

*Evaluation Of Effects Of ERP Integration On
Post Sales Processes Of Makkays*



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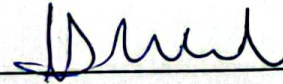
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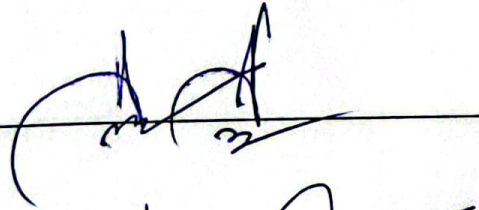
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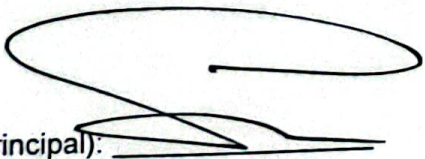
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EVALUATION OF EFFECTS OF ERP IMPROVEMENTS INTEGRATION ON POST- SALES PROCESSES OF MAKKAYS

Business Project # 2 Report

Abstract

This report includes our findings from the interviews, focusing on the improvement, effectiveness, change, and facilitation provided by the management in deployment of ERP improvements to the post-sales process.

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EXECUTIVE SUMMARY

Since its beginnings in 1982 Makkays has endeavored to be the best in its field to give exceptional world class services to its customers. Management of data, information and bookkeeping become paramount in this regard to not only facilitate the customers but also streamline internal processes for long term sustainability. In this regard Makkays, while starting from humble beginnings of manual bookkeeping of ledgers and excel sheets has grown with the times and has implemented a state-of-the-art ERP for its internal and external needs. The scope of this project will be to analyze the implementation of ERP in Makkays and its effects on the workings, benefits to the users and problems faced during the transition specifically focusing on the post-sales business segment. The project includes interviews with the users from top management all the way to low level executives who use this system and how they view and rate in terms of productivity and ease of use. Findings from this paper will assist not only Makkays but similarly focused organizations in their data management needs. it will help streamline post-sales procedures development in Pakistan which is sorely missing in our market dynamics.

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1 COMPANY INTRODUCTION:

Established in 1982, MAKKAYS - a leading technology solution provider - offers the most diverse range of innovative technology products and services. Our extensive product portfolio comprises of state-of-the-art products in the domain of Electronic, Electromechanical, Industrial, Test & Measurement, Information & Communication Technology, Power, and Software Solutions. Makkays has multitudes of high-profile customers ranging from educational establishments, Research & Development Organization, OEM to Industrial, Defense, telecom & Enterprise sector. Keeping our customer experience and customer satisfaction at the forefront, our procedure and practices conform to ISO 9001:2008 standards. Our nationwide presence, training facilities and 24/7 after-market support make us our customers' perfect information technology solution partners in today's ever-changing world.

Makkays Product Spectrum comprises of **Electronics & Industrial Components** - Cables, Connectors & Assembly Solutions, RF & Microwave Solutions, Soldering/De-Soldering & Reworking Solutions, Electromechanical Solutions, Electronic Components and Mechanical Tools. **Test & Measurement Equipment** – Our test & measurement product range offers a broad spectrum of products for the Networks, Telecom, and Industrial sectors. **Information & Communication Technology** - We offer turnkey solutions in the domain of In-building Solutions, Data Centre Solution, Network Security, Physical Security & Surveillance and Unified communication. **Power** – Our power portfolio caters to all organizational power needs by offering equipment & solutions for UPS, Inverters, Batteries, AVR, Rectifiers, Solar Solutions and SLAs. **Software Development** – We offer extensive range of Software Solutions - Enterprise IT Solutions, Automation, Hardware Integrated Solutions, Web portals & Applications, E-Business Solutions, Mobile Application Development, IT Consultancy & Project Management.

For more than 30 years of successfully incorporating next generation technologies, Makkays is the leading name in delivering world renowned test and measurement solutions. Offering products and services for complete test & measurement cycle, our solutions are preferred choice of clientele in telecom, defense, manufacturing, and advanced technology development sectors.

3 ERP IN MAKKAYS:

Makkays, being primarily a technology-based sales and services provider company, requires an automated ERP system for managing the nationwide sales and providing support services to the organization. For this purpose, Makkays has been utilizing an internally developed ERP system for all the business activities performed by the staff and they all revolve around the ERP and are automated using the same. From employee enrolment to payroll management, from logging an enquiry, generating a quotation to delivery and invoicing, everything is automated by the ERP.

The ERP system used by Makkays is a comprehensive business management software that integrates and automates various business functions, including finance,

accounting, inventory management, supply chain management, human resources, and customer relationship management. The ERP system helps Makkays to streamline its business processes, improve operational efficiency, and make data-driven decisions.

Makkays ERP has been developed in-house using a combination of open-source freeware products combined with some licensed products. Details of which are follows. The basic infrastructure on which the ERP is built is powered by VBP SAP Package based on XML database. It also uses Seagate Crystal reporting module from SAP. The development and implementation of Makkays ERP has been conducted totally in-house by Makkays software development team and business process teams. Development started in 2007 and since then the system has been undergoing continuous improvement to better manage the growing requirements of the company's business segments. A flowchart representation of Makkays ERP is shown in Appendix A.

4 POST-SALES IN MAKKAYS

Makkays is a technology solutions provider based in Pakistan that offers a range of products and services related to electrical, electronics, and telecommunications. Post-sales in Makkays refers to the activities that take place after a product or service has been sold to a customer. For this project, I will be focusing on the Post-sales department in Makkays. Post-sales segment in Makkays is one of the leading business generation part of the organization as Makkays invests heavily on providing its customers with the best post-sales support in Pakistani industry. For this purpose, Makkays has gone above and beyond by not only getting its technical support staff trained from overseas suppliers but also gone the extra mile of getting accredited for ISO 9001:2000 and ISO 17025 certifications to better facilitate its end users. The process flowchart of Makkays Post Sales department is shown in appendix B.

The Post-Sales department is one of the major financially earning departments of Makkays and makes approximately **PKR 100 million in revenue annually**. However, Post-sales departments procedures were facing a lot of **delays in processing time** while going through the ERP due to authorizations being needed at multiple stages thus requiring human intervention and causing delays. As depicted by the image, up to 8 days of wait time was being observed due to authorization delays being initiated by the ERP. These authorization delays were being caused at managerial levels in the Sales, Post-Sales, Warehouse, Supply Chain, Finance and Procurement departments. Since the involvement of management at multiple departments the list of authorizations for a single case got caught in a lot of red tape thus delaying the whole process. Details of these authorization delays and how they were overcome are one of the issues covered in this report.

These delays were caused before the integration of ERP improvements, making the post-sales processes in Makkays less efficient and more prone to errors. The different post-sales processes were being managed in separate systems, leading to siloed information and difficulties in tracking and managing orders. The lack of a centralized

system made it difficult to track the status of orders and to identify bottlenecks and inefficiencies in the post-sales processes. The manual data entry processes were slow, leading to delays in order processing and delivery. These delays led to the second most important issues which is **Resource Allocation**: The lack of a centralized resource management system have led to resource misallocation, missing of jobs deadlines, inventory pileups, overstocking, or stockouts, leading to delays and customer dissatisfaction. Post-sales jobs in Makkays are a resource intensive process. Allocation of correct human resources, especially trained resources are tantamount to timely completion of jobs and maintaining competitive international standard industrial turnaround times to retain customers and grow business.

As per internal audits and quarterly reviews these issues were causing a yearly estimated loss ranging from **PKR 30 to 40 million** per annum in additional revenue that the Post-Sales department could acquire by efficiently competing in the Pakistani market. Reputation loss and falling customer loyalty were in addition to these financial losses.

Overall, the post-sales processes in Makkays before the integration of ERP improvements were less efficient and more prone to errors. The integration of ERP improvements has helped to streamline the post-sales processes, improve efficiency, and enhance the customer experience. Similarly, the resources of the post-sales department were not being properly and optimally utilized as per the type of jobs being received as inventory management module was not being interfaced in real time with the post-sales ERP module. This resulted in resources being misallocated or precious working hours being wasted as proper job priority was not being maintained.

These issues compounded the loss of customers and market share of Makkays and were a major performance issue for Makkays management. Therefore, an internal taskforce was created to tackle this issue and was tasked to analyze the issues in depth and formulate and implement strategies with the assistance of IT and ERP support teams to root out these issues and efficiently improve the performance numbers of Post-Sales department. Details are described in the following sections.

5 SUGGESTIONS AND IMPLEMENTATION

As per analysis TWO main bottleneck issues emerged in Post Sales Processes of Makkays: **Delays in Processing Time & Resource Allocation**. These issues were addressed as detailed in the following sections.

5.1 DELAYS IN PROCESSING TIME

In the context of post-sales processes, delays refer to any situation where the process of fulfilling an order or providing customer support takes longer than expected. Delays were caused by a variety of factors, including manual processes, inefficient processes and poor communication in Makkays. Wateen Telecom is one of the major customers of Makkays when it comes to Post-sales repair and maintenance jobs. The volume of

jobs performed for Wateen by the Post-Sales department lies in the range of PKR 150 to 200 million per annum. The delays in processing time of post-sales jobs were a major concern of Wateen Telecom which had been highlighted in one-on-one meetings with Wateen's point of contact Mr. Suleman Nasir and also raised by sales managers of Punjab and Sindh regions where Wateen telecom has major business ventures which are being supported by Post-Sales department of Makkays. When there are delays in post-sales processes, it can lead to several negative consequences. Customers became frustrated and dissatisfied, leading to a decline in customer loyalty and loss of business. Due to these delays Wateen along with other prominent customers like Nayatel, Pakistan Airforce and NLC/FWO started buying competitor equipment as they provided faster turnaround times and hence more profitability. Thus, these delays impacted on the overall efficiency and effectiveness of Makkays as a business, as resources were tied up in resolving delays rather than being used to support other aspects of the business resulting in stagnation of current customers and negative reputation in the market.

As per the process flow diagram in appendix D the repair process is currently averaging around **18 days** from end to end. Order processing delays occur when there is a delay in the process of taking and fulfilling customer orders. Take an example of repair, maintenance, and calibration of Optical Time Domain Reflectometers (OTDRs) which are one of the most common occurring post-sales jobs being done by Post-Sales department. The actual repair maintenance process of OTDRs take only 5 working days at maximum and are often completed in 2-3 working days however due to the overall delays especially authorization delays in the process this whole process is elongated to 18 days as illustrated in the Appendix D. This was caused by manual data entry errors, lack of automation and poor communication between departments. The major delays are caused due to Sales and Post-Sales departments doing verification and price quotation steps separately thus causing a delay of **5 days** combined during which information is just being exchanged between customer and vendor. Both departments were using different but similar ERP modules for the same processes which was causing undue delays by working independently of each other. Poor communication between different departments and between the business and its customers also led to delays in processing.

The standard turnaround time for post-sales repair/maintenance jobs in Pakistan is maximum 14 days or 2 weeks however Makkays was operating at 18 days which almost 3 weeks' time and well beyond the industry standard in Pakistan. These delays caused the Post-Sales department a decrease in customer satisfaction and resultant customer orders. Costs were being increased due to these delays and the volatile foreign exchange situation meant that even a delay of few days meant a loss of hundreds or thousands of rupees due to devaluation of Pakistani Rupee on a regular basis. Productivity suffered and resulted in poor reputation in the market for Post-Sales department specifically and Makkays as a whole lead to lost sales and post-sales opportunities as the customers who faced delays choose to take their business elsewhere, resulting in lost revenue for the business.

The principle of **Process Mapping** was employed at this stage to identify bottlenecks and choke points. By grouping the verification and price quotation steps together we

saved us invaluable process time as shown in Appendix D and saved customer from undue involvement thus making the process easy and attractive for customer with respective to competitors. The *sales* and *post-sales* teams along with guidance of *Accounts & Finance* team were consulted to work around this delay issue. Based on previous order histories and ordering patterns several different approaches and models were discussed and debated. Sales teams were reluctant to relinquish their point of contacts with customers as they had invested time and resources in developing these contacts personally and professionally. Post-sales teams on the other hand were hard pressed to be put through to end-users so that customers can transition from sales to post-sales seamlessly and recurring post-sales business be targeted to post-sales department directly instead of being routed via sales department every time an inquiry is received as this will save time at both Makkay's end and customer's end. Both these proposals from sales and post-sales team were brought before management and resultantly it was decided that Sales will maintain principal contact with customers however a Post-sales presence will be introduced into all sales contracts which include warranties and possible repair/maintenance in future. This way the post-sales team will be apprised of any evolving situations well before time and be ready to engage with it. The Accounts & Finance team were directed to merge the price quotation and verification steps as shown in Appendix D into a single step instead of multiple steps as happening currently to reduce redundancies and streamline the customer end experience. Resultantly the sales and post-sales departments with guidance of management agreed to reduce the redundant steps involving similar processes in multiple departments to be handled by a single customer facing department i.e., Sales with a Post-sales presence. In the improved process as shown in appendix D the waiting time has been reduced from **8 days** to **4 days** by combining the verification and price quotation steps of two departments together in one step from the customer point of view. The overall turnaround time for customers gets reduced to **13 days** from **18 days** which is a major boon in repair industry in terms of competition. For the example of OTDRs this reduction in processing and authorization delays resulted in turnaround time coming closer to the industry standard of 14 days rather surpassing it as Makkay's standard turnaround time was designated 13 days and due to the professionalism of Post-sales engineering team the resultant time was often 9-10 days. This resulted in increased efficiency, reduced costs, increased productivity, higher customer reputation and an increase in sales and post-sales opportunities to be tapped. The financial benefit was calculated to be in at least in the range of **PKR 30 million per annum** by the reduction of delay days in Post-Sales jobs. Customer like Wateen and Nayatel were especially benefited by this improvement in processing and turnaround times by Makkays and their satisfaction index grew favorably towards Makkays resulting in increased business and specially inclusion of Makkays in CPEC centric fiber optic projects which included procurement quantities of OTDRs in the range of hundreds of units with their included warranties and services all of which were procured, sold and maintained by Makkays.

Employees resisted changes brought about by the implementation of the new ERP improvements. Specially the sales team in regions were as mentioned above reluctant to forgo of their contacts with customers. This resistance led to delays and difficulties in implementation. To overcome resistance to change, Makkays management

provided adequate safeguards to Sales department to incentivize them to be part of the improvement process without endangering their personal reputations towards their hard cultivated customer contacts. Special training and workshops were provided to employees of sales and post-sales departments to involve them in the implementation process. Financial incentives and recognition were also provided for employees who adapt to the new system effectively.

The integration of the new ERP improvements with existing ERP systems was a challenge, leading to compatibility issues and delays in implementation as Sales and Post-Sales modules were altered in the customer facing roles. This meant combining existing databases and providing real-time access to the two departments so that queries can be processed in real-time without delays. Integrating sales and post-sales ERP modules lead to data inconsistencies, as each module has its own data structure and data may be duplicated across modules. For example, customer data may be stored in the sales module, but also duplicated in the post-sales module. This can lead to errors and confusion when accessing and updating data. Integrating sales and post-sales ERP modules can be expensive, especially if the modules are from different vendors. For example, integrating a sales module from one vendor with a post-sales module from another vendor may require additional resources to ensure compatibility. To address this challenge, Makkays conducted a comprehensive analysis of their existing systems and processes to identify areas of integration in the backend code. They also collaborated with the ERP vendor to ensure that the new system is compatible with their existing systems. Resultantly the ERP integration process was carried out in phases so that integration of data can be carried out between both departments without any losses to the data integrity and without effecting day to day operations. Inclusion of the ERP vendor was helpful in identifying integration compliance issues and resolving them in the phased builds of the new system. The expenses were kept within the normal budget of ERP maintenance and improvement annual budgets without going overboard and the process was managed by the in-house ERP team in this way. Overall expenses of the ERP improvements integration was calculated at PKR 1 million which was easily offset by the PKR 30 million saved due to these integration in the long run annually.

5.2 RESOURCE ALLOCATION

Resource allocation is the process of assigning resources, such as personnel, time, and budget, to different tasks and activities. In post-sales processes, resource allocation is critical for ensuring timely order fulfillment, accurate inventory management, and effective customer support. However, there were several issues related to resource allocation that can impact the efficiency and effectiveness of post-sales processes.

One of the key issues of resource allocation is the lack of visibility into resource availability and utilization. Without real-time visibility into resource availability, it was difficult to allocate resources effectively and efficiently. The post-sales department has 5 full-time repair/maintenance technicians which handle all incoming jobs. All incoming jobs were handed over to them and they had been deciding cases on a first come first serve basis which was resulting in misallocation of precious technical resources. The

correct allocation of trained technical resources in post-sales departments can have a significant impact on a business's ability to provide high-quality service to customers and maintain customer satisfaction. The first resource allocation improvement to ERP was therefore to automate the jobs allocation to technical resources based on experience, technical proficiency, workload and previous handling of similar cases or customers. This resulted in allocation of jobs based to technicians based on a set of parameters to ensure an equality-based allocation across all five technicians. This was especially helpful in freeing up veteran technicians for high priority tasks while allowing newbie technicians and interns to work on low priority and less complex jobs thus allowing them experience to enhance their skills.

Taking the **Post Sales Repair Record of years 2014 to 2020** which is as shown in Appendix F. Utilizing the ***Pareto principle***, I performed an analysis of all the repair jobs received and identify that majority of repair jobs pertain to “**Sumitomo Splicers**” and “**EXFO OTDRs**” category namely **36.9%** and **32.14%** respectively which cumulatively make 69.05% of total repair jobs. The graphical representation is shown in Appendix F. this meant that these categories made the bulk of the jobs being received and hence should be prioritized upon and the customer requesting these jobs should be categorized as recurring priority customers. To address these issues, post-sales processes had to be optimized for efficient resource allocation. The Pareto principal analysis model was fed into the ERP implementing a system that provides real-time visibility into resource availability and utilization can help to optimize resource allocation. The Post-sales jobs, instead of being treated all the same by ERP, were categorized based on the Pareto Principle data findings. Whenever new jobs were received, they had to be categorized as with “EXFO OTDRs”, “Sumitomo Splicers” or “Other Repairs”. This categorization during the ERP entry interface helped flag jobs which were related to EXFO or Sumitomo as these were majorly recurring jobs and also constituted the bulk of the revenue stream. Resultantly such jobs were moved to higher priority in the scheduling available to the repair technicians so that they could focus on completing those jobs before moving onto “Other Repairs” jobs. In this manner the recurring customers like Wateen, Nayatel and NLC/FWO from whom these jobs were being received were highly benefitted as their turnaround times were reduced. This even led to Makkays being able to charge a premium on EXFO and Sumitomo Related Post-sales jobs as dedicated technicians were delegated for them who had mastered the expertise for such jobs.

Resultantly both human and technical resources were re-tasked to give priority to *Sumitomo Splicers* and *EXFO OTDRs* repair jobs as these made the bulk of the activities of post-sales department. The remaining job types were relegated to lesser priority so as not to disturb the flow of high importance job routines.

This realignment and reallocation of resources has led to significant improvement in the efficacy and efficiency of Makkays Post Sales department. Proper resource allocation led to improved efficiency in post-sales processes in terms of finances and the actual labor costs involved. By allocating resources effectively, Makkays management ensured that tasks are completed in a timely manner, reducing delays, and streamlining the overall process. Technical resources actual engagement time on jobs was improved. Resultantly the department was able to 20 to 25

maintenance/repair jobs per week from doing only 10 to 12 jobs a week representing an increase of almost 25% in terms of jobs being completed. Effective resource allocation also led to increased customer satisfaction. By ensuring that the necessary resources are being allocated to order fulfillment and customer support, Makkays has been providing timely and high-quality service, leading to improved customer loyalty and repeat business. As previously mentioned customers like Wateen, Nayatel and NLC/FWO which constituted a bulk of Post-sales departments overall business were highly benefitted from these changes. Wateen's jobs rose from 10 per month to 30 per month as they were their equipment back in faster turnaround times and thus were willing to send more equipment for repair/maintenance to a single vendor like Makkays rather than sending it to different vendors. This led to not only greater relationship between Wateen and Makkays but also greater revenue earnings for Post-sales in particular and Makkays in general. The same effect was replicated for Nayatel and NLC/FWO to certain extents and resulted in financial and reputational gains for Post-sales department and in effect Makkays. By ensuring that resources are allocated efficiently, Makkays Post sales department has reduced waste and eliminate unnecessary spending, leading to improved profitability in the range of upto **50 million PKR** annually. Post sales inventory management has also been improved by the implementation of resource allocation measures and has led to customer equipment being entered and exited from inventory at far reduced timelines than in the past. Effective resource allocation has also improved resource planning. Before the implementation 30 to 40 customer units were received every month for repair/maintenance purposes and due to delays and allocation issues they often stayed in Makkays inventory for upto 20 days before they were worked upon or returned to sender. Now not only have the units being received have increased to upto 50 units a month but also the units are delegated for job performance to technicians within 3 days of receiving as shown in Appendix D and returned to sender within 5 days of repair completion thus reducing the time units stay in Makkays inventory to approximately less than or equal to 15 days before being returned to customer. By tracking resource utilization and availability, Post Sales department has better plans for future needs and is allocating resources, accordingly, leading to improved long-term planning and business success which eventually has led to an increased capture of market share by Makkays overall.

6 EFFECTS OF ERP IMPROVEMENTS

The implementation of an ERP system improvements had significant effects on the post-sales processes of Makkays. Interviews of employees at various levels were conducted to find out about issues faced during the implementation of proposed changes. The interviews are in appendix G. Following observations were received from end-users and here is how they were overcome:

The processing time was improved by removing the bottlenecks and reducing waiting times by reducing the red tape and eventually benefiting the end user with reduced turnaround times of 13 days and less instead of the previous 18 days as shown in Appendix D. Instead of permission alerts going to multiple departments for related jobs

at various times, the tasks were aggregated together for Sales and Post-Sales departments and hence time and effort spent were reduced and optimized. The ERP improvements facilitated better communication and collaboration among Sales, Post-Sales departments, enabling them to work together more efficiently to resolve post-sales issues and improve the customer experience.

The findings of the *Pareto Principle* were utilized to make repair jobs scheduling smarter and target orienting with priority automatically given to highest occurring jobs so that resources are divided and utilized in such a manner to support streamlining execution of all jobs and reduce resource idle time as much as possible. As mentioned above jobs being flagged as “EXFO” and “Sumitomo” were given highest priority and allocated accordingly to the most experienced technicians for rapid turnaround times. The findings also help in educating the inventory module in ERP about which parts and accessories were most likely to be used the most and to generate automatic alerts for their timely replenishment. The ERP improvements provided Makkays with better visibility of their inventory levels and locations, which helped with faster order fulfillment and timely delivery. Inventory turnover increased and the time in inventory was reduced from 20 days to 15 days. It also helped to prevent stock-outs and overstocking, which improved the overall efficiency of the post-sales processes.

The repair industry is inherently based on the fastest turnaround time possible to be provided to customers to attract as much business as possible. *Process Mapping* has helped in improving the turnaround time of the process and thus attracting more business. Further the *Pareto Principle* shows which jobs comprise most of the jobs being received in the Post Sales Repair Laboratory and can help in preparing forecasts for future customer satisfaction and laboratory improvement. Combining these steps within the ERP implementation has helped boost business growth since implementation.

Coordination between a central ERP team located in Islamabad and post-sales teams located all over the country was one of the initial issues that were faced to bring everyone on board and on one page to synchronize the findings and harmonize the execution of implementation. This was facilitated by Makkays HR by arranging sessions at Makkays HQ Islamabad location where all ERP and Post-sales teams were gathered together to assist them in getting up to date with the implementations and to execute them optimally. Those teams that could not be present due to ongoing customer activities were supported online and ERP personnel were delegated to their locations for on-site support.

During implementation it was also necessary that the previous ERP systems and especially ongoing job records be kept functional so that customers don't face any loss. For this purpose, the ERP team had to work closely with Post-Sales teams to ensure smooth flow of both old and new ERP instances and transition the workload on the new system without any disruptions at the customer end.

Training of Post-sales teams along with refresher training of all concerned departments like sales, accounts, finance, administration and logistics for the changes in ERP for Post-sales operations was a major implementation milestone personnel from ERP and Post-sales teams including myself were specially designated to bring

all other departments up to date regarding the changes to facilitate inter-departmental dependencies and especially approvals at the earliest so that the job flow wasn't effected due to any lack of knowledge, training or communication.

Overall, the implementation of ERP improvements in post-sales processes of Makkays was challenging. However, by adequately planning and executing the implementation, providing sufficient training to employees, and collaborating with the ERP vendor, Makkays overcame the challenges and realized the benefits of the improvements. The implementation of an ERP system improvements in integration lead to significant improvements in the post-sales processes of Makkays, resulting in better customer service, more efficient processes, and improved decision-making capabilities.

7 FUTURE IMPROVEMENT PLANS

Makkays is in a transition period and the management is planning to diversify the business portfolio as well as give more autonomy to departments to increase productivity and revenue. For these purposes the ERP is also being overhauled and the ERP and IT team are working on developing and rolling out Makkays ERP 2.0 which is planned to incorporate more features on the basis of feedback. Following are the long-term improvement plans that were received via feedback interviews in the appendix G.

The current ERP lacks a knowledge management system and learning management system. The incorporation of these two platforms in ERP will ensure retention of knowledge from precious experiences for new employees and for trainings and related learning to be shifted to ERP platform reducing the requirement of involvement of current employees from their original assignments to training and making the process more automated and self-improving. Makkays could implement a knowledge management system to store information related to post-sales processes, such as customer support inquiries and common issues, making it easily accessible to customer service representatives. This can help to improve the speed and quality of customer service interactions, increasing customer satisfaction.

The ERP system lacks vendor management due to which all our dealings with vendors are still over emails and spreadsheets which later need to be converted into ERP formats. The incorporation of permanent vendors with the system will make ordering procedures more streamlined, cost effective and time efficient.

From a supply chain and logistics perspective, a lot of stuff is still done by hand and later input into the ERP system which causes delays. It would be helpful to add or upgrade modules to handle these. Similarly, the financial recoveries from customers are also often done out of system and later added on which cause delay in closing of cases so it'll be helpful if a mobile or app version of ERP platform be introduced which can do on field task updating to keep system running at a unified pace in terms of all departments. Makkays could streamline the order management process by improving the integration between the ERP system and other systems such as logistics, shipping, and inventory management. This can reduce the potential for errors and delays and improve order fulfillment times.

The ERP should have a mobile based lite version which we salespeople can use and update on the go as precious time is utilized in updating ERP records once we get back to office from meetings which could otherwise be utilized to enhance productivity elsewhere. A mobile version of ERP can provide several benefits to businesses, including increased accessibility, improved productivity, real-time data access, enhanced collaboration, and cost savings. As mobile devices become increasingly ubiquitous, businesses should consider implementing a mobile version of their ERP system to optimize their operations and achieve business success.

Makkays can automate certain post-sales processes to improve efficiency and reduce the potential for errors. For instance, automating the order processing, invoicing, and shipment tracking processes could reduce the workload on customer service representatives and increase the accuracy of the information provided to customers. Makkays could implement data analytics tools to gain insights into post-sales processes and identify potential areas for improvement. By analyzing data related to post-sales processes, Makkays can gain a better understanding of customer needs, preferences, and behaviors, allowing them to better tailor their services to meet customer needs.

Based on the evaluation of the effects of ERP improvements integration on post-sales processes of Makkays, there may be several potential improvement plans that could be implemented to further enhance the efficiency and effectiveness of their post-sales processes. Overall, by implementing these and other potential improvement plans, Makkays can further improve the efficiency and effectiveness of their post-sales processes, leading to improved customer satisfaction and increased business success.

8 CONCLUSION

Working on this project helped us to observe comprehensively the workings of a real time ERP system in an organization. It also helped put into perspective the theoretical academic knowledge we have studied related to ERP during our coursework and relate it to a professional environment. Especially the benefits and challenges of an ERP system in a sales and services organization like Makkays. The evaluation of the effects of ERP improvements integration on post-sales processes of Makkays has highlighted the potential benefits of implementing an integrated ERP system. The study has shown that the integration of the ERP system has improved the efficiency of post-sales processes and has resulted in a higher level of customer satisfaction. The study has identified that the integration of ERP system has improved order processing, inventory management, and shipment tracking processes. This has led to faster order fulfillment times, reduced errors, and improved inventory management, resulting in a higher level of customer satisfaction.

The study has also highlighted the challenges faced during the implementation of ERP improvements in post-sales processes and the solutions that were implemented to overcome these challenges. The study has shown that clear communication, training, and effective change management are critical to the success of ERP integration.

Finally, the study has identified future improvement plans that Makkays could implement to further enhance the efficiency and effectiveness of their post-sales processes. These improvement plans include automating post-sales processes, expanding customer communication channels, implementing data analytics, streamlining order management, and implementing a knowledge management system.

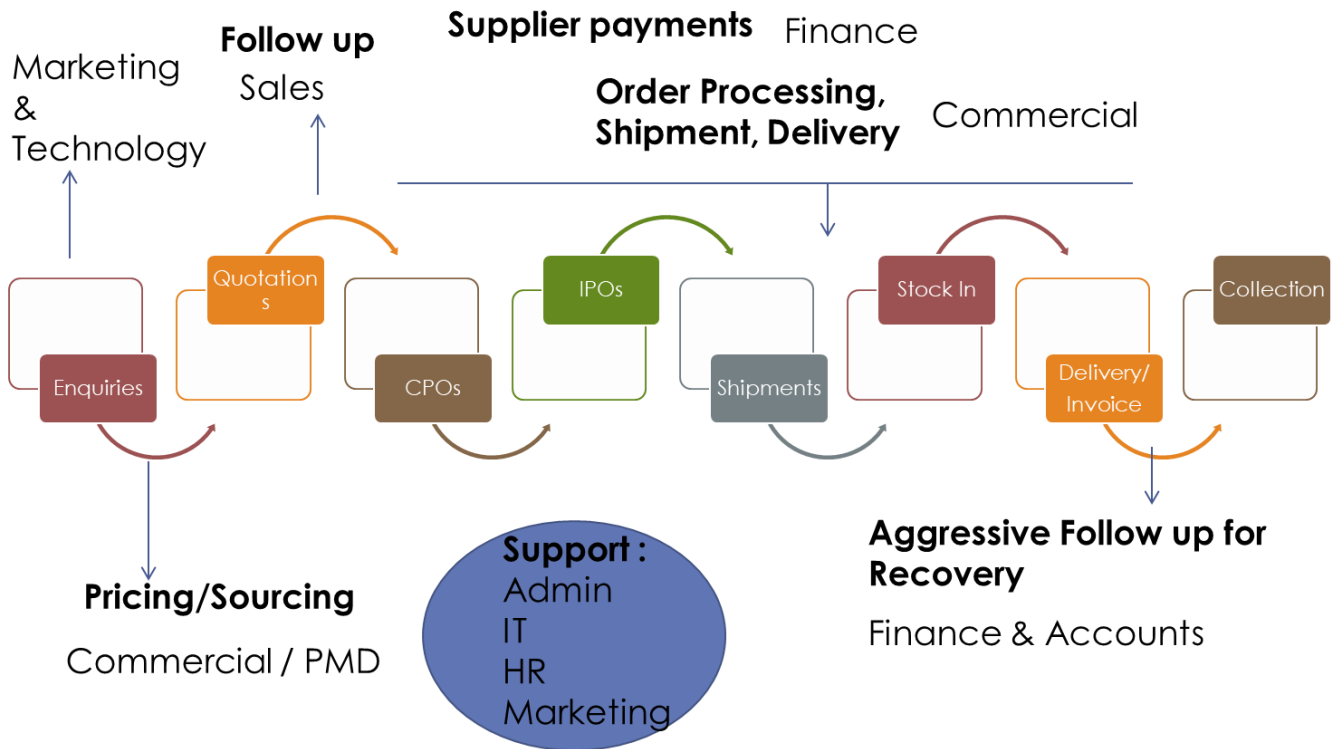
Overall, the evaluation has demonstrated the importance of ERP integration in improving the efficiency and effectiveness of post-sales processes of Makkays. By implementing future improvement plans, Makkays can further improve their post-sales processes, leading to increased customer satisfaction and business success.

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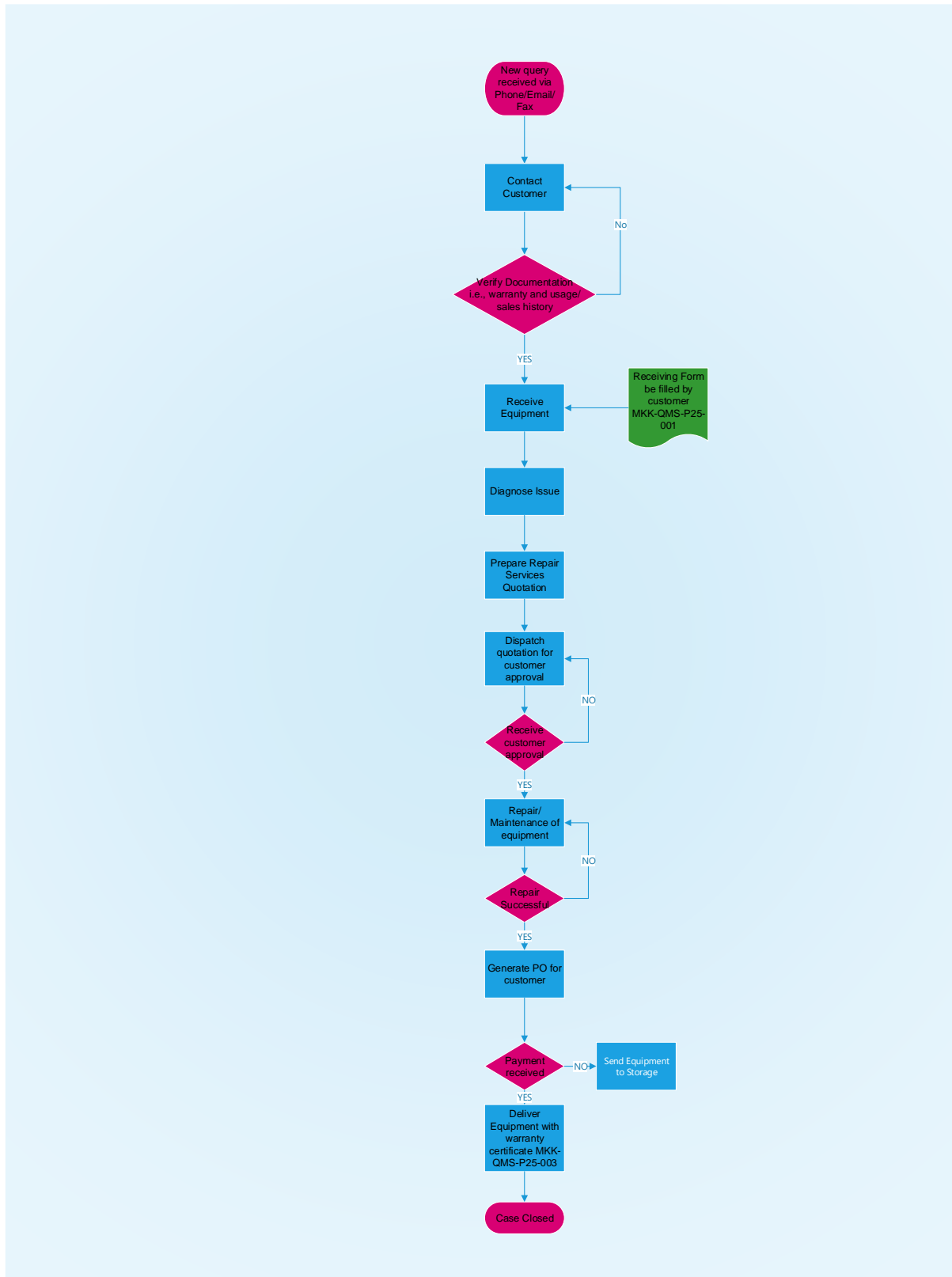
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10 APPENDIX A – MAKKAYS ERP

Business Process – Analysis, Monitoring, Reporting, support (ERP)



11 APPENDIX B – MAKKAYS POST SALES FLOWCHART



12 APPENDIX C - PROCESS MAPPING

Process mapping, also known as process flowcharting, is a technique used to visually represent the steps and activities involved in a particular process or workflow. It is commonly used in business and process improvement efforts to help identify areas of inefficiency or bottlenecks, and to design and implement changes to improve the process.

Process mapping typically involves creating a flowchart that shows the sequence of steps involved in a process, including any decision points, branching paths, and feedback loops. The flowchart may include symbols to represent several types of activities, such as tasks, inputs, outputs, and decision points.

By mapping out a process in detail, stakeholders can better understand how the process works, and identify areas for improvement. For example, they may identify steps that are redundant, unnecessary, or inefficient, or they may identify opportunities to streamline or automate certain tasks. They may also identify areas where errors or delays are occurring and implement changes to prevent or reduce these issues.

Process mapping can be a collaborative effort, involving input from stakeholders at all levels of the organization. It can also be an ongoing process, with the flowchart updated as changes are implemented, and the process is improved over time.

Process mapping is a visual representation of a process, which can be used to identify inefficiencies, opportunities for improvement, and potential areas of risk. In the context of post-sales processes of Makkays, process mapping can be used to identify bottlenecks and areas of delay in the process, helping to improve efficiency and customer satisfaction.

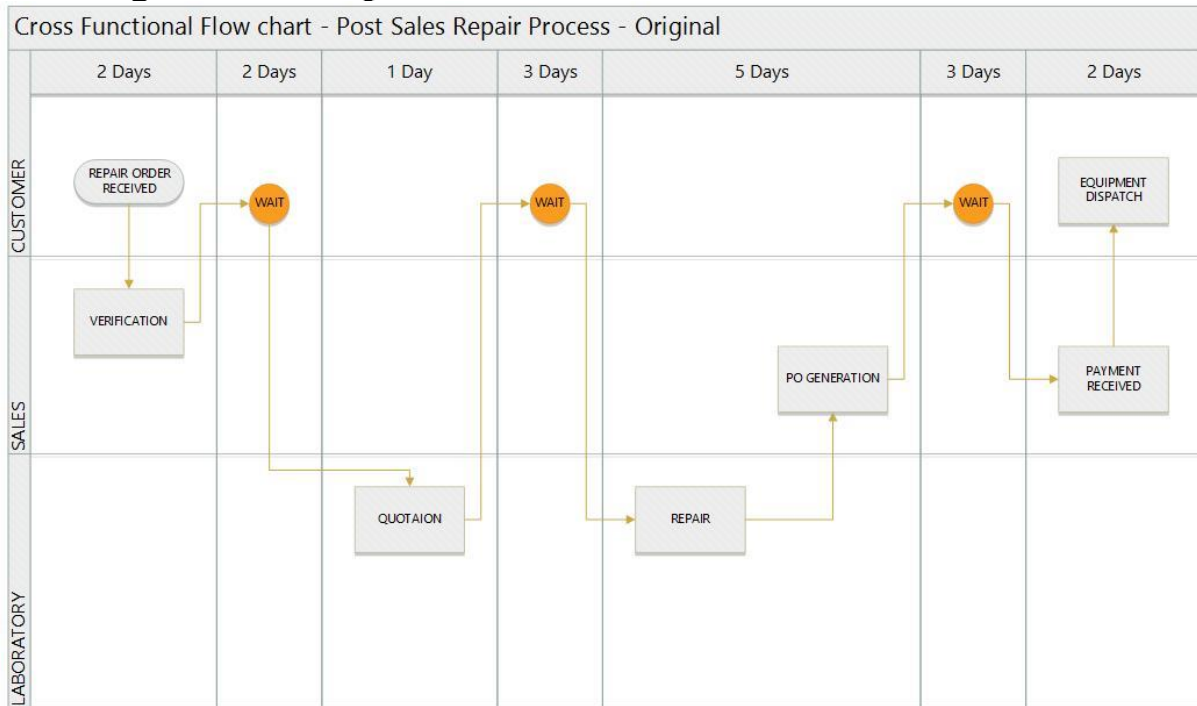
Here are some of the steps that Makkays can follow to map their post-sales process:

1. **Identify the Process:** Makkays should identify the specific post-sales process that they want to map, such as product delivery, installation, customer training, and support.
2. **Define the Boundaries:** Makkays should define the boundaries of the process, identifying the starting and ending points and any inputs and outputs.
3. **Map the Process:** Using a flowchart, Makkays should map the post-sales process, including all the steps involved in the process. This map should include information such as who performs each step, what resources are used, and what decisions are made.
4. **Analyse the Process:** Makkays should analyse the mapped process to identify any bottlenecks or areas of inefficiency. They should also identify any potential areas of risk and the impact of the risk on the customer's experience.
5. **Identify Improvement Opportunities:** Based on the analysis, Makkays should identify opportunities for improvement in the process, such as reducing the number of steps or eliminating redundant processes. They should prioritize the improvements based on their potential impact on customer satisfaction and efficiency.

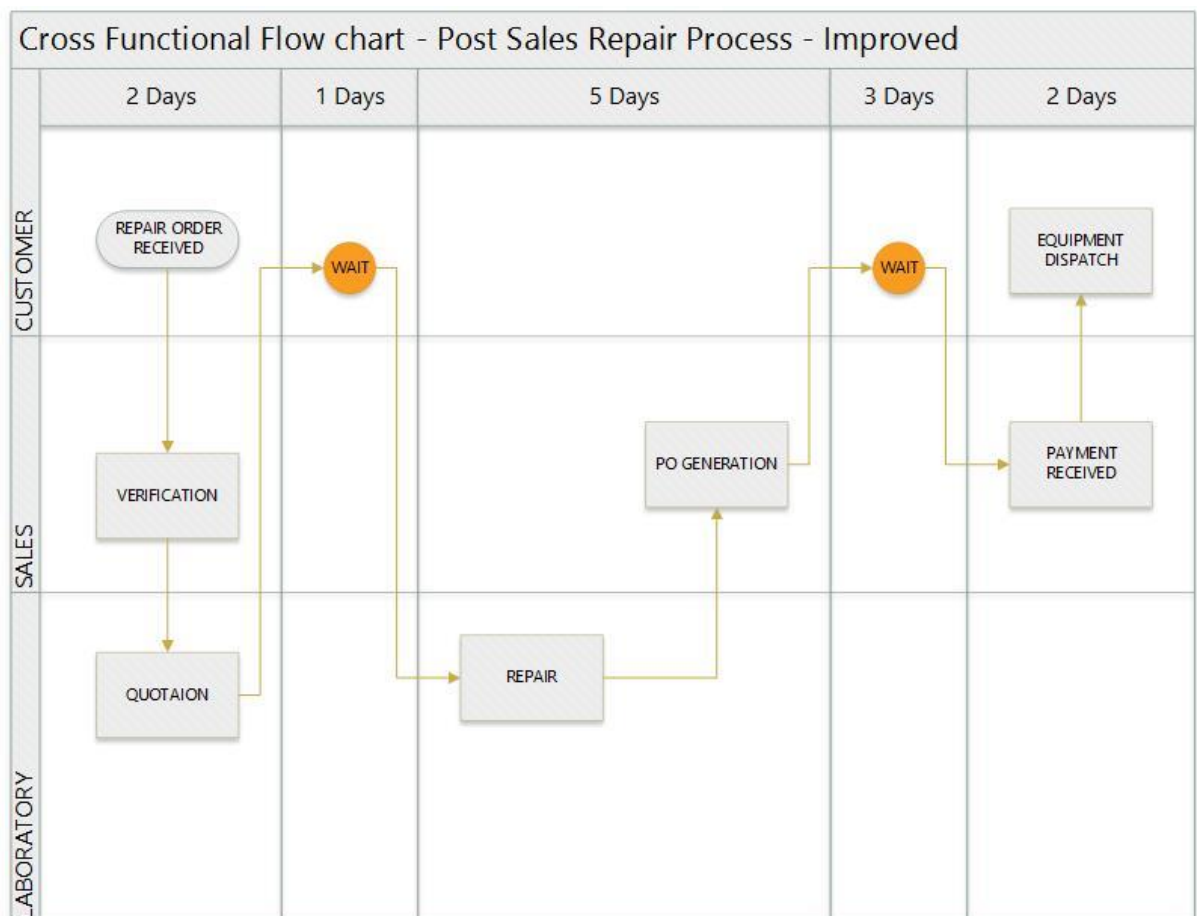
6. Implement Improvements: Makkays should implement the identified improvements, making sure to monitor the process to ensure that the changes are effective and meet the desired goals.

Overall, process mapping can be an effective tool for identifying inefficiencies and opportunities for improvement in post-sales processes of Makkays. By analysing the mapped process and identifying improvement opportunities, Makkays can streamline their processes, reduce delays, and improve the customer experience.

13 Appendix D – Post Sales Repair Process Chart Original & Improved



18 Days Turnaround Time



13 Days Turnaround Time

14 APPENDIX E - PARETO PRINCIPLE

The Pareto principle, also known as the 80/20 rule, is a concept that states that roughly 80% of the effects come from 20% of the causes. It was first proposed by Italian economist Vilfredo Pareto, who observed that 80% of the wealth in Italy was owned by 20% of the population.

The principle has since been applied to various fields and industries, such as business, economics, and personal productivity. For example, in business, the principle suggests that 80% of a company's revenue comes from 20% of its customers, or that 80% of a company's profits come from 20% of its products.

The Pareto principle can be a useful tool for businesses and individuals to focus their efforts on the most important and impactful areas, rather than trying to achieve equal results in all areas. By identifying the 20% of causes that are responsible for 80% of the effects, they can prioritize their resources and maximize their results.

The Pareto Principle, also known as the 80/20 rule, states that 80% of effects come from 20% of causes. In the context of post-sales processes of Makkays, the Pareto Principle can be applied to identify the most significant issues and opportunities for improvement.

For example, applying the Pareto Principle to post-sales customer complaints, it might be found that 80% of customer complaints come from 20% of products or services. This can help Makkays to identify those products or services that require improvement and prioritize resources and efforts to address these issues.

Similarly, the Pareto Principle can be applied to identify the most common causes of delays in post-sales processes. For instance, it might be found that 80% of delays in order processing come from 20% of products. By identifying these products and analysing the reasons for delays, Makkays can implement specific improvements to address the causes of the delays.

In summary, the Pareto Principle can be applied to post-sales processes of Makkays to identify the most significant issues and opportunities for improvement, enabling them to focus their efforts on the areas that will have the greatest impact on improving the customer experience and increasing efficiency.

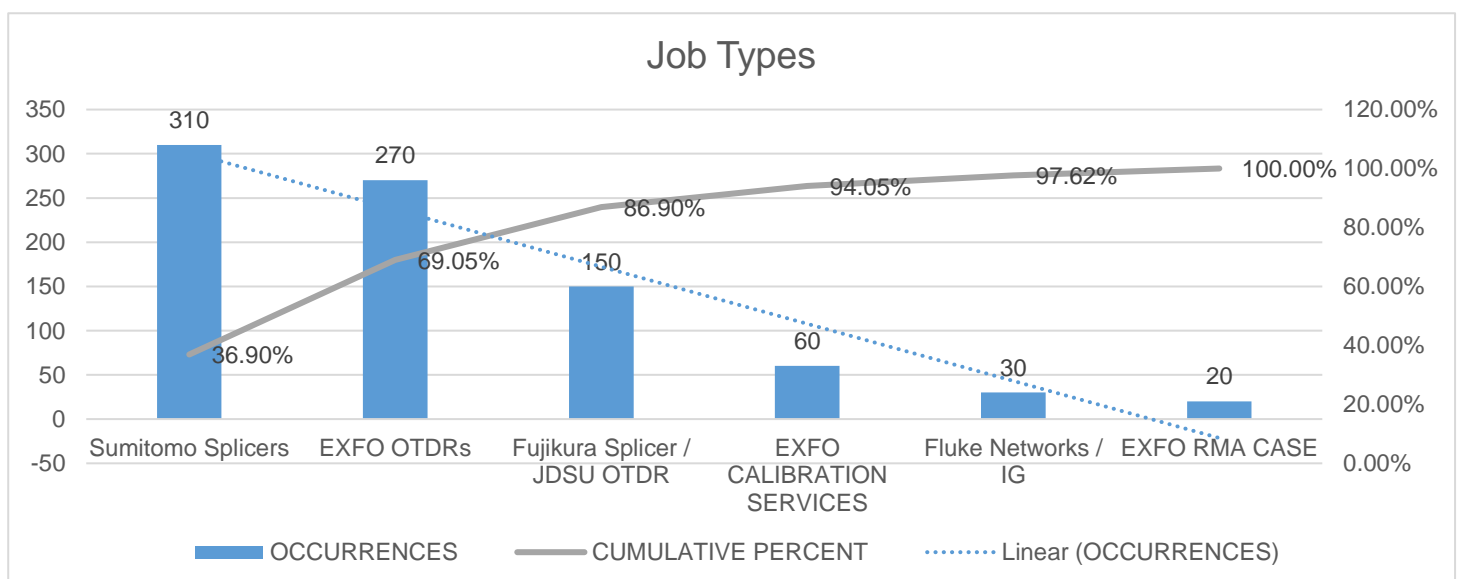
15 APPENDIX F – GRAPHIC REPRESENTATION OF DATA AS PER PARETO PRINCIPLE

Repair Job Type	Repair Occurrences
Sumitomo Splicers	310
EXFO OTDRs	270
Fujikura Splicer / JDSU OTDR	150
EXFO CALIBRATION SERVICES	60
Fluke Networks / IG	30
EXFO RMA CASE	20

PROBLEM DATA

Job Type	OCCURRENCES	PERCENT OF TOTAL	CUMULATIVE PERCENT
Sumitomo Splicers	310	36.90%	36.90%
EXFO OTDRs	270	32.14%	69.05%
Fujikura Splicer / JDSU OTDR	150	17.86%	86.90%
EXFO CALIBRATION SERVICES	60	7.14%	94.05%
Fluke Networks / IG	30	3.57%	97.62%
EXFO RMA CASE	20	2.38%	100.00%

Pareto Principal Data



16 APPENDIX G - INTERVIEWS

For finding the process of implementation of ERP in Makkays and its effects and I conducted interviews and surveys starting from top management down to users to gain an insight for our report.

Following personal were interviewed:

1. Top Management (TM)
 - Khan Ayaz Khan – Director/Owner
2. Senior Management (SM)
 - Taimoor Saleem – General Manager
3. Middle Management (MM)
 - Muhammad Aamir Khan – Manager Test and Measurement Department (Post Sales Department)
4. IT department (IT)
 - Farrukh Ali Qureshi – Team Lead ERP
 - Muhammad Ahsan – Senior Software Developer
5. User (U)
 - Usman Ali Cheema – Senior Product Engineer (Post Sales Department)
 - Muhammad Zakria – Senior Sales Engineer (Post Sales Department)
 - Abdul Qadeer – Senior Service Engineer (Post Sales Department)

Interview Questions and Answers

Interviews were conducted about the implementation of ERP and its facilitation to the organization at large. Following questions followed by responses form the data basis of our observations and conclusions for this project:

- i. **Can you please tell me about your current role in the organization?**
 - a. **TM - Khan Ayaz Khan** – This is our family company and was established and headed by my father Khan Abbas Khan. I became involved in management of the company in early 1990s after early retirement from Pakistan Army and assumed General Manager Role of company. In 2018 I transitioned to Director of Board of Makkays and its sister companies.
 - b. **SM – Taimoor Saleem** – I joined Makkays in 2008 as manager HR and subsequently lead HR department till 2018 culminating till the position of senior manager HR. in 2018 I took reigns of Makkays as General Manager.
 - c. **MM – Muhammad Aamir Khan** – I joined Makkays in 2014 as Senior Product Engineer Test and Measurement Department and am now leading said department as Manager Test and Measurement.

d. **IT**

- i. **Farrukh Ali Qureshi** – I joined Makkays in 2009 as IT Support Executive and am now leading the ERP/IT team as team lead.
- ii. **Muhammad Ahsan** – I joined Makkays in 2009 as Software Support Engineer and am now leading business process team as Senior Software Developer.

e. **Users**

- i. **Usman Ali Cheema** – I joined Makkays in 2016 as Product Engineer in Test and Measurement department and am now Senior Product Engineer in said department.
- ii. **Muhammad Zakria** – I joined Makkays in 2017 as Sales Executive in Sales Team Islamabad and am now team lead defense accounts as Senior Sales Engineer.
- iii. **Abdul Qadeer** – I joined Makkays in 2008 as Technical services engineer and am now team lead post sales in Test and Measurement Department as Senior Service Engineer.

ii. **What are your main tasks and responsibilities?**

- a. **TM - Khan Ayaz Khan** – As Director is oversee operations of Makkays and its sister companies and provide strategic direction to all our family businesses. I engage in the overall financial control and in relationship management with our government and defense sector clients as well as foreign suppliers.
- b. **SM – Taimoor Saleem** – As General Manager Makkays I oversee day to day business activities of Makkays nationally and am involved with sales and finance/accounting teams to ensure our revenue targets are being met and related activities are proceeding smoothly.
- c. **MM – Muhammad Aamir Khan** – As Manager Test and Measurement Group I control one of the five essential entities which constitute Makkays and am responsible for meeting sales targets annually whilst introducing new business streams from national and international market.
- d. **IT**
 - i. **Farrukh Ali Qureshi** – As team lead ERP/IT team I am responsible for the running/maintenance and upgradation of Makkays ERP nationally in terms of hardware and software support and meeting all IT requirements all Makkays personal for smooth execution of company business.
 - ii. **Muhammad Ahsan** – As team lead business process team I am involved with maintenance and upgradation of ERP platform for smooth and efficient information flow within all affiliated departments.

e. **Users**

- i. **Usman Ali Cheema** – As part of a post-sales department like Test and Measurement my main responsibilities include assisting sales teams in technical negotiations, BOQ preparation, technical compliance preparations, supplier negotiations and supplier's targets negotiations and fulfillment.
- ii. **Muhammad Zakria** – As part of sales team my main responsibilities include looking after my account holders and ensuring their orders are processed and delivered on time whilst working with them for new sales opportunities. I am also involved in securing new sales leads for new accounts for future business revenue streams.
- iii. **Abdul Qadeer** – As part of the post-sales team I am involved with handling customers post sales issues regarding repair/maintenance and calibration of faulty and/or defective equipment and liaising with suppliers to provide technical support to local customers. I am also involved in conducting demos before sales and training after sales of equipment.

iii. **How were you accomplishing tasks before the implementation of the new ERP? Examples?**

- a. **SM – Taimoor Saleem** – At the time of my joining Makkays was undergoing transition from excel based spreadsheets and handwritten ledgers to a centralized nationwide ERP system. Therefore, I have experienced firsthand the processes in both forms. All records were maintained in a mixed form of digital and book-keeping format at various departments in various national branches and were synchronized on monthly basis which added to burden of individuals as they had to do all recordkeeping twice for it to be recorded digitally or stored centrally. Sales quotations, financial invoices and delivery notes were often a mixture of hand-subscribed and printed and it was quite a hassle to synchronize them at the end of each month and the chances of records being lost were substantial.
- b. **MM – Muhammad Aamir Khan** – By the time I joined Makkays a fully functional ERP system was in place which encompasses all departments and handles all the information flow end to end.
- c. **Users**
 - i. **Usman Ali Cheema** – At the time of my joining Makkays a fully functional ERP system was in place therefore I have no experience of working outside this system.
 - ii. **Muhammad Zakria** – At Makkays we already had an ERP system when I joined however in my previous work experience, I have worked at companies without any ERP therefore the work there had to be done personally and then individually synchronized with the

central databases which themselves consisted of either excel databases or book-keeping ledgers due to which loss of records was a huge risk.

- iii. **Abdul Qadeer** – I joined Makkays when ERP implementation was being planned. Back then all our records were kept manually and once a month we used to update everything with a central database by submitting our individual excel spreadsheets. Often due to difference in formats of every Individual's submissions there used to be some data loss or misinformation and that had to be personally tracked down and handled with.

iv. **How are you accomplishing tasks with the new ERP?**

- a. **SM – Taimoor Saleem** – With the implementation of the new ERP all business processes of all departments of Makkays are now being handled through one centralized platform and information pertaining to all departments are readily available to them online nationwide at any time. All documentation has also been digitized and centralized thus reducing the probability of record loss and misinformation to a bare minimum. I can easily monitor sales activities in all regions nationally and can get information from a single individual's official activities up to a whole department's weekly, monthly, and quarterly progress.
- b. **MM – Muhammad Aamir Khan** – The current ERP helps me in all steps of securing a sales order from customer end to supplier end. Additionally, all of the company's internal communication and related documentation is maintained and transported through the ERP to the requisite departments thus increasing efficiency and ensuring transparency. Ease of access to opening new inquiries and proceeding with old cases on a single platform with assisting information from relevant departments is a big benefit.
- c. **Users**
 - i. **Usman Ali Cheema** – The ERP system at Makkays is all encompassing and with a little training one can utilize its many options to make work life very smooth. Besides all official tasks external or internal are routed through ERP therefore it's an essential part of office life now. I handle all my customer and supplier interactions through the platform while providing required information to supporting departments for efficient processing along the way.
 - ii. **Muhammad Zakria** – The Makkays ERP system is a powerful tool especially for sales team as all our sales leads and progresses are visible to us in a one window operation while all past data is also readily available to us for informed sales decisions. All new inquiries

are entered into the ERP for processing along with any possible sales leads and the progress is maintained and monitored by me personally and management to ensure fruition of business activities into monetary revenue.

- iii. **Abdul Qadeer** – For post sales all trouble tickets and customer support inquiries are now routed through ERP to me, which can be further routed to any required department or foreign supplier for further assistance. Turnaround times are tracked for efficiency. Also new equipment sold is registered in the ERP so we can facilitate customers ahead of time for necessary upgrades or routine maintenance so as not to inconvenience their working schedules.

v. **What benefits were expected from the deployment of the new ERP? Were the expectations met?**

- a. **SM – Taimoor Saleem** – The biggest expected benefit was centralization of data and processes for increasing efficiency and reducing the cost of doing business. This Alhamdulillah was met with remarkable success and all the business processes of Makkays are now integrated and functioning in tandem with each other. It has improved inter-departmental cooperation and assisted in processing business inquiries more efficiently than before while reducing the risk of information loss and misinformation.
- b. **MM – Muhammad Aamir Khan** – The ERP system deployed in Makkays is expected to facilitate in sales activities by synchronizing all internal departments with external suppliers and customers and to that effect the system is benefitting us superbly. Information flow is streamlined and readily available, making conducting business that much simpler and more straightforward.
- c. **IT**
 - i. **Farrukh Ali Qureshi** – From an IT perspective the system was expected to reduce information roadblocks and increase constructive collaboration and transparency which we have been able to achieve successfully. Information flow is continuous now and process time has improved greatly.
 - ii. **Muhammad Ahsan** – As a developer on the ERP team our expectations were long, but I am happy to see that the system is integrating well and helping all processes to become efficient. We are hopeful for more improvements with time as per requirements.
- d. **Users**
 - i. **Usman Ali Cheema** – As a post-sales team member I expect ERP to facilitate me in synchronizing with the sales team and my suppliers to ensure correct dissemination of information and timely working on

cases as per deadlines. In this regard ERP has been majorly beneficial and daily activities are very straightforward due to its existence.

- ii. **Muhammad Zakria** – In sales meeting customer deadlines is the most important thing to maintaining good relationships. ERP has helped us immensely in maintaining and nurturing these relationships to new heights as the cost of doing business and turnaround times have decreased dramatically. Support from nationwide teams is synergized on this one platform thus boosting our productivity.
- iii. **Abdul Qadeer** – My expectations from the ERP systems were based around centralized data collection and ease of processing and both these requirements have been fulfilled. Now I get all my customer complaints routed to me automatically from all over the nation and categorized according to type and importance while the customer also remains informed on the progress being made on their cases which leads to increased customer loyalty and trust.

vi. **What are the problems and issues that you face when using the new system? Examples?**

- a. **SM – Taimoor Saleem** – The main issues faced were in the transition period which were mostly related to individuals getting to know the new way of doing things and the natural change averseness that comes with it. Most of the admin staff were unaware of digital technologies and their usage and had to face issues in transitioning. The sales teams and technical teams faced issues in transitioning to centralize their data streams into a centralized database. Moreover, with the passage of time issues with inter-departmental synchronization keep coming up which need to be handled.
- b. **MM – Muhammad Aamir Khan** – As a middle management user flow of information is crucial to me. Therefore, any hindrance in it is problematic. Often new joiners don't understand the system from get go and can cause some minor issues which increase in magnitude like a domino effect if not identified correctly due to missing safeguards which are then reported to ERP and IT teams for improvements. Moreover, information linkages between departments are sometimes non-existent or overlapped leading to either no information or repetitive information which causes issues. Since it's an ever-evolving platform such problems are to be expected and taken care of as soon as possible.
- c. **Users**

- i. **Usman Ali Cheema** – I have faced issues tracking of old cases as often old data is not immediately accessible and needs IT support and verification which causes time delay. Also loading information about new products is a cumbersome task as the information fields are often redundant or incompatible with newer product specifications which leads to delays as IT/ERP has to upgrade modules accordingly.
- ii. **Muhammad Zakria** – I have faced issues in transitioning cases and cold cases as those cases often get closed automatically by system due to inactivity and the process to get them active again is often lengthy and involves a lot of red tape.
- iii. **Abdul Qadeer** – I have faced issues in tracking of complaints and customer products at times due to late entry by stores and/or logistics teams or no entry at all which transitions a human error into a system error.

vii. **How the problems and issues related to the new ERP were resolved? Problems solved by whom?**

- a. **TM - Khan Ayaz Khan** – Since the system has been developed in-house the problems are managed and their solutions developed by the same team which designed and implemented the system i.e., the ERP and IT teams with occasional help from outside consultants.
- b. **SM – Taimoor Saleem** – The IT and ERP team are responsible for problem resolutions related to ERP faced by company individuals. Feedback from users is taken and solutions are developed accordingly.
- c. **MM – Muhammad Aamir Khan** – We communicate any issues we face with ERP to the ERP team, and they are always prompted to solve them in minimal time.
- d. **IT**
 - i. **Farrukh Ali Qureshi** – As IT team lead ERP issues are always forwarded to us along with ERP team. We facilitate the ERP development team in terms of hardware issues and provide personnel for software development and rollouts for quick resolution of problems.
 - ii. **Muhammad Ahsan** – As ERP developer all ERP related issues are forwarded to me, and most issues are either due to human error or lack of operational knowledge which are managed promptly. Any systematic issue when identified is accurately diagnosed and a software patch or module upgrade is done accordingly.
- e. **Users**

- iii. **Usman Ali Cheema** – Any issues faced in ERP are forwarded to ERP team for resolution.
- i. **Muhammad Zakria** – We forward all ERP related issues to ERP team.
- ii. **Abdul Qadeer** – For any issues in ERP, ERP team is the solution provider.

viii. **How have things changed during the implementation and use of the new ERP? Major tasks, responsibilities, coordination of work, interactions with people, relationships with other departments. Examples.**

- a. **TM - Khan Ayaz Khan** – The ERP implementation has had wide ranging effects on the company and the individuals. Many previous jobs have been combined into single person positions whereas many new positions have been created in terms of business processing and digitized sales assistance requirements. Job descriptions company over have been re-written to match the new direction of a modern centralized sales platform. Management purview of all departments has increased. Operational, tactical, and strategic planning have been synergized and are now possible nationwide on basis of internal and external feedback and accumulating Big Data in relation to data being collected about customers, suppliers, employees, sales, expenses and related finances and management.
- b. **SM – Taimoor Saleem** – The ERP has provided a bird’s eye view of all operational capabilities of Makkays to me while also allowing me to check on individual cases and performances. I can now directly look at regional sales and sales forecasts submitted by sales teams and compare them to sales targets for performance analysis. Inventory management is now readily available helping me to mitigate with both customers and suppliers regarding payment and delivery timelines. It has also helped in HR matters in terms of tracking employee turnover and forecasted hiring needs.
- c. **MM – Muhammad Aamir Khan** – The ERP platform has brought me in synch with the different departments such as supply chain and post sales which are necessary in terms of order delivery timelines and offers me a significant advantage while negotiating sales terms with customers as compared to my competitors as I have ever-changing delivery times lines and payment strategies at my beck and call through a centralized ERP solution.
- d. **IT**
 - i. **Farrukh Ali Qureshi** – Advent of ERP has made tracking usage of IT resources and resultant complaints and issues a lot easier through all our departments nationwide. The inventory management and

usage are now trackable in real time and complaint resolution timelines have lowered drastically.

- ii. **Muhammad Ahsan** – With the advent of ERP the ERP team has become a hub of information flow and is integrally connected to all departments and activities of Makkays. Our responsibility to keep the system up and running under ever increasing load in terms of data and users is a challenge which is being met with continuous updating of modules and real time diagnostic troubleshooting.

e. **Users**

- i. **Usman Ali Cheema** – With ERP post-sales process has become smoother and interdepartmental interaction has become more automated as any requests or queries are timely communicated and responses are automatically incorporated into ongoing communications at supplier or customer end. Moreover, inventory management has become easier to facilitate upcoming post-sales requirements and the ability to pursue aggressive post-sales targets has been enhanced.
- ii. **Muhammad Zakria** – ERP has facilitated departmental linkages end to end. We do not have to rely on individual communications and transfer stuff through emails and communicate via phone as much as everything being done in tandem with relative departments is now mostly a one window operation which not only enhances our mobility and dynamism as sales team but also provides us an edge over our competitors in the field.
- iii. **Abdul Qadeer** – As a post-sales representative ERP helps me to connect with sales and logistics teams to timely receive customers after-sales cases and again dispatch them timely to our customers after repair/maintenance and calibration. It also helps maintain a complete record of all post-sales activities to be shared with our suppliers to increase credibility and with our prospective customers to highlight our abilities to foster customer loyalty.

ix. **What was the primary role of the top management in facilitating this change within the organization?**

- a. **SM – Taimoor Saleem** – As General Manager, I have tried my best to facilitate the transition period involved in shifting to ERP usage. Departmental workshops were conducted to educate about the new ERP system and ERP teams were reinforced with external resources and consultants to facilitate the change in our nationwide network. The top management in its capacity has assisted financially and in terms of personal to ensure proper rollout and implementation.

- b. **MM – Muhammad Aamir Khan** – My role in middle management is to ensure that my team makes the most usage of the resources and facilities provided by ERP and for it I regularly conduct monthly sessions with my whole team and ERP team to initiate feedback from users and to get educated about the newer elements of ERP being implemented and to ensure their use to the fullest. The top management has been encouraging of our efforts and has facilitated us with IT resources and related requirements necessary for ensuring continuous improvement and implementation of ERP.
- c. **IT**
 - i. **Farrukh Ali Qureshi** – The top management provided us with financial resources to ensure IT equipment necessary was procured and extra IT human resources, if needed, were engaged for a smooth transition.
 - ii. **Muhammad Ahsan** – For procurement of licenses to build ERP and to engage assistance of external consultants the top management assisted in terms of finances and flexible timetables while maintaining a personal interest in all matters.
- d. **Users**
 - iii. **Usman Ali Cheema** – As a user I've always observed full financial and technical support of the ERP team by top management to ensure smooth operations in terms of ERP. Additionally, training courses are conducted on a quarterly basis to update us on any changes and to answer our complaints or feedback suggestions.
 - i. **Muhammad Zakria** – Being a sales end user our reliance on ERP is quite heavy and it was a pleasant experience when on joining Makkays the management themselves took interest in our ERP trainings and progress. Training is provided quarterly on management's initiative to keep everyone educated and up to date.
 - ii. **Abdul Qadeer** – As a post-sales user of the ERP system, shifting to ERP was a major challenge however management's support in conducting training sessions and providing real time support eased this transition period immensely.

x. **What are the areas where the new ERP lacks?**

- a. **TM - Khan Ayaz Khan** – The ERP system is ever improving, and I am always on the lookout to find areas of improvement for it among Makkays. The current ERP lacks in knowledge management system and learning management system as it's my vision to incorporate these two platforms in ERP to ensure retention of knowledge from precious experiences for new employees and for trainings and related learning to be shifted to ERP platform reducing the requirement of involvement of current employees from

their original assignments to training and making the process more automated and self-improving.

- b. **SM – Taimoor Saleem** – The ERP system lacks in vendor management, and we plan to incorporate our permanent vendors with our system to make our ordering procedure more streamlined, cost effective and time efficient.
- c. **MM – Muhammad Aamir Khan** – From a supply chain and logistics perspective, a lot of stuff is still done by hand and later input into the ERP system which causes delays. It would be helpful to add or upgrade modules to handle these. Similarly, the recoveries from customers are also often done out of system and later added on which cause delay in closing of cases so it'll be helpful if a mobile or app version of ERP platform be introduced which can do on field task updating to keep system running at a unified pace in terms of all departments.
- d. **IT**
 - i. **Farrukh Ali Qureshi** – From an IT point of view the ERP could be improved by integrating a Network Management System with it to monitor and improve the network resources usage throughout the company and improve upon it.
 - ii. **Muhammad Ahsan** – Our ERP is built on quite old technologies, and it is functioning well enough for us, but continuous updates requirement of current era is rendering it obsolete therefore it needs to be ported to a newer infrastructure preferably cloud based to ensure compatibility with changing times and technology requirements.
- e. **Users**
 - i. **Usman Ali Cheema** – A vendor management system is sorely missing in the current ERP system due to which all our dealings with vendors are still over emails and spreadsheets which later need to be converted into ERP formats.
 - ii. **Muhammad Zakria** – The ERP should have a mobile based lite version which we salespeople can use and update on the go as precious time is utilized in updating ERP records once we get back to office from meetings which could otherwise be utilized to enhance productivity elsewhere.
 - iii. **Abdul Qadeer** – The ERP customer management system and customer relationship manager needs improvements as adding and approving a customer requires a going through a lot of red tape due to which often, we keep customer contacts with us personally and add only frequent customers to the system.