

Humanoid Robot Market by Component (Hardware, Software), Motion Type (Biped, Wheel Drive), Application (Education and Entertainment, Research and Space Exploration, Personal Assistance and Caregiving) and Region - 2028

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Abstracts

The humanoid robot market size is valued at USD 1.8 billion in 2023 and is anticipated to be USD 13.8 billion by 2028, growing at a CAGR of 50.2% from 2023 to 2028. Factors such as rising demand for humanoid robots from the medical and retail industries for personal assistance are likely to drive market growth during the forecast period.

Increasing use of humanoids as educational robots

Educational humanoid robots are a unique learning tool that creates a learning environment attracting and keeping students interested and motivated with joyful learning experiences. The field of educational robotics is moderately new; the existing literature in this area commonly deals with self-reported learning and enthusiasm for science, technology, engineering, and mathematics (STEM) as a direct result of using the educational robot as a tool for learning. Humanoid robots are influencing in terms of learning, attitudes, and workforce development programs in the educational field in various learning environments, such as formal classroom learning, out-of-school time, and robot competitions.

Humanoid robots have a huge impact on student learning and help children learn about different concepts. SoftBank Robotics (Japan) has developed an educational humanoid robot named Pepper, which is capable of recognizing faces and basic human emotions. NAO and Pepper have easily created an empathetic link with researchers and students

by their appearances, humanoid behavior, and moderate sizes. These robots are assistants for educators. Their intuition and visual interface make the process of content creation easier as well as allows customized teaching activities in either small groups or on a one-to-one basis.

Humanoid robots are not only used for educational purposes but also research in universities. There are several educational robotics programs funded by the National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), and other public and private entities across the world.

In the past decade, the market for humanoid robots has grown at a significant rate; currently, they are gradually being incorporated into educational societies. The development of several less expensive humanoid robotic platforms, robotics software tools, programming languages, and several robotic simulators have made robots more accessible to several students, educators, and robot enthusiasts at all levels. Supported by accessible robot platforms and systems, the rapid growth of robotics in schools, universities, and even kindergartens signifies one of the most important developments in the education sector. Robotics courses, especially based on learning through assembling, constructing, and operating robots, along with the interaction and communication with robots, are widely accepted. Companies involved in the production of educational humanoid robots are SoftBank Robotics (Japan), UBTECH ROBOTICS (China), and HYULIM Robot (South Korea), among others. Hence, the increasing use of humanoid robots as an educational tool is driving the growth of the humanoid robot market.

Surging demand for humanoid robots from the retail industry for personal assistance

The retail industry already uses robots in several different ways across stores and warehouses, as the major applications of robots in retail are in warehouses and logistics. Humanoid robots are also highly deployed in the retail industry for serving primary robotic applications, such as in-store customer service and bringing the store to customers. The growing use of humanoid robots on retail shop floors leads to better customer engagement with personal assistance and enhanced user experience.

Humanoid robots establish a decent way to improve store experience; hence, they are heavily deployed in retail stores worldwide to overcome the lack of resources or inadequacies. Humanoids are deployed in stores to answer questions, provide directions, entertain, play, attract clients with games, and even provide a presentation to users and detect customers' emotional states. Also, humanoid robots benefit stores by

collecting feedback from customers directly, which can be used to improve customer satisfaction. Humanoid robots are also used as sales assistants, brand ambassadors, information agents & guides, receptionists & welcome assistants in retail stores. Furthermore, technologically advanced features in robots help the retail industry maintain sales and CRM applications, customer recommendations, and payment services.

By introducing humanoids in the stores, several companies take on a positive image over their competitors. Softbank (Japan) manufactures Pepper, a 4-ft humanoid capable of recognizing faces and basic human emotions to welcome, inform, and entertain people in retail stores. The company has deployed its humanoid robot Pepper in more than 140 mobile stores in Japan. In May 2021, Snowdog (Poland) implemented a humanoid robot in the retail store eObuwie.pl. Another robot, NAO, is a 2-ft bipedal assistant used in retail, education, and research industries to welcome, inform, and entertain people. Pepper and NAO interact with the customers by utilizing personalized and relevant messages and offers. Pepper has been one of the famous robots used in several pilot projects in stores worldwide for personal assistance. Hence, the retail industry's growing deployment and increasing demand for personal assistance drive the humanoid robot market.

Asia Pacific is the fastest-growing region in the humanoid robot market.

Asia Pacific is expected to have the highest CAGR during the forecast period. The increasing aging population in countries such as China and Japan will likely increase the deployment of humanoids for caregiving and personal assistance in the coming years in the Asia Pacific. The presence of prominent market players such as SoftBank Robotics (Japan), Honda Motor Co., Ltd. (Japan), and Toyota Motor Corporation (Japan) and the growing awareness regarding the benefits of humanoid robots are fueling their demand in Japan.

The breakup of primaries conducted during the study is depicted below:

By Company Type: Tier 1 – 52 %, Tier 2 – 31%, and Tier 3 –17%

By Designation: C-Level Executives – 47%, Directors – 31%, and Others – 22%

By Region: North America– 37%, Europe – 28%, Asia Pacific – 31%, Rest of world– 4%

Research Coverage

The report segments the humanoid robot market and forecasts its size, by value, based on region (North America, Europe, Asia Pacific, and RoW), Component (hardware and software), application (education and entertainment, research and space exploration, personal assistance and caregiving, search, and rescue, public relations, and others (cleaning, inspection, maintenance, and surveillance)) and motion type (biped, and wheel drive). The report also comprehensively reviews market drivers, restraints, opportunities, and challenges in the humanoid robot market. The report also covers qualitative aspects in addition to the quantitative aspects of these markets.

Reason to Buy Report

The report will help the market leaders/new entrants with information on the closest approximations of the revenue numbers for the overall humanoid robot market and the subsegments. This report will help stakeholders understand the competitive landscape and gain more insights to position their businesses better and plan suitable go-to-market strategies. The report also helps stakeholders understand the market pulse and provides information on key market drivers, restraints, challenges, and opportunities.

The report provides insights on the following pointers:

Analysis of key drivers (growing development of humanoid robots with advanced features and increasing use of humanoids as educational robots), restraints (high initial cost and research and development expenses required for introducing advanced robotics, and safety concerns in humanoid robot adoption), opportunities (rapidly growing senior citizen population in most developed countries, and rising demand for humanoid robots from logistics sectors), and challenges (lack of high-level interfacing resulting in unpredictable performance of robots in untested environments, and limited market awareness hindering humanoid robot adoption)

Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product & service launches in the humanoid robot market.

Market Development: Comprehensive information about lucrative markets – the report analyses the humanoid robot market across varied regions.

Market Diversification: Exhaustive information about new products & services, untapped geographies, recent developments, and investments in the humanoid robot market

Competitive Assessment: In-depth assessment of market shares, growth strategies, and service offerings of leading players like SoftBank Robotics (Japan), SoftBank Robotics (Japan), Honda Motor Co., Ltd. (Japan), Toyota Motor Corporation (Japan), among others in the humanoid robot market

Contents

1 INTRODUCTION

1.1 STUDY OBJECTIVES

1.2 MARKET DEFINITION

1.3 STUDY SCOPE

1.3.1 MARKETS COVERED

FIGURE 1 HUMANOID ROBOT MARKET: SEGMENTATION

1.3.2 INCLUSIONS AND EXCLUSIONS

1.3.3 YEARS CONSIDERED

1.3.4 GEOGRAPHICAL SCOPE

1.4 CURRENCY CONSIDERED

TABLE 1 CURRENCY CONVERSION RATES

1.5 LIMITATIONS

1.6 STAKEHOLDERS

1.7 SUMMARY OF CHANGES

1.8 RECESSION IMPACT

2 RESEARCH METHODOLOGY

2.1 RESEARCH DATA

FIGURE 2 HUMANOID ROBOT MARKET: RESEARCH DESIGN

2.1.1 SECONDARY AND PRIMARY RESEARCH

2.1.2 SECONDARY DATA

2.1.2.1 List of major secondary sources

2.1.3 PRIMARY DATA

2.1.3.1 List of key primary interview participants

2.1.3.2 Key data from primary sources

2.1.3.3 Key industry insights

2.1.3.4 Breakdown of primaries

2.2 MARKET SIZE ESTIMATION

FIGURE 3 RESEARCH FLOW FOR MARKET SIZE ESTIMATION

FIGURE 4 MARKET SIZE ESTIMATION METHODOLOGY (SUPPLY SIDE):

REVENUE GENERATED BY COMPANIES THROUGH SALES OF HUMANOID ROBOTS

2.2.1 BOTTOM-UP APPROACH

2.2.1.1 Approach to derive market size by bottom-up analysis (demand side)

FIGURE 5 HUMANOID ROBOT MARKET: BOTTOM-UP APPROACH

2.2.2 TOP-DOWN APPROACH

2.2.2.1 Approach to derive market size by top-down analysis (supply side)

FIGURE 6 HUMANOID ROBOT MARKET: TOP-DOWN APPROACH

2.3 MARKET BREAKDOWN AND DATA TRIANGULATION

FIGURE 7 DATA TRIANGULATION

2.4 RESEARCH ASSUMPTIONS

2.5 PARAMETERS CONSIDERED TO UNDERSTAND IMPACT OF RECESSION ON HUMANOID ROBOT MARKET

2.6 RISK ASSESSMENT

TABLE 2 HUMANOID ROBOT MARKET: RISK ASSESSMENT

3 EXECUTIVE SUMMARY

FIGURE 8 PERSONAL ASSISTANCE & CAREGIVING SEGMENT TO HOLD LARGEST SHARE OF HUMANOID ROBOT MARKET FROM 2023 TO 2028

FIGURE 9 BIPED SEGMENT TO DOMINATE HUMANOID ROBOT MARKET FROM 2023 TO 2028

FIGURE 10 CONTROL SYSTEMS/CONTROLLERS SEGMENT TO ACCOUNT FOR LARGEST SHARE OF HUMANOID ROBOT MARKET FROM 2023 TO 2028

FIGURE 11 ASIA PACIFIC HUMANOID ROBOT MARKET TO RECORD HIGHEST CAGR DURING FORECAST PERIOD

4 PREMIUM INSIGHTS

4.1 ATTRACTIVE OPPORTUNITIES FOR PLAYERS IN HUMANOID ROBOT MARKET

FIGURE 12 RAPIDLY GROWING AGING POPULATION IN ASIA PACIFIC TO CREATE LUCRATIVE OPPORTUNITIES FOR MARKET PLAYERS

4.2 HUMANOID ROBOT MARKET, BY COMPONENT

FIGURE 13 SOFTWARE SEGMENT TO REGISTER HIGHER CAGR IN HUMANOID ROBOT MARKET DURING FORECAST PERIOD

4.3 HUMANOID ROBOT MARKET, BY MOTION TYPE

FIGURE 14 BIPED SEGMENT TO ACCOUNT FOR LARGER SHARE OF HUMANOID ROBOT MARKET IN 2023

4.4 NORTH AMERICA: HUMANOID ROBOT MARKET, BY APPLICATION AND COUNTRY

FIGURE 15 US AND PERSONAL ASSISTANCE & CAREGIVING SEGMENTS TO DOMINATE NORTH AMERICA MARKET IN 2023

4.5 HUMANOID ROBOT MARKET, BY REGION

FIGURE 16 SOUTH AMERICA TO RECORD HIGHEST CAGR IN HUMANOID ROBOT

MARKET DURING 2023–2028

5 MARKET OVERVIEW

5.1 INTRODUCTION

5.2 MARKET DYNAMICS

FIGURE 17 GLOBAL HUMANOID ROBOT MARKET DYNAMICS

5.2.1 DRIVERS

5.2.1.1 Growing development of humanoid robots with advanced features

FIGURE 18 EVOLUTION OF HUMANOID ROBOTS

5.2.1.2 Increasing use of humanoids as educational robots

5.2.1.3 Surging demand for humanoid robots in retail industry for personal assistance

5.2.1.4 Rising demand for humanoid robots for medical applications

FIGURE 19 IMPACT ANALYSIS OF DRIVERS ON HUMANOID ROBOT MARKET

5.2.2 RESTRAINTS

5.2.2.1 High initial investment and research and development expenses required for developing humanoid robots

5.2.2.2 Safety concerns limiting adoption of humanoid robots

FIGURE 20 IMPACT ANALYSIS OF RESTRAINTS ON HUMANOID ROBOT MARKET

5.2.3 OPPORTUNITIES

5.2.3.1 Rapidly growing geriatric population in developed countries

FIGURE 21 GLOBAL AGING POPULATION, BY REGION

5.2.3.2 Rising demand for humanoid robots from logistics sector

5.2.3.3 Increasing adoption of humanoid robots in rescue operations

FIGURE 22 IMPACT ANALYSIS OF OPPORTUNITIES ON HUMANOID ROBOT MARKET

5.2.4 CHALLENGES

5.2.4.1 Performance limitations of humanoid robots in untested environments

5.2.4.2 Limited market awareness hindering adoption of human robots

FIGURE 23 IMPACT ANALYSIS OF CHALLENGES ON HUMANOID ROBOT MARKET

5.3 SUPPLY CHAIN ANALYSIS

FIGURE 24 HUMANOID ROBOT MARKET: SUPPLY CHAIN

5.3.1 RESEARCH & DEVELOPMENT CENTERS

5.3.2 RAW MATERIAL SUPPLIERS

5.3.3 ORIGINAL EQUIPMENT MANUFACTURERS

5.3.4 SUPPLIERS AND DISTRIBUTORS

5.3.5 END USERS

5.3.6 POST-SALES SERVICE PROVIDERS

5.4 PRICING ANALYSIS

5.4.1 AVERAGE SELLING PRICE TREND

5.4.2 AVERAGE SELLING PRICE OF HUMANOID ROBOTS OFFERED BY KEY PLAYERS, BY MOTION TYPE

FIGURE 25 AVERAGE SELLING PRICE OF HUMANOID ROBOTS OFFERED BY KEY PLAYERS, BY MOTION TYPE

TABLE 3 AVERAGE SELLING PRICE OF HUMANOID ROBOTS OFFERED BY KEY PLAYERS, BY MOTION TYPE

5.5 ECOSYSTEM MAPPING

TABLE 4 HUMANOID ROBOT MARKET: ROLE OF KEY PLAYERS IN ECOSYSTEM

FIGURE 26 HUMANOID ROBOT MARKET: ECOSYSTEM

5.6 PORTER'S FIVE FORCES ANALYSIS

FIGURE 27 HUMANOID ROBOT MARKET: PORTER'S FIVE FORCES ANALYSIS

5.6.1 THREAT OF NEW ENTRANTS

5.6.2 BARGAINING POWER OF SUPPLIERS

5.6.3 BARGAINING POWER OF BUYERS

5.6.4 THREAT OF SUBSTITUTES

5.6.5 INTENSITY OF COMPETITIVE RIVALRY

5.7 CASE STUDY ANALYSIS

TABLE 5 IMPLEMENTATION OF HUMANOID ROBOT PEPPER ENHANCED CUSTOMER EXPERIENCE AT EOBUWIE.PL RETAIL STORE

TABLE 6 INTEGRATION OF HUMANOID ROBOT AT PRINCESS NOURAH UNIVERSITY ENHANCED STUDENT ENGAGEMENT AND INNOVATION

TABLE 7 NEOM BAY AIRPORT INTEGRATED HUMANOID ROBOT PEPPER TO CREATE FUTURISTIC AIRPORT ENVIRONMENT

TABLE 8 ARAMCO ADOPTED HUMANOID ROBOT PEPPER TO ENHANCE EMPLOYEE EXPERIENCE

TABLE 9 DUBAI ELECTRICITY AND WATER AUTHORITY EMPLOYED HUMANOID ROBOT PEPPER TO ENHANCE CUSTOMER ENGAGEMENT

5.8 TRADE ANALYSIS

5.8.1 TRADE ANALYSIS FOR VACUUM CLEANERS

TABLE 10 IMPORT DATA FOR HS CODE 850860, BY COUNTRY, 2018–2022 (USD MILLION)

TABLE 11 EXPORT DATA FOR HS CODE 850860, BY COUNTRY, 2018–2022 (USD MILLION)

5.9 TARIFFS AND REGULATORY LANDSCAPE

5.9.1 TARIFFS

5.9.1.1 Tariff analysis for cleaning robots (including domestic robots)

TABLE 12 MFN TARIFFS FOR PRODUCTS COVERED UNDER HS CODE 850860 EXPORTED BY US

TABLE 13 MFN TARIFFS FOR PRODUCTS COVERED UNDER HS CODE 850860 EXPORTED BY CHINA

5.9.2 REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 14 NORTH AMERICA: REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 15 EUROPE: REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 16 ASIA PACIFIC: REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 17 REST OF THE WORLD: REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

5.9.3 REGULATORY STANDARDS

5.10 TECHNOLOGY ANALYSIS

5.10.1 ARTIFICIAL INTELLIGENCE (AI) ADVANCEMENTS

5.10.2 SENSOR TECHNOLOGY

5.10.3 HUMAN–ROBOT INTERACTION ENHANCEMENTS

5.10.4 MOBILITY AND LOCOMOTION

5.10.5 CLOUD CONNECTIVITY AND DATA SHARING

5.11 PATENT ANALYSIS

TABLE 18 PATENT REGISTRATIONS, 2019–2022

FIGURE 28 COMPANIES WITH HIGHEST NUMBER OF PATENT APPLICANTS IN LAST 10 YEARS, 2013–2022

FIGURE 29 NUMBER OF PATENTS GRANTED OVER LAST 10 YEARS, 2013–2022

TABLE 19 TOP 10 PATENT OWNERS IN LAST 10 YEARS, 2013–2022

5.12 KEY CONFERENCES & EVENTS, 2023–2024

TABLE 20 HUMANOID ROBOT MARKET: KEY CONFERENCES & EVENTS, 2023–2024

5.13 REVENUE SHIFTS AND NEW REVENUE POCKETS FOR HUMANOID ROBOT VENDORS

FIGURE 30 REVENUE SHIFTS IN HUMANOID ROBOT MARKET

5.14 KEY STAKEHOLDERS AND BUYING CRITERIA

5.14.1 KEY STAKEHOLDERS IN BUYING PROCESS

FIGURE 31 INFLUENCE OF STAKEHOLDERS ON BUYING PROCESS FOR TOP THREE APPLICATIONS

TABLE 21 INFLUENCE OF STAKEHOLDERS ON BUYING PROCESS FOR TOP THREE APPLICATIONS

5.14.2 BUYING CRITERIA

FIGURE 32 KEY BUYING CRITERIA FOR TOP THREE APPLICATIONS

TABLE 22 KEY BUYING CRITERIA FOR TOP THREE APPLICATIONS**6 HUMANOID ROBOT MARKET, BY COMPONENT****6.1 INTRODUCTION**

FIGURE 33 HUMANOID ROBOT MARKET, BY COMPONENT

FIGURE 34 SOFTWARE SEGMENT TO REGISTER HIGHER CAGR IN HUMANOID ROBOT MARKET DURING FORECAST PERIOD

TABLE 23 HUMANOID ROBOT MARKET, BY COMPONENT, 2019–2022 (USD MILLION)

TABLE 24 HUMANOID ROBOT MARKET, BY COMPONENT, 2023–2028 (USD MILLION)

6.2 HARDWARE

TABLE 25 HUMANOID ROBOT MARKET, BY HARDWARE, 2019–2022 (USD MILLION)

TABLE 26 HUMANOID ROBOT MARKET, BY HARDWARE, 2023–2028 (USD MILLION)

TABLE 27 HARDWARE: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2019–2022 (USD MILLION)

TABLE 28 HARDWARE: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2023–2028 (USD MILLION)

6.2.1 SENSORS

6.2.1.1 Gather valuable data to perform tasks

TABLE 29 SENSORS: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2019–2022 (USD MILLION)

TABLE 30 SENSORS: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2023–2028 (USD MILLION)

6.2.1.2 Gyroscopes

6.2.1.3 Microphones

6.2.1.4 Accelerometers

6.2.1.5 Tilt sensors

6.2.1.6 Force/Torque sensors

6.2.1.7 Position sensors

6.2.1.8 Vision/Image sensors

6.2.1.9 Others

6.2.2 ACTUATORS

6.2.2.1 Enable movements in humanoid robots

TABLE 31 ACTUATORS: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2019–2022 (USD MILLION)

TABLE 32 ACTUATORS: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2023–2028 (USD MILLION)

6.2.2.2 Electrical

6.2.2.3 Pneumatic

6.2.2.4 Hydraulic

6.2.2.5 Piezoelectric

6.2.2.6 Ultrasonic

6.2.3 POWER SOURCES

6.2.3.1 Power various components for functioning

TABLE 33 POWER SOURCES: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2019–2022 (USD MILLION)

TABLE 34 POWER SOURCES: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2023–2028 (USD MILLION)

6.2.4 CONTROL SYSTEMS/CONTROLLERS

6.2.4.1 Control sensors and movements for functioning of humanoid robots

TABLE 35 CONTROL SYSTEMS/CONTROLLERS: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2019–2022 (USD MILLION)

TABLE 36 CONTROL SYSTEMS/CONTROLLERS: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2023–2028 (USD MILLION)

6.2.5 OTHERS

TABLE 37 OTHERS: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2019–2022 (USD MILLION)

TABLE 38 OTHERS: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2023–2028 (USD MILLION)

6.3 SOFTWARE

6.3.1 PROVIDE CODED COMMANDS TO PERFORM TASKS

TABLE 39 SOFTWARE: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2019–2022 (USD MILLION)

TABLE 40 SOFTWARE: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2023–2028 (USD MILLION)

7 HUMANOID ROBOT MARKET, BY MOTION TYPE

7.1 INTRODUCTION

FIGURE 35 HUMANOID ROBOT MARKET, BY MOTION TYPE

FIGURE 36 BIPED SEGMENT TO HOLD LARGER SHARE OF HUMANOID ROBOT MARKET DURING 2023–2028

TABLE 41 HUMANOID ROBOT MARKET, BY MOTION TYPE, 2019–2022 (USD MILLION)

TABLE 42 HUMANOID ROBOT MARKET, BY MOTION TYPE, 2023–2028 (USD MILLION)

7.2 BIPED

7.2.1 INCREASING FOCUS ON MANUFACTURING BIPED ROBOTS TO ACHIEVE HUMAN-LIKE APPEARANCE TO DRIVE SEGMENT

TABLE 43 BIPED: HUMANOID ROBOT MARKET, BY COMPONENT, 2019–2022 (USD MILLION)

TABLE 44 BIPED: HUMANOID ROBOT MARKET, BY COMPONENT, 2023–2028 (USD MILLION)

TABLE 45 BIPED: HUMANOID ROBOT MARKET, BY HARDWARE COMPONENT, 2019–2022 (USD MILLION)

TABLE 46 BIPED: HUMANOID ROBOT MARKET, BY HARDWARE COMPONENT, 2023–2028 (USD MILLION)

TABLE 47 BIPED: HUMANOID ROBOT MARKET, BY APPLICATION, 2019–2022 (USD MILLION)

TABLE 48 BIPED: HUMANOID ROBOT MARKET, BY APPLICATION, 2023–2028 (USD MILLION)

7.3 WHEEL DRIVE

7.3.1 VERSATILITY AND EFFICIENCY OF WHEEL-DRIVE HUMANOIDS MAKE THEM IDEAL FOR VARIOUS APPLICATIONS

TABLE 49 WHEEL DRIVE: HUMANOID ROBOT MARKET, BY COMPONENT, 2019–2022 (USD MILLION)

TABLE 50 WHEEL DRIVE: HUMANOID ROBOT MARKET, BY COMPONENT, 2023–2028 (USD MILLION)

TABLE 51 WHEEL DRIVE: HUMANOID ROBOT MARKET, BY HARDWARE COMPONENT, 2019–2022 (USD MILLION)

TABLE 52 WHEEL DRIVE: HUMANOID ROBOT MARKET, BY HARDWARE COMPONENT, 2023–2028 (USD MILLION)

TABLE 53 WHEEL DRIVE: HUMANOID ROBOT MARKET, BY APPLICATION, 2019–2022 (USD MILLION)

TABLE 54 WHEEL DRIVE: HUMANOID ROBOT MARKET, BY APPLICATION, 2023–2028 (USD MILLION)

8 HUMANOID ROBOT MARKET, BY APPLICATION

8.1 INTRODUCTION

FIGURE 37 HUMANOID ROBOT MARKET, BY APPLICATION

FIGURE 38 EDUCATION & ENTERTAINMENT APPLICATION TO EXHIBIT HIGHEST CAGR DURING FORECAST PERIOD

TABLE 55 HUMANOID ROBOT MARKET, BY APPLICATION, 2019–2022 (USD MILLION)

TABLE 56 HUMANOID ROBOT MARKET, BY APPLICATION, 2023–2028 (USD MILLION)

8.2 EDUCATION & ENTERTAINMENT

8.2.1 EDUCATION & ENTERTAINMENT APPLICATION SEGMENT TO WITNESS HIGHEST GROWTH DURING FORECAST PERIOD

TABLE 57 EDUCATION & ENTERTAINMENT: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2019–2022 (USD MILLION)

TABLE 58 EDUCATION & ENTERTAINMENT: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2023–2028 (USD MILLION)

TABLE 59 EDUCATION & ENTERTAINMENT: HUMANOID ROBOT MARKET, BY REGION, 2019–2022 (USD MILLION)

TABLE 60 EDUCATION & ENTERTAINMENT: HUMANOID ROBOT MARKET, BY REGION, 2023–2028 (USD MILLION)

8.3 RESEARCH & SPACE EXPLORATION

8.3.1 HUMANOIDS ENABLE HIGH-RISK SPACE EXPLORATION AND HELP TO ADVANCE RESEARCH IN COGNITION, BEHAVIOR, AND AI

TABLE 61 RESEARCH & SPACE EXPLORATION: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2019–2022 (USD MILLION)

TABLE 62 RESEARCH & SPACE EXPLORATION: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2023–2028 (USD MILLION)

TABLE 63 RESEARCH & SPACE EXPLORATION: HUMANOID ROBOT MARKET, BY REGION, 2019–2022 (USD MILLION)

TABLE 64 RESEARCH & SPACE EXPLORATION: HUMANOID ROBOT MARKET, BY REGION, 2023–2028 (USD MILLION)

8.4 PERSONAL ASSISTANCE & CAREGIVING

8.4.1 HUMANOID ROBOTS EMPOWER INDIVIDUALS THROUGH SUPPORT AND ASSISTANCE

TABLE 65 PERSONAL ASSISTANCE & CAREGIVING: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2019–2022 (USD MILLION)

TABLE 66 PERSONAL ASSISTANCE & CAREGIVING: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2023–2028 (USD MILLION)

TABLE 67 PERSONAL ASSISTANCE & CAREGIVING: HUMANOID ROBOT MARKET, BY REGION, 2019–2022 (USD MILLION)

TABLE 68 PERSONAL ASSISTANCE & CAREGIVING: HUMANOID ROBOT MARKET, BY REGION, 2023–2028 (USD MILLION)

8.5 SEARCH & RESCUE

8.5.1 ABILITY TO PERFORM LIFE-SAVING TASKS IN HAZARDOUS

ENVIRONMENTS MAKE HUMANOID ROBOTS VALUABLE IN SEARCH AND RESCUE OPERATIONS

TABLE 69 SEARCH & RESCUE: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2019–2022 (USD MILLION)

TABLE 70 SEARCH & RESCUE: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2023–2028 (USD MILLION)

TABLE 71 SEARCH & RESCUE: HUMANOID ROBOT MARKET, BY REGION, 2019–2022 (USD MILLION)

TABLE 72 SEARCH & RESCUE: HUMANOID ROBOT MARKET, BY REGION, 2023–2028 (USD MILLION)

8.6 PUBLIC RELATIONS

TABLE 73 PUBLIC RELATIONS: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2019–2022 (USD MILLION)

TABLE 74 PUBLIC RELATIONS: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2023–2028 (USD MILLION)

TABLE 75 PUBLIC RELATIONS: HUMANOID ROBOT MARKET, BY REGION, 2019–2022 (USD MILLION)

TABLE 76 PUBLIC RELATIONS: HUMANOID ROBOT MARKET, BY REGION, 2023–2028 (USD MILLION)

8.6.1 RETAIL

Humanoids enhance customer experiences and streamline operations in retail

8.6.2 HOSPITALITY

8.6.2.1 Humanoids used in hospitality industry to enhance customer experiences and improve operational efficiency

TABLE 77 PUBLIC RELATIONS: HUMANOID ROBOT MARKET, BY APPLICATION, 2019–2022 (USD MILLION)

TABLE 78 PUBLIC RELATIONS: HUMANOID ROBOT MARKET, BY APPLICATION, 2023–2028 (USD MILLION)

8.7 OTHERS

TABLE 79 OTHERS: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2019–2022 (USD MILLION)

TABLE 80 OTHERS: HUMANOID ROBOT MARKET, BY MOTION TYPE, 2023–2028 (USD MILLION)

TABLE 81 OTHERS: HUMANOID ROBOT MARKET, BY REGION, 2019–2022 (USD MILLION)

TABLE 82 OTHERS: HUMANOID ROBOT MARKET, BY REGION, 2023–2028 (USD MILLION)

9 HUMANOID ROBOT MARKET, BY REGION

9.1 INTRODUCTION

FIGURE 39 HUMANOID ROBOT MARKET, BY REGION

FIGURE 40 SOUTH AMERICA TO REGISTER HIGHEST CAGR IN HUMANOID ROBOT MARKET DURING FORECAST PERIOD

TABLE 83 HUMANOID ROBOT MARKET, BY REGION, 2019–2022 (USD MILLION)

TABLE 84 HUMANOID ROBOT MARKET, BY REGION, 2023–2028 (USD MILLION)

9.2 NORTH AMERICA

9.2.1 NORTH AMERICA: IMPACT OF RECESSION

FIGURE 41 NORTH AMERICA: HUMANOID ROBOT MARKET SNAPSHOT

FIGURE 42 CANADA TO REGISTER HIGHEST CAGR IN HUMANOID ROBOT MARKET IN NORTH AMERICA DURING FORECAST PERIOD

9.2.2 US

9.2.2.1 Growing adoption of humanoid robots in various applications to drive market

9.2.3 CANADA

9.2.3.1 Growing focus on innovations in humanoid robots to drive market

9.2.4 MEXICO

9.2.4.1 Rising adoption of service robots for personal and public uses to drive market

TABLE 85 NORTH AMERICA: HUMANOID ROBOT MARKET, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 86 NORTH AMERICA: HUMANOID ROBOT MARKET, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 87 NORTH AMERICA: HUMANOID ROBOT MARKET, BY APPLICATION, 2019–2022 (USD MILLION)

TABLE 88 NORTH AMERICA: HUMANOID ROBOT MARKET, BY APPLICATION, 2023–2028 (USD MILLION)

9.3 EUROPE

9.3.1 EUROPE: IMPACT OF RECESSION

FIGURE 43 EUROPE: HUMANOID ROBOT MARKET SNAPSHOT

FIGURE 44 GERMANY TO HOLD LARGEST SHARE OF EUROPEAN HUMANOID ROBOT MARKET IN 2023

9.3.2 UK

9.3.2.1 Extensive R&D in field of humanoid robotics to accelerate market growth

9.3.3 GERMANY

9.3.3.1 Government investments in robotics industry to drive market

9.3.4 FRANCE

9.3.4.1 Presence of numerous SMEs involved in robotics to favor market growth

9.3.5 ITALY

9.3.5.1 Deployment of humanoids in healthcare sector to foster market growth

9.3.6 SPAIN

9.3.6.1 Increasing deployment of humanoids in educational institutions to drive market

9.3.7 REST OF EUROPE

TABLE 89 EUROPE: HUMANOID ROBOT MARKET, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 90 EUROPE: HUMANOID ROBOT MARKET, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 91 EUROPE: HUMANOID ROBOT MARKET, BY APPLICATION, 2019–2022 (USD MILLION)

TABLE 92 EUROPE: HUMANOID ROBOT MARKET, BY APPLICATION, 2023–2028 (USD MILLION)

9.4 ASIA PACIFIC

9.4.1 ASIA PACIFIC: IMPACT OF RECESSION

FIGURE 45 ASIA PACIFIC: HUMANOID ROBOT MARKET SNAPSHOT

FIGURE 46 JAPAN TO RECORD HIGHEST CAGR IN ASIA PACIFIC HUMANOID ROBOT MARKET DURING FORECAST PERIOD

9.4.2 CHINA

9.4.2.1 Presence of leading robotics manufacturers to drive market

9.4.3 JAPAN

9.4.3.1 Rising investments in robotics industry to boost market growth

9.4.4 INDIA

9.4.4.1 Government-led initiatives to advance robotics to drive market

9.4.5 SOUTH KOREA

9.4.5.1 Increasing focus on using service robots in public sector to create opportunities for market players

9.4.6 REST OF ASIA PACIFIC

TABLE 93 ASIA PACIFIC: HUMANOID ROBOT MARKET, BY COUNTRY, 2019–2022 (USD MILLION)

TABLE 94 ASIA PACIFIC: HUMANOID ROBOT MARKET, BY COUNTRY, 2023–2028 (USD MILLION)

TABLE 95 ASIA PACIFIC: HUMANOID ROBOT MARKET, BY APPLICATION, 2019–2022 (USD MILLION)

TABLE 96 ASIA PACIFIC: HUMANOID ROBOT MARKET, BY APPLICATION, 2023–2028 (USD MILLION)

9.5 REST OF THE WORLD

9.6 REST OF THE WORLD: IMPACT OF RECESSION

FIGURE 47 MIDDLE EAST & AFRICA TO DOMINATE HUMANOID ROBOT MARKET IN REST OF THE WORLD IN 2023

9.6.1 SOUTH AMERICA

9.6.1.1 Increasing demand for automation and advanced technologies in various industries to fuel demand for humanoid robots

9.6.2 MIDDLE EAST & AFRICA

9.6.2.1 Increasing adoption of humanoid robots in rescue and defense applications to drive market

TABLE 97 REST OF THE WORLD: HUMANOID ROBOT MARKET, BY REGION, 2019–2022 (USD MILLION)

TABLE 98 REST OF THE WORLD: HUMANOID ROBOT MARKET, BY REGION, 2023–2028 (USD MILLION)

TABLE 99 REST OF THE WORLD: HUMANOID ROBOT MARKET, BY APPLICATION, 2019–2022 (USD MILLION)

TABLE 100 REST OF THE WORLD: HUMANOID ROBOT MARKET, BY APPLICATION, 2023–2028 (USD MILLION)

10 COMPETITIVE LANDSCAPE

10.1 INTRODUCTION

10.2 STRATEGIES ADOPTED BY KEY PLAYERS

TABLE 101 OVERVIEW OF STRATEGIES ADOPTED BY KEY PLAYERS IN HUMANOID ROBOT MARKET

10.3 REVENUE ANALYSIS OF KEY PLAYERS, 2022

FIGURE 48 HUMANOID ROBOT MARKET: REVENUE ANALYSIS OF KEY PLAYERS, 2022

10.4 MARKET SHARE ANALYSIS OF KEY PLAYERS, 2022

FIGURE 49 HUMANOID ROBOT MARKET: SHARE OF KEY PLAYERS, 2022

TABLE 102 HUMANOID ROBOT MARKET: DEGREE OF COMPETITION

10.5 EVALUATION MATRIX FOR KEY COMPANIES, 2022

10.5.1 STARS

10.5.2 EMERGING LEADERS

10.5.3 PERVASIVE PLAYERS

10.5.4 PARTICIPANTS

FIGURE 50 HUMANOID ROBOT MARKET: EVALUATION MATRIX FOR KEY COMPANIES, 2022

10.6 COMPANY FOOTPRINT

TABLE 103 COMPANY FOOTPRINT: MOTION TYPE

TABLE 104 COMPANY FOOTPRINT: REGION

TABLE 105 COMPANY FOOTPRINT: APPLICATION

TABLE 106 OVERALL COMPANY FOOTPRINT

10.7 EVALUATION MATRIX FOR STARTUPS/SMALL AND MEDIUM-SIZED ENTERPRISES (SMES), 2022

10.7.1 PROGRESSIVE COMPANIES

10.7.2 RESPONSIVE COMPANIES

10.7.3 DYNAMIC COMPANIES

10.7.4 STARTING BLOCKS

FIGURE 51 HUMANOID ROBOT MARKET: EVALUATION MATRIX FOR STARTUPS/SMES, 2022

10.8 DETAILED LIST OF KEY STARTUPS/SMES

TABLE 107 HUMANOID ROBOT MARKET: LIST OF KEY STARTUPS/SMES

10.9 COMPETITIVE BENCHMARKING OF KEY STARTUPS/SMES

TABLE 108 HUMANOID ROBOT MARKET: COMPETITIVE BENCHMARKING OF KEY STARTUPS/SMES

10.10 COMPETITIVE SCENARIOS AND TRENDS

TABLE 109 HUMANOID ROBOT MARKET: PRODUCT LAUNCHES, 2019–2022

10.10.1 DEALS

TABLE 110 HUMANOID ROBOT MARKET: DEALS,

11 COMPANY PROFILES

(Business Overview, Products/Solutions/Services Offered, Recent Developments, MnM view (Key strengths/Right to win, Strategic choices made, Weakness/competitive threats)*

11.1 KEY PLAYERS

11.1.1 SOFTBANK ROBOTICS

TABLE 111 SOFTBANK ROBOTICS: COMPANY OVERVIEW

FIGURE 52 SOFTBANK ROBOTICS: COMPANY SNAPSHOT

TABLE 112 SOFTBANK ROBOTICS: PRODUCT OFFERINGS

TABLE 113 SOFTBANK ROBOTICS: PRODUCT LAUNCHES

TABLE 114 SOFTBANK ROBOTICS: DEALS

11.1.2 ROBOTIS

TABLE 115 ROBOTIS: COMPANY OVERVIEW

TABLE 116 ROBOTIS: PRODUCT OFFERINGS

11.1.3 KAWADA ROBOTICS CORPORATION

TABLE 117 KAWADA ROBOTICS CORPORATION: COMPANY OVERVIEW

TABLE 118 KAWADA ROBOTICS CORPORATION: PRODUCT OFFERINGS

TABLE 119 KAWADA ROBOTICS CORPORATION: PRODUCT LAUNCHES

TABLE 120 KAWADA ROBOTICS CORPORATION: DEALS

11.1.4 TOYOTA MOTOR CORPORATION

TABLE 121 TOYOTA MOTOR CORPORATION: COMPANY OVERVIEW
FIGURE 53 TOYOTA MOTOR CORPORATION: COMPANY SNAPSHOT
TABLE 122 TOYOTA MOTOR CORPORATION: PRODUCT OFFERINGS
11.1.5 HONDA MOTOR CO., LTD.
TABLE 123 HONDA MOTOR CO., LTD.: COMPANY OVERVIEW
FIGURE 54 HONDA MOTOR CO., LTD.: COMPANY SNAPSHOT
TABLE 124 HONDA MOTOR CO., LTD.: PRODUCT OFFERINGS
11.1.6 HANSON ROBOTICS LTD.
TABLE 125 HANSON ROBOTICS LTD.: COMPANY OVERVIEW
TABLE 126 HANSON ROBOTICS LTD.: PRODUCT OFFERINGS
TABLE 127 HANSON ROBOTICS LTD.: PRODUCT LAUNCHES
TABLE 128 HANSON ROBOTICS LTD.: DEALS
11.1.7 UBTECH ROBOTICS CORP LTD
TABLE 129 UBTECH ROBOTICS CORP LTD: COMPANY OVERVIEW
TABLE 130 UBTECH ROBOTICS CORP LTD: PRODUCT OFFERINGS
11.1.8 PAL ROBOTICS
TABLE 131 PAL ROBOTICS: COMPANY OVERVIEW
TABLE 132 PAL ROBOTICS: PRODUCT OFFERINGS
11.1.9 HYULIM ROBOT
TABLE 133 HYULIM ROBOT: COMPANY OVERVIEW
TABLE 134 HYULIM ROBOT: PRODUCT OFFERINGS
11.1.10 SAMSUNG
TABLE 135 SAMSUNG: COMPANY OVERVIEW
FIGURE 55 SAMSUNG: COMPANY SNAPSHOT
TABLE 136 SAMSUNG: PRODUCT OFFERINGS
TABLE 137 SAMSUNG: DEALS
11.2 OTHER PLAYERS
11.2.1 ENGINEERED ARTS LIMITED
11.2.2 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
11.2.3 ROBO GARAGE CO., LTD.
11.2.4 ISTITUTO ITALIANO DI TECNOLOGIA
11.2.5 ROBOTICS LAB
11.2.6 HAJIME RESEARCH INSTITUTE, LTD
11.2.7 PROMOBOT CORP.
11.2.8 EZ-ROBOT
11.2.9 MACCO ROBOTICS
11.2.10 BOSTON DYNAMICS
11.2.11 ADVANCED TELECOMMUNICATIONS RESEARCH INSTITUTE
INTERNATIONAL (ATR)

11.2.12 WOWWEE GROUP LIMITED

11.2.13 KINDRED

11.2.14 TESLA

11.2.15 AGILITY ROBOTICS

Details on Business Overview, Products/Solutions/Services Offered, Recent Developments, MnM view (Key strengths/Right to win, Strategic choices made, Weakness/competitive threats) might not be captured in case of unlisted companies.

12 ADJACENT & RELATED MARKETS

12.1 INTRODUCTION

12.2 LIMITATIONS

12.3 COLLABORATIVE ROBOT (COBOT) MARKET, BY PAYLOAD

12.3.1 INTRODUCTION

12.3.2 UP TO 5 KG

12.3.2.1 Cobots with payload capacity below 5 kg are inherently safe

TABLE 138 COMPANIES OFFERING COBOTS WITH PAYLOAD CAPACITY UP TO 5 KG

TABLE 139 UP TO 5 KG: COLLABORATIVE ROBOT MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 140 UP TO 5 KG: COLLABORATIVE ROBOT MARKET, BY APPLICATION, 2022–2028 (USD MILLION)

TABLE 141 UP TO 5 KG: COLLABORATIVE ROBOT MARKET, BY APPLICATION, 2018–2021 (UNITS)

TABLE 142 UP TO 5 KG: COLLABORATIVE ROBOT MARKET, BY APPLICATION, 2022–2028 (UNITS)

TABLE 143 UP TO 5 KG: COLLABORATIVE ROBOT MARKET, BY INDUSTRY, 2018–2021 (USD MILLION)

TABLE 144 UP TO 5 KG: COLLABORATIVE ROBOT MARKET, BY INDUSTRY, 2022–2028 (USD MILLION)

12.3.3 5–10 KG

12.3.3.1 Cobots with 5–10 kg payload capacity can have built-in force sensors

TABLE 145 COMPANIES OFFERING COBOTS WITH 5–10 KG PAYLOAD CAPACITY

TABLE 146 5–10 KG: COLLABORATIVE ROBOT MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 147 5–10 KG: COLLABORATIVE ROBOT MARKET, BY APPLICATION, 2022–2028 (USD MILLION)

TABLE 148 5–10 KG: COLLABORATIVE ROBOT MARKET, BY APPLICATION, 2018–2021 (UNITS)

TABLE 149 5–10 KG: COLLABORATIVE ROBOT MARKET, BY APPLICATION, 2022–2028 (UNITS)

TABLE 150 5–10 KG: COLLABORATIVE ROBOT MARKET, BY INDUSTRY, 2018–2021 (USD MILLION)

TABLE 151 5–10 KG: COLLABORATIVE ROBOT MARKET, BY INDUSTRY, 2022–2028 (USD MILLION)

12.3.4 MORE THAN 10 KG

12.3.4.1 Advanced robotic hardware allows for development of collaborative robots with over 10 kg payload capacity

TABLE 152 COMPANIES OFFERING COBOTS WITH PAYLOAD CAPACITY OF MORE THAN 10 KG

TABLE 153 MORE THAN 10 KG: COLLABORATIVE ROBOT MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 154 MORE THAN 10 KG: COLLABORATIVE ROBOT MARKET, BY APPLICATION, 2022–2028 (USD MILLION)

TABLE 155 MORE THAN 10 KG: COLLABORATIVE ROBOT MARKET, BY APPLICATION, 2018–2021 (UNITS)

TABLE 156 MORE THAN 10 KG: COLLABORATIVE ROBOT MARKET, BY APPLICATION, 2022–2028 (UNITS)

TABLE 157 MORE THAN 10 KG: COLLABORATIVE ROBOT MARKET, BY INDUSTRY, 2018–2021 (USD MILLION)

TABLE 158 MORE THAN 10 KG: COLLABORATIVE ROBOT MARKET, BY INDUSTRY, 2022–2028 (USD MILLION)

13 APPENDIX

13.1 DISCUSSION GUIDE

13.2 KNOWLEDGESTORE: MARKETSandMARKETS' SUBSCRIPTION PORTAL

13.3 CUSTOMIZATION OPTIONS

13.4 RELATED REPORTS

13.5 AUTHOR DETAILSODUCT LAUNCHES

TABLE 186 SYNGENTA AG: DEALS

13.1.3 BAYER AG

TABLE 187 BAYER AG: BUSINESS OVERVIEW

FIGURE 73 BAYER AG: COMPANY SNAPSHOT

TABLE 188 BAYER AG: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 189 BAYER AG: PRODUCT LAUNCHES

TABLE 190 BAYER AG: DEALS

13.1.4 UPL

TABLE 191 UPL: BUSINESS OVERVIEW

FIGURE 74 UPL: COMPANY SNAPSHOT

TABLE 192 UPL: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 193 UPL: PRODUCT LAUNCHES

TABLE 194 UPL: DEALS

13.1.5 CORTEVA AGRISCIENCE

TABLE 195 CORTEVA AGRISCIENCE: BUSINESS OVERVIEW

FIGURE 75 CORTEVA AGRISCIENCE: COMPANY SNAPSHOT

TABLE 196 CORTEVA AGRISCIENCE: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 197 CORTEVA AGRISCIENCE: PRODUCT LAUNCHES

TABLE 198 CORTEVA AGRISCIENCE: DEALS

13.1.6 THE MOSAIC COMPANY

TABLE 199 THE MOSAIC COMPANY: BUSINESS OVERVIEW

FIGURE 76 THE MOSAIC COMPANY: COMPANY SNAPSHOT

TABLE 200 THE MOSAIC COMPANY: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 201 THE MOSAIC COMPANY: DEALS

13.1.7 PRO FARM GROUP INC.

TABLE 202 PRO FARM GROUP INC.: BUSINESS OVERVIEW

TABLE 203 PRO FARM GROUP INC.: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 204 PRO FARM GROUP INC.: PRODUCT LAUNCHES

TABLE 205 PRO FARM GROUP INC.: DEALS

TABLE 206 PRO FARM GROUP INC.: OTHERS

13.1.8 GOWAN COMPANY

TABLE 207 GOWAN COMPANY: BUSINESS OVERVIEW

TABLE 208 GOWAN COMPANY: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 209 GOWAN COMPANY: DEALS

13.1.9 VEGALAB SA

TABLE 210 VEGALAB SA: BUSINESS OVERVIEW

TABLE 211 VEGALAB SA: PRODUCTS/SOLUTIONS/SERVICES OFFERED

13.1.10 LALLEMAND INC.

TABLE 212 LALLEMAND INC.: BUSINESS OVERVIEW

TABLE 213 LALLEMAND INC.: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 214 LALLEMAND INC.: PRODUCT LAUNCHES

13.1.11 VALENT BIOSCIENCES LLC

TABLE 215 VALENT BIOSCIENCES LLC: BUSINESS OVERVIEW

TABLE 216 VALENT BIOSCIENCES LLC: PRODUCTS/SOLUTIONS/SERVICES

OFFERED

TABLE 217 VALENT BIOSCIENCES LLC: DEALS

TABLE 218 VALENT BIOSCIENCES LLC: OTHERS

13.1.12 KOPPERT

TABLE 219 KOPPERT: BUSINESS OVERVIEW

TABLE 220 KOPPERT: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 221 KOPPERT: PRODUCT LAUNCHES

TABLE 222 KOPPERT: DEALS

13.1.13 SUSTAINABLE AGRO SOLUTIONS, S.A.U.

TABLE 223 SUSTAINABLE AGRO SOLUTIONS, S.A.U.: BUSINESS OVERVIEW

TABLE 224 SUSTAINABLE AGRO SOLUTIONS, S.A.U.:

PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 225 SUSTAINABLE AGRO SOLUTIONS, S.A.U.: DEALS

13.1.14 TRADE CORPORATION INTERNATIONAL

TABLE 226 TRADE CORPORATION INTERNATIONAL: BUSINESS OVERVIEW

TABLE 227 TRADE CORPORATION INTERNATIONAL:

PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 228 TRADECORP INTERNATIONAL: DEALS

TABLE 229 TRADECORP INTERNATIONAL: OTHERS

13.1.15 STK BIO-AG

TABLE 230 STK BIO-AG: BUSINESS OVERVIEW

TABLE 231 STK BIO-AG: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 232 STOCKTON BIO-AG: DEALS

13.2 STARTUPS/SMES/OTHER PLAYERS

13.2.1 BIOLCHIM SPA

TABLE 233 BIOLCHIM SPA: BUSINESS OVERVIEW

TABLE 234 BIOLCHIM SPA: PRODUCTS/SOLUTIONS/SERVICES OFFERED

13.2.2 RIZOBACTER

TABLE 235 RIZOBACTER: BUSINESS OVERVIEW

TABLE 236 RIZOBACTER: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 237 RIZOBACTER: PRODUCT LAUNCHES

TABLE 238 RIZOBACTER: DEALS

13.2.3 BIONEMA

TABLE 239 BIONEMA: BUSINESS OVERVIEW

TABLE 240 BIONEMA: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 241 BIONEMA: PRODUCT LAUNCHES

TABLE 242 BIONEMA: DEALS

13.2.4 CERTIS BIOLOGICALS

TABLE 243 CERTIS BIOLOGICALS: BUSINESS OVERVIEW

TABLE 244 CERTIS BIOLOGICALS: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 245 CERTIS BIOLOGICALS: PRODUCT LAUNCHES

TABLE 246 CERTIS BIOLOGICALS: DEALS

TABLE 247 CERTIS BIOLOGICALS: OTHERS

13.2.5 BIOBEST GROUP NV

TABLE 248 BIOBEST GROUP NV: BUSINESS OVERVIEW

TABLE 249 BIOBEST GROUP NV: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 250 BIOBEST GROUP NV: PRODUCT LAUNCHES

TABLE 251 BIOBEST GROUP NV: DEALS

13.2.6 VERDESIAN LIFE SCIENCES

TABLE 252 VERDESIAN LIFE SCIENCES: BUSINESS OVERVIEW

13.2.7 AXEB BIOTECH SL

TABLE 253 AXEB BIOTECH SL: BUSINESS OVERVIEW

13.2.8 PIVOT BIO

TABLE 254 PIVOT BIO: BUSINESS OVERVIEW

13.2.9 ANDERMATT GROUP AG.

TABLE 255 ANDERMATT BIOCONTROL AG.: BUSINESS OVERVIEW

13.2.10 BIOTALYS

TABLE 256 BIOTALYS: BUSINESS OVERVIEW

*Details on Business overview, Products/Solutions/Services offered, Recent Developments, MNM view, Right to win, Strategic choices, Weaknesses and competitive threats might not be captured in case of unlisted companies.

14 ADJACENT & RELATED MARKETS

14.1 INTRODUCTION

14.2 LIMITATIONS

14.3 BIOSTIMULANTS MARKET

14.3.1 MARKET DEFINITION

14.3.2 MARKET OVERVIEW

14.3.3 BIOSTIMULANTS MARKET, BY ACTIVE INGREDIENT

TABLE 257 BIOSTIMULANTS MARKET, BY ACTIVE INGREDIENT, 2017–2021 (USD MILLION)

TABLE 258 BIOSTIMULANTS MARKET, BY ACTIVE INGREDIENT, 2022–2027 (USD MILLION)

14.4 BIOFERTILIZERS MARKET

14.4.1 MARKET DEFINITION

14.4.2 MARKET OVERVIEW

14.4.3 BIOFERTILIZERS MARKET, BY TYPE

TABLE 259 BIOFERTILIZERS MARKET, BY TYPE, 2018–2022 (USD MILLION)
TABLE 260 BIOFERTILIZERS MARKET, BY TYPE, 2023–2028 (USD MILLION)

15 APPENDIX

15.1 DISCUSSION GUIDE

15.2 KNOWLEDGESTORE: MARKETSANDMARKETS' SUBSCRIPTION PORTAL

15.3 CUSTOMIZATION OPTIONS

15.4 RELATED REPORTS

15.5 AUTHOR DETAILS

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