

Navigating with Project Metrics using Digitally Integrated Framework

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Abstract—

Introduction: Key challenges faced in account management includes multiple tracking system, repeated entry, not updated, inaccuracy, secondary effort for consolidation, dependency on system/person, ineffectiveness etc.,

Objective: A digital framework integrating all business functions E2E, tracking project life cycle linking with dynamic metrics, control mechanism, agility to easily customize & adapt framework for short sprints in less effort

Digital Solution: Implemented digital workflow using SharePoint (Input screen) & analytical dashboard using spreadsheets.

Summary of solution implemented represented below as <Digital Themes>:<Solution> – <Use cases>:

1. Planning & Scheduling:

- a) Burndown chart - Establish velocity
- b) Work Time Analyzer - Monitors time distribution
- c) Visibility - Transparency & collaboration

2. Execution & Analytics:

- a) Connected work flow – Operational Dashboards/ATM [Variance, Overtime, Quality, Utilization, forecast, billing]
- b) Real-time evaluation - Statistical approach, Performance scorecard
- c) Real-time financials – Business Dashboard [P&L]

3. Monitoring & Control:

- a) Trend analysis – Quality effectiveness & Dynamic training calendar
- b) Control toolkit – Visual-aids/compliance

4. Stakeholder

- a) Centralized repository – Knowledge management, Virtual PM's
- b) Agility – Flexible & Customization

Business Impact: Reduced NVA (~30% of leads effort), High accuracy & real-time data, statistically informed decision making, transparent culture, improved motivation. Easily customizable for rapidly changing requirements and successfully implemented across accounts.

Index Terms: Agile, Burndown chart, Work time analyzer, Any Time Metric (ATM), End to End (E2E) connected digital work flow, customizable, Centralized repository, Collaboration, Non-value added (NVA), Project Management Framework, Root Cause Analysis (RCA), Error Categorization, Trend analysis, Statistical approach, Key Performance Indicator (KPI), Transparency, SharePoint (SPP), Automation.

I. INTRODUCTION

Typical challenges

In real time, managing projects has multi-dimension complexity- multiple systems, in-accuracy/non-real-time data, inflexibility in existing system to handle new parameters leading to secondary/manual systems. To baseline the current problem, a “As-Is” study conducted on different focus areas and its related challenge, as shown in Table I.

Table I: Challenges/Pain Area

Focus area	As Is	Challenges / Pain Area
Execution Model	High Volume, shorter execution hrs. type of projects (Work orders)	Effort intensive in Project planning & tracking
Systems	Not supportive /	Effort intensive, High cycle

Focus area	As Is	Challenges / Pain Area
	Inflexible for short duration projects	time, Access issues for all level, not supportive of report generation
Tracking	- Each designer receives input via email directly from customer - No tracking or tracked individually	- PM have less visibility - Difficulty in following the status, needs more frequent follow-up (Push system) - Less confidence on accuracy
Report	Consolidation from multiple sources	Huge effort for consolidation, Less confidence on accuracy, dependency on person
Status	No live update, always prepared as required	Priority conflicts, delay creates doubt on transparency & LTTS process maturity

Also, a survey conducted to capture the frequency of

occurrence in real-time as shown in Fig. 1.

[Survey: Via questioners & interview, rational subgrouping, n: 30]

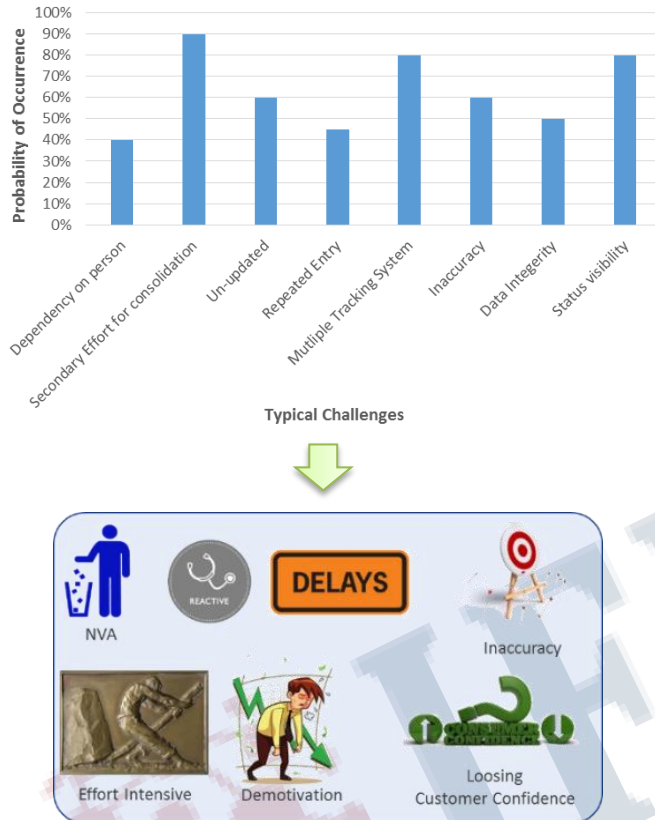


Figure 1: Baseline Study & Impact

II. OBJECTIVE / GOALS

Objectives of this digital solution includes:

- Simple & customizable framework - No additional investments, flexible to customize, ability to handle short sprints
- An automated workflow integrating all business functions end to end - One entry, track life cycle including billing, centralized repositories
- Real time analytical dashboard – Any-time Metrics (ATM), auto computation, no secondary effort
- Monitoring & control mechanism - Visual aids, trend analysis, control limits effectiveness
- Transparency & Collaboration - Data availability, statistical inference and individual performance score card

III. APPROACH TO DIGITAL SOLUTION

The approach includes activities as shown in Fig. 2.

A. Voice of Customer (VOC)

Collected input from all stakeholders as listed below:

- Delivery Team: Business head, Delivery unit head, Project Manager (PM), Leads & team member
- Internal customer: Sales, PMO, Ops team
- External customer: End customer

B. Process Map

A high-level process map created based on:

- Systems used: How is the system used, & who are the end users of the system
- Frequency & Type: How many times the data would be fed and what kind of data to be fed.

C. Benchmarking

A benchmarking exercise conducted to identify the best in call features from other systems in use like

- LTTS: Systems prevalent in other accounts, sub-systems being used & its approach
- Outside company: Which kind of systems are used in other companies were analyzed through internet & experience of employees in the past.

D. Ideation & Development

Ideation phase includes:

- Brainstorming: Systems which can be cheaper, reliable, available, easy, customizable were identified by forming a small team.
- Identify KPI's & Dashboards: KPI's inline to the organization requirement were framed & dashboard requirements were listed. This helped to understand what data is required and how it can be populated to achieve the required reports.
- To Be Process Map: A process map is defined based on all the requirements which involved tools to be used, identify developers (internal/external), user permissions, and table types, graph type etc.

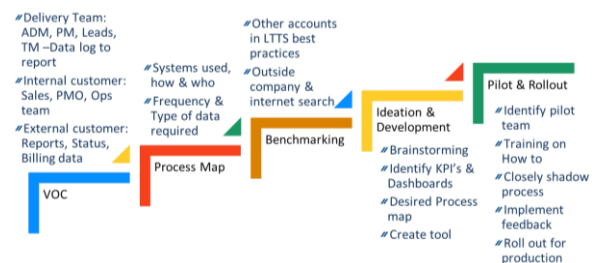


Figure 2: Approach

IV. WORK FLOW FRAMEWORK

The digital work flow created as shown in Fig. 3.

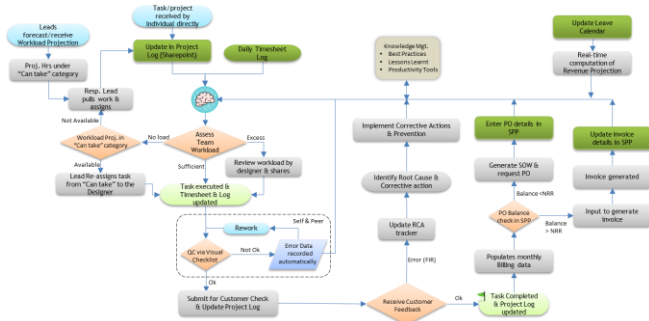


Figure 3: Work flow framework

V. SOLUTIONS

Developed solutions on different digital theme connecting to the use cases as listed below

A. Digital Theme: Planning & Scheduling

Currently the planning is effort intensive, done as a standalone one-time activities and manager has challenge to commit the delivery date as the status are not real time linked.

Identified below digital solutions to address the same.

Solution: Burndown Chart (Use Case: Establishes Team Velocity)

When more volume/shorter projects, identifying what in hand itself is critical. Also, committing to customer to deliver itself is a mammoth task. This use case helps to do it no time. It clearly shows how much work we have in hand & who is working on them & for how much time & how much is still pending.

With this chart shown in Fig. 4 below the lead/manager can plan & commit; & this is used in everyday team huddle to look if any help is required for project completion to keep velocity for the high-volume projects.

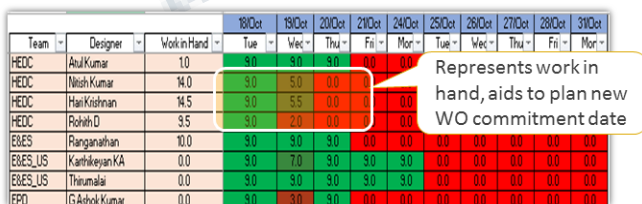


Figure 4: Burndown Chart

Solution: Work Time Analyzer (Use Case: Monitor Time Distribution)

To look at our team/individual's improvement we need to

know where the effort is spent. As witnessed in workflow the time spent is majorly on billable & non-billable activities as shown in Fig. 5. This helps to take appropriate action to improve utilization.

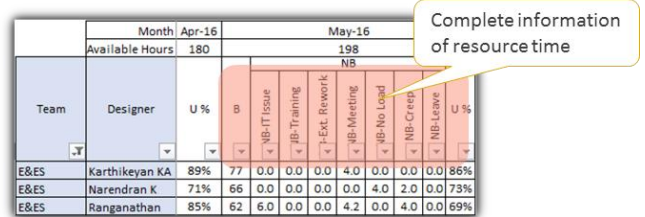
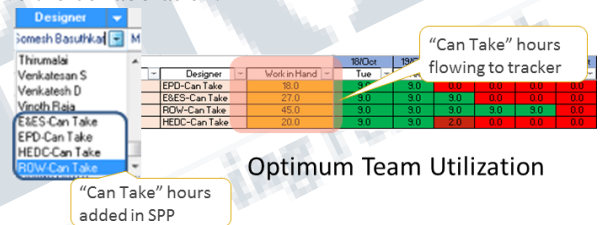


Figure 5: Work Time Analyzer

Solution: Visibility (Use Case: Collaboration)

As witnessed in flow chart, many times there are peaks & valleys in the workload in teams. Because of lack of visibility it is either missed or there is some idle time.

So, now with this "Can Take" category shown in Fig. 6, it helps to see if there is work in other team & then helps to drive the collaboration.



Optimum Team Utilization

Collaboration model within teams

Figure 6: One Team

Solution: Visibility (Use Case: Transparency)

To bring a positive competitive environment in workplace, complete transparency is key. We use voting my team using "Likes" in selections, as shown in Fig. 7. We also have a "Hall of fame" displaying every recognition & their achievement and in turn linked to individuals Score Card.

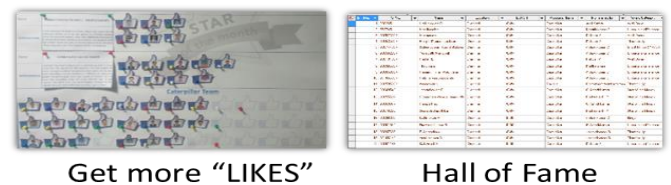


Figure 7: Transparency

B. Digital Theme: Execution & Analytics

Solution: Connected work flow (Use case: Operation & Business Dash boards / ATM - Variance, Ontime, Quality, Utilization, Forecast, Billing, etc.)

Every identified key KPI's are captured as operational

dashboards, both top down & bottom down. We can start at account level then deep dive to a team level & then to individual level.

It will help to do study between or within team, identify GAP, best practice and support continuous improvement. The one shown in Fig. 8 is for quality metrics, similarly can be done for other KPI's like Utilization, Variance, Ontime etc.

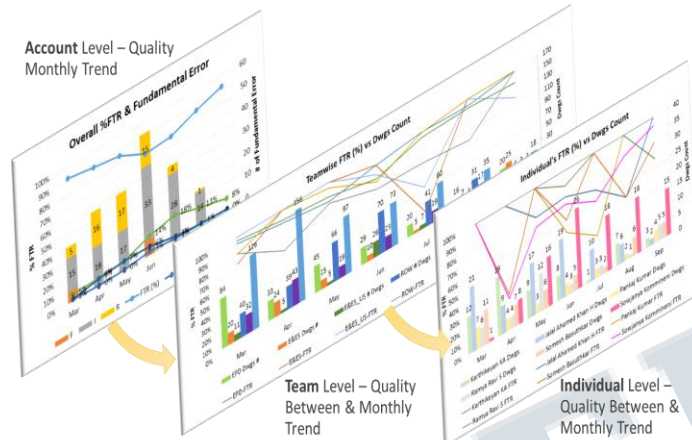


Figure 8: Operational Dashboard

Solution: Real time evaluation (Use Case: Customer related Statistical inference)

Many at times we face stakeholder review meetings with feedback based on perception or one of recent incidents. This solution helps to populate KPI's to substantiate "Performance" Vs "Perceptions".

The statistical analysis, data with confidence level & KPI's gives clear understanding of engagement maturity as shown in Fig. 9 below.

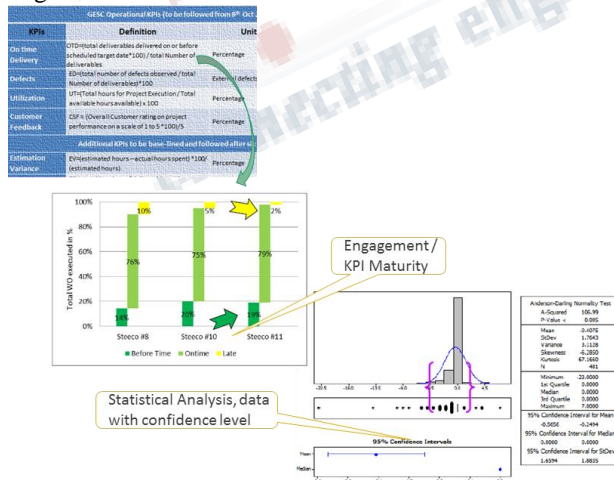


Figure 9: Statistical KPI's Plot

Solution: Real time evaluation (Use Case: Employee Performance management via scorecard)

Similarly, internal KRA's are populated on real time basis to provide regular feedback during project reviews. This helps team to benchmark themselves and motivates overall to improve the performance.

Real-time performance assessment system as shown in Fig. 10.

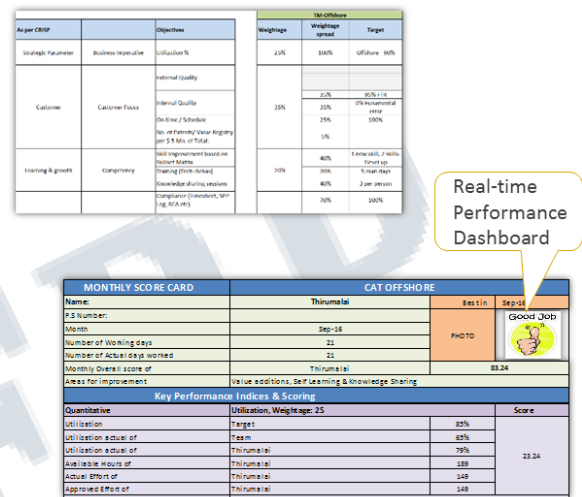


Figure 10: Internal KRA's

C. Digital Theme: Monitoring & Control

Solution: Trend Analysis (Use case: Quality Effectiveness)

Each defect is captured, categorized & counted under respective error code like how product failures are categorized. Root cause analysis (RCA) done for each error reviewing existing detection mechanism as well.

The categorization & monitoring shown in Fig. 11 helps to understand if there is a repeat of error code which in turn shows that RCA is not effective. The decrease in trend shows effectiveness of RCA.

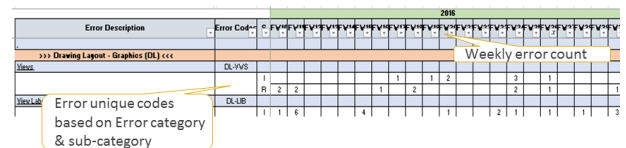


Figure 11: RCA Effectiveness Monitoring

Solution: Trend Analysis (Use Case: Prioritization & dynamic Training Plan)

The objective of analyzing by error code is to observe pattern/trend. If found random, it is under natural variation. Otherwise it indicates the ineffectiveness and need to revisit the corrective action identified.

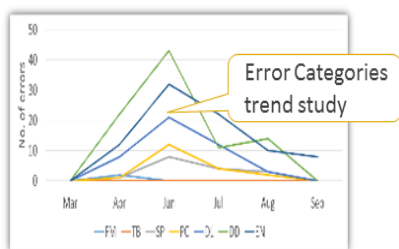


Figure 12: Error Trend Analysis

Another take away from this Use case is prioritization of the error month by month to know which error type occurred in this month, as shown in Fig. 13, which reflects the current competency GAP in the team.



Figure 13: Prioritization

With this, the training calendar topics for the month will revolve around where we find the gap. This continuous process helps us to increase the competency and improve first time right significantly.

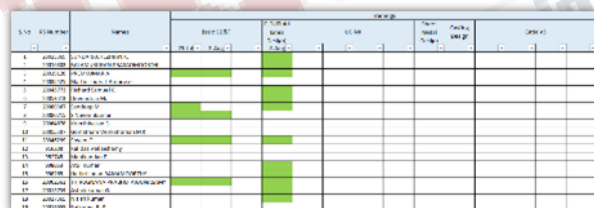


Figure 14: Training Plan

Solution: Control Tool Kit (Use Case: Process Validation visual aid)

Though the work flow is completely automated, there is large scope for garbage in, garbage out. Hence, it is important to bring a tighter control on inputs.

The below tool kit as shown in Fig. 15, used as a visual aid for the leads to monitor the noncompliance on a real-time basis and prompt for immediate fix.

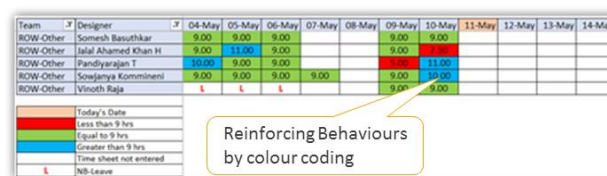


Figure 15: Process Validation

Solution: Control Tool Kit (Use Case: Data Validation visual aid)

This tool kit also built with certain degree of intelligence / logic to identify the data, prompt user where the error as shown in Fig. 16.

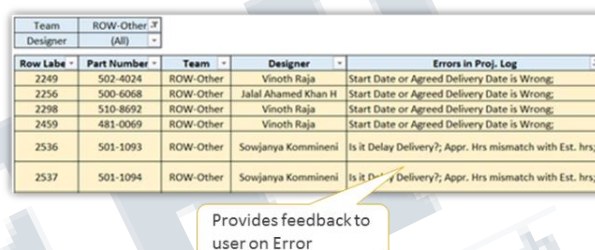


Figure 16: Data Validation

Solution: Control Tool Kit (Use Case: Statistical control limits)

No process is absolute, we knew there will be variations.

With this tool kit, we statistically built the control limits as shown in Fig. 17 to alert when there is a non-natural variation. It also helps to identify special cause variation. This can be done at all levels- account, team & individual level.

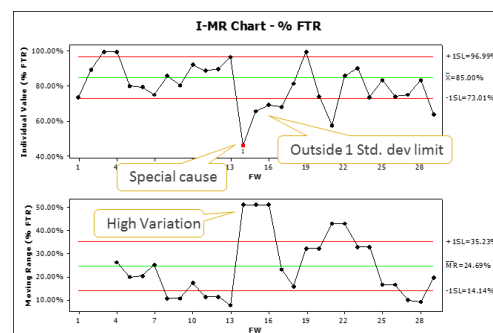


Figure 17: KPI's control limit

D. Digital Theme: Stakeholders

Solution: Centralized repository (Use case: Billing data, forecast, Revenue, Margin)

Every customer needs the billing data in a specific format to scrutinize task wise efforts with a further breakdown. This is critical & many a time's managers spend their time in putting

& verifying the data. As all input is in the SPP this data gets populated automatically for the month & at real-time as shown in Fig. 18 below.

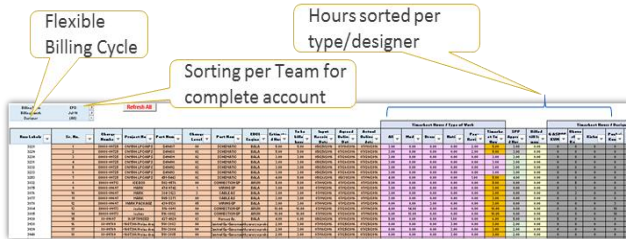


Figure 18: Billing data

Beginning of the month projection calculation is a mammoth task for the manager where we must get inputs from various leads. With this we created a simple regression equation considering factors like net run rate, holidays of the region, leaves coming from the calendar which gives us automatic projection as shown in Fig. 19 below.

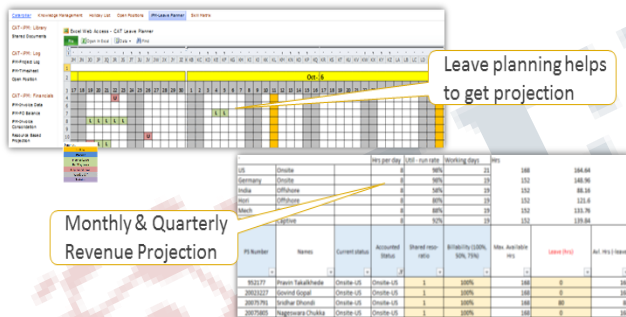


Figure 19: Forecasting

Solution: Centralized repository (Use case: PO Balance predictive)

It is far more important to invoice all delivered projects on time. Many at time we realize we have exhausted the existing PO and can't raise an invoice. Need to wait till we get the PO amended. This is centralized repository; the PO balance tracker will calculate automatically the required balance for next month and alert in case of any deficiency as shown in Fig. 20. It also keeps watch on the PO validity.

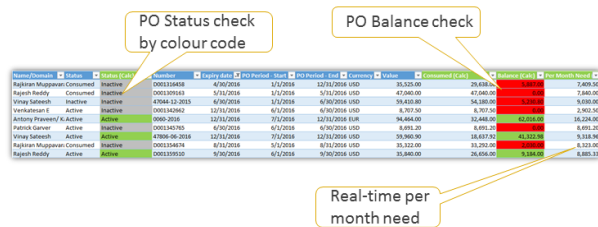


Figure 20: PO Overrun Indicator

Solution: Agility (Use case: Flexible & Customization)

As the pilot was done & initially rolled-out this framework it was understood that each team has their own billing cycle, some want option to do advance & many more customization.

In this solution, we have provided options to customize based on their business need without changing the system as shown in Fig. 21.

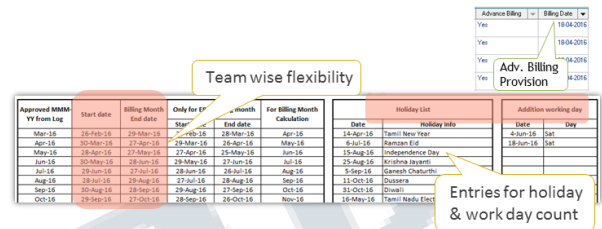


Figure 21: Flexible to customize

VI. POST IMPLEMENTATION ASSESSMENT

Below Table 2 shows how the initially identified challenges or pain areas addressed.

Table II: Solution

Area of Interest	Challenges / Pain Area	Solution
Execution Model	Effort intensive in Project planning & tracking	Minimal effort in planning, burn down chart populated automatically. All status is real time.
Systems	Effort intensive, High cycle time, Access issues for all level, not supportive of report generation	Highly flexible & customizable, to match customer need & team practice. All reports are populated automatically
Tracking	- PM have less visibility – Difficulty in following the status, needs more frequent follow-up (Push system) - Less confidence on accuracy	- No dependency /follow-up. Dashboard driven. - No redundant data, high accuracy with no iteration with customer
Report	Huge effort for consolidation, Less confidence on accuracy, dependency on person	Any time metric, no secondary consolidation/effort needed. All data available both via Internet & Intranet
Status	Priority conflicts, delay creates doubt on transparency & LTTS process maturity	- Transparent system, Leads can take real time decisions - Matured process, brings customer confidence

Also, a similar survey done post implementation of the solution and the probability of occurrence measured. As shown in Figure 22, many challenges are eliminated and for few a) the occurrence reduced significantly & b) developed

tool kit to deduct in case if it occurred. This digital framework has been implemented in 2 business units & has been well received by stakeholders with appreciation on implementation of effective project management process. This framework was further shared in the strategy meet in L&T TS as best practices for easy & effective project management.

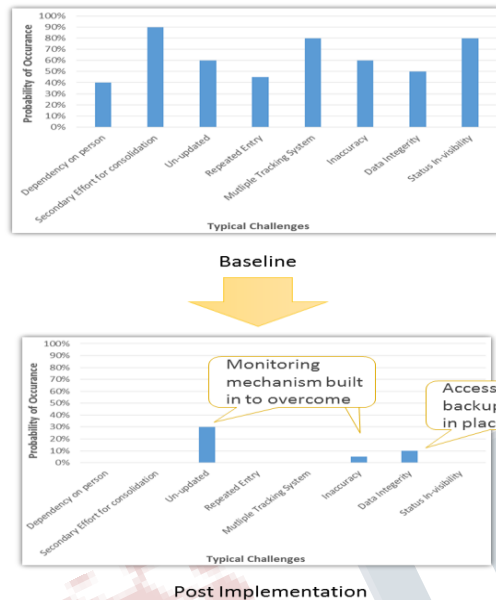


Figure 22: Post Implementation Study

VII. BUSINESS IMPACT

Listed below are the tangible & intangible benefits.

- Reduced NVA ~ 30% of leads effort
- Improved Quality ~ Reduced 80% of COPQ (Cost of poor quality)
- Linked Training Plan (Effective training - Hrs. & type)
- Reduced extended/unplanned report efforts. - Improves Motivation
- ZERO PO Overrun – timely invoicing
- Matured process (100% FTR - Increase customer confidence)
- Transparent System (Builds healthy environment)
- Metric driven project management framework
- Easily customizable for all rapidly changing requirements
- Can implement for any new account at ease

This framework can also be extended to customer to do

Virtual PM as it can be accessed via internet.

Gallery:

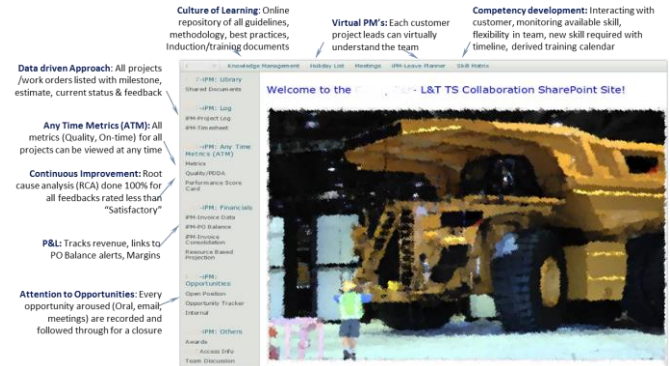


Figure 23: Gallery of Frameworks in use