HUMANOID ROBOT BUSINESS OPPORTUNITY IN THEME PARK INDUSTRY: A CASE STUDY OF AA CALYSTA ROBOTICS

PITCHAPAT CHAROENPOL

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……..…..…….....
Miss Pitchapat Charoenpol
Candidate

.....	.....
Suthep Nimsai, Ph.D. Advisor	Asst. Prof. Prattana Punnakitikashem, Ph.D. Chairperson
.....	.....
Duangporn Arbhasil, Ph.D. Dean College of Management Mahidol University	Phoommhiphat Pongpruttikul, Ph.D. Committee member

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Pitchapat Charoenpol

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PITCHAPAT CHAROENPOL 6049158

M.M. (GENERAL MANAGEMENT)

THEMATIC PAPER ADVISORY COMMITTEE: SUTHEP NIMSAI, Ph.D., ASST. PROF. PRATTANA PUNNAKITIKASHEM, Ph.D., PHOOMMHIPHAT PONGPRUTTIKUL, Ph.D.

ABSTRACT

At present, all sectors are getting involved with robots. The industrial robots has been using for many years in manufacturing process aiming to increase efficiency and reduce production costs. Logistics, entertainment, education, and healthcare sectors are the examples of sectors that are starting to adopt the robots to work. Humanoid robots are one type of the robots that reproduce human movement. As AA Calysta Robotics would like to manufacture humanoid robots and enter the theme park industry, so the analysis regarding the readiness and competitive environment is required. The objectives of this study are to explore the market structure of the theme park industry and the robots used, who are the current main players, to analyze competition and recommend a new business model for AA Calysta Robotics, and to provide recommendations on marketing strategy based on the company's competitive advantages. There are many areas to be analyzed in order to enter a new market. However, starting from the company itself and a broad understanding of the theme park market will help AA Calysta Robotics to prepare the business strategies and move on to the implementation stage.

KEY WORDS: Humanoid Robots/ Robots/ Theme Park Industry/ Readiness in Theme Park Industry

51 pages

CONTENTS

CONTENTS (cont.)

LIST OF TABLES

LIST OF FIGURES

CHAPTER I
INTRODUCTION

1.1 Background

Nowadays robots have been used in many industries. They are commonly seen in manufacturing plants of automotive and electrical sectors and starting to increase in food production, healthcare and distribution operation sectors. Not only they are used in the manufacturing and industrial world, robots are starting to grow and becoming a part of people's homes, for example, the robotic vacuum cleaner. Another example is Nuro autonomous pod designed by Google engineer team that is used to delivered groceries on the streets (Marr, 2019). Robot become more interaction in people's lives. Robots have many advantages. In the aspect of industrial and manufacturing sectors, robots increase efficiency and provide higher quality works than human. They perform precise tasks with high level of accuracy. Robots can also work in longer period of working hour. With the same tasks and same working hours, replacing robots with human can generate the outputs of 40% higher (Granta Automation, n.d.). However, there are some limitations and advantages of using robots since they have high capital cost. Before making decision, the companies should consider the amount of investment needed and also the ROI they expect to achieve.

Another industry that uses many robots is theme park industry. There are various types of rides in the theme parks namely big thrills, fun for kids and family, dark rides and VR rides. Each type of ride has specific kind of rides. The main players in theme park industry like Disney and Universal Studio both built the attractions that feel like the characters come from the real movies. In order to do that, they made the robots that had physical shape like the characters from the famous movies and animation films. Disneyland adopted humanlike robot that has lifelike movement in Pandora: The World of Avatar that located at Disney's Animal Kingdom in Orlando. This is the most life-like animatronic that Disney has ever created (Heney, 2019).

AA Calysta Robotics is a start-up company found by Jean-Claude Rassou, CEO and Professor Samer Alfayad, VP Science & Technology. Jean-Claude Rassou was a former CEO of Motorola in France. Now he is helping corporate groups to push innovations to markets and help investment funds in M&A activities. Professor Samer Alfayad has Engineering background. He is the Director of robotic chair of the University of Versailles, France. He has designed HYDROïD, MbZirc and HOPALALA robots. Both share the same interest in bringing innovation to the world, therefore, they created AA Calysta Robotics company aiming to design humanoid robots and components that have ability of human movement. The headquarter of AA Calysta Robotics is located in Toulouse, France but its R&D lab is located in Paris-Saclay University where the company has the access to key resources including lab, talents, and research capabilities. AA Calysta Robotics has begun to start the company in 2018. The company is considered a very small size with only 6 staff. The main product is humanoid robots or the robots that have physical shapes like human. Another main product from the company is liner actuator. It is an actuator that creates motion for machines as well as robots. At the moment, AA Calysta Robotics is in the product development and market exploration stages and plans to go to the market at the end of 2020.

1.2 Problem Statement

AA Calysta Robotics aims to design and commercialize humanoid robots. The company planned to launch humanoid robots and entered the theme park industry. They were looking for a place where the humanoid robots are used in the secure environment (no close interaction with human). They saw that theme parks could be a high potential market to sell humanoid robots because theme parks had secure environment. People nowadays are very concerned with the safety about robots with close interaction with human. At the moment, AA Calysta Robotics is exploring the market structure and competition of the theme park industry. There are many players in the industry, both buyers and sellers. Any important information about the main players, how the humanoid robots are used in the theme park, the main features that the robots can provide at the moment, or how close the interaction between human and robot can be due to the safety reason will be the useful information for the company to design its strategy before

entering the theme park market. AA Calysta Robotics also does not target to sell its products to the buyers like Disney or Universal Studios only. Selling the products to buyers' suppliers can be one of the choice that generates sales for the company. Exploring the current market and competitive environment would help AA Calysta Robotics to evaluate its readiness for the market entry.

1.3 Research Objectives

In this study, there are three objectives to understand the current market of theme park industry. The objectives are as follow.

1. To explore the market structure of the theme park industry and the robots used, who are the current main players
2. To analyze competition and recommend a new business model for AA Calysta Robotics
3. To provide recommendations on marketing strategy based on the company's competitive advantages

1.4 Research Scope

The company consulting project is the project that collaborated by Toulouse School of Management and AA Calysta Robotic. It is a part of Master of International Management program. The research study was done in Toulouse, France which is where both Toulouse School of Management and AA Calysta Robotic are located. The market exploration of robots in theme park industry was done together with Jean-Claude Rassou, who is the CEO of AA Calysta Robotic.

CHAPTER II
LITERATURE REVIEW

There are 2 sections in this chapter. The first section is about the related theories that will be used for analysis. The second section is the theme park industry analysis. The topics are categorized as follow in order to help the analysis of the market easier.

1. Industry Analysis
   - Robot Market Overview
   - Robot Market and Trends
   - Humanoid Robot Market
   - Theme Park Industry and Trends
2. Related Theory
   - Business Model Canvas
   - Porter's Five Forces
   - Marketing Strategy 4Ps

2.1 Industry Analysis

2.1.1 Robot Market Overview

Presently, people is getting aware of artificial intelligence (AI) or robots. They have been seen commonly in many manufacturing factories. The uses of robots are becoming useful because of their consistency and long working period of time. Robot market can be segmented into 2 main groups which are industrial robots and service robots as seen in figure 2.1. Industrial robots are mainly used in manufacturing industry including automotive, food and beverage, electronic, metals, chemical, and plastic industry. On the other hand, service robots provide human an assistant to perform tasks. Service

robots serve well in logistics, military, hospital and healthcare, entertainment, and household (Robotics Market - Growth, Trends, and Forecast (2019 - 2024)., 2018).

Figure 2.1 The type of robots and end users

Source: Robotics Market - Growth, Trends, and Forecast (2019 - 2024) (2018)

Robots have been used for a long period of time. However, the industry is facing the transformation which is the raise in labor cost and unavailability of workers. This drives the use of robots to improve efficiency and reduce manufacturing costs (Robotics - Market Research and Insights, 2019). Looking at the market, the industrial robots seem to have the highest application over other industry. The industrial robots have excellent applications in assembling any kind of products with very fast movement. It tends to be the important robot field for a while (Pagliarini & Lund, 2017). Emerging hospitality and tourism in Asia, Japan's Henn na Hotel has adopted the use of robots at the front desk to greet the guests as shown in Figure 2.2. The hotel aims to cut down the labor cost (Hertzfeld, 2019). In the healthcare industry, robots are used as surgical assistant, medical transportation robots or the crucial role the help patients get recovery with disability, for example, improve strength and mobility (Crawford, 2016). The company like Swisslog has designed healthcare assistant robot called Relay. This robot can help transporting medicine in the hospital. With this robot, the nurses, laboratory technicians, pharmacists and other skilled workers are able to focus on more valuable works (Broomfield, 2018). The robots are alternative use to human in military sector. They are widely used in Intelligence, Surveillance and Reconnaissance (ISR). WASP, a lightweight and remote-controlled Unmanned Aerial System (UAS) is used by the US army for patrol and surveillance purposes. This robot is manufactured by AeroVironment and the Defense Advanced Research Projects Agency (DARPA) (Mishra & Kumari, 2018). On the battlefield,

robot tanks and trunks are used to replace soldiers to prevent the soldiers from risk and dangerous situation. The robots are also used where the areas are inaccessible. The DARPA's sea hunter can travel for miles and for months under the sea without any man on crew (Walan, n.d.).

Figure 2.2 The robots used as the receptionists in Henn na Hotel in Japan
Source: Hertzfeld (2019)

The robot market in year 2018 was valued USD 31.78 billion with an expect forecast of CAGR of 25% in the period of 2019 – 2024. Many robots have been adapted into more user friendly and cost effective. Therefore, the demand of robot has been accelerated since 2010 and able to penetrate many industries (Robotics Market - Growth, Trends, and Forecast (2019 - 2024)., 2018).

The information from this section will broaden the view for this research to see how much the robots get involved with human and the features that the robots can perform. It would help AA Calysta Robotics to predict the future trend and involvement between robots and human.

2.1.2 Robot Market and Trends

The robot market has value of USD 25.65 billion in 2018 and it is forecasted to have a growth rate of more than 11.51% from 2019 to 2026. The concept of reducing labor cost and the need of assisting human to perform various tasks are adopted in many organizations. To reduce labor cost and the increase in automotive industry are the main

driving factors of the robotic market trend in the forecast period. Increase in SMEs also affects the need of robots (Collins, 2019).

It is estimated that the robot market would grow faster than expected. By the year 2025, the market will reach USD 87 billion. As can be seen in Figure 2.3, most of the growth will come from consumer market because the consumers will be more interested in the applications like home-aided device or self-driving. 40% of the robotics startups is focusing on developing robots in consumer sectors, for example, elder care and healthcare (Wolfgang, Lukic, Sander, Martin, & Küpper, 2017). The price of robots, sensors and computing power will continue to fall. In contrast, the applications and capabilities are expected to increased (Tobe, 2017).

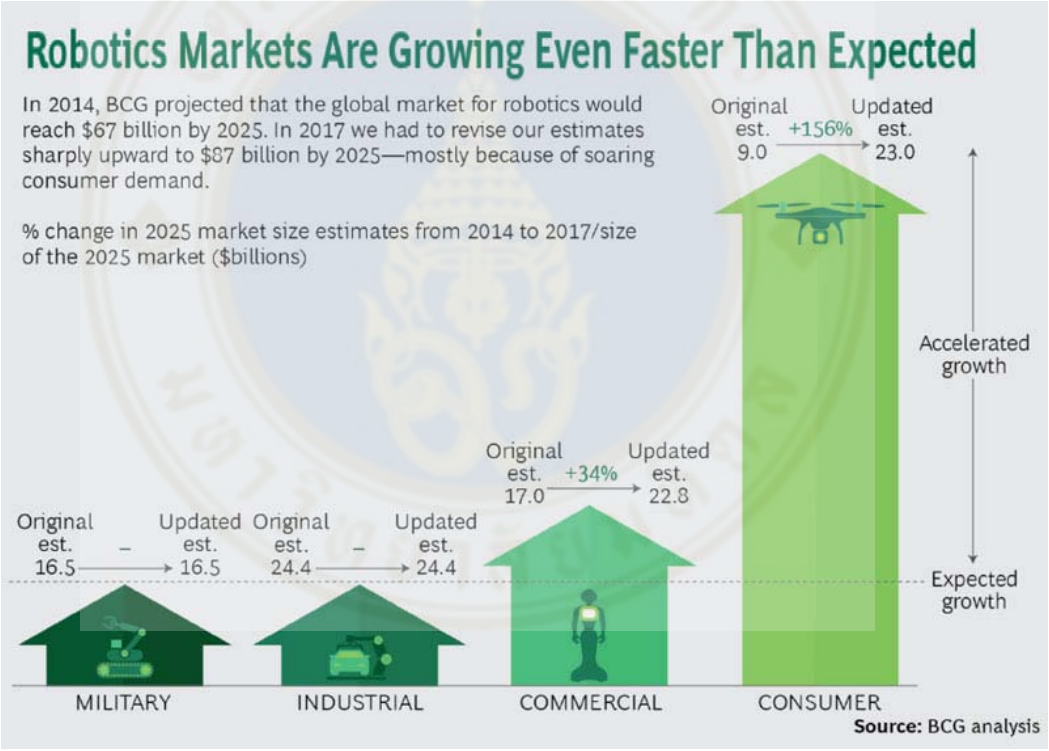


Figure 2.3 The growth of robotics markets forecasted in each sector (2017)
Source: Wolfgang, Lukic, Sander, Martin, & Küpper (2017)

The industrial robot is not the only main factor of the robot market growth, the service robot also plays a significant role. They become more related to human activities. Aging population and scarcity of healthcare assistants are another factors for driving the development of robot technology. Higher advance in robotic technology let many people

see how robots can carry out various operation. Together with the popularity in e-commerce business, the need of building automated warehouses is rising. The main player who develops this robot function is Kiva and Mobile industrial Robots (MiR) and many more startups company are trying to introduce this innovation in warehouse robots (Robotics Market - Growth, Trends, and Forecast (2019 - 2024)., 2018)

In 2019, new robotic companies will enter the markets and will be resulted in more robots with cheaper price. China and Germany are the main countries that invest heavily in technology including robots. Safety, precision, reliability, user-friendly, and speed are still the main factors that the buyers expect from manufacturers (Newswire, 2019).

The area that is expected to execute the fastest growth is Asia-Pacific especially the countries like Japan, New Zealand and Australia because these countries are one of the big market of industrial robots in the world. Germany, Italy, France, Spain, UK are the main distribution of the European countries that are expected to boost the market in Europe. While in North America, the country like Mexico is expected to be the major role of using robot across various sectors in the future (Bajaj, 2017). The top 5 markets the 73% of the sales in 2017 come from China, Japan, South Korea, the United States and Germany. The Figure 2.4 measures the density of robots in main countries. The average number of robot is 85 per 10,000 employees. It can be seen that Europe has the highest density of 106 units while the lowest one is in Asia with 75 units (IFR, 2018).

The information about robot markets and trends will be beneficial in the study since AA Calysta Robotics' product is the robots. Knowing the future trends and growth of the industry can ensure that the business has high possibility of growth.

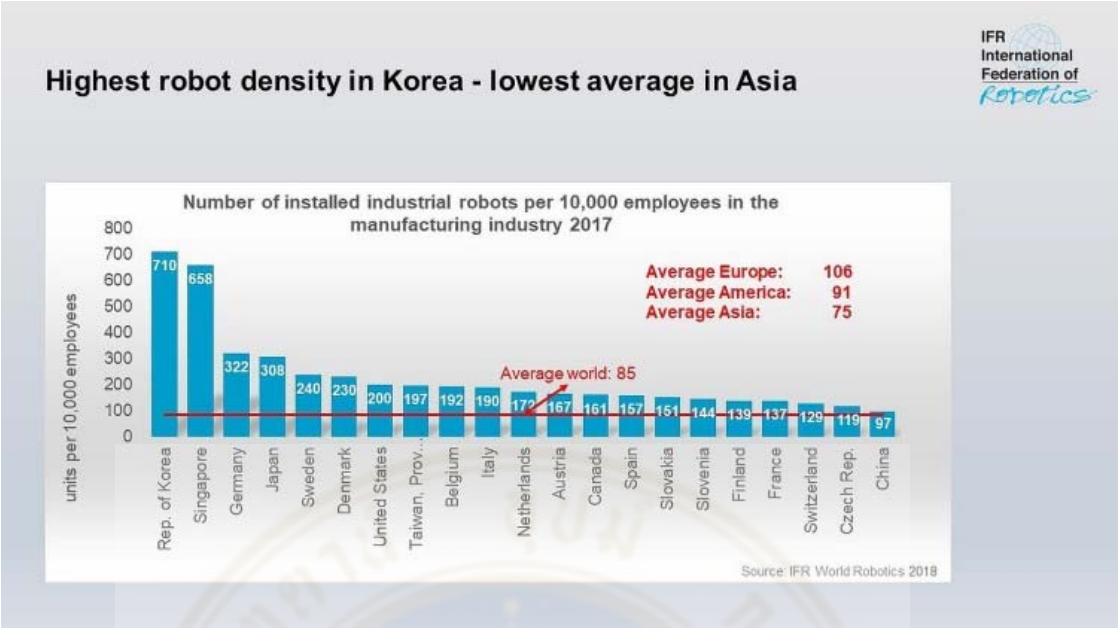


Figure 2.4 Automation degree by robot density (2018)

Source: IFR (2018)

2.1.3 Humanoid Robot Market

Humanoid robots are the robots that have the shape like human body. The purpose of developing humanoid robots is basically for human assistant that can work perfectly in the same environment with human. However, many humanoid robot developers are still working on the development of the robot functions for examples bipedal locomotion, learning and controlling and the control of human interaction (Reuters, 2019). The humanoid robot market is forecasted to grow during the period of 2017 to 2023 from USD 320.3 Million to USD 3,962.5 Million at CAGR of 52.1%. The factors that affect the growth of humanoid robots of the forecast period include the introduction of advanced technology of humanoid robots for human assistant and educational purposes. The biped motion type of robot or the robots that have to walk like human play a major role in the growth in this market. Moreover, USA is considered the early developer of robot and expected to be a major consumer (Humanoid Robot Market worth 3,962.5 Million USD by 2023, n.d.). Education and research are the major factors that drives the growth of humanoid robots. The global humanoid market is expected to increase with CAGR of 51.7% over the period of 2018 – 2024. The humanoid robots are mainly categorized by research & space exploration, search & rescue, public relation, education &

entertainment, and personal assistant as shown in Figure 2.5. The world's major leaders of humanoid robots are SoftBank Robotics, Hanson Robotics, Honda Motor Company, UBITECH ROBOTICS, DST Robot Co, PAL Robotics, KAWADA Industries Inc, Toyota Motor Corporation (Infinium, 2018).

The humanoid robots resemble machine learning and artificial intelligence. These create the humanoid robots with ability to move like human and show expression (Pagliarini & Lund, 2017). WABOT-1 robot was the first full-scale humanoid robot that could walk, communicate in Japanese and grasp objects. In 2000, Honda created ASIMO, the first robot with ability to jump, run, and use the stairs (Lucarobotics, n.d.). SoftBank Robotics released its first robot called Nao that was famous around the world in 2006 as shown in Figure 2.6. Nao has been programmed using for education and research. In 2018, SoftBank Robotics has enhanced Nao's performance to Nao6 which is selected by many companies as assistant in healthcare centers to entertain, welcome and inform the guests (SoftBank Robotic, n.d.). In 2010, NASA and General Motors worked together and launched the humanoid robot called Robonault. This robot was a part in Discovery shuttle in 2011. Robonault was designed in a human shape. It helped the astronauts in space tasks like measuring how the air flowed in the station or cleaned many tools inside the station so the astronauts could focus on more important works (NASA, 2012). Pepper, created by SoftBank Robotics, is the first humanoid robot in the world that has function of human face and basic emotion recognition. Pepper was purchased by over 2,000 companies around the world to inform and welcome visitors in a more innovative way (SoftBank Robotic, n.d.). Nowadays, Pepper is used in Tokyo cafe called Pepper Parlor to serve customers and sell waffles. SoftBank Robotics aims to build the experience of people coexistence with the robots (Kwan, 2019). In 2014, Professor Maja Matric from University of Southern California has paired the patients with humanoid robots to help them from recovery. The autism children can copy the motion from robots. The victims from stroke were aided by the humanoid robots through exercise. The patients were more motivated and responsive by the robots (Gonzalez, 2017).

The information of humanoid robots from this section will broaden the view of what features that humanoid robots can do at the moments and who the current producers are. The humanoid robots are becoming more popular in different sectors. It can be predicted

that humanoid robots will have more interactive features with human and this information can be used as the business recommendation in the study

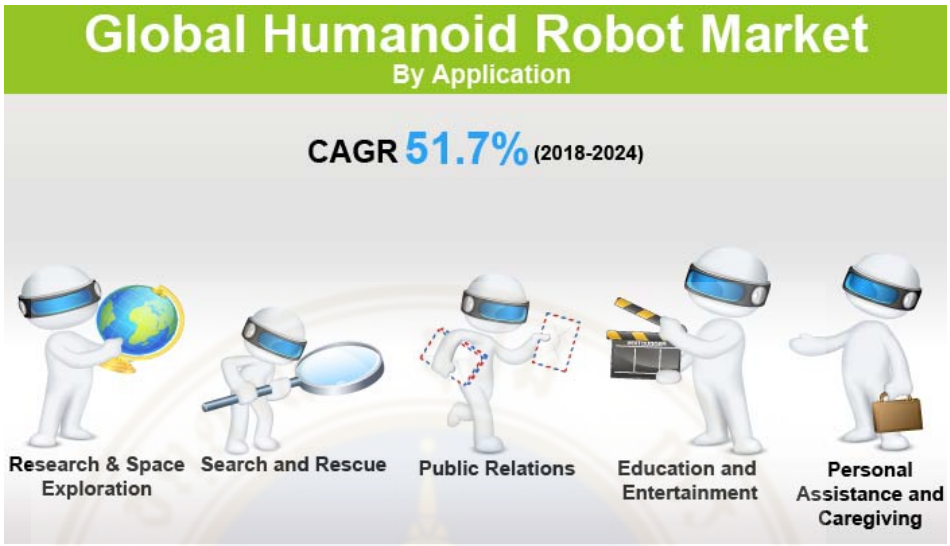


Figure 2.5 Global humanoid robot market by application

Source: Infinium (2018)

Figure 2.6 Softbank Robotics' robot, from left to right, Nao, Romeo, and Pepper

Source: Gonzalez (2017)

2.2 Theme Park Industry And Trend

The global theme park was valued at USD 45.2 billion in 2017 with the expected growth rate at CAGR of 5.8% from 2018 to 2025. The expansion of customer base that does not target only children, the innovation of the rides, merchandise in the park and the accommodations are the key factors that rise the revenue in this industry (Grand View Research, 2018). In 2018, the global amusement parks market reached USD 62 billion with expected CAGR growth of 8.8%. It is forecasted to reach USD 87.2 billion by 2022 (Eastern Daylight Time, 2019). The North America retain the big lead in the world market. The expected growth comes from many factors including the recovery of leisure spending, the change of consumer lifestyle, the rise in spending for outdoor activities, the growth of the middle class population in the emerging countries, and the increase in international tourism. The use of simulation, virtual reality, and technology are gaining popularity. This technology includes mobile application and the projection of virtual tour (Global Industry Analysts, 2015).

There are 3 levels of products in the theme parks which are core product, supporting product and facilitating product. The core product is very fundamental one and it is what the customer is buying. Excitement and fun atmosphere are the core products of the theme parks. The tangible product adds the value to the core product. The rides, shows, souvenir shops, quality of service and safety are the tangible products of the theme park. The augmented product will enhance the experiences of visitor. This includes car parking space, the weather, ancillary services, opening time and location (Mitrasinovic, 2016).

Figure 2.7 The 3 product levels of theme park industry
Source: Gonzalez (2017)

The theme park can be described as an outdoor attraction with resembling exciting experience together It usually has rides, shows and attractions The theme park usually charges for a pay-one-price admission fee (Pikkemaat & Schuckert, 2007).

There are several types of rides in the theme parks. Each ride offers a unique thrill and experiences.

1. Roller coaster: Roller coasters are considered the main ride in theme parks and the most popular ones among other rides. They are designed with different features starting from simple to high thrill rides. Most theme parks have at least 2 types of roller coasters.

2. Family rides: Family rides will be milder than roller coasters. They are suitable for all ages. The children who ride the family ride will be accompanied by adults for safety.

3. Water rides: These rides are where the visitors will get wet. They usually have water slides or the river raft rides in water zone.

4. Thrill rides: Pendulum riders, drop tower, or the rides with very high structure are the examples of thrill attractions. These rides can cause the heart beating very fast and they are not recommended for people with heart problems.

5. Dark rides: Dark rides offers a special and unique experience for guests. They are usually built indoor with enclosed structures. The Pirate of the Caribbean at Disneyland is one of the examples of dark rides.

6. Kid rides: These types of rides are specially designed for young kids, so they have height limit and very mild version created for the younger guests only. The common rides are Ferris wheels and small bumper cars are the examples of kid rides (Garg, n.d.).

The trends and popularity of the theme parks that found from this section can be predicted that the market is getting bigger. In the future, consumers may rise and there will be more investment. There will be a chance to make sales from this industry. The information in this section gives more understanding about the theme park industry which can give some direction to the study where to search for more information.

2.3 Business Model Canvas

Business model canvas helps the firms to understand business model better. The model explains how a firm creates, captures, and delivers the values. Small business can adapt business model canvas and use it as a strategy for competition. The business model shows the relationship between a firm, its partner, and its customer (Osterwalder & Pigneur, 2010). The model divides into nine segments which each segment is a part of business planning so that the firms can focus on business model segment by segment. The nine segments are namely; (1) Key partners, (2) Key activities, (3) Key resources, (4) Value proposition, (5) Customer relationships, (6) Channels, (7) Customer segment, (8) Cost structure, (9) Revenue streams (Umar, Sasongko & Aguzman, 2018).

1. Key partners are the important partners of the company who help the business and make the sales increase. The partners can improve business, reduce risks and get the resources (Indrawan, Adil, & Rossanty, 2016).

2. Key activities are the effective ideas, usually required to be customer concerned, that makes the business go up. The main activities include making new idea and produce it, promote the products and service, and manage the organization to operate smoothly.

3. Key resources are the available resources of the company and ready to be used. Physical, human, intellectual and financial resources are the main categories of resources of the company.

4. Value proposition describes products and services that create values to the customers. The value is the reason explaining why customers switch from one company to another company. Different companies offer different values. Price, convenience, brand, performance, risk reduction, cost reduction, or design are the elements that contribute the value creation.

5. Customer relationships describe how the company aim to develop relationship with its customer segment. There are 3 main motivations which are customer acquisition, customer retention, and improving sales.

6. Channels are how and where the company can reach the targeted customers and deliver the value. The channels will raise brand awareness, allow the customers to purchase the products and services, deliver the value to the customers and perform the after sales service.

7. Customer segments define the group of customers that the company aiming to reach. Customers are the key of the enterprise's profit. To develop a better strategies for customer satisfaction, the customers should be grouped first to see what their needs, behaviors and other attributes are. Then the company has to make a decision which segment will be targeted and which segment will be ignored. The business model has to be designed for the targeted group.

8. Cost structure describes all the costs occur from business operation. All the activities have costs. Costs are more important for some companies than other companies. The 2 main types of cost structure are cost-driven business model where the costs must be minimized as much as possible and value-driven business model where the costs are less important than other aspects. The premium brands are the examples of value-driven business models because these companies will focus on value creation than cost minimization.

9. Revenue streams define how the income or cash generated from the value creation that the company has created. Revenue can be received from many ways. Asset sale, usage fee, subscription fee, renting, licensing, brokerage fee, and advertising are where the revenue can come from (Osterwalder & Pigneur, 2010).

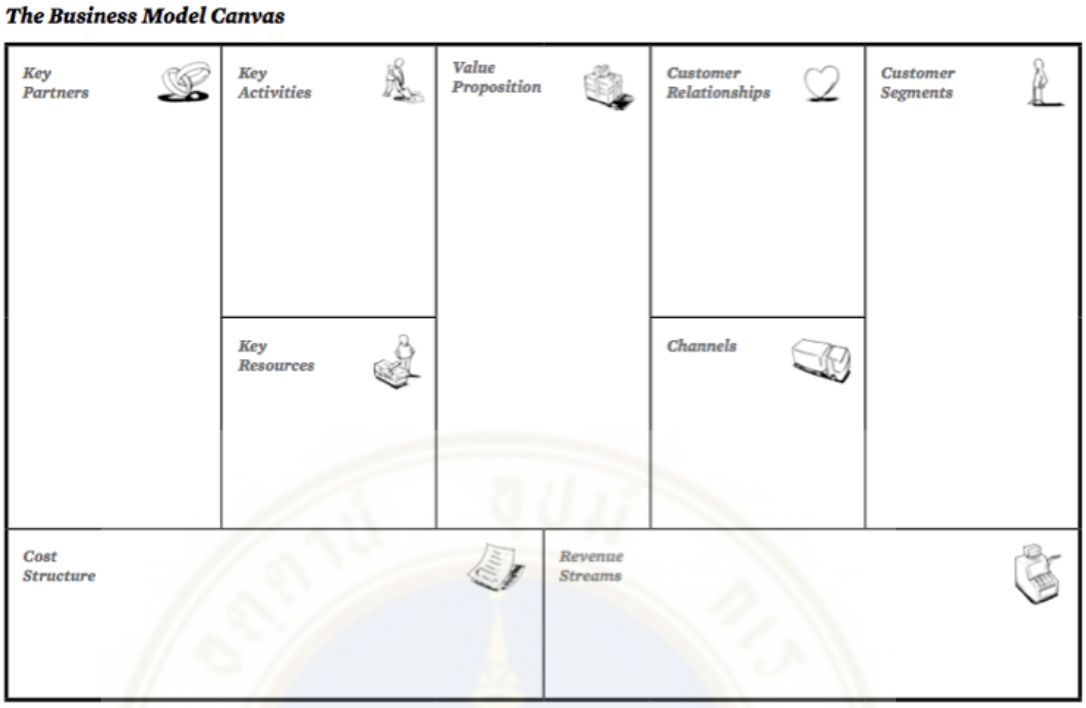


Figure 2.8 Business Model Canvas

Source: Osterwalder & Pigneur (2010)

The information in this section allows the team to understand the business model canvas clearer. The model describes that in order to run the business well, the companies should not focus on only small areas. They should consider many segments that are related to the companies. By using the information in this section, the analysis of the company by using this model will be more accurate and effective.

2.4 Porter's Five Forces

How to compete in the industry does not focus on only the competitors. Competition for profits goes beyond industry rivals that include 4 more elements namely; customers, suppliers, potential entrants, and substitute products. If the forces are very intense, most company will not gain high return on investment. Understanding the competitive forces can explain where the profit will be generated.

1. Threats of entry: The new entrant in the industry will bring the change in the market share structure. A desire to gain market share will pressure on costs, prices,

and investment. When the threat is high, the existing players will hold down their prices or make more investment to compete with newcomers.

2. The power of supplier: The powerful suppliers will have power over buyers in terms of prices, service, and cost. They will have ability to charge higher price on the products or limit the quality of the products and services they sell. The suppliers are more powerful if the industry is monopoly, suppliers depends on various industries whose revenue is not dependent on only one industry, or suppliers can offer products that are very unique and difficult to find a substitution.

3. The power of buyers: The powerful buyers can play a significant role in term of forcing down the price and demanding higher quality of service and product. The buyers are very powerful if they have power in negotiation, there are very few buyers in the industry, and they have low switching cost.

4. The threat of substitutes: A substitute has similar functions to industry's products. It may be direct or indirect forms. For example, software that is sold to travel agent can be replaced by airline and travel website. The threat of substitute is high if the substitute can perform more attractive performance and offer cheaper price. Moreover, the threat can be high if the switching cost of buyer is low. The higher the threat of substitute, the lower the profit in the industry.

5. Rivalry among existing competitor: High rivalry in the industry will limit the profitability. The intensity of the rivalry is high if the size and power of competitor are larger or roughly equal, slow growth rate in the industry that makes the companies fight for higher market share, and high exit barrier that makes it difficult for the companies to leave the market (Porter, 1979).

The information in this section allows the team to understand more about competitive environment. Porter's five forces model analysis describes which area has higher threat which can be used later in this research suggestion.

Figure 2.9 Five Force Model

Source: Business to you (2016)

2.5 Marketing Strategy 4Ps

Marketing Mix or 4Ps is not a scientific theory but it is the framework often used by managers who aim to design marketing strategies that suit customer needs. The framework will vary in each firms depending on the resources, the market environment and the demand of customers (Goi, 2009). Marketing Mix can be referred as the strategies designed by an organization or the combination of marketing variables that can affect to the customers' purchasing decision (Thabit & Raewf, 2018). There are 4 elements as follow;

1. Product: Products include physical products and service that are offered to customers who are willing to pay. The concept of product is not specific. It can be experiences, places, people, ideas, or organizations. The minimum characteristics of the product are what the product itself has to deliver the expectation from the customers and the main features the users expect to get from it. A better version of general product is the product that delivers supplements beyond the main features and expectation (Isoraite, 2016).

2. Price: Price is mainly calculated from the cost of production, the cost of transportation and the purchasing power of target customers. The price is the value which is charged from the products that sold to customers. It can give some impact to the customers psychologically (Nuseir & Madanat, 2015). The pricing methods can be adopted from cost based; the cost and the price have direct variation to each other, when the cost goes up, the price goes up too. The second method is demand based, when the demand is strong, the price increases. The last method is competition based; the consideration of competitors' price rather than other variables like cost.

3. Place: The place is the distribution channel that the firms use to deliver its product and service to customers (Al Badi, 2015). The place also includes the consideration of how the product will be delivered to customers. The strategy will help to see what the best way is to deliver the product to customers (Martin, 2014).

4. Promotion: Promotion is very important because it is how to make the customers connect to the organization. Advertising, sales promotion, public relation, and direct marketing are the examples of promotion (Pour, Nazari, & Emami, 2013).

CHAPTER III
RESEARCH METHODOLOGY

This chapter will present the research methodology and how the data are collected. Research methodology will consist of four steps which are Problem Definition, Framework Adoption, Data Collection, and Analysis.

3.1 Research Design

Toulouse School of Management (TSM) in France had designed the consulting project which is consisted of three multinational students who have different nationalities. The team consisted of Ms. Pitchapat Charoenpol from Thailand, Ms. Katherine Bogley from Ecuador, and Mr. Jose Pablo Retana from Costa Rica. The team had a meeting with Jean-Claude Rassou, the CEO of AA Calysta Robotics, at Toulouse School of Management in order to discuss about the introduction of AA Calysta company and the scope of the project. The consulting project was conducted in Toulouse, France with two months period. The TSM team had the meeting with Mr. Rassou weekly to update the progress of the research. The detail and stages of this study are as follows.

3.1.1 Problem Definition

In the first step, TSM team got the topic and a brief project mission of AA Calysta Robotics from the school. Then the team had a short meeting with academic tutor in order to give a brief discussion about what the company might expect. Later the TSM team had the first meeting with Mr. Rassou which he provided information that AA Calysta Robotics aimed to enter theme park industry. AA Calysta Robotics wanted us to gather information how far robots play the roles in theme park industry. Mr. Rassou believed that knowing the big players in this industry will provide the company some good information for the start and they could predict the guideline for the future project plan.

3.1.2 Framework Adoption

Because AA Calysta Robotics is a very new company that has just started the business and they have never explored the theme park market before, the company would like to use some frameworks that fit the current situation. TSM team adopted Business Model Canvas to design the company's business model that could cover all the areas related to the company. The Business Model Canvas will provide the guideline for the company to design a strategy and measure its readiness in the industry. Another framework that was planned to be used was Porter's Five Force because Calista Robotics would like to know the current competitive environment in this industry so in the future they would be able to plan for a competition, which area has the high threat that the company should take for consideration.

3.1.3 Data Collection

There were 2 objectives in this research. How the data was collected will be demonstrated in each objective as follow;

Table 3.1 How the data was collected

Objective	Data Collection
Objective 1: To explore the market structure of the theme park industry and the robots used, who are the current main players	**Primary source** - Obtain the information through direct email to International Association of Amusement Parks and Attractions (IAAPA) and asked for the lists of main players in the market - In-depth interview with Mr. Jean De Rivieres, VP from Ubisoft who had experiences in the industry and provided brief information on how the robots were used nowadays in the theme park

Table 3.1 How the data was collected (cont.)

Objective	Data Collection
	Secondary source - The information of each company came from the companies' websites - The information of top 15 park worldwide was collected from the Theme Index Museum Index 2018, the Global attractions attendance report published by the Themed Entertainment Association (TEA) and the Economics practice at AECOM - The information of how to robots used in the theme park also come from news and articles that published online
Objective 2: To analyze competition and recommend a new business model for AA Calysta Robotics	**Primary source** - In-depth interview with Mr. Jean Claude Rassou, the CEO of AA Calysta Robotics who provided the company information **Secondary source** - The information of AA Calysta Robotics was also collected from the company profile presentation provided by Mr. Jean Claude Rassou - The information of each company came from the companies' websites - Other related information came from the articles published online
Objective 3: To provide recommendations on marketing strategy based on the company's competitive advantages	**Primary source** - In-depth interview with Mr. Jean Claude Rassou, the CEO of AA Calysta Robotics **Secondary source** - The information of AA Calysta Robotics was also collected from the company profile presentation provided by Mr. Jean Claude Rassou

3.1.4 Analysis

There were 2 objectives in this research. How the data was analyzes will be demonstrated in each objective as follow;

Table 3.2 How the data was analyzes

Objective	Analysis
Objective 1: To explore the market structure of the theme park industry and the robots used, who are the current main players	**The market structure** – *Qualitative analysis* - The key buyers in the industry that were ranked from top 15 theme parks worldwide in 2018 by the number of attendance - The key robotic manufacturers that supplied to big theme parks - The level of product differentiation in the market – what features of the robots being used at the present and the hypothesis of the features in the future
Objective 2: To analyze competition and recommend a new business model for AA Calysta Robotics	**Porter's Five Force** – *Qualitative analysis* - Evaluate the competitive environment of the robot industry in theme park by measuring the level of threat that AA Calysta Robotics should focus. The threats came from 5 areas which were the bargaining power of buyers, the bargaining power of suppliers, threat from new entrants, threat of product substitution and competitive rivalry - Conduct a spider chart of industry attractiveness **Business Model Canvas** – *Qualitative analysis* - Use Business Model Canvas to create AA Calysta Robotics' current business model - Use the current Business Model Canvas from the previous analysis and suggest new Business Model Canvas to AA Calysta Robotics for its future strategic design

Table 3.2 How the data was analyzes (cont.)

Objective	Analysis
Objective 3: To provide recommendations on marketing strategy based on the company's competitive advantages	**Marketing Strategy** – *Qualitative analysis* - Use Marketing Mix or 4Ps to recommend AA Calysta Robotics' marketing strategies

CHAPTER IV
FINDINGS AND ANALYSIS

This chapter, the study presents the results from the group brainstorming. The results are separated into 3 sections that follow the objectives of the research as followed.

1. Objective 1: Existing market structure of theme park industry and the robot used, who the main players are
2. Objective 2: Competitive analysis and business model of AA Calysta Robotics
3. Objective 3: Marketing strategy of AA Calysta Robotics based on the company's competitive advantages

4.1 Objective 1: Existing market structure of theme park industry and the robot used, who the main players are

4.1.1 The key buyers in the theme part industry

The TSM team discovered the potential buyers would be the theme parks. The team listed out top 10 theme park groups in the world ranked by the number of attendance in 2018 as shown in Table 4.1. The biggest theme park was Walt Disney Attractions group with the number of attendance of 157.31 million visitors in 2018 and the number was increased by 4.87% from 2017. The second biggest theme park group was Merlin Entertainment from the United Kingdom who was operating Legoland, Alton Towers, Coca Cola London Eye and other attractions across Europe. The overall number of attendance from 2017 to 2018 was increased by 5.76%. When scoping down into each attraction, the TSM team listed out top 15 theme parks in the world by the number of attendance in 2018 as can be seen in Table 4.2. Most of the big theme parks came from from Walt Disney group. Magic Kingdom Florida in the United States have the highest

number of attendance with 20.86 visitors. Only Universal Studio Japan that had the fall in the number of visitor. However, the overall growth was 4.32% from 2017 to 2018.

Table 4.1 Top 10 theme park groups worldwide by the number of attendance (2018)

Rank	Group name	Headquarter	% Change	Attendance 2018 (Million)	Attendance 2017 (Million)
1	Walt Disney Attractions	USA	4.87%	157.31	150.01
2	Merlin Entertainment	UK	1.52%	67	66
3	Universal Parks and Resorts	USA	1.23%	50.07	49.46
4	OCT Parks China	China	15.09%	49.35	42.88
5	Fantawild	China	9.30%	42.07	38.49
6	Chimelong Group	China	9.57%	34	31.03
7	Six Flags Inc.	USA	5.26%	32.02	30.42
8	Cedar Fair Entertainment Company	USA	0.74%	25.91	25.72
9	Seaworld Parks & Entertainment	USA	8.61%	22.58	20.79
10	Parques Reunidos	Spain	1.46%	20.9	20.6
TOP 10 ATTENDANCE GROWTH 2017 - 2018			**5.76%**	**501.21**	**475.4**

Source: TSM team

Table 4.2 Top 15 theme parks worldwide by the number of attendance (2018)

Rank	Park	Location	% Change	Attendance 2018 (Million)	Attendance 2017 (Million)	No. of rides
1	Magic Kingdom, FL	USA	2.00%	20.86	20.45	101
2	Disneyland Park, CA	USA	2.02%	18.67	18.3	107
3	Tokyo Disneyland	Japan	7.89%	17.91	16.6	46
4	Tokyo Disneysea	Japan	8.52%	14.65	13.5	39
5	Universal Studio Japan	Japan	-4.22%	14.3	14.93	24
6	Disney's Animal Kingdom, FL	USA	10.00%	13.75	12.5	101
7	Epcot, FL	USA	1.97%	12.44	12.2	92
8	Shanghai Disneyland	China	7.27%	11.8	11	63
9	Disney's Hollywood Studios, FL	USA	5.04%	11.26	10.72	7
10	Chimelong Ocean Kingdom	China	10.74%	10.83	9.78	37
11	Universal Studio, FL	USA	5.00%	10.71	10.2	85
12	California Adventure, CA	USA	3.13%	9.87	9.57	30
13	Disneyland Paris	France	1.86%	9.84	9.66	50
14	Island of Adventure, FL	USA	2.41%	9.78	9.55	22
15	Universal Studio Hollywood, CA	USA	1.10%	9.15	9.05	14
TOP 15 ATTENDANCE GROWTH 2017 - 2018			**4.32%**	**195.82**	**188.01**	**818**

Source: TSM team

4.1.2 The key suppliers in the theme park industry

The Table 4.3 shows the key suppliers who manufacture animatronics or the human-shape robots in the markets. The Figure also provides the lists of the companies' clients, products and the company size (revenue and number of the employee). The TSM team was not able to find all companies' revenue and number of employee since some of the companies did not share the information online. The TSM team also had a chance to contact IAAPA and they provided one of the main suppliers which was Sally Corporation from the United States. Sally Corporation has an expertise in manufacturing animated figures for the dark ride types of rides in the theme parks. The TSM team also found that most of the humanoid robots with human shapes were commonly created for dark ride type of rides in the theme park. The robots were usually created in the figures and famous characters from the movies, for example, the Joker from Justice Leagues in Six Flags that was created and designed by Sally Corporation. The robots would move and talk but they would not walk due to the safety reason with visitors. The TSM team also found other robotic suppliers, for example, Heimotion who was the main supplier of European theme parks and Garner Holts Production who was the main supplier of Disneyland and Universal Studios Hollywood. Some of the companies, for example, Sally Corporation, did not only produce the robots but their service covered the creation and design of dark ride.

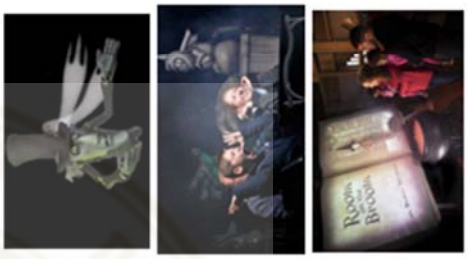
The Table 4.4 is showing the list of suppliers who manufacture other products in the markets, for example, rollercoasters, spin rides, audio, visual effect design, etc. It can be seen that the size of these companies is bigger than the size of the companies who manufacture animatronic robots only since the products are sold in bigger scale. Most of the suppliers in the theme park industry are the member of IAAPA. Being the member if IAAPA is one of the guarantee that the companies have experience and deliver a good quality of products.

Table 4.3 The key suppliers in theme park industry (1)

Robot manufacturers	Sally Corporation	Heimotion	Garner Holts Production	Hofmann	Sanhe Robot
Headquarter	United States	Germany	United States	Germany	China
Products and Specialities	Manufacture animated Figure "Dark Rides" Creation of Immersive environments	Manufacturer and developer of animated figures, dark rides, program shows, themed rides, walking acts and all kinds of special effects	The world's finest animatronics, special effects, show action systems and more	Manufacturer of figures and animals of all kinds in durable robust mechanics and with the suitable kind of drive.	Use of animatronics (animals like dinosaurs)
No. of employee	44	-	64	-	-
Revenue (USD million)	11.9	-	12.8	-	-
Customers	Gröna Lund, Stockholm, Sweden, Six Flags, Grona Land, Hard Rock Park, Canada's Wonderland, Legoland FL, Pargue WB World, Movie WB World	Europa-Park, Isla Mágica ES, Genting Highlands MY, West Edmonton Mall, Schwaben Park - Germany	Disneyland, Magic Kingdom, Universal Studios Hollywood, Disneyland Paris	Dayton Co., Minneapolis/Minn. (USA), Kaufhof Germany	Fujian Theme Park
Pictures					

Source: TSM team

Table 4.4 The key suppliers in theme park industry (2)

Robot manufacturers	Mack Rides	Preston and Barbieri	Sarner	Vekoma
Headquarter	Germany	Italy	United Kingdom	Netherlands
Products and Specialities	Rollercoasters, water rides, spin rides, dark rides	Italian ride manufacturer	Creative design and audio visual system specialising in the design of a variety of visitor attractions (Graphic, Lighting & Audiovisual design, Film & Interactive production)	Ride manufacturer
No. of employee	-	45	-	200
Revenue (USD million)	7.6	14	4.8	40
Customers	Europa-park, Legoland, SixFlags, Universals Japan, Samsung Everland, Nigloland	OCT China, Fiabilandia (Italy), Pacific Place (Korea)	SOUTHEND-ON-SEA (UK), Ocean Park (Hong Kong), Merlin, Alton Tower, Sony, Apple, Adventure Island, Legoland Windsor	Global Village (UAE), Furuvik Sweden, Everland, Hongkong Disneyland
Pictures				

Source: TSM team

4.1.3 The level of product differentiation in the market: where the robots are used now in the theme park

The humanoid robots nowadays are commonly used in the dark rides. The Figure 4.1 shows the features of the robots that are required to in the theme park industry. The features of the robots that are required today will have the function of standing and pre-recoded talking. The rational talking is not developed yet while the walking ability is also not developed due to the safety reason between human and robots. Having a walking robot will be a great risk because of the safety reason. Theme parks nowadays are not willing to pay a substantial amount of money for a robot that can potentially risk the well-being of their visitors. More study and technology development are required in the future to guarantee that the close interaction between human and robot is safe before launching the new features of robots in the theme park because two-legged machines are difficult to build and control. They require stability control.

The Table 4.5 shows the examples where the robots were used in the theme park and how many robots were there in each attraction. The robots from these attractions could stand, talk and move without the ability to walk. It can be seen that all the robots used nowadays will be avoided from human interaction as much as possible due to the safety reason. The features of the robot are similar across the theme park worldwide.

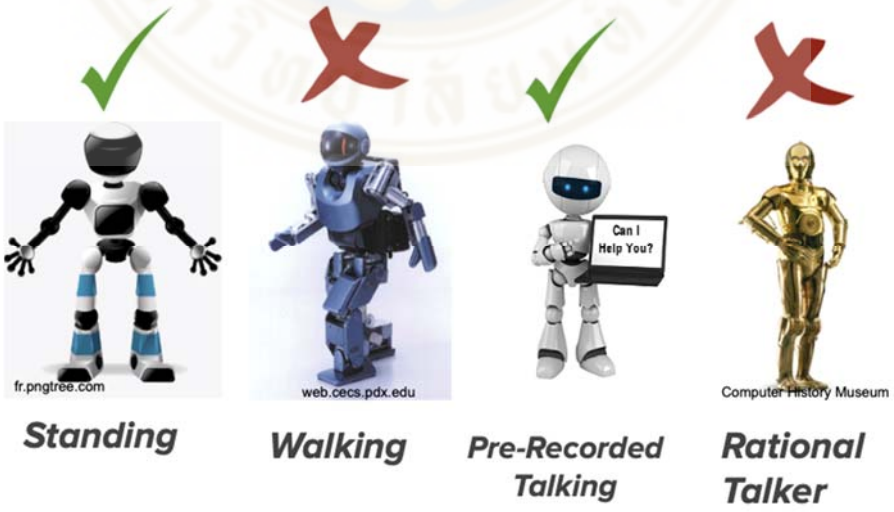
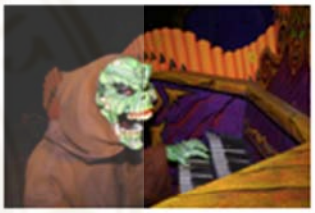
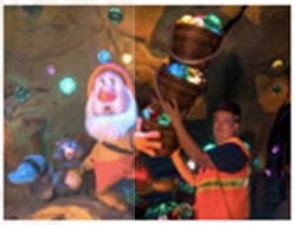


Figure 4.1 The features of robots required today in the theme park industry
Source: TSM team

Table 4.5 Where the robots are used in the theme park industry

Theme park	Attraction	Number of robots	Pictures
Disneyland Park, CA	Pirates of the Caribbean	75	
Six Flags	Justice Leagues	5	
King's Island	Boo Blasters	80	
Disney's Magic Kingdom, FL	Seven Dwarfs Mine Train	7	
Epcot, FL	Frozen Ever After	17	
Disney's Magic Kingdom, FL	Hall of presidents	44	

Source: TSM team

However, the TSM team discovered that Disney Enterprises Inc. was developing soft robots for physical interaction with humans. The soft robots have a rigid body with the chamber filled with fluid and air. The soft characteristic is designed to reduce the collision impacts with humans. The company also filed for a U.S. patent for a model. Disney was also inventing brand-new batch of robots called The Throwing Bots that could throw a ball back and forth with humans. The purpose was to enhance customer experience in the theme park to a new level. Therefore, the TSM team has hypothesis that, in the future, the additional feature of the robots will include human interaction application as shown in Figure 4.2.

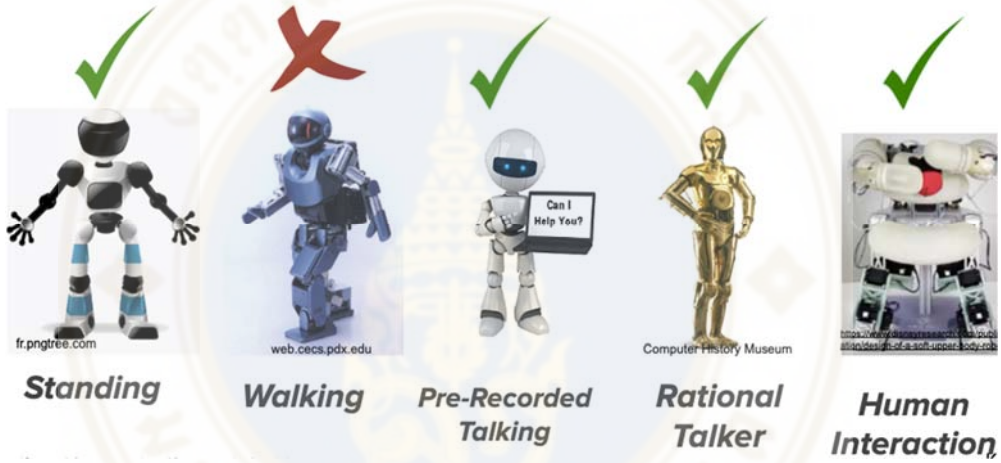


Figure 4.2 Potential features of robot required in the future in the theme park industry
Source: TSM team

4.2 Objective 2: Competitive analysis and business model of AA Calysta Robotics

4.2.1 Porter's Five Force Analysis of AA Calysta Robotics

The TSM team used Porter's Five Force Framework to analyze the competitive environment in the industry as shown in Figure 4.3.

The threat of new entrants – Weak force. In order to enter the market, high capital investment, both technical skills and financial support, is required. The companies must have strong knowledge in technology in order to build complex products like humanoid

robots. There are also a lot of works to build the brand to be accepted in the market since the products have high price, complex, and highly quality-concerned.

Bargaining power of supplier – Weak to Moderate force. There are high number of robot manufacturers in the market across the regions. The main features of the robots being used in the theme parks at the present are very common and similar. The differentiation among each supplier is not high. However, some supplier like Sally Corporation differentiate itself from other companies because Sally Corporation does not produce only the robots. Their products come with the service that they will design and create the dark rides in the theme parks. Moreover, the big player like Disney also has their own research lab where they can produce their own robots.

Bargaining power of buyers – Moderate to high force. The cost of creating robots is considered high, so before setting up the price too high, the buyers can become very sensitive and consider the other suppliers' products instead. The price is one of the main determinants the affect to supplier selection. However, the switching cost to other suppliers is also required. The theme parks may need a new software or system to fit the current systems. There are also many buyers or the small theme park where the suppliers can approach and sell the products.

Threat of substitute products or service – Moderate force. There is some number of existing robot producers in the market that the buyers can substitute with another producers. The producers do not offer the variety of products that can differentiate themselves from others. However, for the buyers' side, in order to change to other suppliers require switching cost, so it is not very easy to change to another supplier.

Competitive rivalry – High. There are already the main robot producers in the industry that are selling their products to the big theme parks. The competitors have strong reputation in the industry with high experience. The exit barrier is considered high because the producers have already invested a lot during the market entry. High exit barrier will make it very difficult for the producers to leave the industry resulting in no reduction of the competitors. New entrants can enter the market and increase the number of the competitors. The growth rate of theme park industry and robot for entertainment purposed is continuously increasing which make it no reason for the main players to exit the market.

The Figure 4.4 shows the industry attractiveness of the robot industry in theme park. The highest threat is competitive rivalry which means that the industry has high level of competitive among the robot manufacturers.

Figure 4.3 The Porter's five force of humanoid robotic industry in theme park

Source: TSM team

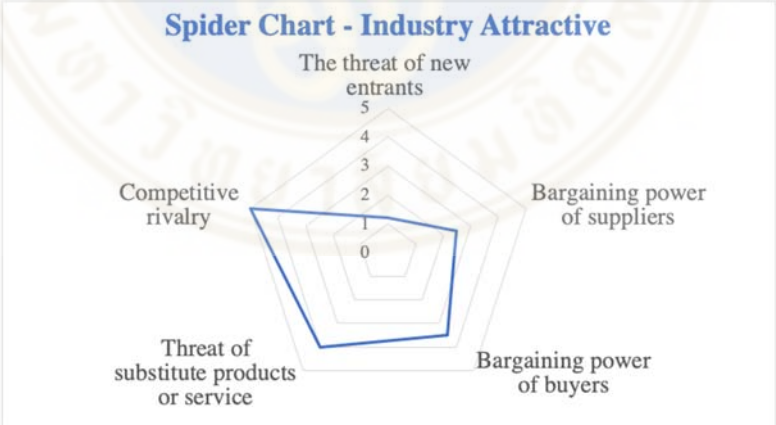


Figure 4.4 Spider chart of industry attractive of humanoid robotic industry in theme park

Source: TSM team

Based on the resulted of Porter's Five Forces analysis, there is the possibility of success in the industry. AA Calysta Robotics should enter the theme park market. However,

the company should try to find a way to differentiate its products because the high competitive rivalry mainly comes low level of product differentiation in the industry.

4.2.2 Current business model canvas of AA Calysta Robotics

The TSM team decided to select business model canvas framework to plan the company strategy as a starter. The data after the team did business model canvas provide the current situation of the company as shown in Figure 4.5. The TSM team saw that the main areas that AA Calysta Robotics does not well plan are key partners, customer relationship and channels. From the meeting with Mr. Jean-Claude, the CEO, the company has not planned yet on how they will develop relationship with their future customers and what customer service they will offer. Right now the company does not have website yet. Mr. Jean-Claude is planning to create AA Calysta Robotics website to be the main source where the company will attract customer apart from direct sales. Moreover, AA Calysta Robotics also plans to develop partnership with manufacturers. Right now the company has only few staff in the lab that for researching and developing the product. In the first phase, AA Calysta Robotics does not plan to build its own manufacturing factory.

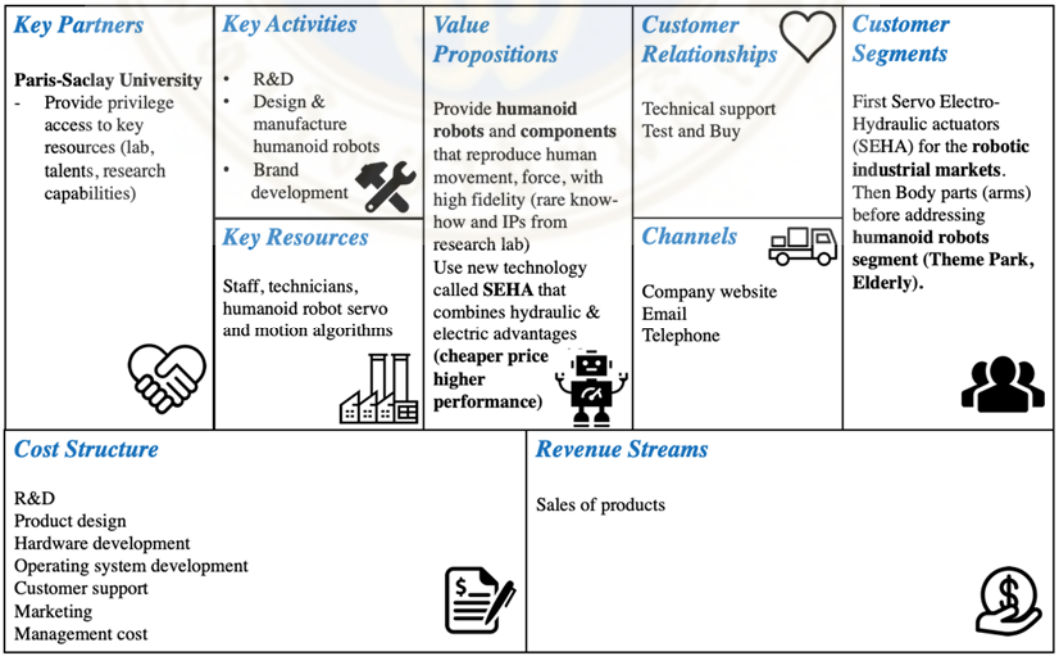


Figure 4.5 The current business model canvas of AA Calysta Robotics

Source: TSM team

4.2.3 New business model canvas of AA Calysta Robotics

The Figure 4.6 shows the new business model canvas of AA Calysta Robotics that the TSM team suggested to the company. Table 4.1 shows the comparison of current and new business model that are suggested by the TSM team. The new business model is designed for a long term plan (3 years or more) where the humanoid robots that used in the theme park are expected to have features of standing, pre-recorded talking, rational talker, and human interaction. The capability of AA Calysta Robotics at the moment cannot produce a complex humanoid robots. The company can only produce the humanoid robots with walking and standing features. Partnership with robot manufacturers can help AA Calysta Robotics to launch humanoid robots with more features.

There were 3 areas that the team had changed as follows;

Key partner: AA Calysta Robotics might try the way to reduce the capital investment cost physically by partnering with manufacturers. Both the company and manufacturer have know-how in robots. They can work together and share some beneficial knowledge and develop better products. AA Calysta Robotics might approach its indirect competitor like Sarner who is designing visual and audio system for the theme parks. Partnership with these companies would increase the opportunities for AA Calysta Robotics to gain new customers.

Customer Relationship: The TSM team scoped down on how AA Calysta Robotics could get new customers, retain them and expand the customer base. For new customers, the company might launch a special promotion and service for them, for example, the company might develop a prototype robot and give the customers to try first before they decided to purchase. In order to build the relationship and retain the their customers, AA Calysta Robotics might include technical support and personal care to its customers. A good quality of service is needed to come along with a good quality of product. To get new customers, the company might develop its social media channel and advertisement to create their brand awareness. At the moment, AA Calysta Robotics does not have its website. The company might have to create one to make its brand visible for another level.

Channels: The TSM team suggested AA Calysta Robotics to separate its sales channels into direct and direct sale so the company will easily focus and see where most of their customers come from. Then, the company can design its strategy and marketing to enhance their sales channels.

Customer segments: At the moment, AA Calysta Robotics has 2 products which are humanoid robots and SEHA. In this research, the TSM team would focus on only humanoid robots. Based on the information that the team had, there were many buyers and suppliers in the market. The team suggested that AA Calysta Robotics should not approach and focus on the theme park as its main buyers. The company should try to sell its product on both sides which were the theme park and the robotic manufacturers. AA Calysta Robotics' robots had cheaper price than many suppliers. This could be the company's competitive advantage. The TSM team also suggested that AA Calysta should target the proportion of its customer segments. For example, its first customer could be the theme park with 60% of total targeted customer and another 40% for robot manufacturers. Doing so would ease the company to answer that whether its main revenue comes from the main customer or not and it will provide the company's direction how to prioritize the importance of customers.

The new business model had been designed based on the reference case of the key players' strategies in the theme park industry that the TSM team had found. The TSM team had gathered the key players' information in the industry and made hypothesis to ensure that the new business model suggestion has a high possibility of success.

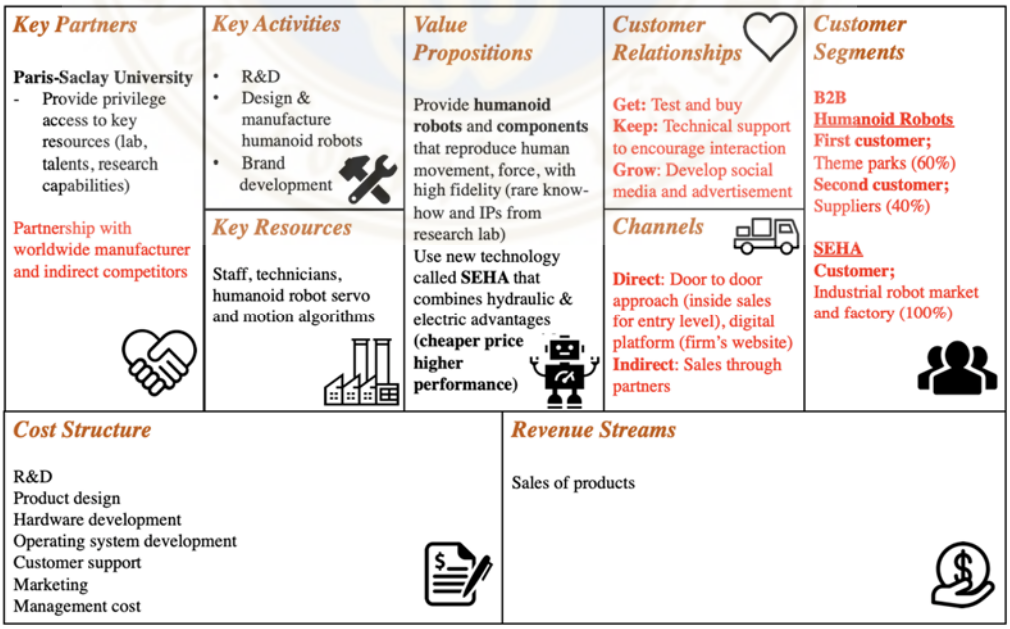


Figure 4.6 The new business model canvas of AA Calysta Robotics

Source: TSM team

Table 4.6 The comparison of current and new business model

Segments	Current Business Model	New Business Model (suggestion)
1) Key Partners	Paris-Saclay University	Partner with worldwide manufacturer and indirect competitors
2) Key Activities	R&D Design & manufacturing of humanoid robots Brand development	No suggestion
3) Key Resources	Staff Technician Humanoid robot servo and motion algorithms	No suggestion
4) Value Propositions	Provide humanoid robots and components Use new technology called SEHA (cheaper price with higher performance)	No suggestion
5) Customer Relationship	Technical support Test and buy	**Get:** Test and buy **Keep:** Technical support to encourage interaction **Grow:** Develop social media
6) Channels	Company website Email Telephone	Direct: Door to door approach, digital platforms **Indirect:** Sales through partners
7) Customer Segments	Humanoid robots for theme park industry SEHA for industrial robot market	**B2B** **Humanoid robot:** Theme park (60%) and suppliers (40%) **SEHA:** Industrial robot market and factory (100%)

Table 4.6 The comparison of current and new business model (cont.)

Segments	Current Business Model	New Business Model (suggestion)
8) Cost Structure	R&D Product design Hardware development Operating system development Customer support Marketing Management cost	No suggestion
9) Revenue Streams	Sales of products	No suggestion

Source: TSM team

4.3 Objective 3: Marketing strategy of AA Calysta Robotics based on the company's competitive advantages

The TSM team had suggested the marketing strategy to AA Calysta Robotics as shown in the Figure 4.7. The team selected to use 4Ps which consisted of 4 aspects as follow. The marketing strategy is also designed for long run project plan when AA Calysta Robotics can manufacture the humanoid robots with the features of standing, pre-recorded talking, rational talker, and human interaction.

Product: The main product of AA Calysta Robotics is humanoid robots than resemble human shape, movement, force and verbal communication together. AA Calysta Robotics created its humanoid robots with SEHA technology, the technology discovered by the team that mixed the advantage of electric and hydraulic technologies together. The humanoid robots that are produced by AA Calysta Robotics will have lighter weight and save energy. The assembly of SEHA into the robots is the competitive advantage of AA Calysta Robotics.

Price: The average price of AA Calysta Robotics' humanoid robot is USD 50,000. This price is considered lower than the market price as shown in Appendix A. The company aimed not to set its products at high price. Because of this purpose, the

company has to minimize its manufacturing cost as much as possible. The partnership with AI software and distribution can be one of the ways that the company can reduce its cost.

Place: There are 2 sale channels, direct and indirect sales. The company will produce the products based on order. There will be no stock on hand because the each humanoid robot in theme park will be unique. The direct sale will mainly come from door to door approach and through company's website. During the first entry level, the company may approach their potential customers directly. It could be from annual amusement park fair that held by IAAPA organization or from the direct contact. AA Calysta Robotics should also create its website, so that the customers will know more about the company and products. When the company gets bigger, the website could be one of the sale channels. For the indirect sales, the customers will come from the partnered companies. The indirect sales could create more chance to get new customers too.

Promotion: Creating brand awareness and building brand reputation are very important. AA Calysta Robotics can do it by PR or always making the information in social media and online advertising fresh. Partnership with a recognized companies can build up the company's reputation and create trust. Moreover, IAAPA annual fair can be the place where the company can show up and meet key buyers in the industry. Being IAAPA membership guaranteed that the companies have experiences and qualification in the theme park industry.

Table 4.7 The marketing strategy 4Ps of AA Calysta Robotics

Source: TSM team

CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

This chapter presents conclusions and recommendations from this study. The purpose of this study is to explore the market structure of the theme park industry, to see the potential market and business model of AA Calysta Robotic, and to provide recommendations on marketing strategy based on the company's competitive advantages.

5.1 Conclusions and Discussions

In this study, the TSM team has explored the current market structure of robot industry in the theme parks, analyzed the competition in the market, conducted business model canvas for AA Calysta Robotics, and provide recommendations to the company. The conclusions and discussions will be separated into 3 parts as follow.

Objective 1: Existing market structure of theme park industry and the robot used, who are the main players. Exploring the current market of robot used in theme parks is a new topic for both AA Calysta Robotics and TSM team. There are already a big amount of the existing key players in the industry, both buyers and sellers. The US has the biggest market by the attendance number. The humanoid robots are commonly used in the dark rides type in the theme parks. The robot features in the theme parks have some limitations. Standing, pre-recorded talking, and rational talker are the current robot features that many theme parks are using in the attractions. Walking feature is now not implemented yet due to the safety reason to humans. However, human interaction feature is predicted to be used in the future since the big player like Disney is now developing soft robot and the throwing bot.

Objective 2: Competitive analysis and business model of AA Calysta Robotics. The Porter's Five Force and Spider Chart that the TSM team conducted indicated that competitive rivalry has the highest threat. The competitors in the industry already have a strong brand reputation with experience. The TSM team also developed the business

model canvas for the company. The competitive advantage of AA Calysta Robotics is the price. The company can deliver high technology robots with cheaper price than some companies in the same industry. Moreover, the team recommended a new business model canvas to AA Calysta Robotics. There are 4 segments in the business model canvas that the team suggested to change which are key partners, customer relationships, channels and customer segments.

Objective 3: The marketing strategy 4Ps will help AA Calysta Robotics to plan the marketing strategies. The TSM team suggested that the area that AA Calysta Robotics should emphasize the most was the promotion to raise its brand awareness since the company is very new in the industry.

5.2 Recommendations

The team suggest that AA Calysta Robotics should enter the theme park industry. Even though there are big players in the market but the level of product differentiation is low. AA Calysta Robotics can partner with robot manufacturers and produce high features robots with cheaper cost which is the current company's competitive advantage.

The TSM team recommended AA Calysta Robotics based on the company's readiness. The practical recommendations for AA Calysta Robotics are divided into 2 ranges, short run (1-3 years) and long run (3 years or more) as follow.

Table 5.1 The practical recommendations

Ranges	Implementations
1) Short run	• Creating robots that have more interactive features like talking, playing or imitating gestures without the need to walk. • The TSM team did not suggest developing walking robot because of the safety reason. • AA Calysta Robotics should also focus on creating pre-recorded talking robot parts that were lifelike since theme parks were looking to add 'realistic' creatures to 'comfortably fool the masses'.

Table 5.1 The practical recommendations (cont.)

Ranges	Implementations
	• The TSM team had searched for the price of robots in the markets and found that based on AA Calysta Robotics' technology and competitive advantage right now, it could offer lower price robots than other companies.
2) Long run	• Develop interactive lifelike robots but more features like playing and rational talker that can interact with humans because Disney is currently focusing to create lifelike robots that can understand and behave like humans or their characters in order to replace actors from using costumes and bring Mickey and Goofy to life.

For managerial implication, the TSM team proposed that AA Calysta Robotics should not target the theme parks as its only key customer segment. The company should try to approach and partner with the suppliers who are producing robots for the theme parks. These suppliers may be interested to outsource their production to AA Calysta Robotics since the company can offer humanoid robots with cheaper price.

5.3 Limitations of This Study

Although Mr. Jean-Claude, the CEO of AA Calysta Robotics, had done some research about the industry but the company still need more data to gather. There are many limitations found in this study and listed as follows.

1. The TSM team did not have connection or any experienced advisor in this industry to consult with, so most of the information that the TSM team used in this study was very broad and it might not enough to do a deeper analysis.

2. Many organizations and companies were not willing to give some information through email and phone interview.

3. AA Calysta Robotics had just started to enter the theme park industry, so this study was considered the first step of the company as well. There was no clear

direction or strategy of the company which sometimes made the TSM team faced some difficulties to focus.

5.4 Future work

AA Calysta Robotics is very new in this market. There are several future works that the company has to conduct as follow;

1. AA Calysta Robotics has very little information in the industry in a deeper scope, for example, the market share, the main robot producers in this industry, or competitors' strategies. The company should do more research from other sources that are not from internet and articles. AA Calysta Robotics may hire consultancy to provide better information, so the company will go to the right direction.

2. AA Calysta Robotics needs more funds to operate its business. The company should look for the source of investment for investors to invest. This is very important because without financial support, the company cannot operate and hire professional human resources.

3. AA Calysta Robotics has to look for partnership and build its networks. Because the existing players in the markets already have their trading partners, it may be difficult for new players like AA Calysta Robotics to gain trust from buyers.

REFERENCES

Al Badi, K. S. (2015, January 12). The Dimensions of Marketing Mix. *Management and Organization Studies, 2*, 136-142.

Bajaj, S. (2017, September). *Industrial Robotics Market.* Allied Market Research. Retrieved from https://www.alliedmarketresearch.com/industrial-robotics-market

Broomfield, C. (2018, October 9). *Swisslog Healthcare and Savioke Introduce a New Fully Autonomous Service Robot (ASR) to the Healthcare Industry.* Retrieved from PR Newswire: https://www.prnewswire.com/news-releases/swisslog-healthcare-and-savioke-introduce-a-new-fully-autonomous-service-robot-asr-to-the-healthcare-industry-300727834.html

Business to you. (2016, August 3). *Porter's Five Forces.* Retrieved from Business-to-you: https://www.business-to-you.com/porters-five-forces/

Collins, A. (2019, July 3). *BUSINESSExcellent Growth in Robot Market 2019 | Current Trends and Future Demand 2026 | ABB, Automation, Ecovacs, EFFORT Intelligent Equipment, Estun Automation, FANUC.* Retrieved from News Exterior: https://newsexterior.com/excellent-growth-in-robot-market-2019-current-trends-and-future-demand-2026-abb-automation-ecovacs-effort-intelligent-equipment-estun-automation-fanuc/10067/

Crawford, M. (2016, September 14). *Top 6 Robotic Applications in Medicine*. Retrieved from ASME: https://www.asme.org/topics-resources/content/top-6-robotic-applications-in-medicine

Eastern Daylight Time. (2019, June 27). *Amusement Parks & Arcades: Global Market Opportunities & Strategies 2019-2022.* Retrieved from Business Wire: https://www.businesswire.com/news/home/20190627005837/en/Amusement-Parks-Arcades-Global-Market-Opportunities-Strategies.

Garg, S. (n.d.). *Types of Theme Park Rides*. Retrieved from https://www.academia.edu/9442251/Types_of_Theme_Park.

Global Industry Analysts. (2015). *Amusement and Theme Parks*. A Global Strategic Business.

Goi, C. L. (2009, May). A Review of Marketing Mix: 4Ps or More? *International Journal of Marketing Studies, 1*, 1-15.

Gonzalez, C. (2017, October 27). *What's the Future Role for Humanoid Robots?* Retrieved from Machine Design: https://www.machinedesign.com/motion-control/what-s-future-role-humanoid-robots.

Grand View Research. (2018, November). *Amusement Parks Market Size, Share & Trends Analysis Report*. Grand View Research. Retrieved from https://www.grandviewresearch.com/industry-analysis/amusement-parks-market.

Granta Automation. (n.d.). *Advantages and Disadvantages of Industrial Robots*. Retrieved from Granta Automation: https://www.granta-automation.co.uk/news/advantages-and-disadvantages-of-industrial-robots/.

Hertzfeld, E. (2019, January 31). *Japan's Henn na Hotel fires half its robot workforce.* Retrieved from Hotel Management: https://www.hotelmanagement.net/tech/japan-s-henn-na-hotel-fires-half-its-robot-workforce.

Humanoid Robot Market worth 3,962.5 Million USD by 2023. (n.d.). Retrieved from Markets and markets: https://www.marketsandmarkets.com/PressReleases/humanoid-robot.asp

IFR. (2018, October 18). *Global industrial robot sales doubled over the past five years.* Retrieved from IFR International Federation of Robotics: https://ifr.org/ifr-press-releases/news/global-industrial-robot-sales-doubled-over-the-past-five-years

Indrawan, M. I., Adil, E., & Rossanty, Y. (2016). A Business Model Canvas: Traditional Restaurant "Melayu" in North Sumatra, Indonesia. *Business Management and Strategy, 7*, 102-120.

Infinium. (2018, April). *Humanoid Robot Market: Global Industry Analysis, Trends, Market Size and Forecasts up to 2024.* Retrieved from Infinium Global Research: https://www.infiniumglobalresearch.com/ict-semiconductor/global-humanoid-robot-market

Isoraite, M. (2016). Marketing Mix Theoretical Aspects. *International Journal of Research - Granthaalayah,* 25-37.

Kwan, C. (2019, September 13). *Softbank to open a cafe run by Pepper robots.* Retrieved from ZDNet: https://www.zdnet.com/article/softbank-to-open-a-cafe-run-by-pepper-robots/

Lucarobotics. (n.d.). F*irst humanoid robot (history of humanoid robots).* Retrieved from Luca Robotics: https://www.lucarobotics.com/blog/first-humanoid-robot

Marr, B. (2019, March 8). *5 Major Robotics Trends To Watch For in 2019.* Retrieved from Forbes: https://www.forbes.com/sites/bernardmarr/2019/03/08/5-major-robotics-trends-to-watch-for-in-2019/#233727145650

Martin. (2014, August 5). *Understanding the Marketing Mix Concept - 4Ps.* Retrieved from Cleverism: https://www.cleverism.com/understanding-marketing-mix-concept-4ps/

Mishra, A., & Kumari, S. (2018, May 23). *Military Robots Play a Pivotal Role as a Tactical and Operational Tool for Armed Forces*. Retrieved from Market Research.com: https://blog.marketresearch.com/military-robots-play-a-pivotal-role-as-a-tactical-and-operational-tool-for-armed-forces

Mitrasinovic, M. (2016). *Total landscape, Theme parks, Public Space.* New York, USA: Routledge.

NASA. (2012, February 2). *What Is Robonaut?* Retrieved from NASA: https://www.nasa.gov/audience/forstudents/5-8/features/nasa-knows/what-is-robonaut-58.html

Newswire, G. (2019, January 22). *The robot revolution: Five trends in 2019 and beyond.* Retrieved from Globe Newswire: https://www.globenewswire.com/news-release/2019/01/22/1703570/0/en/The-robot-revolution-Five-trends-in-2019-and-beyond.html

Nuseir, M. T., & Madanat, H. (2015). 4Ps: A Strategy to Secure Customers' Loyalty via Customer Satisfaction. *International Journal of Marketing Studies, 7,* 78-87.

Pagliarini, L., & Lund, H. H. (2017). The future of Robotics Technology. *Journal of Robotics, Networking and Artificial Life*, 3(4), 270-273.

Pikkemaat, B., & Schuckert, M. (2007). *Success factors of themeparks - An exploratorystudy.* Tourism: An International Interdisciplinary, 55.

Porter, M. E. (1979). *How Competitive Forces Shape Strategy*. In Harvard Business Review. Harvard Business Review.

Pour, B. S., Nazari, K., & Emami, M. (2013). The effect of marketing mix in attracting customers: Case study of Saderat Bank in Kermanshah Province. *African Journal of Business Management,* 3272-3280.

Reuters. (2019, June 4). Humanoid Robot Market Size, Share, Report, Analysis, Trends & Forecast to 2026. Retrieved from Reuters: https://www.reuters.com/brand features/venture-capital/article?id=116615.

Interact Analysis. (2019). *Robotics - Market Research and Insights.* Retrieved from https://www.interactanalysis.com/robotics.

Mordor Intelligence. (2018). *Robotics Market - Growth, Trends, and Forecast (2019 - 2024).* (2018). Retrieved from: https://www.mordorintelligence.com/industry-reports/ robotics-market.

SoftBank Robotic. (n.d.). *Nao6*. Retrieved from SoftBank Robotics: https://www.softbank robotics.com/emea/index.php/en/nao.

Thabit, T. H., & Raewf, M. B. (2018, March 1). The Evaluation of Marketing Mix Elements: A Case Study. International *Journal of Social Sciences & Educational Studies, 4*, 100-109.

Tobe, F. (2017, July 10). *Robotics industry growing faster than expected.* Retrieved September 2019, from The Robot Report: https://www.therobotreport.com/ robotics-industry-growing-faster-than-expected/.

Walan, D. A. (n.d.). *Anti-Submarine Warfare (ASW) Continuous Trail Unmanned Vessel (ACTUV) (Archived).* Retrieved from DARPA: https://www.darpa.mil/ program/anti-submarine-warfare-continuous-trail-unmanned-vessel.

Wolfgang, M., Lukic, V., Sander, A., Martin, J., & Küpper, D. (2017, June 14). *Gaining Robotics Advantage.* Retrieved from Boston Consulting Group: https://www. bcg.com/publications/2017/strategy-technology-digital-gaining-robotics-advantage.aspx.

APPENDICES

Appendix A: Humanoid robot features and prices in the market

Pepper (height 121 cm)
Manufacturer: SoftBank Robotics.
Features: recognize faces and basic human emotions, engage people interaction with touch screen. 20 degrees of freedom for natural and expressive movements.
Price: 1,500 EUR
http://www.mashingrobotics.com/aldebaran-unveils-pepper-personal-emotional-robot/

HRP-4 (height 151 cm)
Manufacturer: Kawada Industries, INC.
Features: robot that can coexist with humans (for safety and more interactive technology), research and development purpose, lift a maximum weight of 0.5kg, talking, walking, understand and turn towards the speaker
Price: 222,000 EUR
https://www.mashingrobotics.com/thirteen-advanced-humanoid-robots-for-sale-today/
http://global.kawada.jp/mechatronics/hrp4.html

RoboThespian (height 5'9 or 175 cm)
Manufacturer: Engineered Arts
Features: Movement, talking, emotion display on the face, dance
Price: £59,000.00 (67,905.65 EUR)
https://www.engineeredarts.co.uk/robothespian/