FACULTY OF
COMPUTER
SCIENCE

UNIVERSITAS INDONESIA
Veritas, Probitas, Iustitia

GROUP ASSIGNMENT 1
PROBLEM ANALYSIS and REQUIREMENT IDENTIFICATION
(2-3 students)

I. Goal:
a. Student is able to perform root-cause analysis using fishbone diagram
b. Student is able to suggest solutions related to information systems development according to the result of root-cause analysis

II. Instruction, Submission, Deadline:
a. Make a group of two or three students to work on this assignment
b. Please write **complete identity information (class, name, npm)**
c. Deadline **Monday**, **5 October 2020, 08.00 AM** (**Softcopy**)
d. Format softcopy:
    [GA1]-[Class]-[NPM]
    Example: GA1-A-160978291-160978292
e. Please write the **task assignment** for all group members at the end of your answer sheet.
f. **Softcopy** will be submitted to available submission box in Scele.
g. Late submission of coursework is **only accepted in the same day**, but penalty will be applied, result in **20% deduction of the total score.**
h. Indication of **plagiarism** will result in **zero mark.**
i. Write the references (if any)
j. Each member of group must **submit peer review form** (BORANG KELOMPOK) via SCELE (**no later than one day after deadline**, see drop box for deadline).

III. According to the Case Study in the next section, answer the following questions:
a. As a business analyst, define the problem and perform **root-cause analysis** using **fishbone diagram** to picture the problems faced by **Port Aventura.**
b. According to your analysis, what is/are **potential systems** you might propose to be developed by Port Aventura to re-establish its business? List **functional and non-functional requirements** for the proposed systems. Map the requirements to each type of basic IS type (**TPS, MIS, and EIS**).

IV.   Case Study

From Theme Park to Resort: Customer Information Management at Port Aventura

It was Saturday, 23 May 2009, and the weather forecast predicted a clear, sunny day. With the Spanish school year having just ended, it was one of the first days of a large influx of visitors to Port Aventura. The resort was operating at full capacity. It was past noon, and Fernando Aldecoa, Director of Finance at Port Aventura, was on watch duty, walking through the park. Watch duty had been implemented as a practice a few years prior and affected all managers and directors who rotated duties – once every 4 weeks – spending an entire day inside the theme park. Watch duty didn't end until the last car left the parking lot. It was recognized as hard but extremely useful in order to 'live the business': walking through the theme park, attending shows, eating at the restaurants, and visiting the golf courses and hotels. In short, it put managers in the customer's shoes.

Fernando walked by one of the areas of the amusement park known as China, one of the five focus areas in the park in addition to Mediterrania, Polynesia, the Far-West and Mexico. The China area recreated the landscape and the buildings of the Asian giant. China is also where the biggest attraction in the park is located: the Dragon Khan rollercoaster. In the vicinity of latter, Fernando had agreed to meet Mercedes de Pablo, Managing Director of the resort, who was also on watch duty that day.

Both had agreed to meet for lunch and they headed to La Hacienda restaurant, located in the Mexico area of the park. On the way to the restaurant they consulted their smart phones which indicated the number of visitors who were then inside the park as well as forecasts at closing and a comparison of these figures with the daily budget estimates made by the Planning Department.

'What a day!,' commented Fernando. 'If we have 31,000 visitors now, we'll reach 36,000 with afternoon ticket sales. I think Planning has hit the target again.'

Meanwhile, Mercedes looked around her. The way she was dressed was peculiar, with her smart phone in one hand and a walkie-talkie dangling from her belt, as well as the fact that she wasn't sweaty. But it wasn't as peculiar as the eight guests who line up before her. They were wearing pleated pants, immaculate polo shirts and ID tags from a well-known insurance company.

'I believe next year's budget is ambitious given the current crisis,' commented one of them.

'Yes,' replied his partner. 'But the chance to implement our national expansion program can represent a great leap forward for the company. We have to be ready.'

Mercedes was listening to the conversation when Fernando said, 'They rented the Chinese theatre for the day and are presenting the company's strategic plans for the coming years. They've brought together all the territorial delegates and the department heads, which should be around 200 people. The general manager comes here every summer with his family. He lives near Tarragona. He's a regular customer. He wanted to bring his entire team here to give a different feel to the meetings they hold every year.'

'When we inaugurate the convention center,' continued Fernando, 'we'll be able to hold a greater number of corporate events and offer differentiating services.'

'What makes us different,' replied Mercedes, 'is that they can spend the rest of the day in the park, enjoy the rides, carry out group activities, spend all day outdoors; in short, they can work and really disconnect at the same time!'

'Fernando,' commented Mercedes, 'I've been thinking about the different types of customers we currently have. I think it's time we got to know them a little better.'

'We've been adapting our commercial strategy to the different customers,' replied Fernando. 'We have park customers, hotel customers, golf course customers, and corporate customers who hold events. The Sales Department is doing a great job of knowing them better: they conduct surveys, they know the customer segments by nationality, age, length of stay by park zone, family units y They even know if the customers have liked the rides or not! We know the customer profiles very well and we are doing a great job of adapting to them.'

'I am not referring to the work of the Sales Department.' said Mercedes. 'What I mean is that we don't need averages, majorities or standard deviations. We need to know each customer! Where do they eat? How much do they spend? Do they stay at the hotels? Do they come to the park 5 times every season? Do they play golf? We have to be able to recognize them when they arrive at hotel reception. And then, send them an e-mail when they return home in order to know if they enjoyed their stay. And, in addition, we need to send them a greeting on their child's birthday. Are you following me?'

'Mercedes, look around you. How many of these visitors' names do we know? Maybe 5 or 10% perhaps? It's difficult to know every customer. The technologies we have weren't designed for that. We're not a bank! And you're not only talking about knowing their names, but also their preferences, their opinions, how much they spend y,' replied Fernando.

'We have to reach a point where we know all the corporate event participants and be able to offer them special deals so they come to play golf here. We have to make sure they know about the hotels and then bring their families on vacation. Another example is customers who have season passes. I can't believe that we don't know which season pass-holder comes the most during the year, or which one has eaten most often in our restaurants. We should have some details about some of them!,' responded Mercedes.

'We have that type of information,' replied Fernando. 'But the volume of information this generates is huge, and we are still devising ways to collect it. Right now we're considering different application scenarios that could help with this type of cross-cut view you've mentioned. But on the other hand, we want something that will serve for the whole resort. Customers who have season passes are a small group.'

While passing through the different dining areas and tables he was thinking about what Mercedes had requested. 'Perhaps we do need to know our customers better, but is it possible? Is the information we have reliable? Which customers do we start to work on? What changes should we apply to our current information systems?'

PORT AVENTURA HISTORY

In the mid-1980s the Walt Disney Company (Disney) had plans to build a theme park in Europe similar to those they already had in the US. Many European countries, including Spain, had approached Disney about setting up the park in their own countries. In 1988 Disney decided ultimately that the park would be located on the outskirts of Paris.

The Catalan Government did not relent in its determination to build Spain's first theme park in Catalonia. To this end they contacted Anheuser Busch, owner of the Busch Gardens theme parks, about building a park in Catalonia together with a consortium of Catalan companies. In 1992, and with an investment of approximately 300 million euros, construction began on the park. Construction lasted approximately two years, and, on 1 May 1995 the park named Port Aventura located in the province of Tarragona in northeast Spain and approximately 100 km from Barcelona was officially opened. At the outset, the theme park was organized into five different thematic areas: Mediterrania, Polynesia, China, the Far-West, and Mexico (Figure 1). Each of these areas had at least one outstanding ride, though the star was the Dragon Khan rollercoaster, whose peculiar shape formed the park skyline.

Since its inauguration, the park's management policy was to continue investing in new rides and other attractions and expand the park. In mid-1998, after having carried out major renovations on the majority of park attractions, the park accepted an offer from the American company, Universal Studios, to become a shareholder in Port Aventura in order to build its European holiday destination. After the arrival of Universal Studios, the park continued its development plan and built two 4-star hotels and a water park, the Caribe Aquatic Park. The theme park, together with the hotels and the water park, was to be the first major Universal Studios Resort in Europe and it was renamed Universal Mediterrania. In 2004, Universal Studios sold all its shares of Universal Mediterrania to the financial institution La Caixa (www.lacaixa.es) who became the maximum shareholder (La Caixa controlled 80% of the stock). But by contract and in exchange for a fee, Port Aventura was guaranteed continued commercial exploitation of the Universal brand and its products and technology.

In order to adjust to seasonal adjusted demand, Port Aventura continued promoting shows. Likewise, it continued to invest in new rides and consolidated the supply of new business lines: three golf courses, a convention center, a shopping mall, and hotels. In 2008 Port Aventura had 3.7 million visitors (see the Appendix). The visits were divided among: Port Aventura theme park (3.3 million visitors), the Caribe Aquatic Park (260,000 visitors), the Beach Club complex (60,000), and the hotels with 250,000 visitors who generated 780,000 overnight stays. These numbers represented sales of 166 million. At that time, Port Aventura had nearly 4000 employees.

The successive park enlargements and future projects had changed the initial park idea (Figure 2), by changing the types of customers, as well as their behavior and the type of stay.

PORT AVENTURA ORGANIZATION

Since taking over as Managing Director in 2004, Mercedes de Pablo focused on imprinting her vision of an integrated resort throughout the organization. Accordingly, she designed an organization that enabled the different departments to provide service to the diverse business lines (park, hotels, golf courses, and events).

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Mercedes created the 'Analysis and Strategic Planning' area as part of the Commercial Management department. This new area would centralize the management of park revenues. For instance, they decided and set pricing and resort commissions: the price of a day ticket (h44 in 2009), the price of each overnight stay (which varied daily on the basis of the actual and estimated occupation), park food prices, commissions paid to agencies and tour operators, event prices, etc. Accordingly, Commercial Management integrated and coordinated income generation, the sales processes and the packaging of services for all the businesses at Port Aventura.

With this same global vision Mercedes de Pablo also restructured the Operations department into areas tied to the diverse service lines and responsibility: shows, restaurants, shops, entertainment and park operations (admissions, parking, and cleaning), and hotels. Each group was specialized in the operational management of an area, from the processes and procedures to recruitment and training, thus promoting specialization and rotation regardless of the business to which they provided service. For instance, the hotel restaurant resources were able to exchange positions with the park or golf restaurants on the basis of needs since they all had a single manager, Restaurants & Food Services.

The support areas were structured into: Human Resources, responsible for carrying out hiring and the specific training for many of the park's areas (each summer requires more than 3000 employees when the park is operating at full capacity); Technical Services, responsible for preventive maintenance and emergency repairs; Legal and Central Services, in charge of general purchases and legal and logistics management; Administration and Finance, responsible for providing back-up support to billing and the deployment strategy, implementation and maintenance of the information systems; and Resort Development, whose goal was to have a holistic view of the projects that were part of the park's expansion process, maintaining this view beyond the park's day-to-day operations.

COMMUNICATIONS WITH THE CUSTOMER

Port Aventura's media plan had always been characterized by its targeting of mass media communications channels (television, newspapers, radio, and outdoor advertising). On a segmented basis, promotional campaigns (basically discounts on prices) were carried out focusing on large collective groups (Carnet Jove, LaCaixa, Coca-Cola, etc.). Most of the promotional campaigns involved a call-to action (902 telephone number) and the product Hotel + Ticket.

The significant publicity efforts were concentrated on opening and low visitor months such as March and April, and in the autumn and winter using the appeal of Halloween and Christmas. The Halloween and Christmas shows were new proposals intended to adjust to seasonal adjusted demand and extend the season until December. On the other hand, they also attempted to lengthen the visitors' stay during the same day, introducing fireworks, nightclubs, and discos.

In the more recent years Port Aventura had put more emphasis on viral communication campaigns via the Internet, but the exploitation of one-to-one communication channels (e-mail and telephone) remained low and was limited to those members who had become fans of Port Aventura by registering on the corporate website. Accordingly, the Marketing department faced the enormous challenge of having to gather and exploit the maximum amount of customer information possible in order to know the customer better and implement personalized services.

KNOWLEDGE ABOUT THE CUSTOMER

This need to know the customer better led the Marketing department to use customer data obtained at the different contact points – that is, hotel reservations and check-in. And, when this was not sufficient, they adopted strategies to obtain new information from entry and exit surveys (some 200 daily) and, recently, obtaining visitor 'migratory movements' inside the park and hotels by giving a Global Positioning Systems (GPS) to specific customers. By exploiting the information that Port Aventura already had and with the support of market analysis consulting specialists, they were able to identify different behaviors, profiles and origins, which were structured into 13 resort customer clusters.

However, although identifying the various clusters was a first step, the sales and marketing areas had always expressed regret over the low traceability of the information since it was impossible to link each of the clusters to specific individuals. The surveys were anonymous, and the process of obtaining information from personal data (hotel reservations and check-in) was incomplete or inaccurate – for instance, a lack of complete information on all family members and no contact information such as e-mails – thus limiting their ability to offer specific and personalized promotional campaigns. As the Sales Director added, 'The most reliable information that we have is from the Clients Club – customers with season passes. However, the new businesses that we are launching will change our customer structure, and we have to know the customer better.

INFORMATION SYSTEMS

The Port Aventura Information Systems Department (IS) was part of the Administration and Finance Management department led by Fernando Aldecoa. Robert Magi, Director of IS, commented that he had seen the growth of the resort since its beginnings. His 14 years of experience had enabled him to follow the evolution from theme park to resort as few within the organization had. During his experience at Port Aventura, Robert had adapted the information systems to each of the changes the company had decided to implement, adopting the strategy of looking for reliable, robust, and flexible tools for the changing environment to which he had become accustomed.

In 2009 the IS department had three sub-areas:

- The 'infrastructure' team, responsible for the installation and maintenance of hardware and communications – data and voice – and for providing support to infrastructure equipment – that is, PCs, network devices, reprography equipment, etc. In 2009 this sub-area had nine employees.
- The 'administration and exploitation of information systems' team was responsible for the operation and administration of the central servers and databases. This sub-area had nine employees.
- And the 'information systems team' was responsible for the design, planning, development, and maintenance of the applications required by the business areas (see **Exhibit 5**). The nine employees in this sub-area were specialized by application. Hence, they tried to implement applications with a high degree of standardization in order to outsource their management and maintenance.

INFORMATION SYSTEMS ARCHITECTURE

Port Aventura was one of the pioneers in the sector to implement SAP R/3. Port Aventura decided to undertake this innovative project in 1995 in order to lay the foundations for back-office administration in the future and thus provide a solid base for the integration of future applications. They implemented various modules: Financial Accounting, Controlling, Sales and Distribution, Human Resource, Materials Management, Investment Management. In 2009 the SAP application had 260 users.

The IS architecture in 2009 (see **Exhibit 5**) was characterized by a hospitality management tool (Prestige),which was running in all the resort's hotels and reservations center (or 'contact center'). Prestige allowed for the integrated management of hotels, from the reservation process and guest management (room assignments, allocation of rooms, check-in process, charges management, and billing) to the internal management of the hotel (house-keeping and maintenance control, etc.). Maintenance and updating of Prestige was outsourced to an IT partner.

Another of the key applications for resort management was Galaxy. Galaxy supported the sales and printing of park tickets and read the bar codes at the park entrances which included 20 turnstiles. With the introduction of Galaxy in2005, Robert Magi was able to develop an agile ticketing system using various sales channels (ticket office at the park, agencies, and Internet) and, at the same time, exercise greater control over the visitors since Galaxy, by reading the bar codes, allowed the company to know the type of entry: day, afternoon, second consecutive day, free pass, season pass, etc. and the time of entry. Galaxy also provided real-time information about park visitors via smart phones to all operations managers and area directors, as well as providing daily attendance forecasts prepared by the 'Analysis and Strategic Planning' area, and daily maximum attendance estimates based on forecast calculations made by a custom-made application.

Other resort applications included: Concept Golf, used to manage the three golf courses; the Clients Club which was a database of customers with season passes; Store flow, used for the sales in shops and restaurants at the resort; the 'Website fans,' application on the Port Aventura website for those who wanted access to contents and offers that matched their preferences; Presence, used to manage the contact center; and the Surveys database which contained the results from the surveys conducted with customers at the resort.

In view of the variety of applications needed to cope with the different resort activities, one of Robert Magi's main concerns was how to integrate the applications in order to encourage single management at the resort and to remove the intra- and inter-business barriers that might be perceived by customers. In that sense, Robert had led several projects such as the development of hotel room keys that allowed entry into the park through the access turnstiles, payment in the park's shops and restaurants, payment of golf course fees and, of course, access to their hotel rooms.

Each of the company's systems was geared to the operative specialization of each of the different areas. The following are the different applications, the departments in which they are used, and the approximate number of users of each application.

GATHERING CUSTOMER DATA

Clients Club

During 2008 approximately 35,000 season passes were sold. There were three available types: Silver, Gold (customers who held a Silver Card for 4 years) and Platinum (including golf). The prices ranged from h130 (Silver/Gold Card) to h330 for a Platinum Card. Buying a season pass allowed unlimited access to park facilities, free parking, shop and restaurant discounts, subscription to a bi-monthly magazine called Port Aventura, and attendance to exclusive events (movie sneak previews, children's workshops, gymkhanas, etc.). The market for this product was concentrated in the provinces of Tarragona and Barcelona and was geared towards families with children.

The Clients Club information was very precise because, in order to acquire a season pass, customers had to go to booths located at the park entrance and, later on, in urban centers of the main cities to which the product was focused (Tarragona, Reus, and Vilaseca) at the start of each season (February-March). At each booth, registration and payment forms were filled in and clients provided the data needed to link season passes to family groups. The sales process through the registration form allowed Port Aventura to obtain high-quality data: personal information, contact data, and family group, all of which were very welcomed by the Commercial department. At the same time, however, at the Commercial department they were aware of some customers' complaints regarding the slowness of the renewal and payment procedures for their season passes through the website. Every year customers buying season passes had to follow the same process as if it were their first year.

In addition to the registration form, Clients Club members were recorded in the Galaxy application each time they entered the park, in the Prestige application when they made a reservation at a hotel and in Store flow when they bought something inside the park (they had to swipe their season pass through a point of sales terminal in order to obtain the Clients Club discount). However, none of the applications (Galaxy, Store flow and Prestige) were able to cross-reference information with the Clients Club database, as the only reports generated by these systems were limited to aggregated sales volume by product type (they knew how many Clients Club members had entered the park that day, but not who).

Hotel

The process of obtaining customer information at the hotels varied depending on the moment in which the data were generated.

- Reservations: The high dependency on travel agents and tour operators limited the volume and quality of information received. Oftentimes, the information was adjusted to only what was strictly necessary in order to reserve a room. Reservations were done through the contact center where operators (approximately 40)responded to calls from travel agencies and introduced the information received by fax from tour operators. In order to expedite administrative tasks with these intermediaries (travel agencies and tour operators), the company decided in early 2007 to implement a communications systems that allowed the intermediaries to reserve a room directly in the Port Aventura system through a web interface. The main problems with managing reservations through contact center operators stemmed from the need for agility in making

reservations, agility which often required entering customer data again without previously looking up the customer's historical information. This limited the possibility of identifying repeating customers and made it more difficult to make queries on the customers' historical records. Additionally, and in order to reduce the dependence on intermediaries, the team that managed the reservation website attempted to enhance direct booking through a webpage from which they could analyze the ideal type of information to request and evaluate the quality of the information received.

- Check-in: The check-in process was also influenced by tour operators: the unloading of buses, massive check-ins, and the need for agility and flexibility led to the execution of a pre-check-in service which expedited the issuance of hotel keys and park entry tickets as quickly as possible.

Finally, the knowledge about the hotel customers' behavior in the park was limited to global data provided by Galaxy (park entry but not when the customer left the park since there are no exit turnstiles with bar code readers) and some data derived from room charges while staying at the park (a service only used by 3–5% of all hotel customers).

Park

The theme park consumers generated the most revenue and continued to do so even after the park expanded and launched its diversification plan. Park consumers generated 3 of every 4 euros invoiced by Port Aventura. However, the park customer data, which were generated from Galaxy, were limited to global data by ticket type sales and to aggregated data on sales generated in shops and restaurants. Within this context, the Marketing department became interested in conducting surveys inside the park as well as at both the entrance and exits. Through these actions they could identify geographic origins, family units, length of stay, and different levels of satisfaction inside. However, they still had no personalized information by customer in order to implement personalize services.

Golf

The three golf courses were inaugurated in 2007. In the development of the strategy for the golf courses and the deployment of the Golf Concept application, Port Aventura management took the opportunity to implement some data gathering processes geared towards increasing customer data accuracy. At the resort level, golf customers had certain specific characteristics such as their golf handicap, their preferred tee time, etc. This information needed to be known by the rest of businesses as well as the golf customer contact points within Port Aventura so as to provide the desired integral service.

Fans

The people who were interested in staying informed about specific content and promotions according to their preferences could register on the Port Aventura website. When registering, fans had to introduce their name, surname, Spanish national identity card or passport number, email address, and physical address. Port Aventura verified these data and stored the information in the fan database.

NEXT STEPS

As Mercedes and Fernando left the restaurant, Fernando thought about the next steps. The request for more knowledge about the individual customers that Mercedes had just made and the Marketing department's desire to implement one-to-one forms of communication required making changes to Port Aventura's information management processes and systems. To support the one-to-one marketing approach, the company needed to set some priorities and answer several questions: which information management processes should they change? What changes should they introduce into the company's working roles? Likewise, given the different degrees of completeness and accuracy of customer data, should the company target all customers at once or should it start working on specific segments? Furthermore, any changes to the information management processes would require adapting the information systems. However, should the company replace its existing information systems with a new, integrate done or should it opt for a data warehousing solution that would enable it to consolidate the data from the diverse systems? Fernando took his smart phone and sent an e-mail to Robert Magi: 'Robert, let's meet at 9.00 a.m., on Monday, May 25th. We have to define an implementation plan for the new one-to-one marketing strategy at Port Aventura.'

APPENDIX

EXHIBIT 5: RESORT STRUCTURE IN MAY 2009