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# Human Augmentation Market Assessment, By Type [Wearable, In-Built], By Product [Non-Body Worn, Body Worn], By Technology [Wearable, Augmented Reality, Exoskeleton, Virtual Reality, Others], By Industry Vertical [Healthcare, Materials & Chemicals, Manufacturing, Military & Defense, IT, Others], By Region, Opportunities and Forecast, 2016-2030F

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## Abstracts

Global human augmentation market size was valued at USD 147.62 billion in 2022, which is expected to reach USD 581.77 billion in 2030, with a prominent CAGR of 18.7% for the forecast period between 2023 and 2030.

Human augmentation provides significant advantages, such as improved physical and cognitive abilities, enhanced health, and heightened productivity. The growth of human augmentation is propelled by technological advancements, particularly in biotechnology and AI, which enable innovative enhancements along with a larger adoption rate and rise in investments. Furthermore, societal acceptance and the desire for self-improvement play a vital role in the increasing interest in human augmentation, offering individuals the prospect of optimizing their potential for overall well-being.

Cochlear implants are one of the most widely adopted human augmentation technologies, and their use is expected to grow in the coming years. Cochlear implants restore hearing amongst the deaf and the severely hearing-impaired, improving recipients' communication, speech development, and overall quality of life. According to the American Institute of Physics, Cochlear implants are the most effective neural prosthesis. Scientists have utilized the source-filter model and speech vocoder to create contemporary multi-channel implants, enabling users to attain an average of 70%–80%

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accurate sentence recognition in quiet conditions.

Psychological Augmentation

Psychological augmentation holds crucial significance in the human augmentation market. It encompasses enhancing cognitive abilities, emotional well-being, and mental resilience. Society increasingly values mental health and cognitive performance, so psychological augmentation solutions become integral. These technologies aid in addressing issues like stress, anxiety, and cognitive decline, ultimately improving individuals' overall quality of life. With the growing demand for mental well-being and cognitive enhancement, psychological augmentation is poised to play a pivotal role in shaping the future of human augmentation.

For example, Sensory Augmentation is a psychological augmentation that has been practiced widely worldwide for a long time. It is an extension of the body's capacity to feel the components of the environment that the body cannot perceive in its normal condition. Moreover, this technology can augment an existing sense, such as providing hyperspectral vision or ultrasonic hearing, thereby driving market growth.

Presence of AR and VR Technologies in the Market

The prolonged prevalence of augmented reality (AR) and virtual reality (VR) technologies has significantly contributed to the growth of the human augmentation market. AR and VR have fostered innovation in medical training, education, and entertainment, making augmentation technologies more accessible and accepted by users. Their presence has attracted investment and talent, driving the development of more sophisticated augmentation solutions. This sustained technological backdrop has paved the way for human augmentation technologies' broader adoption and evolution over time.

As per Zippia, Inc., currently, there are around 171 million users of VR across the globe and (25 to 34) years aged people account for almost 23% of the AR/VR devices. Moreover, around 69% of the AR or VR device buyers are male while the rest 31% are female.

Fabrication of Robotic Exoskeleton for the Pavement of New Opportunities in the Market

The manufacturing of robotic exoskeletons is enhancing the human augmentation

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market by providing wearable devices that can augment human capabilities. These exoskeletons can be used to improve strength, endurance, and mobility, and in varied industry verticals, such as manufacturing, healthcare, and military. Furthermore, the development of more sophisticated and affordable exoskeletons is expected to provide ample growth opportunities for the market over the upcoming years.

In April 2023, TS2 Space stated that the organizations are using robotic exoskeletons and augmented reality (AR) to enhance workers' physical capabilities, such as lifting heavier objects or enhancing accuracy level and speed in repetitive tasks to provide them with real-time instructions and feedback, which, in turn, can help them improve their productivity.

North America Dominates the Market

North America has comprehensively led the market growth over the forecasted timeframe and will continue its dominance over the years. The continuous growth of the geriatric population in North America is one of the main reasons that is augmenting the market growth. Moreover, the region has a very strong economic background and thus the government is investing a hefty amount in the R&D sectors, to figure out some advanced HA technologies. Furthermore, the presence of highly advanced human augmentation technologies, along with highly efficient government policies is aiding the market expansion in this region.

As per the National Institute of Health (NIH), using Brain-machine interfaces (BMIs) in neural prosthetics has become a rapidly developing technology in the United States with the potential to revolutionize the lives of people with disabilities. As the technology continues to improve, Americans can expect to see more sophisticated and effective neural prosthetics that can restore lost functions and improve the quality of life.

Government Initiatives

Government initiatives play a vital role in developing the human augmentation market by providing funding for research and development, creating regulatory frameworks, and promoting public awareness regarding the benefits of these technologies. Moreover, government initiatives can help to ensure that human augmentation is used safely and ethically and benefits all members of society.

For example, on April 2023, The Defense and Security Accelerator (DASA) of the UK launched a completely new themed competition to develop and prototype Human

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Augmentation technologies for defense. This initiative is funded by the Defense Science & Technology Laboratory (Dstl). Moreover, DASA has announced substantial funding of approx. 2 million euros for ethical, novel, and safe human augmentation technologies to alleviate human performance as a limiting factor in defense scenarios.

Impact of COVID-19

The COVID-19 pandemic had a significant impact on the global human augmentation market. The market was growing rapidly before the COVID-19 pandemic, at a decent rate. However, the pandemic disrupted the supply chains and distribution channels. As a result, several device-manufacturing facilities decreased their output. Nevertheless, the market is expected to recover and continue to grow in the coming years, owing to the awareness regarding the benefits of these technologies. For instance, the demand for wearable devices for health monitoring increased post-COVID-19 as people have become more conscious about their health tracking and analysis. Additionally, the use of virtual reality and augmented reality technologies has increased in the healthcare sector, as they can be used to provide remote medical care and training.

Key Players Landscape and Outlook

Significant advancements are unfolding in the global human augmentation market, with major companies focusing on finding new solutions for human augmentation to increase their revenue and market worth. Significant investments are being made in the manufacturing of highly advanced wearable devices. Additionally, notable collaborations, acquisitions, and partnerships are dynamically shaping the industry's landscape, as these companies vigorously pursue their goals.

In October 2022, Kyocera Corporation of Japan announced the creation of three new human augmentation solution prototypes: a Walk Sensing and Coaching System, a Physical Avatar, and an Auditory Augmentation Device. All 3 options are based on a concept developed by Kyocera's Future Design Laboratory called Mai. The systems are intended to increase human perception, cognition, motor abilities, and human presence and interaction. Furthermore, Kyocera's technology is projected to assist a wide range of industries, ranging from healthcare and medicine to entertainment and manufacturing.

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