# Dissertation Project
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# Orthopedic Prosthetics Market Analysis and Forecast Through Geographical and Product Segmentation (2017-2021)


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# INTRODUCTION

- Orthopedic prosthetics is an artificial attachment which is used to replace a body part such as lower limb, knee, hip, hand, elbow, shoulder and parts of upper and lower extremity organs. Orthopedic prosthetics deals in manufacturing, design of custom fitted limbs which require low weight and high strength so that they can bear the weight of the body. A person may lose their body parts due to certain diseases such as diabetes, musculoskeletal disorder and due to road accidents, which require sudden amputation and artificial replacement of organs which provide movement to the body parts.
- Orthopedic prosthetics are used for two types of Amputations such as

1) Lower extremity prosthetics
2) Upper extremity prosthetics

# Lower extremity prosthetics

- The lower extremity orthopedic prosthesis is used when an individual has underdone amputation of hemipelvectomy, hip articulation, above knee amputation, through knee amputation, below knee amputation, ankle disarticulation and partial foot amputation due to certain diseases or trauma cases.
- These lower body parts are then replaced by artificial prosthetics for the movement of lower extremities. Lower extremity prosthetics have the largest revenue of 85% in the global orthopedic prosthetics market owing to high lower amputation surgeries due to diabetes and road accidents.

**Advanced lower extremity prosthetic device includes:**

- The Power Knee is a motored knee from Össur which provide strength and endurance to the user.
- The Symbionic leg from Össur which combine's the Rheo microprocessor knee and powered ankle to create a bionic leg.
- BiOM Ankle System from iWalk which is used to increase mobility and reduced stress from the body.

# Upper extremity prosthetics

- These are the devices which is used when an individual has underdone amputation of upper extremity such as shoulder, arm, forearm, wrist and hand which occurs due to sports injury or trauma cases. These upper body parts are then replaced by artificial prosthetics for the movement of upper extremities.
- The upper limb prosthetics contributes to overcome daily routine problems caused due to limitation in the interfaces providing prosthetics to increase user satisfaction rates to reduce device abandonment. The upper limb prosthesis is classified into two cosmetic and functional that include both body-powered and externally powered.

**Advanced upper extremity prosthetic devices**

- The beBionic from steeper is a myoelectric prosthetic hand which helps for easy movement.
- The Boston digital arm system from liberating technologies which provide torque for the multiple task.

# Study Objective

- To analyse the current & future market outlook of orthopedic prosthetic through geographical and product segmentation..

- To know the technological advancement in orthopedic prosthetics market.

# Research Methodology

- **Study Design:** Descriptive, Qualitative and Exploratory study
- **Study Area:** Bangalore
- **Duration of study:** 30th January 2017 – 1st May 2017
- **Data collection procedure:**
- **Primary research:** Data is collected through primary research. The research questions has been asked from industry experts, manufacturers and strategic decision makers.
- **Secondary research:** Majorly, the data is collected through secondary research after reading articles, journals, literatures and internet.
- **Data analysis tools:** MS excel and SPSS
- **Sample Size :** 20

# Template

- I would like to know about **Orthopedic Prosthetic** product offerings in your company.
- What are the major parameters considered by the end users before buying?
- How do you see this market performing in the next five years?
- What will be some of the trends that will have an impact in the market in the coming years?
- In terms of geographic split, which market is growing and why?
- Which of these regions is expected to witness fastest growth in the next five years?
- Could you please elaborate on the major drivers and restraints in the market?
- Is the market highly fragmented or dominated by top players?
- Can you name some potential start-up players in this market who can give high end competition to the key players in the near future?

# Geographical segmentation

- **Orthopedic prosthetic market in Americas:**
- In 2016, orthopedic prosthetics market in the Americas accounted for a dominant share and is expected to retain its dominant position over the coming years. The increase prevalence of diabetes and peripheral vascular diseases related to limbs and sports related injuries have contributed to the growth of the market. The growth is due to the advanced technology such as be Bionic hand, microprocessor knees, Michelangelo hand and due to rise in the road accidents which leads to loss of body part such as limbs, foot, toe and other body organ which is then replaced by artificial prosthetics.
- The presence of key players such as Össur, Ottobock Healthcare, The Ohio Willow Wood Company, Blatchford and Fillauer has dominated the market in Americas due to their advanced technology products such as Rhee knee, customised fibre products and robotic prosthetics which will revolutionise the global orthopedic prosthetics market in future.

- **Orthopedic prosthetic market in EMEA**

- Orthopedic prosthetics market in Europe had a significant market share in 2016 which is due to the high prevalence of diseases and trauma cases in the region. Advance technology and rise in awareness among people regarding artificial prosthetic devices are the major growth factor. The major revenue contributors to this region were from most of the Western European countries such as the UK, France and Germany which is due to advanced healthcare structure and presence of key players in the market.

- In African countries, high prevalence of diabetes, road accidents and civil war were the main reason for the limb loss which cater the growth of the orthopedic prosthetics market. Rise in the disposable income and awareness regarding prosthetic devices in sub-Saharan African countries are the other growth factors.

## Orthopedic prosthetic market in APAC

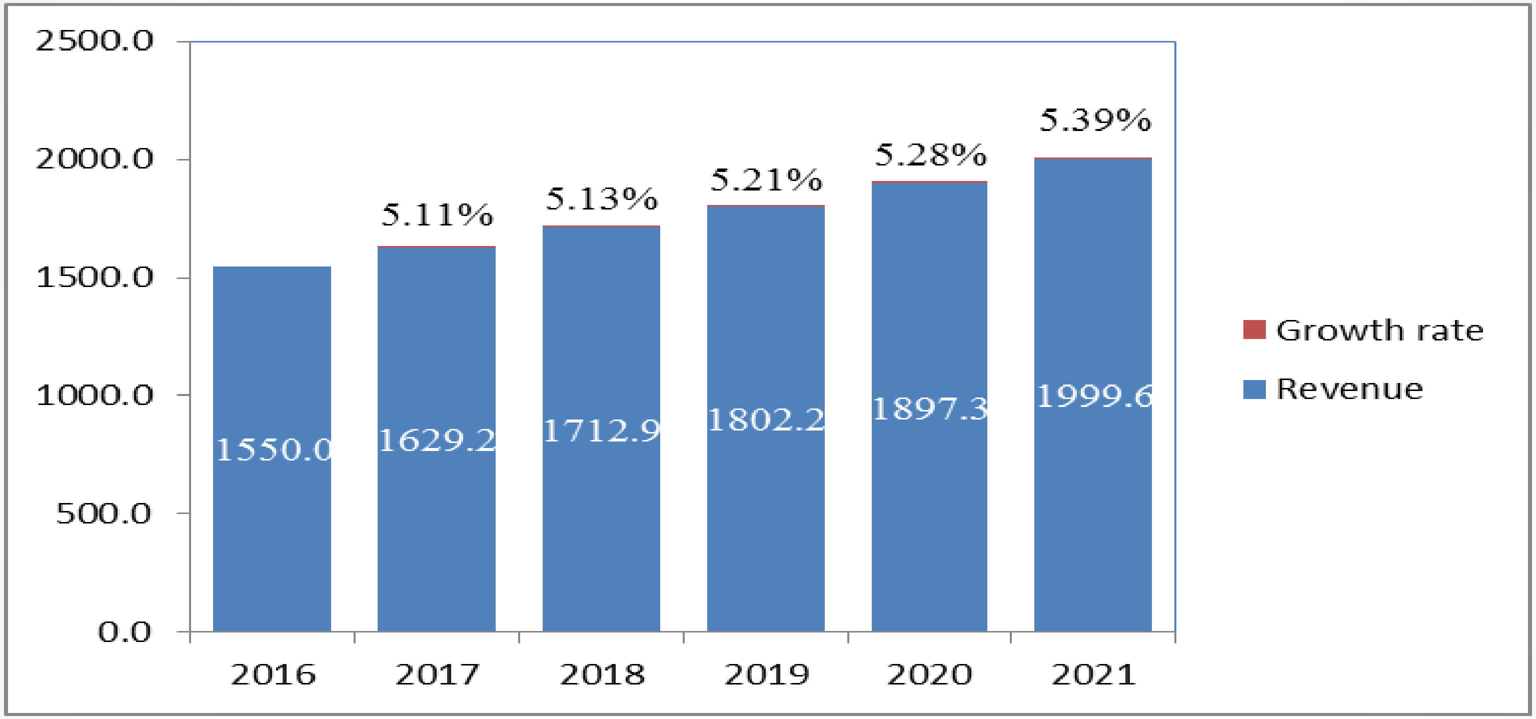
- Orthopedic prosthetics market in APAC region is growing at a fast rate which is due to the large population in the countries such as India and China, due to which the high prevalence of diabetes and road accidents are the major factors for large amputation surgeries.

- In India, 62 million people had diabetes, due to which 25% of the people develop foot ulcers, sores and other life-threatening infection in foot which is the major cause of amputation surge.

- Due high cost of orthopedic prosthetics devices, the companies are setting up their manufacturing facilities in these regions due to cheap labour and availability of land which will decrease the manufacturing cost for the companies and generate more profit to the major players and have low price to the end-user in India.

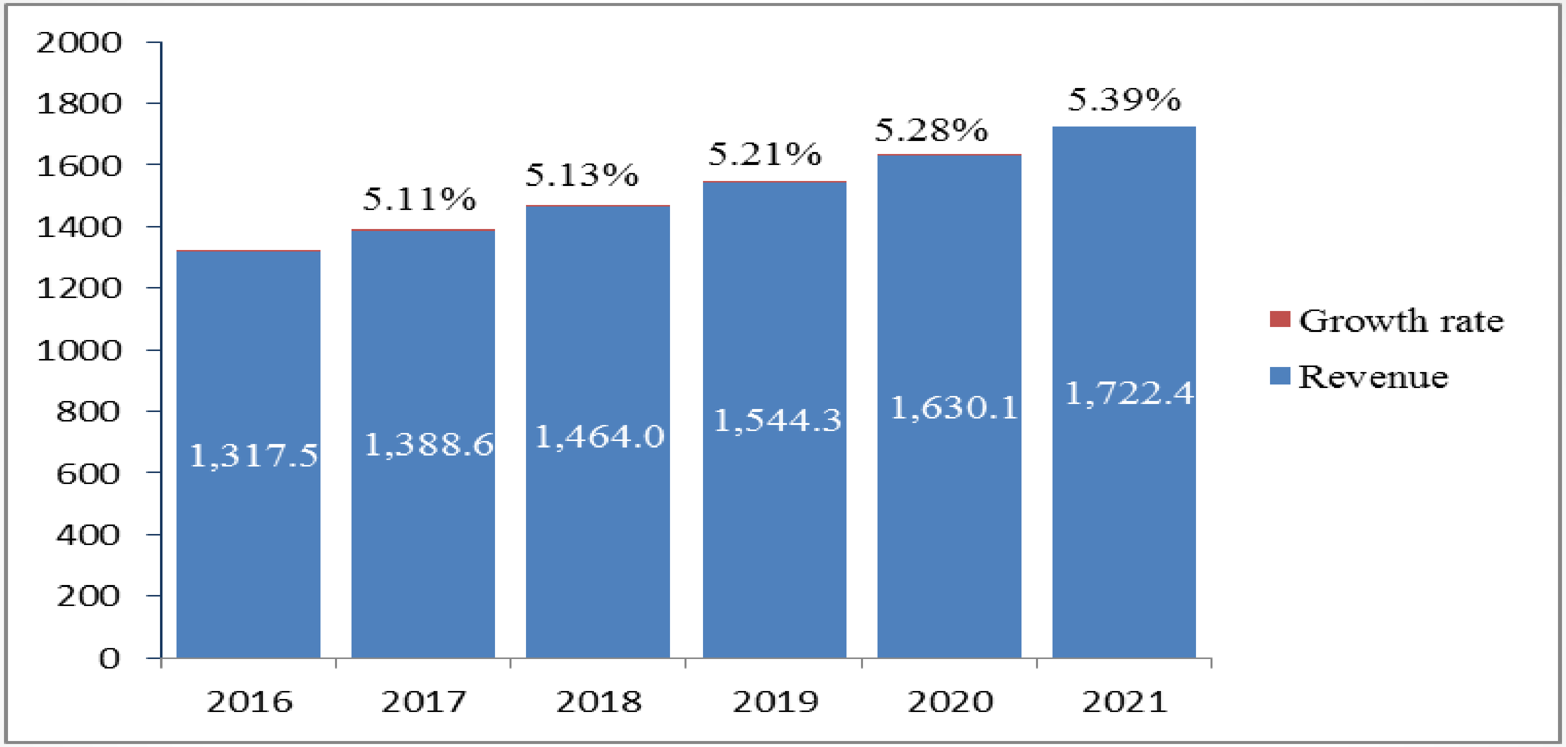
# Results

➢ **Global orthopedic prosthetic market in terms of revenue ($ millions)**



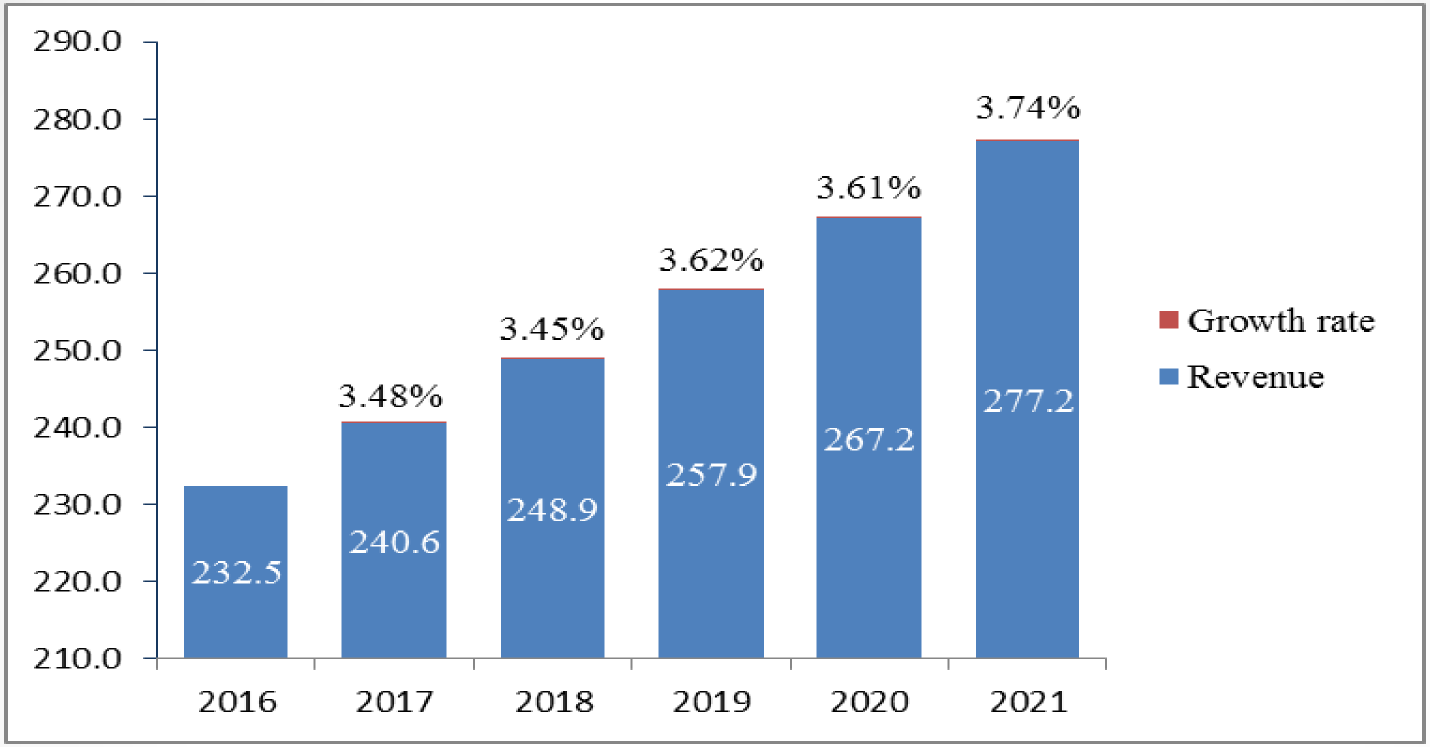

The global orthopedic prosthetic market is growing at faster rate with a CAGR of 5.23%. The market will grow due to road accidents, diabetes and presence of technologically advanced products.

- **Global lower extremity prosthetic market in terms of revenue ($ millions)**



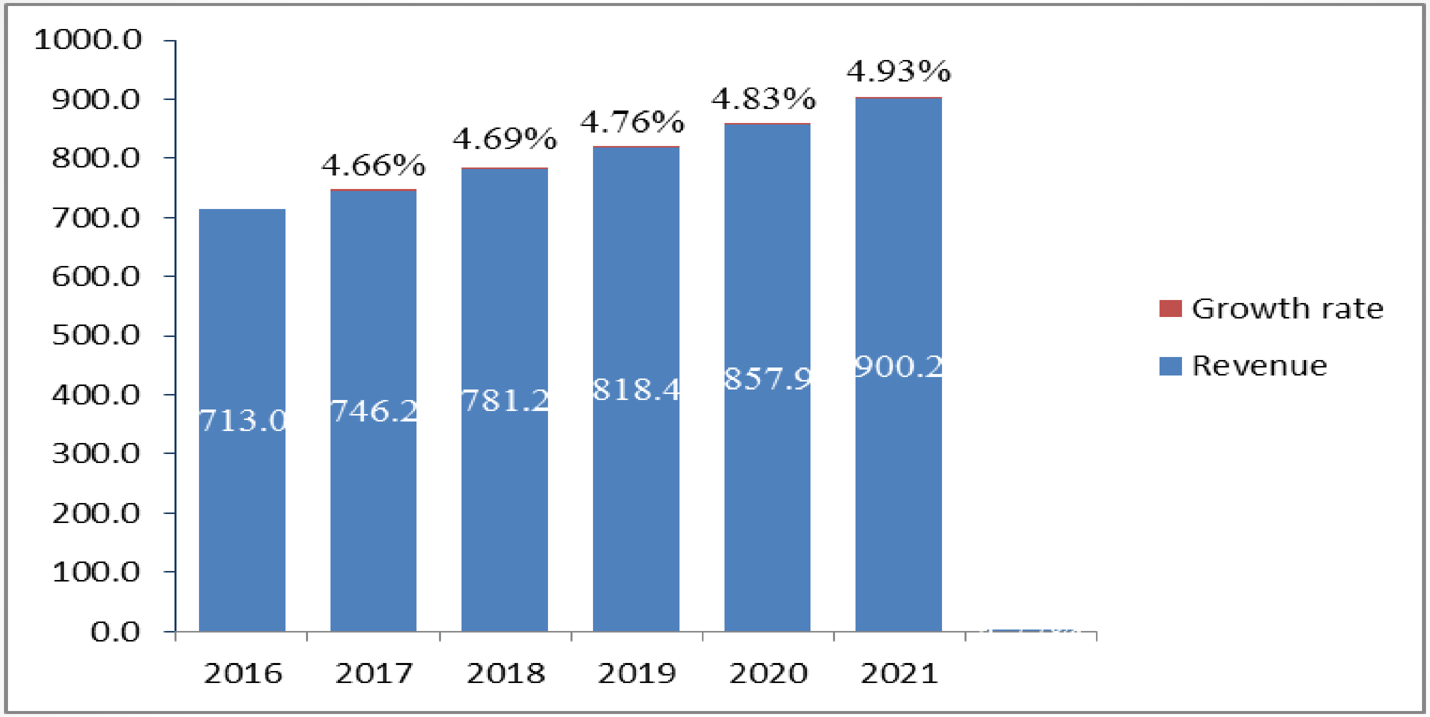

- The global lower extremity prosthetic market is growing at a faster rate with a CAGR of 5.51% due to rise in the prevalence of diabetes and road accidents, resulting into use of lower extremity prosthetic devices. The advanced technology devices have led to the development of lighter, stronger and more aesthetic material which will drive the market in coming years.

➢ **Global upper extremity prosthetic devices in terms of revenue ($ millions)**



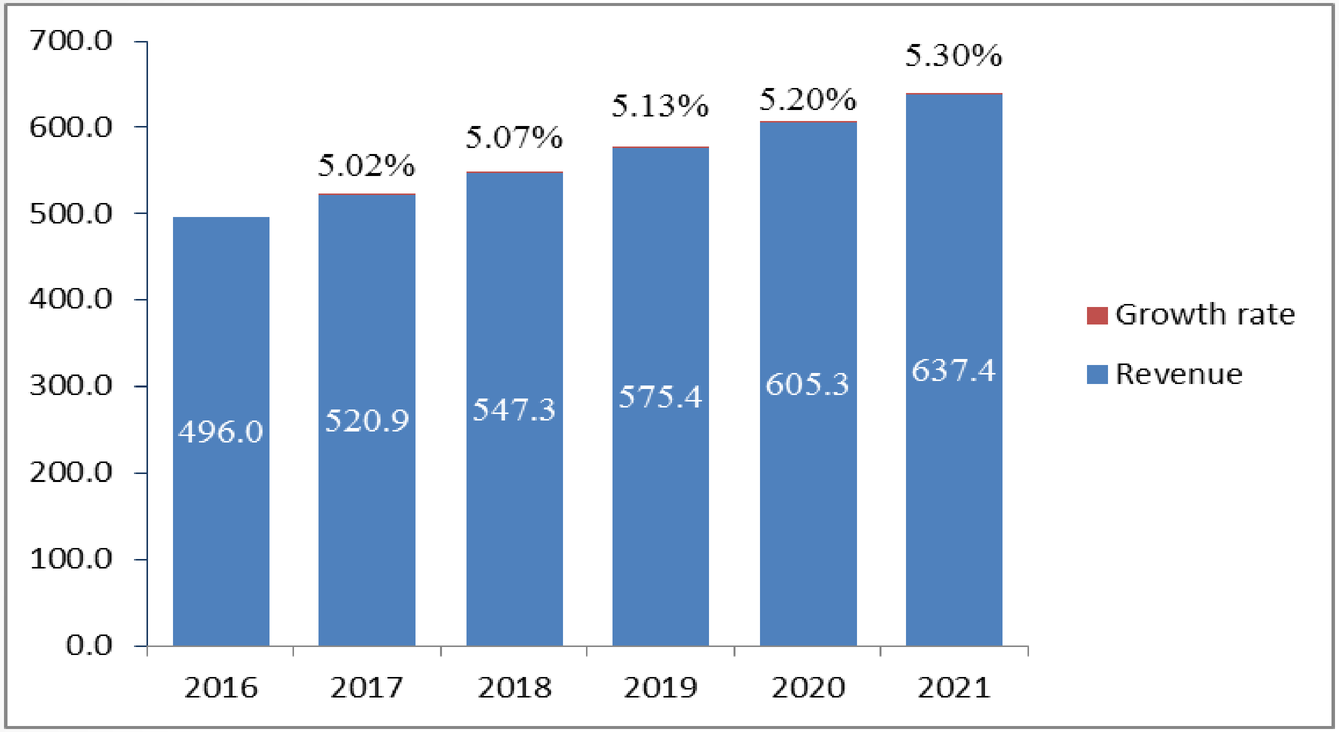

- The global upper extremity prosthetic market is growing at a steady rate with a CAGR of 3.58% which is due to sports related injuries and trauma cases.

## Orthopedic prosthetic market in Americas in terms of revenue ($ million)



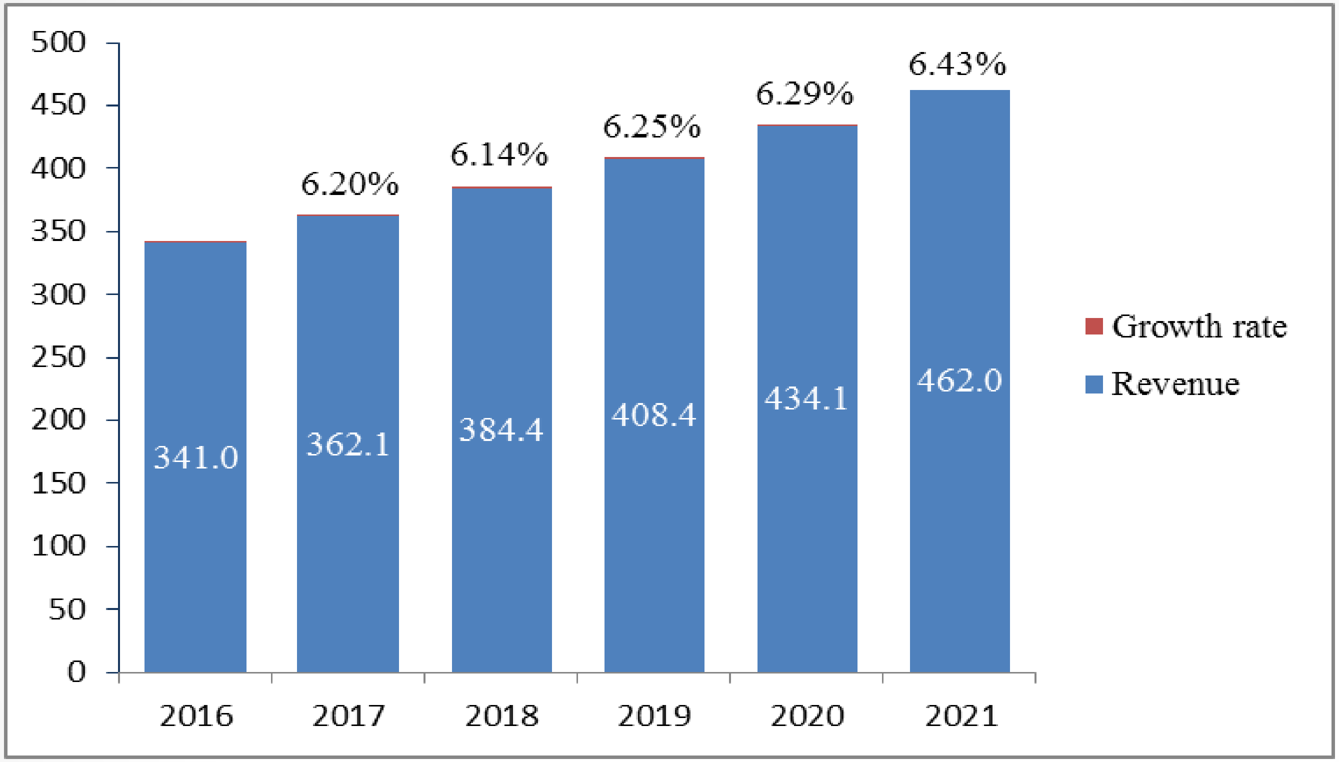

- The orthopedic prosthetic market in Americas is growing at a CAGR of 4.78%. North America contributes the largest market share for orthopedic prosthetic devices in 2016 which is due to the rise in the trauma cases and awareness among the people regarding prosthetic devices. 78% of the market share was captured by US in 2016 which is due to rise in amputation surgeries and sports related injuries.

## ➢ Orthopedic prosthetic market in EMEA in terms of revenue ($ millions)




- The market is growing at a significant rate with a CAGR of 5.14% which is due to high prevalence of diabetes and advanced healthcare system. Rise in the number of rehabilitation centers for the surgeries will drive the market during the forecast period.

## ➢ Orthopedic prosthetic market in APAC in terms of revenue ($ millions)




- APAC is the fastest growing region with a CAGR of 6.18% which is due to rise in the awareness among people regarding advanced prosthetic devices. The market is also growing due to availability of advanced prosthetic devices.

- **Respondents were asked to tell about orthopedic prosthetic products of the company?**

| Company name | Product name |
|---|---|
| Ossur | Rheo Knee |
| Blatchford | Microprocessor knee |
| Ottobock Healthcare | Michaelangelo hand |
| Fillauer | Body powered hand |
| Ossur | Genium X3 |
| The Ohio Williow Wood Company | Trans-femoral sockets |

- **Respondents were asked to tell the major parameters considered by end-user before buying orthopedic prosthetic devices?**

- Price
- Quality
- Advanced technology
- Durability
- Attributes

- **How the market is performing in the next five years?**

- Most of the respondents replied that the market is growing due to availability of advanced prosthetic devices.
- Increase in the geriatric population will lead to the use of orthopedic prosthetic devices.
- High adoption rate of advanced prosthetic over conventional prosthetic devices will lead to the growth of the market in coming years.

- **Respondents were asked to tell the major trends that will have an impact in the market during the forecast period?**

- Growing focus towards customised orthopedic prosthetics devices.
- Emergence of mind-controlled humonics solutions.
- Technological innovations and product launches.
- Growing demand for myoelectric prosthetics.

- **Respondents were asked to tell in terms of geographic split, which market is growing and why?**

- 70% of the respondents replied that America has dominated the market due to availability of advanced orthopedic prosthetic devices and presence of major and small vendors in the region.

- 30% of the respondent replied that Europe also has the significant market share due to presence of advanced healthcare system and high adoption rate of advanced prosthetic devices.

- **Respondents were asked to tell which region is expected to witness fastest growth in next five years?**

- Respondents replied that, although the market is dominated by America and Europe but APAC is the fastest growing segment due to the large number of geriatric population and most of the large and small vendors are setting-up their manufacturing facilities in this region due to the cheap labour and abundant resources.

- **Respondents were asked to elaborate the major drivers and challenges in the market?**

Major drivers which contribute to the growth of the market are:

- Growing number of birth defects and trauma cases.
- Availability of technically advanced orthopedic prosthetic devices.
- Growing number of amputation surgeries and focus on restoring mobility among amputees.
- Rising sports related injuries.

Major challenges which hamper the growth of the market are:

- High cost of prosthetic devices
- Risk and complications related to prosthetic devices.
- Insufficient reimbursement policies couples with reimbursement denial by private insurance companies.

- **Respondents were asked whether the market is highly fragmented or dominated by top players ?**

- According to respondents, the market is highly fragmented due the presence of large and small vendors. Small vendors compete with large players on the basis of price, quality and availability of products.

- **Respondents were asked to tell the names of some potential start-ups players in the market who can give high end competition to the key players in the near future?**

According to respondents, some potential start-up players who can give competition to major players are:

- Fillauer
- TAL Innovations
- Steeper
- ATP Amputee
- Meditex
- Aesthetics Prosthetics
- Touch bionics
- Proteor
- Orthomerica

# Conclusion

- The global orthopedic prosthetic market is growing at a CAGR of 5.23% which is due to high prevalence of diabetes and rise in the number of trauma cases such as road accidents.
- Lower extremity prosthetics has dominated the prosthetics market as compared to upper extremity prosthetics which is due to high prevalence of diabetes which causes foot ulcers and requires sudden amputation surgeries. Road accidents are also the major factors which mostly affect the lower body part as compared to upper body part.
- Americas has dominated the orthopedic prosthetic market which is due to incidence of road accidents and use of advanced technology prosthetic devices to replace body part.
- Europe has the second largest share in orthopedic prosthetic which is due to advanced healthcare system and rise in the awareness of orthopedic prosthetic products.
- APAC is the fastest growing market which is due to the large pool of geriatric population in the region. India and China has the large number of diabetic population which leads to amputation of lower extremity.

- The market is highly competitive with the presence of large and small vendors. Some of the major players includes Ossur, Ottobock Healthcare, Endolite, Ohio Willow wood company and Blatch ford who has dominated the market with their advanced prosthetic products. The presence of other prominent vendors such as TAL Innovative Solutions, Fillauer, MTP Amputtee, Freedom Innovations and Jaipur foot compete with large vendors on price, quality and availability of products in the market.

# Thank You
# So Much