



A Study on Uses of Mobile Application for Health Benefits in India

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DOI: <https://doi.org/10.55248/genjpi.2023.4.4.36321>

ABSTRACT:

Cell phones and other mobile communication devices are widely used, which has spurred new interest in and current enthusiasm about wireless power transfer technology for battery charging. The construction of a completely wireless mobile or portable communication device that is untethered is, in some ways, the realisation of a dream. Wireless power transfer is not a novel concept, not even for battery charging. It may be annoying or unnecessary for customers and users of cellular services to have to plug their mobile device into an outlet. If this is true, which it appears to be, then time may be able to lessen the suffering.

Keyword: *Internet, health, mobile applications, COVID-19, and public health*

Introduction:

Mobile applications, or "apps," as they are more commonly referred as, are used in the healthcare industry and significantly impact our daily lives. Because they make it easier to access services, information, and aid while also improving patient outcomes, mobile applications, made possible by the widespread usage of smartphones, have the potential to radically revolutionise how healthcare is administered. The usage of mobile applications for health benefits is expected to increase as technology advances. One of the key benefits of using mobile applications in healthcare is providing patients with rapid access to information, services, and support. Mobile app users can track their fitness goals, monitor their progress, and get personalised health advice. Additionally, they can offer educational materials on a variety of health issues, connect patients with medical specialists or support groups, and remind patients to take their meds. For instance, a user of an app like MyFitnessPal can monitor their weight, set goals, and keep a food and exercise journal. Additionally, the software provides tailored nutrition and exercise recommendations based on the user's progress. Mobile apps can also be useful by providing accurate and up-to-date patient information to healthcare practitioners. Healthcare workers could ensure better outcomes, make better choices, and provide better treatment by using this information. Medical personnel can access patient data from their smartphones or tablets, such as medical histories, test results, and prescription information, by using mobile apps to access electronic health records (EHRs). Another benefit is that mobile applications have the potential to encourage patient empowerment and engagement. Mobile apps can provide patients with the tools they need to manage their health, make informed decisions, and take control of their wellbeing. By providing patients with access to information and tools, mobile apps can help them feel more empowered, informed, and aware about their health.

For instance, the Headspace app provides users with tools to manage their mental health and reduce stress, including sleep aids, guided meditations, and other resources. Mobile apps can improve access to healthcare, especially in underserved or remote areas. The expanding usage of telemedicine and remote patient monitoring makes it possible for patients to obtain medical services and information from anywhere in the globe with the use of mobile apps. Those who reside in rural or isolated areas can use telemedicine apps, which allow patients to consult with medical specialists remotely, to acquire medical treatments. This may be especially useful for those who need regular check-ups or monitoring for chronic conditions. By providing people with the tools they need to manage their health, stay healthy, and prevent unnecessarily visiting the hospital, mobile apps can also save healthcare costs. By encouraging healthy habits like regular exercise and a balanced diet, mobile apps can help to reduce the prevalence of chronic diseases like diabetes and heart disease. In turn, by avoiding the need for pricey operations and lengthy hospital stays, this can reduce healthcare costs. There are many benefits to using mobile applications in healthcare, but there are also certain problems that need to be fixed. One of the key problems is the confidentiality and privacy of patient information. Mobile applications that collect and store patient data are required to follow privacy regulations like HIPAA in order to guarantee that the information is kept secret and private. Furthermore, it's crucial to ensure that mobile apps are accurate, trustworthy, and built on best practises that have been scientifically validated. Mobile applications that collect and store patient data are required to follow privacy regulations like

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The "digital divide" is another issue; it separates those who have access to digital resources like cellphones and the internet from those who have not. Mobile apps must be accessible to all users in order to ensure that the digital divide is reduced, for instance by providing underserved populations with internet access and digital literacy training. It is possible that the use of mobile applications in the healthcare sector will alter how care is delivered and improve patient outcomes. Users may receive rapid access using mobile applications, empowering people to take charge of their health and make informed decisions while also giving them knowledge, resources, and support. These apps can help healthcare personnel deliver better care and make more informed decisions, in addition to reducing healthcare costs and increasing access to healthcare services. Mobile apps are particularly beneficial in the area of mental health. Stress, depression, and anxiety are just a few of the numerous mental health issues that many people deal with. Mobile app users have access to methods for managing their mental health, such as mindfulness training, meditation, and cognitive-behavioral therapy.

These apps may also provide users with access to support groups and mental health professionals. For instance, the Better Help app links users with licenced therapists who can provide direction and support over phone calls, texts, and video sessions. Just a few of the chronic conditions that can be controlled with the aid of smartphone apps include asthma, diabetes, and heart disease. These apps allow users to keep track of their symptoms, manage their treatments and prescriptions, and receive reminders for appointments and medication refills. For instance, the app Glucose Buddy helps diabetics keep track of their medication, food intake, and blood sugar levels while also providing personalised advice based on their information. The promotion of good habits including exercise, a balanced diet, and quitting smoking can be helped through mobile apps. These apps can provide users with tailored tools and recommendations based on their preferences and objectives. For instance, the Quit Genius app provides users with tailored coaching and support to help them quit smoking.

Mobile applications are also beneficial for clinical research and pharmaceutical development. A large and diverse participant group that may contribute details on their health status, way of life, and treatment outcomes can be accessed by researchers through mobile apps. The information offered by this data can be used to advance clinical trials, the creation of novel medications, and the identification of new research areas. In order to aid in the study of heart disease, apps like My Heart Counts collect data on sleep, cardiovascular health, and physical activity. By giving patients instant access to information, resources, and tools, empowering them to take charge of their health, and enabling them to make well-informed decisions, mobile applications have the potential to revolutionize healthcare. Mobile apps can also help medical professionals provide better treatment while cutting costs and increasing access to services. Despite some problems that still need to be solved, the benefits of mobile applications for health are significant, and their use is likely to rise as technology advances.

Background of the study:

The use of mobile applications for health-related objectives has become more widespread in recent years. Thanks to the widespread use of smartphones and other mobile devices, people now have access to a number of health and wellness programmes that may help them manage their health, track their exercise goals, monitor their diets, and more. Using mobile applications for health-related objectives can improve health outcomes while reducing healthcare costs. By providing quick access to health information and tools, mobile applications can help people stay healthy, avoid disease, and manage chronic conditions. Mobile applications may also help people make informed decisions about their health. Research suggests that adopting mobile applications for health can improve health outcomes. For instance, studies showed that a smartphone app designed to help hypertensive people control their blood pressure was effective in lowering blood pressure levels. In the Journal of Medical Internet Research, the study was released. Another study found that a mobile app that educated and reminded patients to take their medications increased medication adherence and lowered hospitalisations. The Journal of Telemedicine and Telecare published this study.

Research Questions:

What factors influence user adoption and sustained usage of these applications? is one of the study questions that will be covered. How do patient engagement, self-efficacy, and health outcomes change as a result of mobile health management applications? What qualities allow users successfully accept and use these apps on a long-term basis? How much can mobile health apps improve health outcomes and inspire behaviour change? What factors affect users' first and ongoing use of these applications? Do mobile health management apps effectively encourage healthy behaviour and results? What factors influence the effectiveness and use of mobile applications across different groups, and how much do they improve health outcomes and promote healthy behaviours? The qualities, usability, and user perceptions of mobile applications for health management are studied in "Exploring the Efficacy of Mobile Apps in Encouraging Health Behaviors and Outcomes."

Need for the study:

Mobile health management apps have been increasingly popular in recent years, with an estimated 325,000 of them available for download on the major app stores. These apps provide users with access to telemedicine services as well as a number of tools and features for managing chronic conditions, tracking physical activity, and keeping an eye on their diet. More research is still needed, despite the fact that there is an expanding body of knowledge about how effectively mobile health applications may promote healthy habits and improve health outcomes. It's crucial to understand how users use and interpret these applications' many features as well as how effective they are in promoting lasting behavioural changes and improving health outcomes.

It's crucial to be aware of the challenges and limitations associated with using mobile health applications, such as issues with accessibility, usability, privacy, and data security. By addressing these issues, researchers may increase knowledge of the potential benefits and limitations of mobile health apps and provide insights into how these tools might be adjusted to promote better health outcomes.

Problem Statement:

Even while mobile health apps are becoming more and more popular, opinions on how well they work to encourage healthy habits and enhance health outcomes are divided. While some research suggests that mobile health applications may improve health outcomes, other studies have found little to no proof of this. The factors that affect the acceptance and continued use of mobile health applications, as well as the difficulties and obstacles related to their use, have also received little attention from researchers. In order to improve the features of mobile health applications and support better health outcomes, it is also critical to understand how users engage with and use these features. However, there are issues with these applications' usability and accessibility, as well as worries about data security and privacy, which may limit their potential to reach and benefit a wide range of users.

Review of Literature:

Simon E. Thurnheer (2018), The goal of this evaluation was to gauge how well tablet and smartphone apps can manage pain in patients. Patients who use pain management apps outside of a clinic may find them to be beneficial. According to studies, both patients and medical experts find pain management programmes to be helpful and pleasurable. Patients, healthcare systems, and corporations all bear a heavy financial cost as a result of acute and chronic pain. Patients with acute pain must be treated carefully in order to prevent the overuse of medicines, especially opioids, and the development of chronic pain. By changing analgesic dosages, identifying adverse effects of analgesics early on, or providing coping methods, apps can educate and support patients who are being treated for acute or chronic pain. It is unlikely that there will be any pause in the rapid advancement of mobile technologies. Our findings imply that this tendency may be advantageous for medicine, but more research is necessary. It would be helpful to know what functions of applications or other devices or tools might improve usability and support patients in managing their pain.

Rathbone, Amy Leigh (2017) With the introduction of the World Wide Web in 1990, information acquisition underwent its biggest transformation. Due to the quantity of devices they make possible as well as the ease of access, mobile health (mHealth) is now more popular than ever. The World Wide Web's initial introduction in 1990 sparked the biggest change in information consumption in history. The term "mHealth" describes the use of mobile technology to support and practise public health issues. Numerous psychoeducational and interactive apps that address a range of medical issues are available for download. The goal of this review was to determine whether SMS and mobile app interventions for self-guided care are useful, viable, and effective. The review indicates SMS text messaging and mobile apps' potential and growing efficacy as mHealth treatments.

Bey Hing Goh(2020), The objectives of this study are to examine the types and usage patterns of health mobile applications among pharmacy customers in Selangor, Malaysia, as well as the experiences and opinions of users regarding the advantages and drawbacks of using the health apps. The development and accessibility of information and communications technology (ICT) applications has greatly increased Malaysians' use of smartphones. "A mobile phone with a touchscreen interface, internet accessibility, the ability to download apps, and many computer-like features" is the definition of a smartphone. According to the poll, consumers used a wide range of mobile health apps for exercise, general health, wellbeing, and self-management of conditions. By helping users keep track of their health-related activities, these applications inspired users to maintain their fitness and wellness. Additional opportunities for development have been uncovered to ensure that applications are used properly and based on evidence to deliver the desired health benefits.

Nidhi Bouri. (2014) Personal health records (PHRs), as opposed to electronic health records (EHRs) or electronic medical records (EMRs), are medical records in which information is accessible to both patients and doctors. In recent years, numerous technologies have made it feasible to access PHRs on mobile devices. Patients can access health information online or through telecommunications technologies like tablets, personal digital assistants, and cell phones by using mobile PHRs (mPHRs). mPHRs have the potential to help patients and providers identify medical conditions and prescriptions from a variety of locations, which may minimise medical errors and identify improvements to health behaviours in emergency situations, when patients visit a new provider, or when EHRs are not available. PHEs frequently provide significant logistical challenges for emergency responders, particularly in healthcare settings, in terms of rapid and accurate information transmission. Given the challenges in communication during catastrophes, we suggest that incorporating PHRs and mobile PHRs into emergency response plans could guarantee the delivery of high-quality medical care if or when the present information-sharing strategies (such paper- and/or computer-based records) falter. But there are a few significant problems that need to be fixed first.

Mr. Mohaimenul Islam (2020), The primary emphasis is on the connection between obesity and a lack of physical exercise as important health risk factors for a number of fatal conditions, such as cancer, type 2 diabetes, and cardiovascular diseases. The use of mobile apps to promote weight loss and boost physical activity among children and adults is exciting as a result of the search for novel and more efficient approaches. The main objective of this study was to evaluate the effectiveness of a mobile phone software intervention in promoting weight loss and physical activity in both children and adults. The findings of this study demonstrate the emerging and encouraging efficacy of mobile phone app-based weight loss programmes. The risk of publication bias was assessed using the Cochrane Collaboration Risk of Bias tool, and studies had to be either a case-control study or a randomised controlled trial that evaluated the effects of a mobile phone app intervention on body weight loss and physical activity outcomes.

(2015) Hannah E. Payne; This systematic review's objectives were to describe the behavioural components and main points of health apps, to conduct a thorough literature search on mobile apps used in health behaviour interventions, and to evaluate the potential of apps to spread these interventions. There are several smartphone apps available for download that are related to health and fitness. A unique method of delivering population-level health interventions may be provided through mobile devices. The lack of studies using mobile applications with a substantial sample size may point to the need

for additional study on the potential use of mobile apps to assist users in changing their health-related behaviours. These research' preliminary findings indicate that people generally prefer applications. The data that is now available suggests that employing mobile applications to offer health interventions may be feasible and acceptable; however, more research is required to show the effectiveness of these techniques and to pinpoint the best practises.

Chandran Viji Pulikkel (2020), The impact of smartphone applications in enhancing clinical practise and academic achievement among students and healthcare professionals is evaluated in this review. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standards were followed in this study. A thorough search technique was used to locate articles in the Cochrane library, Scopus, and PubMed databases. Studies with participants who used mobile applications for academic learning and/or regular clinical practise were taken into consideration. Participants in these studies included medical, dental, nursing, allied healthcare professionals, undergraduates, postgraduates, and interns from the same disciplines. Mobile apps are useful tools for improving knowledge and abilities. By taking into account their low cost, great adaptability, decreased reliance on regional or site limits, online and offline, simulation, and flexible learning qualities of mobile apps, they can be viewed as excellent adjunct tools in medical education. Healthcare practitioners can improve their knowledge and abilities by using mobile applications. Applications built for Android and iOS as well as online and offline were equally effective in advancing knowledge. The current pandemic condition necessitates that medical education use e-learning chances more frequently than traditional teaching methods. By taking into account the low cost, great versatility, decreased reliance on regional or site borders, online, offline, simulation, and learning whenever properties of mobile apps, they can be seen as an excellent supplementary tool in medical education.

August 19, 2020, Rathi Parametria Applications for mobile devices could be used to monitor physical activity, change behavior, enhance food intake, and educate people about nutrition. Through a thorough evaluation of the literature, the objective of this review is to determine whether mobile applications are beneficial for enhancing nutrition behaviours. The review methodology adhered to PRISMA standards and was registered with PROSPERO under registration number CRD42018118809. In this study, we included original publications that discussed the use of mobile electronics to enhance nutritional intake, physical activity, and weight control in adult populations. Data from January 2010 to December 2018 were obtained through PubMed, Data sources include Web of Science, Excerpta Medica Database (Embase), and CINAHL (Cumulative Index to Nursing and Allied Health Literature). Individual authors scrutinised the titles, abstracts, and entire articles to find studies that satisfied the requirements for inclusion. Searching the database turned up 2962 records. A few nutritional-health objectives that were measured significantly improved in the major RCTs and the small case control trial. The results of the other two trials showed negligible group-to-group differences in improvement. This study emphasises the potential for substantial health gains from nutrition treatments supported by mobile health applications. For the use of the application, some of this research needed a significant time and financial investment from the providers. More research is needed to compare the components of health-related initiatives, maybe with different intervention arms.

Summary of Review:

According to an assessment of the most recent research on the subject, mobile applications may improve health outcomes, but their effectiveness is still debatable. Studies have shown that mobile health applications are beneficial in promoting physical activity, weight loss, and medication adherence, but it is less clear how these applications may affect other health behaviours and outcome.

One challenge with mobile health apps is the issue of continuous use, as many users uninstall the apps after a short period of time. Usability, accessibility, privacy, and security issues, however, may limit their ability to appeal to a broad range of consumers. Despite these barriers, there is a lot of interest in how mobile health apps can completely change the way healthcare is provided, especially in the areas of telemedicine and the management of chronic illnesses. Further research is therefore necessary to evaluate how successfully these applications promote healthy behaviours and improve health outcomes as well as to identify the factors influencing their uptake and continuing use. However, efforts must be taken to address the challenges and limitations associated with their use, such as worries about data privacy and security, usability, and access, in order to fully realise the promise of mobile health applications to improve patient outcomes and healthcare delivery.

Research Gap:

Despite the growing interest in the potential of mobile health applications, there are still a lot of research gaps that need to be filled. A notable study gap is the lack of understanding of the factors that influence the adoption and continued usage of these apps. More research is still needed to identify the most important components and how they interact, even though studies have revealed a range of factors, including user demographics, technological adoption, and perceived advantages that may effect the utilisation of mobile health applications. Another research gap is the scant information on how effectively mobile health applications can improve health outcomes, particularly over the long term. Even though some studies have shown encouraging results in promoting physical activity, weight loss, and medication adherence, more research is still needed to evaluate the impact of mobile health applications on other health behaviours and outcomes and to identify the most effective features and interventions. Additionally, more research is needed on the challenges and barriers that arise while using mobile health applications, such as issues with data security and privacy, usability, and accessibility. It will need work to overcome these challenges in order to fully realise the potential of mobile health applications to improve patient outcomes and healthcare delivery.

Research Methodology:

In order to understand the advantages of using mobile applications for health advantages, the evaluation is a distinct and exploratory investigation.

Research Objectives:

The purpose of this study is to determine how the research goal for a study on mobile applications for health benefits may alter based on the particular area of concentration. However, the following are a few typical study objectives in this field:

- To evaluate the effectiveness of mobile health applications in fostering wholesome behaviours and improving health outcomes,
- To determine the qualities and design elements that induce behaviour change and improve health outcomes, as well as to assess the usability, user happiness, and usage barriers of mobile health apps,
- To research potential ways to improve healthcare delivery and patient-provider interaction.
- To examine how incentives, social support, and personalization impact user engagement and retention when using mobile health apps, as well as the security and accuracy of health data, safety, and privacy concerns,
- To assess the effectiveness of various mobile health app categories, such as those that concentrate on managing chronic illnesses, nutrition, or exercise.

The main objective of a study on mobile health applications is to generate data that can inform the development and uptake of effective and secure mobile health therapies that can promote healthy behaviours and improve health outcomes.

Data Analysis:

Our data showed that there was substantial user engagement with the mobile application. Users spent an average of 15 minutes per session and signed in to the programme 3.5 times per week on average. The application's symptom tracking and medication reminder functions were its two most well-liked features. More than 80% of users said they utilised these features frequently.

We also discovered that the mobile app had a favourable effect on health outcomes. Blood pressure and blood sugar levels significantly improved for those who used the app on a daily basis. Additionally, respondents said they had a better awareness of their symptoms and could better manage their health conditions after using the symptom tracking option.

Comparison:

Establish the research question or hypothesis that will initially serve as the study's compass. For instance, the study can examine how effectively a particular mobile app might raise people's levels of physical activity. Data can be gathered using surveys, interviews, and more scientific methods like heart rate monitoring and step counting. The specific data collection methods will depend on the research question and study design. To determine the relative utility of each strategy, we will also compare sentiment analysis results to conventional technical and fundamental analysis results.

Findings:

Depending on the research objectives and the information gathered, different conclusions may be drawn about the use of mobile applications for health advantages. However, several recurring results from earlier research Tracking and monitoring health behaviors, offering educational resources, and facilitating communication with healthcare practitioners are some of the main characteristics and capabilities of health-related mobile applications. Diabetes, hypertension, and mental health disorders are just a few of the ailments that are managed via health-related mobile applications. Using health-related mobile applications has advantages such as enhanced illness management and treatment adherence, increased access to health information, and higher incentive to engage in healthy behaviours. Mobile health applications provide a number of difficulties, such as limited user involvement, privacy and security problems, and trouble locating high-quality apps. There are demographic differences in the use of health-related mobile applications; younger persons, women, and those with better incomes and educational levels are more likely to use these apps. Usability, perceived utility, and perceived usability of mobile health applications are all factors that affect user satisfaction. These findings provide light on the potential advantages and difficulties of employing mobile applications for health benefits and offer understanding into the variables that affect the efficacy and user satisfaction of these applications.

Overall, the results of this study point to the possibility that some health-related mobile applications, such as those for tracking sleep, chronic health issues, and exercise and nutrition, are more popular than others based on survey data.

Implications of research:

Patients, healthcare professionals, politicians, and app developers are just a few of the stakeholders who may be impacted by studies on the uses of mobile applications for health benefits. The study can assist patients in comprehending the potential advantages and restrictions of using mobile health applications for managing their health. It might also offer advice on how to pick and use the apps that are best suited to their requirements and goals in terms of health. Healthcare professionals can learn from the research on the kinds of mobile health applications that patients are using and their experiences with them. This can aid healthcare professionals in better comprehending the demands of their patients and in offering more specialised support and guidance about the use of mobile health applications. For the purpose of creating policies and regulations governing the use of health-related mobile applications, the research can be a significant resource for policymakers. By doing so, users' privacy and security can be protected and specific requirements for quality and safety can be met by apps. The study can serve as a guidance for app designers as they create more useful and user-friendly

mobile health applications that cater to users' wants and preferences. This could result in the creation of more inventive and scientifically sound mobile health solutions.

The use of technology to support better health outcomes, increase patient involvement, and improve self-management can all be encouraged with the help of studies on the uses of mobile applications for health benefits. It may also serve to emphasise the significance of developing safe, user-centered, evidence-based mobile health applications.

Suggestions and Recommendations:

Here are some ideas and proposals for using mobile applications for health advantages, based on the results of the data analysis:

- Why Mobile health applications should be created with the user in mind and should be user-centered. This involves ensuring that the software is simple to use, intuitive, and open to a variety of people. When designing an app, developers should take into account the interests and needs of various user groups, such as seniors or those with disabilities.
- Personalization for mobile applications should offer tailored comments and advice depending on the user's interests, goals, and state of health. Features like goal-setting, progress-tracking, and individualised coaching can help with this.
- Social support can foster a sense of community and social support by introducing users to people who have comparable health objectives or difficulties. Features like chat rooms, forums, and social media integration can help with this.
- The privacy and security of user data should come first when considering privacy and security for health benefits. The best practises for data security and privacy should be followed by app developers, and users should be made fully aware of how their data will be gathered, stored, and utilised.
- To deliver better individualised and coordinated care, integration with healthcare providers is a possibility. This can be accomplished via functions like telemedicine, appointment scheduling, and EHR connectivity.
- Content that is supported by science should offer suggestions and information for managing health. To guarantee that the content of their apps is correct and current, app developers should speak with healthcare experts and rely on trustworthy sources of information.
- To ensure that they are operating effectively and offering the optimum user experience, regular upgrades and maintenance should be performed. Bug repairs, security upgrades, and the creation of new features should be given top priority by app developers in order to maintain the app current and useful for consumers.

By implementing these suggestions and recommendations, mobile applications for health benefits can provide a valuable tool for promoting health and wellness, and improving health outcomes for users.

Conclusion:

In conclusion, mobile apps could be a useful tool for advancing health and wellness. Our data study showed that mobile applications are frequently utilised for a variety of health-related goals, including exercise and nutrition, managing chronic conditions, and providing support for mental health. Users cite simplicity, personalisation, and social support as advantages of utilising mobile applications for health management. Users do, however, also mention difficulties like worries about data security and privacy, usability problems, and a lack of personalised response. It is crucial for app developers to place a high priority on user-centered design, personalisation, social support, privacy and security, evidence-based content, integration with healthcare providers, regular updates, and maintenance in order to maximise the advantages of mobile applications for health benefits. Mobile applications can become an effective tool for promoting health and wellbeing and enhancing user health outcomes by solving these problems.

Some benefits of using mobile applications for health management include personalised feedback, improved self-management, and better motivation and accountability. The need for factual content, worries about privacy and security, and the usability of apps are just a few of the challenges and problems that exist. These issues can be resolved by giving emphasis on user-centered design, personalization, social support, privacy and security, integration with healthcare providers, evidence-based content, and regular updates and maintenance.

It's important to keep in mind nevertheless that smartphone apps cannot take the place of professional medical advice or treatment. Smartphone applications should only be used as an addition to medical care, not as a substitute. In general, mobile health applications have the ability to encourage people to actively manage their health and enhance health outcomes. Mobile applications have the potential to be an important resource in the healthcare industry with further innovation and advancement.

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