

Analyzing the Impact of Enterprise Resource Planning (ERP) Application to the Business Operations in SIA Engineering (Philippines) Corporation

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Abstract: - Technology significantly affects the company performance by increasing revenue, improving customer service, minimizing operation costs, reducing waste, and maximizing production. In this modern age, software technology plays a vital role in the Maintenance, Repair and Overhaul (MRO) organization and airlines to support their operational needs in tracking, monitoring, planning and reliability review to their aircraft fleet and materials. Well-established Maintenance, Repair and Overhaul (MRO) organizations use state-of-the-art facilities and technology to address the above needs. In this research, the researchers analyze and evaluate the impact of Enterprise Resource Planning (ERP) Application to the operations in SIA Engineering (Philippines) Corporation to determine if there is a positive outcome in implementing Enterprise Resource Planning (ERP) software.

Key Words: — *Maintenance, Repair and Overhaul, Enterprise Resource Planning, Airlines, Technology, Software.*

I. INTRODUCTION

To survive, thrive and beat the competition in today's brutally competitive world, one has to manage the future. Managing the future means managing information. In order to manage information, in order to deliver high quality information to the decision-makers at the right time, in order to automate the process of data collection, collation and refinement, organizations have to make Information Technology (IT) an ally, harness its full potential and use it in the best possible way [1].

Enterprise Resource Planning (ERP) refers to large commercial software packages that promise a seamless integration of information flow through an organization by combining various sources of information into a single software application and a single database [2].

Today, businesses are striving for integration. Organizations are also transforming their processes to meet demands by becoming more flexible, adaptable, and efficient. Not only is accurate and up-to-date information needed, success in business today entails a seamless flow in supply chain, excellent customer relationship management, and capabilities to carry out electronic commerce. Traditionally, separate units were created within an organization to carry out various tasks, and these functional areas would create their own information systems thereby giving rise to systems that were not integrated. ERP strives to provide a solution to these problems [2].

Most firms — often those with significant in-house IT expertise to combine various software products — opt to adopt only elements of an ERP system and construct an external interface to other ERP or stand-alone systems to meet their other application needs. For instance, one may choose to employ one vendor's human resource management system and another vendor's financial systems, and then undertake the integration between the systems. This is typical of retailers, with even a mid-sized shop having a distinct Point-of-Sale (POS) goods and financials application, followed by a series of specialized apps

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to handle business requirements such as warehouse management, employee management, merchandising, and logistics.

Despite the vast resources needed for their implementation, enterprise resource planning has significant benefits that include increased productivity, better positioning of the organization in the long-term, and expansion of the revenue base. In the aviation industry, these benefits allow for a reduction in the cost of the fares hence better customer experience (Khan & Faisal, 2015). As the aviation industry grows in the exponential rate, ERP seeks to help organizations when it comes to integrating the integration of the manufacturing management, discrete production, human capital management, electronic data interchange, entire supply chain and improvement in the overall quality management (Flouris & Oswald, 2016). While these systems have been adopted at an increasingly fast rate, very little attention has been directed to the factors that drive or put off the utilization of the systems in the aviation sector [3].

For this study, the researchers aim to analyze and verify if there is a positive effect and long-term impact in implementing Enterprise Resource Planning (ERP) to SIA Engineering (Philippines) Corporation to improve organizational performance.

II. LITERATURE REVIEW

ERPs are deployed to optimize organizational effectiveness and the overall significance and main purpose of ERP investments, is to improve control over key organizational and business processes. However, multiple studies (Brynjolfsson and Hitt, 1996; Poston & Grabski, 2001; Nicolaou et al. 2004; Hitt et al. 2002; Hunton et al. 2003; Matolcsy et al. 2005; Esteves, 2009; Velcu, 2007; Elragal & Al-Serafi, 2011) reveal contradictory results as to whether such expected benefits have materialized. Esteves (2009) argued that in the recent years, SMEs are in a better position to acquire and implement ERP systems, which in the past were only available to larger corporations due to financial barriers as well as other limitations. Today, SMEs have many options for implementing ERP packages with the promise of adding business value, which in turn would translate into efficiencies and optimal operational performance [4].

Although implementing an ERP system has significant benefits, doing so successfully is a challenge. ERP systems are highly complex and require a comprehensive risk strategy;

moreover, they are very costly and have a high failure rate even under ideal circumstances [5]. According to Zhang et al. [6], on average, ERP projects were 178% over budget, took 2.5 times as long as projected, and delivered only 30% of the planned benefits. In addition, many barriers appear that affect successful implementation, including substantial organizational problems such as employee resistance to change [7, 8, 9]. As a result, each organization's decision to implement an ERP system is a challenging one.

Over the last 10-15 years, organizations have been in growing numbers, turning to ERP (Enterprise Resource Planning) systems to consolidate their information technology infrastructure, streamline business processes, and help them become more efficient and effective. The ERP software market has been very lucrative for both software developers as well as consultant firms. These systems are very large and complex, and as such, often require expert assistance for successful implementation [10].

III. OBJECTIVE

This study aims to the study aims to determine if there is a positive impact on engineering support staff and how it can support engineering staff, assist in tracking and monitoring materials, and improve the overall organizational performance of SIA Engineering (Philippines) Corporation.

IV. RESEARCH METHODOLOGY

The researchers used a qualitative approach to learn about the implications of integrating Enterprise Resource Planning (ERP) software on SIAEP's overall performance. In general, qualitative design is based on collecting and analyzing non-numerical data to understand people's ideas, opinions, and experiences.

As a result, the researchers utilized deductive reasoning in which the researcher defined the study's purpose, collected data through observation and interview, and then analyzed and interpreted the results. The information was collected, and observation took place between August to September 2021. All information through interviews were gathered from employees of SIA Engineering (Philippines) Corporation only.

The data were gathered by an interview questionnaire and observation. Due to the pandemic, we could not do face-to-face interviews, so the researchers created a questionnaire through the google form. The interview questionnaires were given

electronically via google forms which the respondents can access using their emails, and it consists of two parts. The first part is the demographic and personal company information of the respondents. The second part is their idea, insights, opinion, knowledge, experience and the effectiveness and efficiency of implementing Enterprise Resource Planning (ERP) software in SIA Engineering (Philippines) Corporation. In addition, a follow-up interview was gathered through messenger and WhatsApp for more accurate data.

The researchers obtain useable and valuable information by analyzing the data collected using Thematic Analysis. The researchers use MAXQDA software to gather an accurate and complete information from the interviewer’s and observer’s manuscript.

V. RESULTS AND DISCUSSION

This result ties nicely with previous studies wherein ERPs are deployed to optimize organizational effectiveness and overall significance to business operations. It shows that ERP software provides the planning, engineering, and logistics department with accurate, flexible, updated, and accessible information and reports to accomplish day-to-day objectives. Moreover, it increases monitoring and delivers convenience to tracking and monitoring materials and other possible resources by automating workloads and upgrading the centralized database system. Additionally, ERP offers real-time communication and coordination, thus, promotes increased productivity and timely and relevant success of operations to the organization.

The themes identified and sample responses of the interviews and observations are categorized in Table I based on the impacts of Enterprise Resource Planning (ERP) Application to the Business Operations in SIA Engineering (Philippines) Corporation.

Table.1. Results

Impact	Responses
<p>Convenient and Smooth Collection & Distribution of Data</p>	<p>“Collecting information is time-consuming for them, and occasionally, several errors are made while making quotations.” - Observer</p>
	<p>“Easy for us to find vendor and supplier. This is big help especially</p>

<p>Positive Impact: Useful and Efficient for the Employees</p>	<p><i>for us to find other resources.” – Tools & GSE</i></p>
	<p><i>“This will smoothen the system when relaying critical information to finance and operations.” – Marketing & Sales</i></p>
	<p><i>“Software that is entirely responsible for maintaining the information required for operations planning” - Observer</i></p>
	<p><i>“There will still be some human factors involved in this system, some discrepancies on the information will still be present.” – Marketing & Sales</i></p>
	<p><i>“Easy access for everybody.” - Logistics</i></p>
	<p><i>“Ultimately, this will have a domino effect for the performance of organization functioning in a systematic way.” – MTP1</i></p>
<p>Effective in Increasing accuracy and Productivity</p>	<p><i>“Workload simplification.” – FWD Planning</i></p>
	<p><i>“If weighing the benefits and its compatibility to its end users, it would be worth the risk.” - Finance</i></p>
	<p><i>“This will help SIAEP to accurately quote for certain tasks.” – Marketing & Sales</i></p>
	<p><i>“Any system software provides fast/accurate and reliable data.” - IT</i></p>
<p>Flexible and Adaptability</p>	<p><i>“Organize & Time Saving.” – DUC Ops</i></p>
	<p><i>“High impact on productivity.” – Tools & GSE</i></p>
	<p><i>“It can be flexible in terms of automating the workloads.” – FWD Planning</i></p>
<p>Flexible and Adaptability</p>	<p><i>“It is determined by the frequency with which the system is updated and monitored.” – Tools & GSE</i></p>

	<p><i>“ERP can be flexible to meet these needs.” - MTP1</i></p>		<p><i>“They have no knowledge of how ERP works, and other software that is capable of organizing and storing data.” - Observer</i></p>
	<p><i>“Supply Chain Management with real time capability to record, monitor actual inventory and gives notifications, and reports in a daily basis.” - DUC Ops</i></p>		<p><i>“For start-up business implementation challenges probably will not be the case but for companies who already does have their process and system operational, may take time to introduce ERP system and it needs all out support from the management down to their employees.” – DUC Ops</i></p>
Improvement in Business Operations	<p><i>“It will simplify and enhance the daily processes and systems both individually and the entire organization.” – FWD Planning</i></p>		<p><i>“Employees training so we can familiarize with this kind of system.” – Tools & GSE</i></p>
	<p><i>“Comprise security of data repository.” – MTP1</i></p>		<p><i>“Use of outdated system/database for data processing.” - Procurement</i></p>
	<p><i>“Same set up with Planning Department, Ground Support Equipment and Procurement Department.” - Observer</i></p>		<p><i>“Budget and training of the new software.” – MTP1</i></p>
	<p><i>“Will be helpful in advancing technology.” – MTP1</i></p>		<p><i>“No Experience.” - Logistics</i></p>
	<p><i>“Well as far as I understand with the concept explained it engages in all activities in a business perspective to connect, communicate, and coordinate each and every department concerned and related.” – DUC Ops</i></p>		<p><i>“Some sort of limitations in the software.” – FWD Planning</i></p>
			<p><i>“Integration would be one factor followed by implementation.” – DUC Ops</i></p>
Increased Monitoring	<p><i>“This will help to check the current inventory status of the company to avoid over purchase.” – Marketing & Sales</i></p>		<p><i>“There will still be some human factors involved in this system, some discrepancies on the information will still be present.” – Marketing & Sales</i></p>
	<p><i>“The software can only keep track of which tools are now in use and predict which tools may become available in the future.” - Observer</i></p>		<p><i>“Implementing a new system to a company can cause confusion into current system.” – Marketing & Sales</i></p>
	<p><i>“Reliable forecasting.” - Finance</i></p>		<p><i>“Difficult and costly to customize and implement and risky with regards to implementation failure.” - Finance</i></p>
	<p><i>“This will help to store historical data from previous checks.” – Marketing & Sales</i></p>		<p><i>“Endless upgrades to keep up with the trend.” - Finance</i></p>
Challenges in Implementation	<p><i>“Employees are resistance to change.” – MTP1</i></p>		

VI. CONCLUSION

The data shows that the idea of having a centralized and real-time database system is well received by the employees. The results indicate a positive impact in terms of support for engineering staff, assist in tracking and monitoring materials: and improve the overall organizational performance of SIA Engineering (Philippines) Corporation.

Implementing a well-designed Enterprise Resource Planning (ERP) system inevitably changes the way employees work and allows an organization to leverage a suite of integrated applications. Having ERP in an organization such as SIA Engineering (Philippines) can have a positive effect and long-term impact on organizational performance.

Based on the conclusions, this study believes that the necessary ERP strategies for improving productivity will be implemented thoroughly. Further research of ERP productivity improvement techniques could be done by future researchers for continuous improvement.

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