PalArch's Journal of Archaeology of Egypt / Egyptology

STRATEGIC IMPLEMENTATION OF INFORMATION SYSTEM (IS) TO CREATE BUSINESS VALUE –A CASE STUDY ON AIR ASIA

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Shreya Singh, Sujata Joshi: Strategic Implementation of Information System (IS) to Create Business Value –A Case Study on Air Asia -- Palarch's Journal Of Archaeology Of Egypt/Egyptology 17(6). ISSN 1567-214x

Keywords: ERP, Information System, Competitive Advantage, Business Value.

ABSTRACT

In the past decade, there has been a lot of emphasis on information collection, storage, and distribution processes within an organization. However, the creation of business value through the adoption of information system strategies has been questionable and a major topic for research.

The objective of this research paper is to critically analyse how Air Asia, a leading low fare airline, has been strategically implementing Information System (IS) to produce business values.

The paper involves a qualitative analysis of secondary research data gathered from different sources and assessing it to meet the research objective. The analysis of the secondary research is based on four elements, Information System implementation methods, various information systems implemented at Air Asia, business values created through these systems, and creation of competitive advantage for the firm.

This study will help managers gain insight as to how an efficient IS when strategically implemented can create competitive edge..

1. Introduction

"A strategic information system planning is the process of creating a long-

range plan of computer-based applications to enable an organization to achieve its goals".[1]. IS empowers the exchange of experience, which circulates the necessary data to the management levels to have an advantage over the competitors since it influences the dynamic to improve the quality of services offered and empowers decision making. Therefore,[2] said that it is natural for businesses to ask their employees to share significant information so that the information capital can be utilized efficiently.

Information Systems are crucial to the activities and the executives of every organization. Managers putting resources into IS are keen on the advantages they get to the business [3]. The complex nature of present-day Information Systems makes it hard to decide the best situation for the decision-makers, a circumstance which is aggravated due to the absence of accurate analytics tools that assist in the interpretation of Information Systems characteristics into business value[4].Even though businesses have different information systems since they have changing data needs, they all strive to gain competitive advantage through consistent improvement, re-assessment of the adequacy and effectiveness of their business information systems.[5]

Objective of the study:

Investment in strategic information systems (SIS) is presented by several authors as one of the many important way for firms to seek competitive advantage [6]. This paper stresses the benefits of IS. Three fundamental assessment techniques that can be utilized to evaluate the business benefits of Information Systems are Experiments, Case studies, and surveys [7]. The Case study method examines the use of the systems in anindustry/Organization. In this paper Information system capabilities at Air Asia are studied. To date, Air Asia has implemented various Information Systems. The paper studies the implementation method of these IS and the business value created by them.

2. Literature Review

As defined by Gartner IT Glossary [8], ever since the beginning of globalization, the value of information to businesses has brought success and new opportunities to businesses around the world. The revolution in information systems has demanded special attention as both cause and effect of the organizational transformation[8].An enormous amount of focus was put on how organizations can reconceptualize their utilization of IT assets to help them reach their key strategic objectives. In the 1990's several initiatives were taken in the Asia Pacific region for research and innovations in Information Systems. The establishment of the Association for Information Systems (AIS) in 1994 and the commencement of the Pacific Asia Conference on Information Systems (PACIS) in 1993 were the significant driving forces in the advancement of Information Systems Asia Pacific[9].

Assurance of financial returns from IS investments has been a prominent topic for exploration. Several papers have stated various concepts and studies to illustrate the benefits of IS implementation. Numerous endeavours have been made to recognize opportunities for the conventional development of strategic

systems as a tool to gain competitive advantage. The first step to developing a Strategic system through conventional IS was to study the cause and effect of IS in different business areas. To recognize the tangible and intangible advantages of IS usage, different speculations were made over the impact of IS on business execution, business procedures, and areas that are being influenced by it[10]. Because of business elements and complexities, aligning IS to the business's strategic objectives has seemed, by all accounts, to be a concern for scientists and experts in the course of the last few years[11].Several researchers also tried to develop conceptual correlations between business values and IS implementation. For instance, Eugene F. Bryan [12], in his paper focussed on the different strategies that can be taken up for IS investments.

Various case studies give a thorough understanding of how IS implementation has brought about a change in the organization's workflow and provided business benefits. Service-based organizations like Amazon use Information frameworks, business systems, and e-CRM as a lively instrument in achieving the upper hand over competitors.[13]Mesfine Industrial Engineering (MIE) Pvt. Ltd. a huge unparalleled electromechanical designing and metal development organization in Ethiopia has its ERP arranging group and related to the group an operational specialty unit (OBU) which is liable for actualizing, working on changes and preparing[14].Information Systems also enabled organizations to optimize processes and in reducing the duration of sub-processes to achieve the planned result, [15]used a case study grounded in business process change theory, their exploration attempts to comprehend the components that lead to the success or failure of ERP ventures.

2.1 Airlines Information systems:

The use of Information systems in the airline industry has also been kept as a focus of the research by a few researchers. In a research conducted by Marks et al[16]. Airport Display Information Systems were found to be successful in maximizing space, increasing customer satisfaction, and generating new revenue opportunities. Marks et al also reviewed - landside airport information management systems and their connections and interoperability with other systems.

A vast majority of these researchers have either built upon concept around business benefits through Information Systems, came up with ways to calculate and evaluate these benefits, studied and analysed different IS strategies or frameworks and addressed how a firm leveraged a particular IS a technology. In this paper, we tend to evaluate how the IS strategies at Air Asia helped them in gaining their core competencies.

2.2 Information Systems and business value

“AnInformation systems (IS) is an integrated environment of the hardware, software, peoples which mainly functions to collect and process data to valuable information by applying a list of procedures on data collection, this information is derived from data by IS procedures, and clears the difference

between data and information." The data is raw materials and the information is the resultant data of processing [17]. There has been an enormous amount of focus on IS implementation in organizations in the last decade. Information Systems helps organizations gain business value. "IT business value is the organizational performance impacts of information technology at both the intermediate process level and the organization-wide level and comprising both efficiency impacts and competitive impacts" [18].

The implementation of an information system and leveraging the IS technology can bring several business values to an organization like increases operational productivity and transform operational processes. Information systems also help in identifying solving existing problems and shortcomings within a business. After the implementation of IS like enterprise resource planning systems(ERP), both tangible as well as intangible benefits might influence business performance in some or the other way.

2.3 Information Systems Implementation Approach

Iimplementing an information system is a complex and extremely structured process that leads to the seamless integration of IS software within the organization's day to day workflow and structure or an individual end-user. Efficiently implementing new software-based solutions is a necessity for organizations as neglecting it could bring down the value of the Software-based solution as well as waste invaluable resources of the organization. The different approaches which are taken up for implementation of IS software are discussed below.

2.2.1 Direct Approach

In this approach, the new software is directly installed in the organization replacing the old one on a particular date. Once the new software is installed there is instant discontinuance of the previous software. This approach is popularly called as the "Cold turnkey" way.

This method is employed when the following parameters are taken into consideration –

1. The old software/system is obsolete and insignificant.
2. The New system is easy to install and easy to use.
3. There are fewer risks involved in directly implementing the new system.
4. The construction and manufacturing of the new system are inexpensive.

2.2.1 Parallel Approach

The new system and the current system work corresponding to one another(parallelly), in this methodology a date is fixed on which the more current system would stop, and the new system will exclusively work. This is an expensive method because of the need of duplicating facilities for both the systems and a trained person to maintain both the system.

2.2.2 Modular Approach

This approach is synonymous with the "Pilot approach". The implementation of the new system in the organization takes place on a piece-meal basis. There

are various advantages to this approach.

- In case the new system fails to work the effect of the failure is localized.
- The major problems with the new system can be identified earlier and corrected.
- The operating personals can be trained even before the system is installed at their location

2.3.4 Phase-In Implementation

This approach is like the "Pilot approach" but it differs because the segmentation in this approach is performed on the system itself rather than the organization. The following advantages which this approach enables are –

- The rate at which the organization changes can be minimized.
- Data processing resources can be acquired gradually.

The system, however, exhibits certain disadvantages such as increased cost to develop an interface with the older system and limited applicability.

3. Research Method

The paper involves a qualitative analysis of secondary research data gathered from different sources and assessing it to meet the research objective. The analysis of the secondary research findings is based on four elements, compiled research regarding Information System implementation methods, the various information systems implemented at Air Asia, the business values created through these systems, and how these business values offered a competitive advantage to the firm.

Three fundamental assessment techniques that can be utilized to evaluate the business benefits of Information Systems are Experiments, Case studies, and surveys. The Case study method examines the use of the systems in anindustry/Organization. In this paper Information system capabilities at Air Asia are studied. To date, Air Asia has implemented various Information Systems. The paper studies the implementation method of these IS and the business value created by them

4. A Focus on Air Asia

4.1. The Airline Industry

The Airline Industry has been extremely competitive especially since the last decade; the industry is expanding rapidly both domestically and globally. In the beginning, the industry was partly owned by the government but in recent years large scale privatization has taken place. Privatization has led to a drastic increase in the number of Air Service Providers. In India, it was in 1994 that the air corporation act allowed private operators in the airline and the aviation industry.

The 3 paramount operations of the airline industry are listed below –

- International Flights – This service carries passengers across the borders of the country
- National Flights – This service is for domestic travel of passengers

- Cargo – Service provided to carry goods and services

Asia Pacific Airlines carries an overall market share of 34% global passenger market and 37% global cargo traffic. (Association of Asia Pacific Airline, 2017). AirAsia acquires a market share of 4.20% in the Asia Pacific Region. Refer to Figure. 2 for ranking and market share of different airlines operating in the Asia Pacific region.

Table 1. Top 20 airlines in the Asia Pacific region with their Market share in Asia Pacific Region (Source – Blue Swan Daily, 2019

Rank	Airline	Total	Percentage Market Share
1	IndiGo	1,605,980	13.50%
2	Lion Air	777,154	6.50%
3	AirAsia	737,464	6.20%
4	Jetstar Airways	521,215	4.40%
5	Thai AirAsia	502,275	4.20%
6	SpiceJet	487,050	4.10%
7	VietJet Air	459,930	3.90%
8	Spring Airlines	453,726	3.80%
9	Cebu Pacific	444,216	3.70%
10	Citilink	334,800	2.80%
11	GoAir	296,976	2.50%
12	JEJU air	291,060	2.40%
13	Lucky Air	290,382	2.40%
14	Beijing Capital Airlines	275,820	2.30%
15	Thai Lion Air	262,096	2.20%
16	Scoot	240,123	2.00%
17	China United Airlines	233,640	2.00%
18	Nok Air	204,520	1.70%
19	West Air	198,246	1.70%
20	Jin Air	187,746	1.60%

4.2. History of AirAsia

The Airline was established in 1993 and the operations finally commenced in 1996. Air Asia was initially established by an government possessed conglomerate. Be that as it may, on December 21 the indepted carrier was bought by Tony Fernandes, A previous Time Warner Executive. The Airline went through a massive turnaround and returned profits in 2002 and launched new routes.

AirAsia opened its second hub at Senai International Airport, near Singapore and launched its first-ever international flight to Bangkok in 2003, following this it commenced flights to Indonesia, Macau, Mainland China, Philippines, Vietnam, Cambodia, Brunei, and Myanmar. With a simple slogan "Now Everyone Can Fly" has been persistently working to develop a strong information system and has strategically used it to optimize air ticket prices and

maximize revenues. It has successfully placed itself as the first successful low-cost airline in the south Asian Region. In Malaysia, Air Asia is the second most powerful national airline. Air Asia is one of the successful businesses that have adopted cost leadership through effective operational management.

Apart from that, AirAsia with its sister airline AirAsia X, which was established in 2007 provides high frequency as well as point to point network flights.

4.3. Present Scenario

Air Asia has been awarded the world's best low-cost airline for the 11th successive year by Skytrax, World Airline Awards. The Airline has reached a market share of 43% in its home market Malaysia in 2018. The Kuala Lumpur airport (Klia2) is AirAsia's main hub and is operating in 25 countries. Air Asia has 275 aircraft, in 8 airlines traveling to 159 destinations across 23 Markets. Approximately 100 million passengers have flown annually and the total number of passengers exceeds the mark of 6 00 million. The Airline Operates over 11,000 flights flying per week on over 387routes, including 107 unique routes. AirAsia has been persistently working to make itself a "Data First" business(Refer to Figure 2 to understand Air Asia goals, priorities, and skills focus), AirAsia has been putting data Science and Google Cloud skills to use on the below framework to reach its objectives.

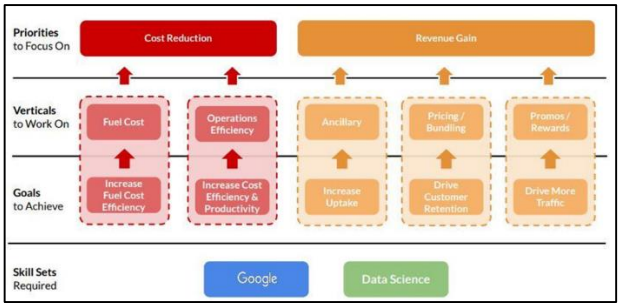

Figure 1. AirAsia Priorities, Goals and Skill Set Required for 2020 (AirAsia Corporate Presentation, 2020)

4.4. AirAsia Competitors

The peak 10 competitors of AirAsia incorporate the Malaysian Airlines, Cebu Pacific, IndiGo and Citylink'sMalindo Air, Jetstar, Garuda Indonesia, SpiceJet, EasyJet and SilkAir. In total, these airlines have cumulatively raised over 929.3M between their estimated 93.3K workers. AirAsia has 22,000 workers and is positioned second among its best ten rivals.

5. A deep dive into the various Information Systems at Air Asia

5.1. Customer Relationship Management (CRM)

AirAsia's fast-developing market came across as a challenge for the airline, but this challenge was conquered by an innovative approach. AirAsia utilized digitally transforming innovation to oversee client fixation which is the focal point of AirAsia's progressing achievement. Salesforce has played a key role in this advanced change. Salesforce helps AirAsia in getting a total perspective of its customers over all channels, permitting the carrier to offer quicker and easily customized services introduced a single Channel Approach. Before CRM arrangement, AirAsia had 6 call centers in distinct areas and accessed

web forms on an assortment of communication channels. Because of this the airline that developed silo thinking that had put the duty on the client to utilize the correct channel for communication, for the correct request in the correct area. This led to shuffled queries and long reaction time from AirAsia. It was then that AirAsia Deployed CRM Service Cloud to bring clients correspondence channels into a solitary stage. Improving consumer loyalty incorporates two significant determinants which are reduced wait time and personalized travel experience, the latter requires definite customer information to come up with better decisions. This detailed data comes from various information systems deployed at AirAsia. CRM system assists the airline is focusing on trends and the behaviors of guests by personalizing and optimizing the customers' needs and wants. It integrates data from different platforms into a single platform which is monitored by AirAsia's command center. At the command Centre, CRM dashboards are used for live tracking of data and instantly identifying trends that are occurring, this also includes looking at tweets coming through social studios.

AirAsia's CRM system provides detailed data about customers which in turn provides deep knowledge and with that knowledge, the airline works on processes, projects, and systems to improve customers' experience.

5.1.1 CRM Benefits

The innovations derived through CRM deployments include things like integration of WeChat in AirAsia's communication channels to connect better with its customers in China. CRM allowed the development of successful chatbot, which reduced the load on the Chat Support Teams. It leads to the introduction of facial recognition to upgrade passenger stream at the air terminal.

CRM has helped AirAsia in efficient rollouts and enhancements. The ongoing enhancement of the system is assisted by an on-site CRM team. This has brought agility to the business. The online learning platform – Trailhead – the online learning platform has helped the airline with ongoing developments within the organizations.

5.2. Advanced Planning & Scheduling (APS)

The operational environment within an airline is complicated. There are large networks of supply chain, constant daily operations, various external and uncontrollable variables, and uncertainties such as government regulations; weather conditions, etc. which start affecting the performance of an airline. Due to these complexities' operations, planning, and scheduling play an important role in determining the success of an airline by organizing activities with customers and suppliers' requirements. APS system assists the airline in the various distinct functions like classifying customers' orders, forecasting future requirements and their fulfilment, tracking resource availability, and sending order priorities. Moreover, it assists AirAsia in securing competitive advantage by improving its visibility across the value chain and upgrading its strategic and operational performance, specifically in the inbound and

outbound activities.

The implementation of APS must lead to the development of new functions to AirAsia. These new capabilities which can help AirAsia in improving its performance incorporate - Event Management Technology, APS helps AirAsia in testing suppliers performance, and giving the ability to smooth out the monitoring procedure [19]. APS has enabled the use of supplier portals these portals help in providing information to the airline as well as suppliers to mitigate any errors during operational activities. APS has provided AirAsia with inventory planning, maintenance management, demand forecasting capabilities. PS Systems also help airlines in analyzing planning the most optimal route.

5.2.1 The Strategic Benefits of implementing APS

The paramount strategic benefit of APS system is visibility across the whole supply chain [20]- The major advantage of using the Advanced Planning System is increased visibility across the value chain. APS enables improved connectivity throughout the supply chain this assists in cross-functional scheduling and collaborative planning with suppliers and customers. APS system ensures all the processes within the supply chain works together in integrations. The application of APS systems allows AirAsia to undertake a process-driven methodology - recently most businesses have moved their strategy from being product-driven to process-driven, APS helps in
improving the process execution inside an association. Price is the most affecting component in AirAsia's Strategy the focus on process-driven methodology and APS framework helps AirAsia in reducing its operational expense by utilizing data created by the Yield Management System. APS systems allow the airline to optimize its flying routes, The APS system analyses distinct flying routes and goes for the most optimal one offering optimal profits. For the analysis, APS systems consider various parameters like a geographical limitation, hauls, etc.

5.3. Customer Reservation System (CRS)

AirAsia deployed a CRS from Navitaire, the software is named Open Skies, it enabled AirAsia to become the first-ever ticketless airline. The CRS excelled in four major fields -ticketless technologies which were customer-centric, ancillary Sales, on-demand reporting, and Direct Sales. In 2019, AirAsia renewed its agreement with the airline software manufacturing company, Navitaire. Under the terms and conditions, AirAsia has deployed the company’s advanced loyalty, ancillary, and reservation platforms, which also include digital, merchandising distribution, and departure control. Today, AirAsia has emerged to be one of the largest LCC in Asia. The Computer Reservation System has supported AirAsia in the carrier’s growth by increasing the number of aircraft and expanding to key regions such as Southeast Asia, Japan, India, and China in the coming years. The Information System (IS) has aimed to focus on high-growth and low operational cost model by providing functions, or solutions which will help to serve customers in

innovative ways. With its Customer Reservation System, AirAsia looks forward to positioning the organization for sustainable and long-term success.
Key Features in New Skies include - GDS booking in traditional as well as enhanced way. CRS Supports various GDS participation levels and offers immediate and direct credit card settlement. New Skies allows Advanced Distribution Controls – this feature enables real-time flight fare audits, the capability to control distributor access as well as pricing via customer rules. One of the new features in New Skies is codeshare booking it allows carriers to expand the network through this feature. It also enables airline partnerships, including check-in and interline baggage check options.

5.3.1. Benefits of CRS System at AirAsia

CRS Systems provides seamless mobile-ready travel experience and assists in utilizing real-time data in all business aspects. CRS has been effective in increasing Customer Retention Rate –it increases customer loyalty
through personalized experiences and promotions across the distribution channel and allows to optimize revenue opportunities –by offering any type of ancillary a customer wants at all customers' touchpoints.

5.4. Yield Management System (YMS)

"Yield management is defined as the techniques used to allocate limited resources among a variety of customers to optimize the total revenue or 'yield' on the investment capacity" [21]. In the airline industry, the restricted resources are the seats on a future flight, and the assortment of passengers is business and leisure travelers.Within the context of the airline industry, yield management can be split into two distinct tasks: overbooking and managing discounts. Air Asia has embraced a basic air ticket fare structure on the time value relationship for seats. In General, the prior the traveler books the ticket the less expensive the fare is. There is a sum of 12 price buckets; each charge bucket is evaluated according to AirAsia's Specification. The initial tier of buckets is for the price-conscious travelers, the travelers can buy tickets on that cost only if they book the flight very
early. The middle tier fare buckets target the captive market. Once the revenue generated through the air tickets is sufficient to make up for all the operational costs of that flight the YMS moves to the top tier of fare bucket. This is when the prices start to increase.
Air Asia's yield management team constantly test each fare bucket to get the maximum revenue from each flight. One of the key responsibilities of a Yield management system is the use of overbooking; usually, airlines overbook the fight so that in case there are any last-minute cancellations then the airline does not miss upon the revenue. In case of overbooking, the airline overbooks a flight, and if passenger's turn-up in a larger number then they send some customers through another flight. A YMS constantly collects fare price data and use strong analytics tools to shift from one fare bucket to another to maximize revenue.

5.4.1 The business benefit of YMS

YMS helps the airline in revenue optimization – this is done by identifying opportunities for revenue generation. YMS brings the advantage of advanced analytics with accuracy tools to assist decision making. The data gathered from YMS Assists in making more profitable decisions and provides real-time insights from multiple data sources that enable the airline to manage thousands of flights simultaneously. YMS enables the airline to react to changing market dynamics – YMS provides multiple flight level inventory control in real time, revenue critical flights can be managed through time-saving systems. Different reporting tools provided by YMS makes it easy for the management to analyze integrated data and take decisions accordingly.

5.5. Enterprise Resource Planning (ERP)

An ERP system is used to streamline different processes within an organization for the frictionless working of the organization. An ERP system facilitates the day to day management. AnERP system has been put to use by various firms in an attempt to upgrade business operations. The performance of business operations can be operationalized to gain financial advantages by the organisation, operational enhancements for the organization., or intangible gains for the organisation [11]. AirAsia ERP System is provided by a leading ERP provider, Oracle.

5.5.1 Business Benefits of ERP implementation

The business benefits through an ERP system are multiple one of the main benefits delivered by ERP System is enabling integration between distinct business lines and allowing standardization: AirAsia's different business lines are linked with one another to facilitate smoother activities and improve dynamic. The ERP cloud arrangement conveys current best activities and empowers AirAsia to normalize forms in procurement and account capabilities. Revenue Accounting and Operational Systems are integrated, ERP Cloud solutions and AirAsia's current business frameworks help AirAsia with a sole source of data collection across finance-related and procurement processes, this supports a situation of transparency inside an association. ERP enables Direct Operating Cost Controls; Enterprise Performance Management (EPM) Cloud helps AirAsia in managing and improving worldwide accounts reconciliation. Because of EPM, AirAsia can characterize, survey, publish financial information, management information, and administrative reports.

ERP provides strong Data Models to compute and analyze Route Contribution and Profitability, EPM and ERP solutions to assist in providing key business analysis and reporting to help improve dynamic and drive business development. It also assists in reconciling cross-currency data – ERP systems can help finance teams in handling cross-currency transactions smoothly which is a complex job for an airline that operates in 25 markets across Asia, Australia, the Middle East, and the US. ERP solution helps AirAsia in simplifying standardizing and automating financial operations.

6. Conclusion

It turns out from the analysis that AirAsia has implemented several information systems that assist it in day to day processes as well as in major decision making. Most of the advantages of information systems like YMS and ERP helps the airline in reducing cost and optimizing revenue and profits. The efficiency of these systems allows AirAsia

- to be a price leader in the airline industry. In the present, to ensure that data is collected and leveraged efficiently AirAsia is incorporating innovative technologies and services that capture, report, and process data to change it into meaningful insights.

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