objective is establishing a pool of eligible applicants to improve the hiring process' level of certainty by considering various factors and they also tend to streamline the recruitment processes by creating detailed strategy as candidates frequently feel appreciated and valued when we are clear about what to expect from them that creates a positive attitude as well with them.

In the past few studies were done where the major goal was to determine whether personal characteristics related to the applicant have an impact on the recruiter's or screener's decision to send the applicant to the client for consideration for all open bulk hire non-IT positions (Horstman, 2019).

Literature Review

The success of any organization's future depends on selection and recruitment, which is undoubtedly the most crucial part of human resources. The recruitment effort, among other things, can have an impact on the results of an organization's selection process, for example the area where candidates are located (Miller, 2018), candidates' literacy abilities, the number of applicants for a position, the position's appeal, etc. Hence the main factors that were researched rest upon candidate's personal factors that impact recruiter decision making while they screen the candidates for the different vacant positions depending on various geographical locations over India as well as in USA, the job profiles were mostly related to customer service positions and as per clients need of onsite /remote work options the key factors were researched upon where the screener gives the rating to shortlisted candidate as per their ATS (Applicant Tracking System) (Collier, 2022) and based on those shortlisted profiles interviews were conducted and cumulative analysis of the candidate's rating sheet was done the best rated candidates were offered for the positions. Employment and recruiting landscape in the USA and Indian Market is dynamic and constantly changing as a result of new technologies and trends (Miller, 2018). Based on their areas of expertise, size, and location, staffing firms and recruiters may offer a variety of procedures and services.

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The key factors we studied upon that the recruiter/screener checks are candidate's Communication, Educational qualification, Empathy/ accuracy, Result driven factors. Quantitative analysis was done on a total of 136 candidates as respondents that were shortlisted for the bulk hire customer service-related roles. The main objective was to find what is the most important factor among all 4 that plays a vital role in selecting the candidates and how it differs in different geographical locations. The result shows that candidate being Result driven and empathetic are the two most important factor among all these which align the screener perspective to hire a candidate while conducting interviews for these bulk hire positions followed by communication skills and educational qualification (Hair et al., 2010).

Hence when a candidate is sourced for position of Customer Service Representative, we look upon the key factors which might fulfill the clients need i.e. requirement of a candidate that can handle high volume of incoming calls, to check if they can manage any irate customer or any difficult situation when the manager is not around, how quickly they can respond to escalations in case of delay in client services. While screening the candidates the client servicing team or the hiring manager checks all these factors hence the candidate should be a very good communicator and must have an attitude where he can empathize with the customer and keep calm when the situations are dire and higher escalations situations can occur if not handled discreetly (Woods & Tharakan, 2021).

In this study we discovered the underlying personal aspects that have an impact on the hiring process by using EFA (Exploratory Factor Analysis) (Watkins, 2018) to candidate data. These elements may influence candidate selection criteria, recruitment tactics, and organizational fit evaluations. Hence factor interpretation was done, and we were able to identify the strength of each of those personal factors that impact the selection process (Collier, 2022).
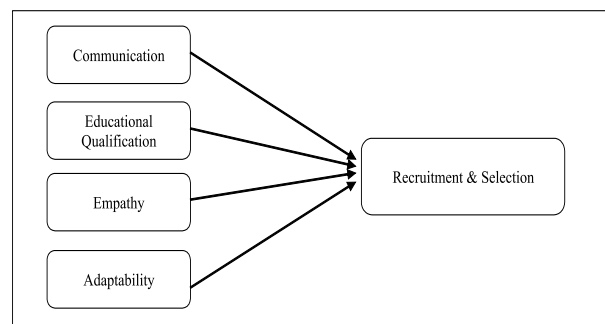

Figure 1: Conceptual Model : Candidates' Personal Factors Impact on Recruitment Process

Research Questions: Present research tries to answer the following research questions.

- RQ1. Do candidates' personal factors impact the recruitment process?
- RQ2. Are recruitment and selection of individuals affected by personal factors?
- RQ3. How can we measure personal factors/attributes among individual candidates?

Objectives of the Study:

This study has been conducted with below mentioned basic objectives:

1. To explore the rationality among candidates' personal factors in recruitment process.

2. To identify candidates' personal factors existing among individual candidate which affect their recruitment process.

Research Hypotheses

H01: There is no significant association of a candidate's communication skills with recruitment process.

H02: There is no significant association of a candidate's educational qualification with recruitment process.

H03: There is no significant association of a candidate's ability to empathize with recruitment process.

H04: There is no significant association of a candidate's adaptability with recruitment process.

Research Methodology

The research design undertaken for the study was descriptive in nature. The data was collected from different recruiters who work with staffing agencies. The data was collected through a self-administered structured questionnaire with 20 item Likert scale. A total of 15 employees shared the survey with their company's internal staff. A total response of 136 respondents were collected for the study from staffing companies in Delhi-NCR Region (India). All respondents were guaranteed confidentiality and anonymity throughout the study's entire process.

All data from the sample was subjected to exploratory factor analysis using IBM-SPSS 21.0 with principal component as the extraction method. It was also used as an analytical tool to conduct logical statistical and computational processes to derive statistical results using the necessary coefficients. The extractions attained through SPSS are given in the table 1 explains the communality, which is the sum of the squared component loadings up to the number of components that are extracted.

Exploratory Factor Analysis (EFA)

The results of the analysis have been presented below followed by their interpretation.

KMO and Bartlett's Test

The KMO value following SPSS analysis was 0.876, which is closer to the ideal value; as a result, all these applicant criteria are crucial to the hiring process and follow the alternative hypothesis i.e., there is an impact of candidate personal factors on recruitment process.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.876
Bartlett's Test of Sphericity	Approx. Chi-Square	288.175
	df	190
	Sig.	.000

Table 1: KMO and Bartlett's Test

Communalities

	Initial	Extraction
Communication 1	1.000	.866
Communication 2	1.000	.781
Communication 3	1.000	.865
Communication 4	1.000	.838
Communication 5	1.000	.779
Educational Qualification 1	1.000	.746
Educational Qualification 2	1.000	.731
Educational Qualification 3	1.000	.732
Educational Qualification 4	1.000	.691
Educational Qualification 5	1.000	.777
Empathy 1	1.000	.848
Empathy 2	1.000	.707
Empathy 3	1.000	.866
Empathy 4	1.000	.678
Empathy 5	1.000	.864
Adaptability 1	1.000	.873
Adaptability 2	1.000	.892
Adaptability 3	1.000	.812
Adaptability 4	1.000	.727
Adaptability 5	1.000	.663

Extraction Method: Principal Component Analysis.
Table 2: Communalities

Bartlett's Test of Sphericity

It is used to test the null hypothesis that the correlation matrix is an identity matrix, i.e., an identity correlation matrix means that the variables are unrelated and not ideal for factor analysis. A significant statistical test (usually less than 0.05) shows that the correlation matrix is indeed not an identity matrix (rejection of the null hypothesis). Hence the results depicted above clarify that the candidates' personal factors in the recruitment process are correlated.

Communalities

The better the factor-variable fit, when the closer the communality is to 1. In this situation, all personal characteristics have different communality output which is regarded as ideal; therefore, they are all taken into consideration during the hiring process.

Total Variance Explained

Total Variance should be more than 0.7 in accordance with the variance extraction criteria. If variance is smaller than 0.7, it shouldn't be considered.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.964	44.818	44.818	8.964	44.818	44.818	6.089	30.443	30.443
2	3.762	18.808	63.625	3.762	18.808	63.625	3.755	18.776	49.219
3	1.704	8.519	72.144	1.704	8.519	72.144	3.393	16.965	66.183
4	1.310	6.550	78.695	1.310	6.550	78.695	2.502	12.511	78.695
5	.978	4.888	83.583						
6	.667	3.336	86.919						
7	.404	2.019	88.938						
8	.346	1.729	90.667						
9	.316	1.581	92.248						
10	.266	1.328	93.576						
11	.208	1.041	94.616						
12	.176	.880	95.496						
13	.166	.832	96.328						
14	.159	.794	97.122						
15	.144	.721	97.844						
16	.119	.595	98.439						
17	.097	.483	98.922						
18	.078	.388	99.310						
19	.069	.347	99.657						
20	.069	.343	100.000						

Extraction Method: Principal Component Analysis.

Table 3: Total variance explained

Hence in this case the % variance is coming out to be 78.69% so it's fulfilling the value extraction criteria as well.

Component Matrix

Estimates of the correlations between every variable and the estimated components are included in the component matrix. The component matrix result was based upon the data of 136 candidates for the factor communication.

Hence communication plays a vital role while a recruiter source candidate for the position of Customer Service Representative as per the geographical location in Delhi-NCR (India). There are 4 components identified namely communication, qualification, empathy, and adaptability. All the above components are an integral part of a candidates' personal factors and help in recruitment and selection process.

Rotated Component Matrix^a

	Component			
	1	2	3	4
Communication 1			.893	
Communication 2			.736	
Communication 3			.878	
Communication 4			.850	
Communication 5			.779	
Educational Qualification 1				.776
Educational Qualification 2				.779
Educational Qualification 3				.824
Educational Qualification 4				.752
Educational Qualification 5				.789
Empathy 1		.833		
Empathy 2		.803		
Empathy 3		.882		
Empathy 4		.741		
Empathy 5		.886		
Adaptability 1	.904			
Adaptability 2	.897			
Adaptability 3	.844			
Adaptability 4	.823			
Adaptability 5	.800			

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Table 4: Component matrix

Hence, the two most important factors the screener checks which processing any candidate application were his attitude being empathetic and result driven (adaptability) nature to solve customer queries.

Hypotheses Testing

The statistical significance of 4 null hypotheses is tested at a level of (?) 5% and is discussed here. Following table 5 presents the results of hypotheses testing procedure. All the hypotheses were tested at 5% level of significance and alternate hypotheses are accepted.

HA1: There is a significant impact of candidate's communication skills on his recruitment.

HA2: There is a significant impact of candidate's educational qualification on his recruitment.

HA3: There is a significant impact of candidate's ability to empathize on his recruitment.

HA4: There is a significant impact of a candidate's adaptability on his recruitment.

			Estimate	S.E.	C.R.	P	Label
R&S	<- - -	CM	0.124	0.04	2.625	0.009	Hypothesis accepted
R&S	<- - -	EQ	0.264	0.054	5.186	0.006	Hypothesis accepted
R&S	<- - -	EM	0.139	0.051	3.127	0.002	Hypothesis accepted
R&S	<- - -	AD	0.155	0.028	3.653	0.008	Hypothesis accepted

Table 5: Hypotheses Testing

Findings and Discussion

The p values for null hypotheses are below 0.05 indicating that candidates' personal factors have an influence on their recruitment and selection in staffing firms. Personal factors communication skill, educational qualification, empathy, and result driven adaptability are found to have a substantial influence on recruitment related decision making for individual candidates. The current article is expected to be valuable for recruiters and to people who want to improve their chances of selection in an organization. They will further be able to understand that not just professional factors but personal factors also ensure successful recruitment. The results from the analysis indicated a strong agreement that a candidate's personal factors have a positive impact on the recruitment process.

Suggestion

The research study was mainly focused on customer service-related profiles but different market segments of different job requirements can be explored and came across multiple perspectives.

With the advent of technology and the implementation of AI in applicant tracking system various companies are using AI to analyze personal characteristics including personality traits, cognitive skills, emotional intelligence, and cultural fit, use established psychometric tests to select best candidate.

We can further study the market and do a in depth analysis of how AI is impacting recruiter decision making while selecting any candidate and the percentage of iteration it is creating and how it can be helpful in HR process growth.

Conclusion

The Indian staffing industry is heavily influenced by a combination of factors, including communication, educational qualifications, empathy, and adaptability. Effective communication is the lifeblood of industry. It facilitates understanding between staffing agencies, job seekers, and employers. Clear and open communication streamlines the hiring process and ensures that the right talents are matched with the right opportunities. Educational qualifications are essential as they define the skillset and capabilities of potential candidates. The industry benefits from well-educated job seekers who are better equipped to meet the diverse demands of the job market. Empathy plays a crucial role in building trust and rapport with both clients and job seekers. It fosters positive relationships and helps the staffing industry understand the unique needs and aspirations of individuals and businesses. Adaptability is a defining trait of a successful staffing industry. It must evolve to align with shifting economic, technological, and social trends. The COVID-19 pandemic, for instance, underscored the importance of adaptability as the industry pivoted to meet the demands of a rapidly changing job market.

In conclusion, effective communication, educational qualifications, empathy, and adaptability are the pillars supporting the Indian staffing industry. These factors together create a dynamic and resilient ecosystem that serves the evolving needs of job seekers and employers. The Indian staffing industry is experiencing trends such as the rise of gig work and remote employment, increased demand for tech-savvy professionals, upskilling programs, and the continued focus on diversity and inclusion. Additionally, the industry is adapting to evolving post-pandemic workforce needs with flexible staffing solutions.?

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