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An Empirical Study on ERP Travel, Trade, and Tourism Systems

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Abstract: In this paper, we present findings from a recently completed research about the use of enterprise resource planning (ERP) in travel, trade, and tourism businesses. Initially, we selected twelve existing travel, trade, and tourism ERP systems and preform practical analysis and testing of these systems via JMETER and Google chrome Lighthouse tools. In addition to that, an online survey was conducted (with an e-mail invitation and telephone call reminder) to collect data from three Pakistani Travel, Trade, and Tourism organizations. Furthermore, we adopted qualitative research practices by going through various research papers and research studies from journals, books, and internet, etc. This study is constructed on only secondary statistics. The goal of this article is to look at ERP systems in terms of their concept and use, as well as how they affect the modern travel business. An ERP system is a business system that integrates several corporate processes into a single database, such as supply chain management, manufacturing, financial management, and project management. ERP systems are utilized in a variety of businesses around the world, including in the manufacturing and service industries. Across a range of industries, service firms have recently spent significant resources on the implementation of Enterprise Resource Planning (ERP) systems to improve the efficiency, cost-effectiveness, and quality of service operations. To assist them to build their businesses, the travel, trade, and tourist industries all rely on an integrated information network. The work focuses on only one industry i-e Travel, Trade, and Tourism. This may limit the applicability of its broad conclusions to other industries or industries. The findings of this study compare and contrast the ERP implementation challenges faced by existing organizations of travel, trade, and tourism companies. This is the first empirical study on the difficulties surrounding ERP installation in travel, trade, and tourism companies. It is also the first study to compare ERP adoption in multiple companies in the areas of travel, trade, and tourism.

Keywords: enterprise resource planning ; survey; travel; tourism; lighthouse; jmeter

1. Introduction

The ERP system enables organizations to integrate all major business processes to increase efficiency and remain competitive. However, without successful system implementation, the expected benefits of increased throughput and economical advantage will not be realized. By its basic definition, ERP is an enterprise-wide information system that integrates and controls all business processes across an organization. Enterprise Resource Planning (ERP) systems are enterprise information systems for integrating and optimizing business processes and transactions within an enterprise. ERP is an industry-oriented model and system that is widely acknowledged by the enterprise and organizational industries as a working solution for achieving integrated enterprise information system solutions. ERP systems have become an important strategic tool in today's competitive commercial environment. The ERP system expedites a smooth flow of mutual real-world material and practices throughout the organization. Moreover, it escalate supply chain production and lessens delivery time. Though,

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without top administration support,effective project management, proper trade plans and visions, user involvement, education organizations training and business process redesign can take full advantage of these multidimensional systems, Otherwise there are risks of failure on successful implementation of ERP system in an organization [1].

ERP systems are often implemented to address the organizational impediments of information coordination due to the application of legacy systems. These legacy systems are usually difficult to maintain and provide older solutions that no longer meet the needs of the organization. The literature suggests that the new ERP system will improve the coordination of information by integrating the flow of data between different departments. Previously, I was working in a "silo" due to the absence of system integration. Accurately carefully chosen and implemented ERP systems offer benefits such as reduced cost, process time, customer service, financial management, faster transaction processing, improved operational performance, web-based interfaces, and more effectiveness. Communication is included. [2].

The ERP system has also received a great deal of attention in academic research. Much scientific research has been carried out into the implementation and use of ERP in Western countries [3–6]. Conducted their studies on ERP implementation against national cultures in Asian countries[7–9]. Despite extensive research on the ERP system, the literature has failed to provide meaningful empirical data on ERP implementation in Travel, Trade, and Tourism industry. The majority of ERP research in Asia is conducted through personal experiences or case studies, and data on ERP implementation in Asia is scarce. Furthermore, no comparison of ERP implementations across countries has been established in the literature. As a result, the primary goal of this research is to contribute to a better knowledge of ERP deployment in the travel, trade, and tourism industry. The results of a survey on ERP installation in Pakistani travel, trade, and tourism companies are presented in this publication. Pre-deployment procedure, deployment experience, ERP system configuration, benefits, and future direction are all included in the survey results.

The rest of the paper is organized as follows: Section II discusses the literature review, and section III included the Research gap and research problem. Section IV discusses the objective of this study. Section V discusses survey methodology. In Section VI analysis of existing travel, trade, and tourism ERP systems via testing tools has been performed. In section VII quantitative research- online survey conducted, survey analysis and results are discussed in detail. In section VIII qualitative research has been discussed, while the conclusions and the future recommendations are provided in the last section.

2. Literature Review

There have been various studies on ERP implementation and numerous associated problems such as implementation techniques, business processes, and results. Although these studies discuss many important issues in detail, also supplier/development team selection and implementation strategies such as internal development or system outsourcing, ERP system research in travel and commerce is still in its infancy.

Of the different services, the tourism and hospitality industry is one that, due to its transience in nature, is very dependent on an integrated information network that plays a critical success factor in strategic inventory sales management. ERP solutions help to solve this problem by providing a single, complete database for the entire business, as well as real-time connectivity between different operations and full integration of the front, middle, and back offices in the tourism industry. The integrated ERP systems allow for better management and minimization of losses caused by ineffective reconciliation, duplication, and potential delays, resulting in better overall service performance for customers [10].

Inventory reduction and improved communication with suppliers and customers are the primary benefits of ERP execution, as are the impact of Enterprise Resource Planning (ERP) Systems on business performance and the key contributing factors to the relationship between ERP systems and business performance. According to the findings, as business users have stated, many business performance

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improvements have been achieved since the introduction of ERP, but some of the previously associated benefits have not been fully realized. This shows that the ERP system has a positive impact on a company's performance. [11]. The performance of ERP systems was examined, and it was discovered that customer satisfaction rose when ERP systems were implemented [12]. ERP has also been shown to save money [13]. Inventory data is integrated with sales, financial, and human resources data in ERP systems, allowing businesses to generate financial statements, price products, and manage material, human and financial resources[14].

In today's market, process improvement is vital to any company's success. It is critical for any company to appropriately identify the processes that need to be improved. Identification of key performance indicators is part of the process improvement path. The effectiveness of ERP systems was investigated, and it was discovered that when ERP systems were introduced, customer satisfaction increased [12]. ERP has also been proved to save money [13]. ERP systems integrate inventory data with human resources data, sales, and financial, letting businesses to generate financial statements, price products, and material,manage human, and financial resourcing ERP systems to key performance indicator measurement parameters, identify performance targets, develop performance plans, and bench-marking. All of these elements are crucial in determining how well a process is improving [15].

3. Research Gap and Research Problem

Numerous research studies on Enterprise Resource Planning systems have been undertaken in the banking, telecommunications, education, and health sectors, in addition to many in the manufacturing sector. Rather a less emphasis from the research perspective has been focused on Enterprise Resource Planning systems in the travel, trade, and tourism industry.

There have been extremely few research studies on the relationship between Enterprise Resource Planning systems and process performance, and even fewer investigations on the impact of Enterprise Resource Planning systems on service performance, according to an empirical underpinning in this field. Furthermore, all ERP research investigations have been undertaken in developed economies [16], with a relatively small number of research studies conducted in developing economies such as Pakistan. As a result, the purpose of this study is to investigate the relevance and use of Enterprise Resource Planning systems in the travel, trade, tourism, and hospitality industries.

4. Objectives of the Study

Understanding the above proposition prompted the researcher to perform research on the implications and implementations of ERP systems in travel, trade, and tourism from the supply-demand perceptive, taking into account the perspectives of key travel organization decision designers with higher ERP system applications. The level of service was chosen as a throughput indicator for which the study included consumer perceptions to link the usability of ERP systems to the output mechanism. Finally, the research investigates the impact of ERP system applications on service performance in the Travel, Trade, Tourism, and Hospitality industries.

5. Research Methodologies

In this study, we performed research via different tools and techniques. In this paper, we used the following methodologies to investigate the role of existing ERP systems in travel, trade, and tourism systems.

- Analysis of Existing Travel, Trade, and Tourism ERP system via Testing tools.
- In quantitative research, An Online Survey has been done among the three largest Pakistani Travel, Trade, and tourism companies.
- Qualitative research via going through available literature over the internet.

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6. Analysis of Existing Travel, Trade, and Tourism ERP system via Testing tools

In this section, we will discuss the practical impact of some of the available Travel, trade, and tourism ERP systems around the world. We have shortlisted these systems based on their familiarity in the industry under study. Qualitative research via going through available literature over the internet.

- Travelustaad - Country Pakistan.
- Bookme - Country Pakistan.
- Sastaticket - Country Pakistan.
- Yatra - Country India.
- Expedia - Country America.
- ClearTrip - Country India.
- MakeMyTrip - Country India.
- TripAdvisor - Country America.
- SkyScanner - Country UK.
- Musafir - Country United Arab Emirates.
- CheapOAir - Country America.
- Trip(ctrip) - Country China

In Table 1 and Table 2 we have summarized the available feature of each product listed above. With the help of software system testing tools, we compared performance, accessibility, Best practices application, and search engine optimization.

Firstly, we used the Apache JMeter™ testing tool to test the load/performance of each web-based ERP system. Apache JMeter ™ applications are open source software, 100% pure Java applications designed to test functional behavior and measure performance. Originally developed for testing web applications, it has since been extended to other testing features [20]. In Figure 1 results of performance comparison shown. We took a sample size of 1000 users and perform a load test except for Expedia as it stopped working with 1000 users sample size and we reduced its size from 100 to 133 users.

For the analysis of accessibility, best code practices, and search engine optimization techniques in selected ERP tools we used the lighthouse testing tool and compile the results of comparison among our selected ERP systems. Lighthouse is an open source automation tool for improving the performance, quality, and accuracy of your web applications. [21]. Lighthouse Google-chrome tool test performs testing on the following parameters. Each parameter description is given below.

- Performance - Performance of system tested by Lighthouse tool based on following Metrics(First Time to Interactive, Contentful Paint, Total Blocking Time,Speed Index, Cumulative Layout Shift Largest Contentful Paint).
- Accessibility - These checks highlight opportunities to improve the accessibility of web apps. Manual testing is also recommended as it can automatically detect only a subset of accessibility issues. These are prospects to enhance the control semantics of your system. This can improve the user experience for assistive technologies such as screen readers.Code reliability and security level
- Best Practice - Code reliability and security level.
- Search Engine Optimization (SEO) -These checks make sure your site follows basic search engine optimization advice.

When auditing a page, Lighthouse runs a series of tests on the page and produces a report on the performance of the page. From here, you can use failed tests as an indicator of what you can do to improve your application. [21].

In Table 3 results of lighthouse testing tools are summarized. Furthermore, these results are also shown in graphical form for further clarity and visibility. In Figures 2a, 2b, 3a and 3b graphical results are shown.

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Table 1. Features of Travel, Trade, and Tourism selected ERP systems. Abbreviations used in the table: **OW** = OneWay, **RT** = Round Trip, **MC** = Multi City, **BK** = Booking, **CF** = Charter Flights, **HT** = Hotels, **CR** = Cars.

System Name / Feature	OW	RT	MC	BK	CF	HT	CR
https://www.travelustaad.com/	✓	✓	x	✓	x	x	x
https://bookme.pk/	✓	✓	x	✓	x	✓	x
https://www.sastaticket.pk/	✓	✓	✓	✓	x	✓	x
https://www.yatra.com/	✓	✓	✓	✓	✓	✓	✓
https://www.expedia.com/	✓	✓	✓	✓	x	✓	✓
https://www.cleartrip.com/flights	✓	✓	✓	✓	x	✓	✓
https://www.makemytrip.com/flights/	✓	✓	✓	✓	✓	✓	✓
https://www.tripadvisor.com/	✓	✓	✓	✓	x	✓	✓
https://www.skyscanner.net/	✓	✓	✓	✓	x	✓	✓
https://www.musafir.com/	✓	✓	✓	✓	x	✓	✓
https://www.cheapoair.com/	✓	✓	✓	✓	x	✓	✓
trip.com(crtip)	✓	✓	✓	✓	x	✓	✓

Table 2. Continue Features of Travel, Trade and Tourism selected ERP systems. Abbreviations used in the table: **TR** = Trains, **D** = Deals, **CRU** = Cruises, **HOL** = Holidays, **VISA** = Visas, **VIL** = Villas, **BUS** = Buses, **BUN** = Bundle.

System Name / Feature	TR	D	CRU	HOL	VISA	VIL	BUS	BUN
https://www.travelustaad.com/	x	x	x	x	x	x	x	x
https://bookme.pk/	x	x	x	x	x	x	✓	x
https://www.sastaticket.pk/	x	✓	x	x	✓	x	x	x
https://www.yatra.com/	✓	✓	✓	✓	x	x	✓	x
https://www.expedia.com/	✓	✓	✓	✓	✓	✓	✓	✓
https://www.cleartrip.com/	✓	✓	x	x	x	x	x	x
https://www.makemytrip.com/	✓	✓	✓	✓	✓	✓	✓	x
https://www.tripadvisor.com/	✓	✓	✓	x	x	✓	✓	
https://www.skyscanner.net/	x	✓	x	x	x	x	x	x
https://www.musafir.com/	x	x	x	✓	✓	x	x	x
https://www.cheapoair.com/	x	✓	✓	✓	x	x	x	✓
trip.com(crtip)	✓	✓	x	x	x	x	x	x

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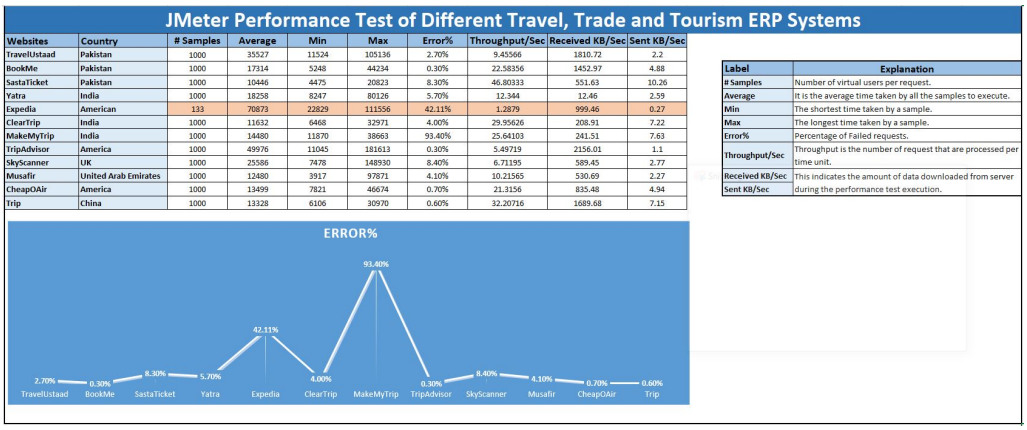
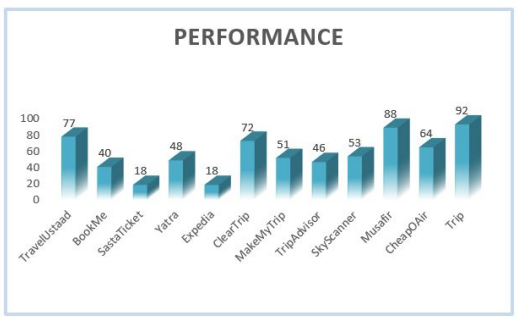


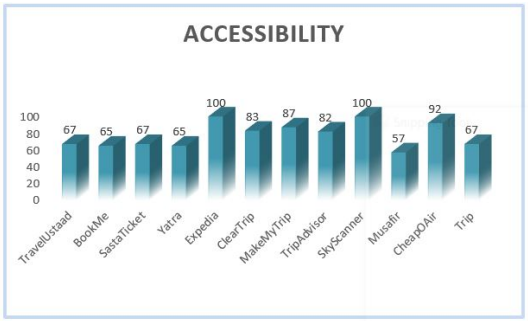
Figure 1. JMeter Performance Test of Different Travel, Trade and Tourism ERP Systems

Table 3. Lighthouse Results of Different Travel, Trade and Tourism ERP Systems. Abbreviations used in the table: **P** = Performance, **A** = Accessibility,**BP** = Best Price

System Name / Feature	P(%)	A(%)	BP(%)	SEO(%)
https://www.travelustaad.com/	77	67	73	83
https://bookme.pk/	40	65	67	82
https://www.sastaticket.pk/	18	67	80	92
https://www.yatra.com/	48	65	80	75
https://www.expedia.com/	18	100	73	100
https://www.cleartrip.com/	72	83	80	73
https://www.makemytrip.com/	51	87	87	92
https://www.tripadvisor.com/	46	82	87	100
https://www.skyscanner.net/	53	100	93	82
https://www.musafir.com/	88	57	93	83
https://www.cheapoair.com/	64	92	73	100
trip.com(crtip)	92	67	100	100



(a) Lighthouse - Performance Results



(b) Lighthouse - Accessibility Results

Figure 2. Comparison of Lighthouse Performance and Accessibility Results

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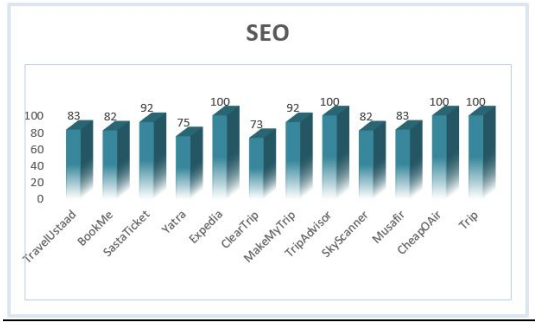
(a) Lighthouse - Best Code Practice Results



(b) Lighthouse - Search Engine Optimization Results

Figure 3. Comparison of Lighthouse Best Practices and SEO Results

6.1. Discussion on Existing ERP Tools Results Performed by Lighthouse and JMETER Testing Tools

As information systems are becoming an essential part of any organization that wants to grow and compete in the global market. In this research, we have performed detailed research on travel, trade, and tourism organizations that will help any new/existing travel, trade, and tourism organization that wants to implement an ERP system in their organization. With the help of Table 1 and Table 2 organizations will be able to get the consolidated list of required features into their system so that they will know what they want to implement in required ERP system as per business needs.

By performing performance, accessibility, best practice, SEO, and throughout time's testing this research will help the travel, trade, and tourism sector how to improve the performance of their ERP system and which factor help to improve performance and which factor guide them to increase the accessibility of their intended ERP must-have. What best practice they have to follow in their ERP system and Search Engine Optimization is a key factor of all web-based ERP systems because with the help of perfect SEO organizations can target the maximum users that will increase their sales.

In this research, we selected twelve existing web-based ERP system so that any new/existing organization that want to computerize their organization will get baseline information from this research.

7. Quantitative Research - Online Survey of Pakistani Travel, Trade, and Tourism Companies

Any qualitative or quantitative study requires a thorough understanding of the research methodology. As a result, choosing the correct qualitative and quantitative approaches is critical for conducting a trustworthy and accurate study. Both qualitative and quantitative research methodologies are used in this study.

In qualitative research, reviewing numerous scientific studies and scholarly articles from publications such as the Journal of Hospitality and Leisure Marketing, the Journal of Travel and Tourism Marketing, the internet, and books, among others. This study relies solely on secondary data for qualitative analysis.

The second phase of this research is empirical wherein A thorough examination of the fundamental idea and implementations of enterprise resource planning in the tourist sector is made. The three online travel service companies namely TravelUtsaad.com product of Six Sigma Travels Group, sastaticket.pk, and bookme.com operating in Pakistan have been taken as the representatives of the travel industry since investments in ERP systems in these organizations are found to be relatively higher than the other travel companies. The selection of these companies is also justified based on the higher applicability of ERP systems and the higher market share of these travel companies. Respondents with appropriate sample design i.e. CEO, CFO, COO, Director Sales, and Chief Business development officer have been selected to respond to ERP application and service performance respectively. Therefore, data-sets have been used in the study with an interval scale for recording measurements.

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Data was collected using a self-structured questionnaire, using a convenience sampling technique. A convenience sampling technique was used to directly engage people who were using Travel and Trade ERP systems. A total of 09 respondents (09 employees of an online travel organization). Thus, the sample size was 09.

7.1. Survey analysis and results of Online survey of Pakistani Travel, Trade and Tourism Companies

As discussed in above section we have selected three main Travel consolidator organizations of Pakistan who have major shares in Pakistan Travel market. In this section our results are drawn based upon response of these three selected organizations. Please see Figure 4. Our survey has been answered by CEOs, CFOs, COOs, CBDs and Director Sales.

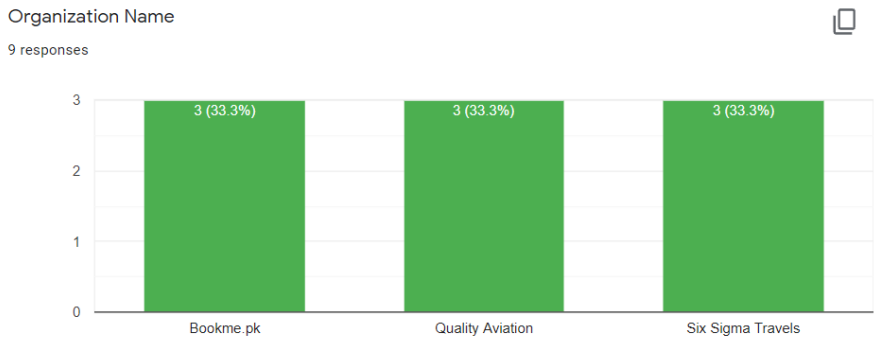
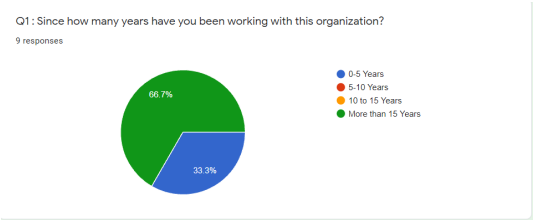


Figure 4. Travel Service Companies Participated in survey

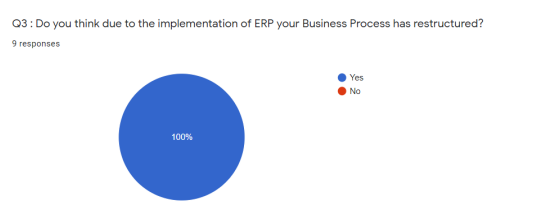
As per survey results 66.7'% of organizations that have implemented ERP systems are operating for more than 15 years in Pakistan (shows in Figure 5a). As per results, shown in Figure 5b it has been observed that ERP re-structured 100% business process to improve the service, quality, and efficiency (see Figure 6a). All three companies said that ERP changed the working culture of their organizations it's a more paperless and system bases controlled work environment now (see Figure 6b).



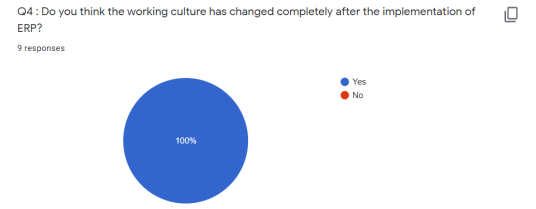
(a) Results of Question No 1 of Online Survey

(b) Results of Question No 2 of Online Survey

Figure 5. Survey Results for Questions 1 and 2



(a) Results of Question No 3 of Online Survey



(b) Results of Question No 4 of Online Survey

Figure 6. Survey Results for Questions 3 and 4

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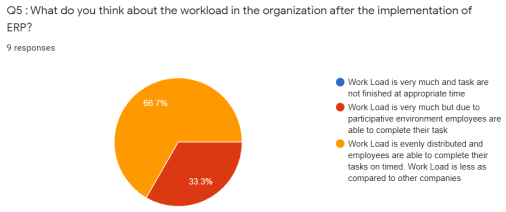
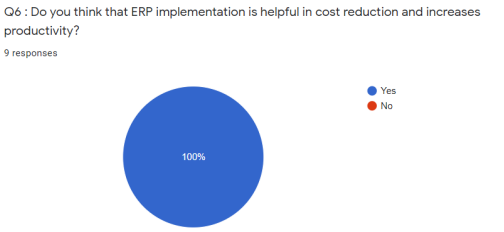
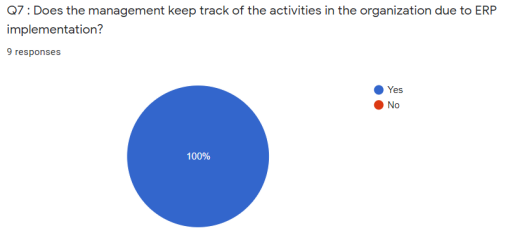


(a) Results of Question No 5 of Online Survey

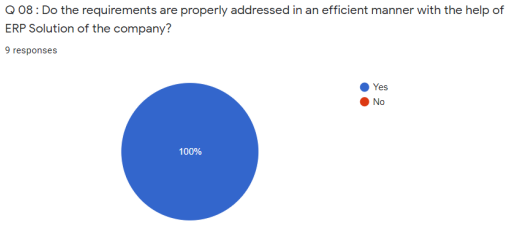


(b) Results of Question No 6 of Online Survey

Figure 7. Survey Results for Questions 5 and 6

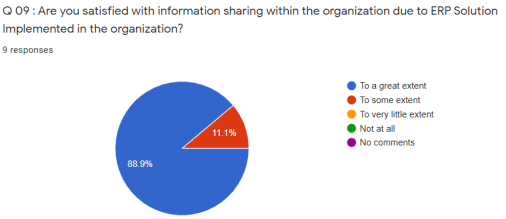


(a) Results of Question No 7 of Online Survey

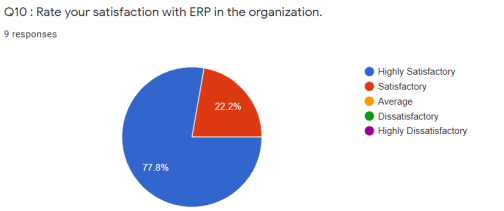


(b) Results of Question No 8 of Online Survey

Figure 8. Survey Results for Questions 7 and 8



(a) Results of Question No 9 of Online Survey



(b) Results of Question No 10 of Online Survey

Figure 9. Survey Results for Questions 9 and 10

As per survey results of three organizations, it has been observed that 66.7% Work Load is evenly distributed and employees can complete their tasks on time. Work Load is less as compared to other companies after the implementation of ERP (see Figure 7a). All these three companies said that ERP reduced the overall organization cost and increase their productivity (see Figure 7b). Regarding cost reduction, it was also explained by all three organizations that after implementation of ERP system they were able to reduce human resource costs e-g if a manual work has been done by 10 employees reduced to an average of 3-4 human resources after implementation of ERP system. Because, in manual daily reporting, every resource has to collect data manually via calling all branches, emails, and whats-app tools it also wastes their time, material like (paperwork) and has more chances of errors in reported data also. Furthermore, they explained that after having computerized reports resources have to just select the report criteria and generate the required report it reduces human resources as all processing has been done by the system no manual intervention was involved in generating reports like the application of formulas on excel sheets, etc. It was also explained by all respondents that while implementing of ERP system they have to pay one-time infrastructure costs on the deployment of ERP system on the other hand keeping more human resources having running monthly expenses due to which they said ERP reduced cost and increase productivity.

ERP helps management to keep track of the activities (see Figure 8a). It is also observed that ERP systems 100% efficiently addressed the requirement (see Figure 8b). 88.9% said that they are satisfied with information sharing within the organization due to ERP Solution Implemented in the organization to a great extent and 11.1% satisfied to some extent (see Figure 9a).

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Table 4. Compilation of Survey Results

Factor / Organization	Six Sigma Travels	Quality Aviation	Bookme.pk
ERP Implementation	80%	100%	100%
Process Improvement	80%	95%	90%
Service Improvement	80%	100%	100%
Workload Management	70%	90%	90%
Cost Reduction	100%	100%	100%
Increase Productivity	100%	100%	100%
Management Decision Making	100%	100%	100%

Figure 10. Compilation of Survey Results

7.2. Discussion

The findings from the research show that the concept of ERP system is highly relevant in the travel, tourism, and hospitality industry from the perspective of the managers representing these select organizations. Customer database, problem identification, on-time service delivery, real-time information, process improvisation, better employee software interface, decision making, inter-departmental communication, better product development, data accuracy, system accuracy, response time, revenue and profit management, and so on have all shown a higher degree of applicability in the application part of the ERP. The managers were found to be extremely pleased with the ERP support systems' performance in their duties, stating that ERP systems have increased their productivity. The analysis of service performance from the consumer's perspective reveals that the service performance of these organizations is found to be higher in terms of product quality, better customer experience, service quality, regular feedback, up-to-date information, effective, delivery as assured and real-time information at 24 hrs, ease in the travel process, etc. The inter-organizational comparison of the ERP systems applicability and service performance revealed significant differences with these companies having a higher level of ERP applications and higher service performance. Finally, the findings based on cause effect relationship revealed that Enterprise Resource Planning systems significantly impact service performance. We have complied survey results in tabular as well as graphical forms. Please see Table 4 and Figure 10

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8. Qualitative Research - Role of ERP Systems on Business Performance in Travel Industries-Qualitative Data Collection Phase

Online travel agencies such as yatra.com, Makemytrip.com, and Cleartrip.com are among India's most popular. It sought to provide a diverse range of rising factors of production, as well as cutting-edge technology and devoted 24-hour customer care. [17].

- Air tickets, rail tickets, hotels, tailored holiday packages, vehicle rental, bus tickets, and simplifying access to travel insurance are among the company's services and goods [17].
- The company gives access to all major domestic full-service and low-cost airlines, Indian Railways, and numerous major Indian bus operators through ERP system implementations and other technology enhanced platforms [17].
- As per Rajesh Magow CFO of MakeMyTrip.com, travel industry necessitated close collaboration between our partners and client service centers. We did, however, require operational flexibility. As a result, we chose the Microsoft Dynamics ERP solution. Employee productivity has increased by 15% in post-sales and fulfilment due to the ease of customization and convenience of use [17].
- Manually controlled (Including human errors). [17]
- Inefficient (More HR required). [17]
- With the help of ERP systems, these online travel firms combine the various components of their quickly developing business operations, streamline business processes, and complete integration of front, mid, and back office. The integrated solution allows for tighter financial control and fewer losses as a result of inefficient reconciliation, duplication of effort, and potential delays [17].

Article [18] explores the impact of information and communication technologies (ICT) on the hotel, travel agency,tourism destination organizations, electronic travel agencies,and airline sectors in the tourism industry. This article examines trends in mainland China's web -based sales of a variety of tourism and travel services during the last five years. The research's findings demonstrate that the market for web-based travel and tourist services in mainland China has exploded in recent years. web-based intermediaries grew their share of online sales as well [18].

In [18], The majority of the data was gathered through a questionnaire survey from tourist enterprises in a variety of key tourism industries in China that perform their commercial activities in an internet environment. A total of 64 tourist organizations were studied, including travel agents, hotels, electronic travel intermediates, tourism destination groups, and airlines. In-depth interviews were conducted with e-tourism experts and tourism practitioners from several industries. These interviews were chosen because they possessed the necessary knowledge, skill, and experience in the field of e-tourism to offer their experiences, ideas, and attitudes to address the important challenges.

Online travel middleman firms in China, such as Ctrip and Elong, provide customers with online booking services. The business model is an internet booking service with travel agents delivering the services to customers. Because of its advantage in removing payment restrictions and security issues, this is a popular route in China. According to the findings of this study, travel intermediary companies have become a major booking channel for travel services in China. [18].

According to iResearch's China online domestic travel booking study, China's total online travel booking income in 2009 climbed by 27.2 percent to 3.84 billion Yuan (US$431 million) from 2.94 billion Yuan (US$431 million) in 2008. In 2010, China's total internet domestic travel booking income reached 6.61 billion Yuan, an increase of 60% over 2009 [18].

In the first half of 2010, 36.1 million consumers booked travel products online in China, according to the China Internet Network Information Center. According to iResearch, a Shanghai-based consulting business, the internet travel booking industry reached 1.72 billion Yuan ($260 million) in the third quarter of 2010, up 66% from 2009. According to the data analyzed, Ctrip.com accounted for 51.6 percent of the Chinese internet travel market, Elong.com 9.6 percent, Mango.com 6%, and others 32.8 percent, respectively. [18].

Most ICT-based facilities in China, such as inventory control systems, civil aviation computer information, air cargo system, passenger processing system, computer reservation system, airport

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passenger processing systems, and global distribution systems [19], such as Sabre [19], Amadeus [19], Galileo [19], and Worldspan, have been set up and implemented for many years. These systems have a significant impact on airline commercial operations, ticketing, and baggage handling. The following upgraded services are offered by Passenger handling and terminal facilitation systems provide electronic services: airline management, ticket reservation, and baggage handling giving technical data of airports, flight plans, and real-time flight information on the Web site [18].

The data analyzed in this study demonstrates that the functionalities offered by ICTs are mostly focused on the services listed below:

- to provide information on the status of a flight
- to use VoIP to deliver long-distance phone services
- provide smart card and e-commerce self-service kiosks in airports to assist customers in making reservations, obtaining e-tickets, checking baggage, or simply finding information
- in collaboration with the banks, supply an auto-ticketing machine system, and
- to offer baggage tracking services

The data analyzed in this study also revealed that when compared to the market share scale of airline firm online sales in developed nations, the market share of airline ticket direct sales on the airline website is quite low. We discovered that online B2C sales ranged from 2 to 3 percent in 2007, 7 to 10 percent in 2009, and 16 to 18 percent in 2010. [18].

This study's findings also show that the percentage of people who travel online is growing rapidly. As a result of these changes, online travel opportunities in China will continue to expand. [18]

9. Conclusion

ERP software was originally built for manufacturing plants, but many solutions today incorporate capabilities in financial management, supply chain management, and business analytics in addition to shop-floor functionality. ERP is now more than just a back-office system; it's also designed to manage all of the data and functions that go into a company's many operations. As a result, non-manufacturing businesses such as travel, trade, tourism, aerospace, financial services, hospitality and entertainment, non-profit organizations, and government use these systems. Travel and tourism businesses can benefit from ERP technology solutions that help them cut costs, improve operational efficiency, boost client loyalty, and coordinate supply chains. ERP systems in the travel and tourist industry combine various areas of the industry's rapidly developing business operations, streamline business procedures, and save costs. The integrated framework enables precarious financial control and lowers losses caused by duplication of services, inefficient reconciliation, and possible delays.

The study demonstrates a greater reliance on and relevance of ERP systems in the travel, trade, and tourism industries. Surprisingly, it has been discovered that ERP plays a critical role in improving service performance and accessibility. Some of these firms' managers have stated that ERP support systems help them fulfill their managerial responsibilities and that ERP systems have increased their productivity and operational efficiency, resulting in overall organizational success. As a result of addressing the aforementioned limitations, the study's findings can be used as a strategic policy statement to address issues such as strategic management techniques, talent acquisition, customer ability to attract and retain (both internal and external), marketing, and brand positioning to be competitive and sustainable in a dynamic industry.

In this research, we provided an analysis of twelve main ERP existing systems based on their features, performance, accessibility, and implementation practices. This research will help travel, trade, and tourism companies to find out the feature list that will be required while implementing of ERP in their organization.

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