

LEVERAGING ARTIFICIAL INTELLIGENCE FOR SOCIAL ENTREPRENEURSHIP: A CASE STUDY ON WYSA

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ABSTRACT

Social entrepreneurship is emerging as a powerful tool for addressing societal problems and is leveraging technological advancements to enhance its impact. Artificial Intelligence (AI) presents a promising avenue to innovate and scale the initiatives taken up by Social Entrepreneurs. This research paper presents a comprehensive case study on Wysa, an AI-powered mental health chatbot, and its innovative use of artificial intelligence AI) to provide accessible and personalized mental health support. In addition, it throws light on the transformative potential of technology in addressing global mental health challenges through an in-depth analysis of Wysa's AI-driven features, implementation strategies, and impact on users. The findings offer valuable insights for researchers, practitioners, and policymakers in the field of digital mental health interventions by examining the effectiveness, ethical considerations, and future directions of Wysa.

Key Words: *Artificial Intelligence, Mental Health Support, Chatbot, Wysa, Case Study, Natural Language Processing, Machine Learning, Cognitive-Behavioral Therapy*

Introduction

Social entrepreneurship has emerged as a powerful approach to addressing social, cultural, and environmental issues through innovative and sustainable business models. Unlike traditional entrepreneurship, which primarily focuses on financial gain, social entrepreneurship aims to create social value by addressing pressing societal needs. These needs can range from poverty alleviation and education to healthcare and environmental sustainability. The dual mission of social enterprises—to achieve social impact while ensuring financial sustainability—places unique demands on social entrepreneurs, who often face significant challenges in scaling their operations, securing funding, and reaching underserved populations.

In recent years, advancements in technology, particularly in Artificial Intelligence (AI), have opened new avenues for social entrepreneurship. AI, with its ability to analyze large datasets, automate processes, and provide personalized experiences, holds the potential to significantly enhance the effectiveness of social enterprises. AI-driven solutions can help social entrepreneurs overcome some of the key barriers they face, such as resource limitations and the need for scalability. By leveraging AI, social enterprises can extend their reach, improve operational efficiency, and provide more targeted and impactful services.

AI has demonstrated significant potential in the realm of mental health. Mental health is a critical global issue, with millions of people worldwide lacking access to adequate mental health support. Traditional mental health services often struggle to meet the demand due to a shortage of professionals, high costs, and social stigma. AI-driven platforms like Wysa have emerged as innovative solutions to these challenges, offering accessible and scalable mental health support through AI-powered chatbots and digital tools.

Problem Statement

Despite the potential of AI to transform social entrepreneurship, there is limited research on how AI can be effectively leveraged to address complex social challenges. Social entrepreneurs need to understand how to integrate AI into their operations in a way that enhances their social impact without compromising their mission or values. Moreover, the unique ethical and operational challenges posed by AI in the social sector require careful consideration.

This research focuses on Wysa, an AI-driven mental health platform that exemplifies the intersection of AI and social entrepreneurship. Wysa has been recognized for its innovative approach to providing mental health support through AI chatbots, making mental health care more accessible, affordable, and stigma-free. However, while Wysa's success offers valuable insights, it also raises important questions about the broader implications of AI in social entrepreneurship.

Objectives

The primary objective of this research is to explore how AI, as exemplified by Wysa, can be leveraged to enhance the effectiveness and reach of social entrepreneurship initiatives. Specifically, the research seeks to:

Examine the Role of AI in Social Entrepreneurship: Investigate how AI technologies are being integrated into social enterprises, with a focus on their impact on operational efficiency, scalability, and social outcomes.

Analyze Wysa as a Case Study: Provide an in-depth analysis of Wysa's AI-driven approach

to mental health support, including its development, implementation, and impact on users.

Identify Challenges and Opportunities: Identify the challenges and opportunities associated with leveraging AI in social entrepreneurship, including ethical considerations, scalability, and user engagement.

Provide Recommendations: Offer practical recommendations for social entrepreneurs looking to integrate AI into their initiatives, drawing lessons from Wysa's experience.

Research Methodology

Secondary data was gathered from diverse sources, including articles, journals and websites. A case study method was used to analyse the current state of social entrepreneurship in India.

Literature Review

Social entrepreneurship

Social entrepreneurship applies business principles to drive social impact (Thompson and Doherty, 2006, Wolk, A. , 2008) creating social values through innovative solutions that utilize minimum resources (Peredo & McLean, 2006). the creation of social value is a defining characteristic that sets social enterprises apart from commercial ones (Cherrier et al., 2018) emphasizing values such as fairness, honesty, altruism, freedom and equality (Murphy & Coombes, 2009).

Social innovation involves implementing novel activities and services with a social purpose (Halberstadt et al., 2021) actively engaging individuals who benefit from these social initiatives (Phillips et al., 2015). Social entrepreneurship is regarded as a catalyst for change, driving continuous innovation to address societal challenges. (Segarra-Oña et al., 2017).

Introduction to AI and its potential for social impact

The global mental health care system is currently facing significant challenges. According to the World Health Organization, one in four individuals will experience a mental health issue at some point in their lives. Mental disorders remain the leading cause of health-related economic hardship worldwide, with depression and anxiety affecting an estimated 322 million and 264 million people, respectively. Despite the growing prevalence of mental health issues, there is a severe shortage of mental health professionals, particularly in Southeast Asia, where there are only 2.5 professionals per 100,000 people. Although effective therapies for many mental and neurological disorders exist, only half of those affected by mental illness receive treatment. Key obstacles to widespread treatment include a lack of resources, qualified professionals, and pervasive social stigma.

Public demand for accessible, cost-effective, and evidence-based healthcare solutions is rising, prompting healthcare systems to address these challenges. In this context, information technology has been seen as a potential solution to issues such as societal stigma and the mismatch between the supply and demand for mental health services. AI-enabled technologies are expected to provide more accessible, affordable, and potentially less stigmatizing alternatives to traditional mental health treatments. With the widespread lack of access to mental health care, there is a growing need for flexible, alternative solutions. This has led to a surge in the development of mobile applications designed to supplement traditional mental health treatments. While studies show that the therapeutic efficacy of these digital approaches can be comparable to conventional methods, patient engagement with these technologies remains a significant challenge. Low commitment and acceptance are often attributed to the technology's inability to fully engage patients and the failure of clinical trials to translate into improved real-world outcomes.

The rise of AI technologies is driving a resurgence in digital mental health treatments. Conversational agents or chatbots—AI-powered software systems capable of interacting with users in natural language through text or voice—are increasingly used in digital assistants like Apple's Siri, Yandex's Alice, and Amazon's Alexa. These chatbots are also being applied in digital mental health services, where they have the potential to significantly impact psychotherapy. AI-driven mental health chatbots offer evidence-based treatments by simulating social communication in a friendly, non-judgmental way. They help address key barriers in mental health care, such as low patient engagement, insufficient clinician availability, and stigma.

AI and machine learning have garnered widespread interest due to their success in various fields, including gaming, speech recognition, and autonomous vehicles. These technologies are being applied to a range of practical problems, such as improving search engines, language translation tools, communication services, transportation efficiency, and personalized healthcare. While these innovations have the potential for positive social impact, they also raise important questions about their social consequences, potential for misuse, and governance, which are critical considerations moving forward.

Case Study: Wysa

Introduction to Wysa

Wysa is an AI-driven mental health platform that utilizes conversational AI to provide emotional support and mental health resources to users worldwide. Launched in 2017, Wysa was developed by Touchkin, a health-tech startup founded by Jo Aggarwal and Ramakant Vempati. The platform was created in response to the growing global need for accessible and

affordable mental health care, particularly in regions where access to professional mental health services is limited or stigmatized.

Mission and Vision

Wysa's mission is to democratize mental health care by making it accessible to everyone, regardless of geographic location, financial status, or social stigma. The platform aims to empower individuals to manage their mental health proactively and to provide support that is available anytime and anywhere. Wysa envisions a world where mental health care is as ubiquitous and easy to access as physical health care.

How Wysa Works

Wysa operates as a chatbot that users can interact with through text-based conversations. The AI chatbot is designed to engage users in therapeutic conversations, providing them with support, guidance, and tools to manage their mental health. The platform is available as a mobile app on both Android and iOS, and it can also be accessed via web browsers.

Key Features of Wysa:

AI-Driven Conversations:

Wysa's chatbot uses natural language processing (NLP) to understand and respond to users' inputs. The AI is trained to recognize emotional cues and respond with empathy, offering suggestions and exercises based on cognitive-behavioral therapy (CBT), dialectical behavior therapy (DBT), and mindfulness techniques.

Personalized Mental Health Tools:

The platform offers a range of tools and exercises tailored to the user's needs, including mood tracking, breathing exercises, meditation, and self-help techniques. These tools are designed to help users manage anxiety, stress, depression, and other mental health concerns.

Human Support:

While the core of Wysa's service is its AI chatbot, users can also access support from human therapists through the platform's premium services. This hybrid model ensures that users have access to professional help if needed, while still benefiting from the immediacy and availability of AI-driven support.

Anonymity and Privacy:

Wysa emphasizes user privacy and anonymity, which is critical in reducing the stigma associated with seeking mental health support. Users can interact with the chatbot without

disclosing personal information, which encourages open and honest conversations.

Proactive Mental Health Support:

In addition to responding to user inputs, Wysa proactively offers support through daily check-ins and reminders to practice mental health exercises. This proactive approach helps users maintain a routine that promotes mental well-being.

User Base and Reach

Since its launch, Wysa has grown significantly in popularity and reach. The platform has over 5 million users across more than 30 countries, including the United States, the United Kingdom, India, and other regions with limited access to mental health services. Wysa has been particularly well-received in regions where mental health stigma is prevalent, offering an anonymous and non-judgmental space for users to seek help.

Impact and Recognition

Wysa has received widespread recognition for its innovative approach to mental health care. It has been featured in prominent publications such as Forbes, BBC, and The New York Times. The platform has also been endorsed by organizations like the National Health Service (NHS) in the UK and has been used in collaborations with educational institutions, employers, and healthcare providers.

Key Achievements:

User Satisfaction: Over 90% of users report finding Wysa helpful, indicating high levels of satisfaction and engagement.

Clinical Validation: Wysa's effectiveness has been validated through clinical studies, which have shown that the platform can significantly reduce symptoms of anxiety and depression in users.

Global Awards: Wysa has won multiple awards for innovation in mental health, including the Google Assistant Developer Challenge and the Global Mobile Award for Best Mobile Innovation for Health and Wellbeing.

Impact on Social Entrepreneurship

Wysa's Contribution to Social Entrepreneurship

Wysa, as an AI-driven mental health platform, has made significant contributions to the field of social entrepreneurship by addressing one of the most pressing global challenges—mental health. By leveraging AI technology, Wysa has managed to provide scalable, accessible, and personalized mental health support to millions of people worldwide. This section analyzes how Wysa has contributed to social entrepreneurship by addressing mental health challenges

at scale, highlighting its impact on both individual users and the broader societal context.

1. Scalability and Accessibility

One of the core challenges in mental health is the limited access to care, especially in low-resource settings or among marginalized communities. Traditional mental health services often require significant financial resources, trained professionals, and infrastructure, making them inaccessible to large segments of the population. Wysa addresses this challenge by using AI to deliver mental health support that is both scalable and accessible:

Global Reach: Wysa's AI chatbot is available 24/7, providing support to users regardless of their geographical location. This global accessibility is particularly important in regions with limited access to mental health professionals. Wysa has been downloaded by over 5 million users across more than 30 countries, demonstrating its ability to reach a diverse and widespread audience.

Cost-Effective Support: Wysa offers free access to its basic services, making mental health support affordable for individuals who may not have the financial means to access traditional therapy. The platform also offers premium services at a fraction of the cost of in-person therapy, further lowering the barrier to entry for users seeking mental health support.

Language and Cultural Adaptability: Wysa's AI is designed to be culturally sensitive and can operate in multiple languages, which broadens its usability across different cultural contexts. This adaptability is crucial for addressing mental health issues in diverse populations, where language and cultural barriers often hinder access to care.

2. Personalization and User Engagement

AI-driven platforms like Wysa have the unique ability to provide personalized experiences at scale. Wysa's AI chatbot engages users in conversations that are tailored to their specific needs and emotional states:

Personalized Interventions: Wysa uses natural language processing (NLP) to understand users' inputs and respond with appropriate interventions, such as cognitive behavioral therapy (CBT) exercises, mindfulness techniques, or supportive conversations. This level of personalization helps users feel understood and supported, which can enhance engagement and the overall effectiveness of the intervention.

Continuous Improvement through User Feedback: Wysa continuously learns from user interactions to improve its responses and recommendations. This feedback loop allows the platform to adapt to users' evolving needs and preferences, making the support more relevant and effective over time. According to user feedback, over 93% of people who interacted with Wysa reported finding the AI helpful in managing their mental health.

3. Impact on Mental Health Outcomes

The effectiveness of Wysa in delivering mental health support can be assessed through various impact metrics, which highlight its contribution to improving mental health outcomes:

Reduction in Anxiety and Depression Symptoms: Several studies have been conducted to assess Wysa's impact on mental health. For instance, a study published in JMIR mHealth and uHealth found that users of Wysa experienced significant reductions in symptoms of anxiety and depression after engaging with the platform. This demonstrates that AI-driven interventions can be as effective as traditional methods in managing mental health conditions.

High User Satisfaction and Retention Rates: Wysa boasts a user satisfaction rate of over 90%, indicating that most users find the platform helpful and are likely to continue using it. High retention rates are crucial for sustained mental health improvement, as they suggest that users are engaging with the platform regularly.

Supporting Mental Health in Crisis Situations: Wysa has been particularly effective during times of crisis, such as the COVID-19 pandemic, when mental health issues surged globally. During the pandemic, Wysa saw a significant increase in user engagement, with many people turning to the platform for support in managing stress, anxiety, and loneliness. Wysa's ability to provide immediate, on-demand support was critical in helping users navigate these challenging times.

4. Ethical Considerations and Challenges

While Wysa's impact on social entrepreneurship is largely positive, it also brings to light several ethical considerations and challenges that must be addressed:

Data Privacy and Security: As with any AI-driven platform, concerns about data privacy and security are paramount. Wysa collects sensitive mental health data, which must be safeguarded against breaches. The platform employs robust encryption and anonymization techniques to protect user data, but ongoing vigilance is required to maintain trust.

Limitations of AI in Mental Health: While AI can provide valuable support, it is not a replacement for human therapists. Wysa's chatbot is designed to offer support for mild to moderate mental health issues, but it may not be suitable for individuals with severe conditions. Recognizing these limitations, Wysa includes a feature that directs users to professional help if the AI detects signs of severe distress.

5. Broader Societal Impact

Wysa's success has broader implications for social entrepreneurship and the use of AI in addressing social challenges:

Inspiring Innovation in the Social Sector: Wysa serves as a model for how AI can be harnessed to create scalable solutions for social issues. Its success has inspired other social entrepreneurs to explore AI-driven innovations in areas such as education, healthcare, and environmental sustainability.

Contributing to the De-Stigmatization of Mental Health: By making mental health support more accessible and less stigmatizing, Wysa contributes to the broader societal effort to normalize conversations about mental health. This de-stigmatization is crucial for encouraging more people to seek help and for creating a more supportive environment for those dealing with mental health issues.

Implementation of AI by Wysa:

1. **Conversational Interface:** Wysa's AI-powered chatbot simulates natural conversation to engage users in meaningful interactions. It employs NLP algorithms to understand users' messages and respond appropriately, creating a supportive and non-judgmental environment.
2. **Emotion Recognition:** Wysa utilizes ML algorithms to analyze users' text inputs and infer their emotional state. By recognizing patterns in language and sentiment, the chatbot can identify signs of distress or anxiety and offer tailored interventions.
3. **Cognitive-Behavioral Techniques:** The chatbot integrates principles of cognitive-behavioral therapy (CBT) into its interactions with users. It provides evidence-based coping strategies, exercises, and mindfulness techniques to help users manage their emotions and improve their mental well-being.
4. **Personalization:** Wysa adapts its responses based on individual users' preferences, past interactions, and therapeutic goals. Through continuous learning from user feedback and data analysis, the chatbot customizes its recommendations to suit each user's unique needs.
5. **24/7 Availability:** A significant advantage of Wysa is its constant, round the clock accessibility. Users can access the chat-bot anytime, anywhere, making it a convenient option for individuals seeking support outside traditional therapy hours or in remote locations.

Challenges Wysa Faces

1. Ethical Considerations

Data Privacy and Security:

Wysa collects sensitive mental health data from users, which necessitates robust privacy

and security measures. Ensuring that this data is stored, processed, and transmitted securely is crucial to maintaining user trust. Any breach of data privacy could not only harm users but also damage the platform's reputation. The ethical challenge lies in balancing the need for personalized service with stringent data protection measures.

Anonymity vs. Professional Intervention:

Wysa offers anonymity to its users, which is a significant factor in reducing stigma and encouraging engagement. However this anonymity can act as a double edged sword. In cases where users exhibit severe symptoms or express suicidal thoughts, Wysa's AI may not be fully equipped to intervene effectively. The challenge is to maintain user anonymity while also providing a pathway to professional intervention when necessary.

AI Limitations in Empathy:

While Wysa's AI is designed to simulate empathetic responses, it is inherently limited by its programming and lack of human experience. The risk of users perceiving AI-driven support as insufficient or impersonal can be a challenge, particularly in cases requiring deep emotional understanding. This raises ethical concerns about the appropriateness of AI in handling complex or severe mental health issues.

2. Scalability

Resource Constraints:

As Wysa's user base grows, scaling the platform to meet increasing demand without compromising service quality is a significant challenge. AI-driven platforms like Wysa must constantly update their algorithms and infrastructure to handle more users, more data, and more diverse interactions. This requires substantial financial and technological resources, which can strain a social enterprise's capacity.

Maintaining Quality at Scale:

Ensuring consistent quality of support as the platform scales is difficult. As more users interact with the AI, there is a risk that the platform's responses could become more generalized, reducing the effectiveness of personalized interventions. Maintaining high levels of personalization and user satisfaction at scale is a critical challenge.

3. Limitations of AI in Mental Health Support Handling Complex Cases:

AI, despite its advanced capabilities, cannot fully replicate the nuanced understanding and deep empathy of human therapists, especially in complex or severe mental health cases. Wysa's AI is effective for mild to moderate issues but may struggle to provide adequate

support for users with more severe conditions. This limitation necessitates clear guidelines on when to direct users to human therapists, which can be a logistical challenge.

User Dependence on Technology:

There is a risk that users might become overly dependent on AI-driven support, potentially delaying or avoiding seeking professional help. This could lead to the worsening of conditions that require more intensive, human-led intervention. Managing this dependency and ensuring that users receive the appropriate level of care is a significant challenge.

Opportunities for Expanding Social Entrepreneurship Efforts

1. Expanding Reach and Accessibility Global Accessibility:

One of the most significant opportunities that AI presents for social entrepreneurship is the ability to reach underserved populations globally. Wysa can be accessed by anyone with a smartphone and internet connection, making it possible to deliver mental health support to regions where traditional services are scarce. This global reach aligns with the mission of social entrepreneurship to address social challenges on a large scale.

Affordable Mental Health Care:

Wysa offers a scalable model for providing affordable mental health care. By reducing the costs associated with traditional therapy, such as therapist fees and infrastructure, Wysa makes mental health support accessible to individuals who might otherwise be unable to afford it. This affordability can drive broader adoption and help to bridge the gap in mental health care access.

2. Data-Driven Insights for Social Impact Leveraging Big Data:

Wysa's interactions generate vast amounts of data that can be analyzed to identify trends, understand user behavior, and develop more effective mental health interventions. These data-driven insights can help social entrepreneurs tailor their services to better meet the needs of their target populations. Furthermore, anonymized data can be used to inform public health strategies, contributing to broader societal impact.

Continuous Improvement:

AI's ability to learn from user interactions allows platforms like Wysa to continuously improve and adapt. This iterative process ensures that the platform remains relevant and effective over time, which is crucial for the sustainability of any social enterprise. As the AI becomes more sophisticated, it can offer increasingly personalized and effective support, enhancing the platform's social impact.

3. Innovation in Service Delivery AI-Driven Innovations:

The success of Wysa opens up possibilities for further innovations in the delivery of social services. For example, AI can be used to develop new tools for education, healthcare, and other areas of social entrepreneurship. These innovations can disrupt traditional models and create more efficient, scalable, and impactful solutions to global challenges.

Hybrid Models of Care:

Wysa's combination of AI-driven support with access to human therapists represents a hybrid model that could be replicated across other sectors. This model leverages the strengths of both AI and human expertise, providing a comprehensive approach to addressing complex social issues. By integrating AI with human services, social enterprises can offer more flexible and scalable solutions.

4. Collaboration and Partnerships Cross-Sector Partnerships:

The success of AI-driven platforms like Wysa presents opportunities for collaboration with governments, non-profits, and private sector organizations. These partnerships can help scale the platform's impact, integrate it into broader health and social care systems, and drive policy changes that support the use of AI in social entrepreneurship. Collaborating with educational institutions, for example, could lead to the development of tailored mental health programs for students.

Corporate Social Responsibility (CSR):

Corporations increasingly recognize the value of supporting social entrepreneurship initiatives as part of their CSR efforts. Wysa's success in providing mental health support presents an opportunity for collaboration with businesses looking to invest in mental well-being, both for their employees and the broader community. Such partnerships can provide additional funding, resources, and platforms for scaling impact.

Opportunities of AI in Mental Health

1. **Early Detection and Diagnosis:** AI can detect early signs of mental health issues by analyzing data from wearables, social media, and electronic health records, enabling timely intervention and effective treatment.
2. **Sleep Quality Analysis:** AI-enabled wearables monitor sleep patterns and provide comprehensive analysis of sleep quality, identifying potential disorders and aiding in the management of sleep-related mental health issues.
3. **Emergency Alerts:** Wearable AI devices can detect acute anxiety attacks or depressive episodes, sending immediate alerts to designated contacts or healthcare professionals for swift intervention.

4. **Activity and Mood Correlation:** AI-powered apps track physical activity and its correlation with mood changes, offering insights that guide lifestyle changes to improve mental well-being.
5. **Customized Treatment Plans:** AI systems develop personalized mental health treatment plans by analyzing genetic data, lifestyle choices, and medical history, enhancing the likelihood of successful outcomes.
6. **Stigma Reduction:** AI-driven platforms provide anonymous support and education, helping reduce the stigma associated with mental health issues and promoting greater acceptance.
7. **Support for Patients with Chronic Pain:** AI aids in managing chronic pain by offering tailored coping strategies and tracking pain patterns, helping patients better manage their condition.
8. **Breaking Addiction Cycle:** AI solutions track progress, identify triggers, and offer ongoing support to help manage addiction.
9. **Managing Burnout Levels:** AI assists in identifying early indicators of burnout and offers tailored stress-reduction advice.
10. **Reducing Symptoms of Anxiety and Depression:** AI-powered interventions, such as CBT apps and virtual therapists, offer accessible and affordable mental health support, helping to alleviate symptoms of anxiety and depression.
11. **Drug Management:** AI-powered applications track drug effectiveness and adherence, providing valuable insights that help improve treatment outcomes.
12. **Telepsychiatry:** AI-enabled platforms enable remote consultations, expanding access to mental health care and making treatment more accessible for individuals in underserved areas.
13. **Research and Development:** AI processes datasets to uncover new trends, insights and potential treatment approaches, advancing the understanding of mental health disorders.

Challenges of Integrating AI in Mental Health

Ethics and Privacy Issues: the integration of AI in mental health care raises concern around consent, privacy, and the ethical handling of sensitive data. It is essential to implement robust data protection measures and ensure the transparency in AI algorithms.

Data Quality and Bias: For AI algorithms to deliver accurate and fair results they must

be trained on high quality, unbiased datasets, preventing the risk of misleading and discriminatory outcomes.

Subjectivity in Mental Health Diagnosis: Mental health diagnoses are often based on subjective evaluations. Integrating transparent and explainable AI algorithms can enhance the accuracy and consistency of these diagnoses.

Legal and Regulatory Frameworks: Well defined regulatory frameworks are necessary to ensure the safe and effective use of AI in mental health applications, providing guidelines for its implementation.

Assessment: Continuous evaluation and monitoring of AI technologies on mental health are crucial to ensure their effectiveness and minimize potential risks.

Conclusion:

Wysa epitomizes the transformative potential of AI in addressing global mental health problems. By leveraging technology to provide accessible, personalized, and evidence-based support, Wysa empowers individuals to prioritize their mental well-being and seek help when needed, ultimately contributing to a healthier and more resilient society.

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