



The Art of POS Transformation



A Thought Paper
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Introduction

Retail is a fast-changing industry with challenges posed at every step from different quarters. Coping and exploiting the changing environment continues to be a constant challenge as retailers strive to remain competitive and grow in this fast-paced global marketplace where access to information plays a crucial part in the sustainability of business. The dynamics of decision making and the agility to respond to changes are absolute critical parameters in this industry where operating margins are among the lowest.

Point-of-sale (henceforth referred to as POS) is the primary gateway between a retailer's information systems and its customers and plays an important role in effective customer interaction and service. POS is where customers today place the value in their shopping experience and its efficiency has been proved to have dramatic effect on sale volumes. So much as, POS has emerged today as a key centre of influence.

However, POS is also an area plagued by a battery of challenges imposed by functional as well as technical limitations. Being a channel which handles more than 90% of the sales, it is imperative that POS occupies high priority in the minds of retailers and forms one of the most investigated and invested area.

This *Thought Paper* discusses some of the characteristic challenges associated with the POS lifecycle and analyzes possible ways to approach these problems.

Justifying POS Investments

Let us start by examining the degree of churn generated at POS. According to surveys* conducted circa 2004 and early 2005

- Retailers typically spend 40-42% of their IT budgets on POS technology
- The overall market value of hardware, software, peripherals and maintenance is around 7.1 Billion USD
- 78% retailers likely to make new POS hardware or software decisions within the next five years
- 23% of POS upgrades delivered ROI within 1 year
- 63% of the retailers plan to increase their spending on store systems
- 8 out of 10 retail IT initiatives will be focused on store systems

Let's look at the dynamics involved in the life of POS applications

- Average life of POS is around 7 years. In some cases, it could be extended up to 10 years.
- 38% of retailers surveyed recently suggested that they might replace their POS in less than 2 years
- Another 24% of the respondents hinted at change in the next 4 years
- 50% of the retailers may upgrade their connectivity in the next 2 years

Moreover, while many retailers have recently undergone POS upgrades, nearly one-third of retailers interviewed during a recent IDC study plan to proceed with upgrades to POS software and/or their POS hardware within the next two years.

These clearly indicate couple of points, that:

- POS is and will continue to be an area of importance for retailers
- It makes an absolute case to adopt industry standards, frameworks and solution accelerators to streamline and expedite renovation/innovation at POS

**Sources:*

1) 14th Annual Retail Technology Study by RIS and Gartner, June 2004

2) Market Study: 2004 North American Retail Point-of-Sale Terminals by IHL

3) LakeWest 5th Annual POS Benchmarking, 2004

4) IDC Reports

5) Gartner Reports

6) Study by NRF

7) Store Systems Study 2005- RIS News Group

8) LakeWest 6th Annual POS Benchmarking, 2005

Emerging Trends in POS Marketplace

POS marketplace is dominated by several players and can be predominantly divided into two segments:

- a) POS Hardware
- b) POS Software

While the POS hardware market continues to be dominated by a few major players like IBM, NCR, Fujitsu et al; the POS software market remains highly competitive with no one vendor dominating the market. The likes of IBM, Datavantage, CRS, Fujitsu, Triversity have active presence in this space.

When it comes to POS operating system, the inclination is towards Windows based operating systems and clearly away from DOS. According to a survey conducted by IHL and RIS, both POS client and server operating system trend seems to be moving primarily towards Windows and Linux.

Pos Client Operating System	Installed Today	Considering For Next Purchase*
DOS	15%	0%
IBM 4690	12%	13%
Windows 9x/ ME/ CE	14%	11%
Windows NT/ 2000Xp Pro	35%	46%
Windows XP Embedded or WEPOS	6%	48%
Linux	7%	40%
Other	11%	2%
*Does not equal 100% Respondents could choose more than one operating system		
RIS Store System Study 2005		

Linux is seeing considerable traction in the POS marketplace. Product vendors embracing Linux for Retail have helped take the operating system to a much more mainstream position in the minds of retailers.

Retailers are also moving towards multi-channel integration with POS to provide a seamless and consistent experience for the consumer across all sales channels, leveraging the infrastructure, assets, tools, and resources across the organization.

Recent addition to the list of POS innovation has been the advent and growing popularity of handheld lane-busting solutions and wireless personal shopping assistants. Lately, market trends in POS software implementation have slightly inclined towards packages and away from proprietary software. However, it is observed that most of the COTS POS packages undergo a battery of changes and customization before being rolled out. This has further lead to tripartite working relationships involving the package vendors, implementation partners and retailers.

All these trends and innovation are aimed towards one single goal - improved efficiency at POS.

Pos Server Operating System	Installed Today	Considering For Next Purchase*
DOS	2%	0%
IBM 4690	11%	12%
Windows 9x/ ME/ CE	4%	5%
Windows NT/ 2000/ XP Pro/ 2003 Server	50%	57%
Windows Xp Embedded or WEPOS	3%	27%
Linux	7%	38%
Unix (SCO, FP, ATT, AIX)	13%	15%
Solaris	3%	2%
OS/ 400	2%	2%
Other	6%	1%
*Does not equal 100% Respondents could choose more than one operating system		
RIS Store System Study 2005		

Challenges Facing POS

POS was originally conceived with a single purpose in mind- processing a transaction - but today retailers require the POS to cater to many more assorted requirements. Today POS is probably the most challenging area in retail IT, mostly isolated, expensive to maintain, and cannot be easily upgraded to meet the increasingly sophisticated needs of retailers. The typical challenges facing POS applications could be segregated into distinct buckets consisting of issues leading from –

Lack of functionality & high cost of ownership:

- Un-scalable POS functionality
- More than 10 year old systems
- Proprietary platforms
- Herculean task to change/modify the software code
- Lack of proper documentation

Inadequate information flow:

- Poor connectivity between store and host systems
- No up-to-date information and customized promotions and services
- Absence of synchronized view of the customer and inventory information

High training cost:

- Average monthly cashier turnover is around 10%
- Non-intuitive character based user interface results in huge training costs
- Almost 90% of the cost of operating POS station is training and related labor cost

Interoperability:

This is another challenge faced during integration of POS with new enterprise applications or hardware due to:

- Monolithic nature of POS system
- Absence of standards and industry norms

In addition, retailers today are faced with many limitations of their legacy POS hardware that challenge any extended life strategy. Hardware upgradeability of these systems was limited when originally designed. Memory could be increased to some extent but processor upgrades are generally not available. Internal designs of some processor bus technologies are old and limit performance by today's standards. Moreover, operating systems that function on this aging hardware are also severely crippled by functionality limitations. Apart from these, pressures of external forces that impact retailer's market position, competitiveness, or business operations (e.g., economic, technology, changing customer preferences, competitive environment, regulatory et al) also pose severe challenge to retailers and their POS systems.



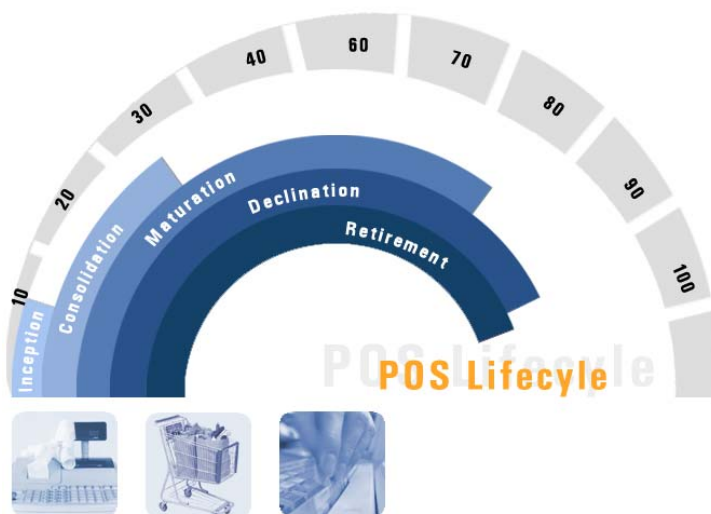
Understanding POS Lifecycle

To understand POS and its uniqueness we shall have to analyze the POS application lifecycle and the characteristics associated with it. Characteristics and challenges associated with across the lifecycle of a POS application are different in many ways than those in other applications in the enterprise IT system.

We can divide the POS lifecycle into five distinct phases based on factors such as age and state.

- Inception
- Consolidation
- Maturation
- Declination
- Retirement

Some of the typical characteristics and challenges associated with various phases of POS lifecycle have been discussed below:



Inception Stage

This is the stage where the new POS is still in the initial pilot phase and has not be rolled out across all the operations. The initial challenge here is to ensure that POS achieves a functionality fitment to the business while incorporating the best processes and features into it. It is likely at this stage to encounter difficulties during implementation and rollout of new POS applications.

Characteristic scenarios depicted by POS at this stage:

- POS needs to achieve the functionality fitment with business requirements
- Best processes and features should be incorporated
- There are impending implementation challenges
- Planning and preparation for Pilots and Rollouts are under progress

Challenges facing Retailers at this stage of the POS lifecycle:

- How to ensure functionality fitment of the new POS
- Is there a way to incorporate best practices in terms of:
 - Standards
 - Features
 - Processes
- How to go about implementation
- What should be the Rollout Strategy

Consolidation Stage

This is when the POS has already crossed the pilot stage but is still in the process of enterprise-wide rollout and integration. There are pockets where versions of the old POS still exist. The day-to-day operational and maintenance processes around the new POS application are still being worked out.

Characteristic scenario of this stage:

- POS not uniform and standardized across all operations in terms of functionality, technology and platform. Presence of multiple POS applications.
- POS needs to be seamlessly integrated with the back office enterprise systems
- Portfolio rationalization exercises are being contemplated to identify redundant resources
- POS release management across all operations has become challenging due to the presence of multiple POS applications

Challenges in this stage:

- How to address interoperability issues with the other back office systems
- Effective Release Management process, a missing caption in the puzzle
- The question of standardization is under consideration, across-
 - Hardware
 - Software/ OS
 - Platform

Maturation Stage

This is the stage where the POS has been around for years with the retailer and is quite stable. This is the state where the POS has evolved to meet all the staple requirements and effectively handles the business requirement. However the POS does not have the state-of-the-art features and has got voluminous enhancement requests pending for implementation. The POS would have evolved over a period and the consistency of its code-base is questionable.

Characteristics:

- The POS has been around for years now and is meeting all the critical and basic functional requirements
- POS is stable and maintenance process is quite streamlined
- Volume of enhancement requests are getting higher by the day and meeting staffing requirements to maintain the POS is beginning to get challenging
- There is no real-time information flow between the enterprise systems and POS
- POS is not very scalable or extendible

Challenges facing this stage:

- POS is not able to handle the peak volume of information and transaction
- Extending POS life has become an imperative
- POS has become labor intensive
- Inconsistent POS versions across different stores
- Is there a way to add more features to the POS
- TCO is inflating beyond control
- POS has become a bleeding edge for its
 - Technology Costs
 - People Costs and
 - Operations Costs
- POS is plagued by inadequate information flow across the enterprise system

Declination Stage

At this stage the POS starts showing sure signs of aging. It is not able to scale up to the new set of business requirements and also failing to live up to the performance level expected out of it.

Characteristic scenario:

- POS has reached a stage where existing software and hardware cannot be scaled any further
- Cost of ownership cannot be brought down any further
- Unable to integrate new functionalities and technologies
- POS application source code not available for various pieces of functionality
- Availability of resources with required technical skill sets is rare
- Loss of business owing to POS limitations and high downtime
- Normal checkout process and time required is much beyond industry average

Challenges:

- To control the unmanageable cost of ownership, in terms of
 - Technology Costs
 - People Costs
 - Operations Costs
- Tackle the Configuration Management nightmare
- Redundant code overhead in POS due to tactical modifications
- Legacy technologies used do not meet the requirements
- There is a need to migrate from 16 bit to 32 bit
- POS lacks adequate features
- Performance is a bottleneck
- Unable to provide proper customer service
- Possibility of incurring lost sales at POS

Retirement Stage

This is where any further investment in the same POS stops yielding credible ROI. The maintenance costs of POS would have grown larger and have become a bleeding edge. Additionally in some cases, vendors who developed the early POS applications have moved on to new technology. Some of them might have gone out of business and retailers are faced with escalated internal costs to support these aging systems. It is the phase where retailers start contemplating on exploring options for a new POS.

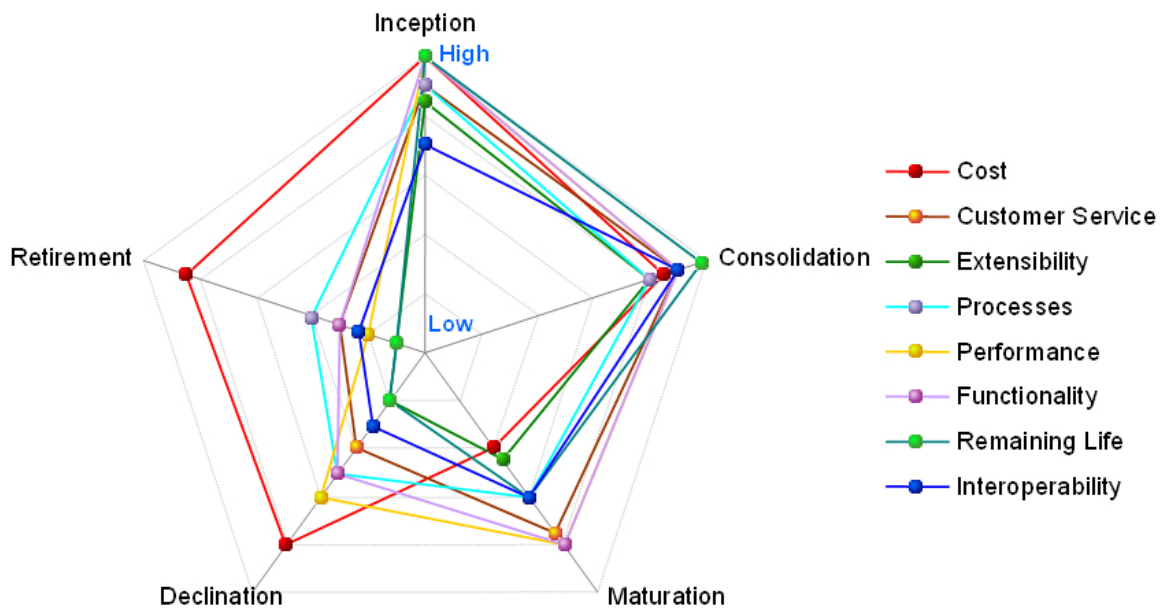
Characteristics:

- Businesses start building business case and performing ROI analysis on POS options
- Process and functionality documentation exercises are initiated
- Vendor identification and evaluation process starts
- Commencement of package & hardware evaluations exercises
- Build V/S Buy analysis and decisions are being deliberated
- Floatation of RFIs and RFPs for prospective vendors

Challenges:

- The challenge is to have a plan as to how to deliver more for less
- To build a credible business case for a new POS and associated investment
- To develop a POS transformation roadmap
- Baseline the existing POS functionality
- Begin the RFP formulation exercise to invite bids from prospective vendors
 - Decide a strategy and selection criteria to evaluate-
 - Packages
 - Implementation partners
 - Build or Buy options

The characteristics and challenges are indicative of the lifecycle stage a POS application might be at that point in time. If we are to chart out a relative severity variation pattern of the typical pain points, across different phases of POS lifecycle, it would correspond to the picture depicted below.



The pain points shown in the spider chart are catalysts to the primary drivers that lead to POS change.

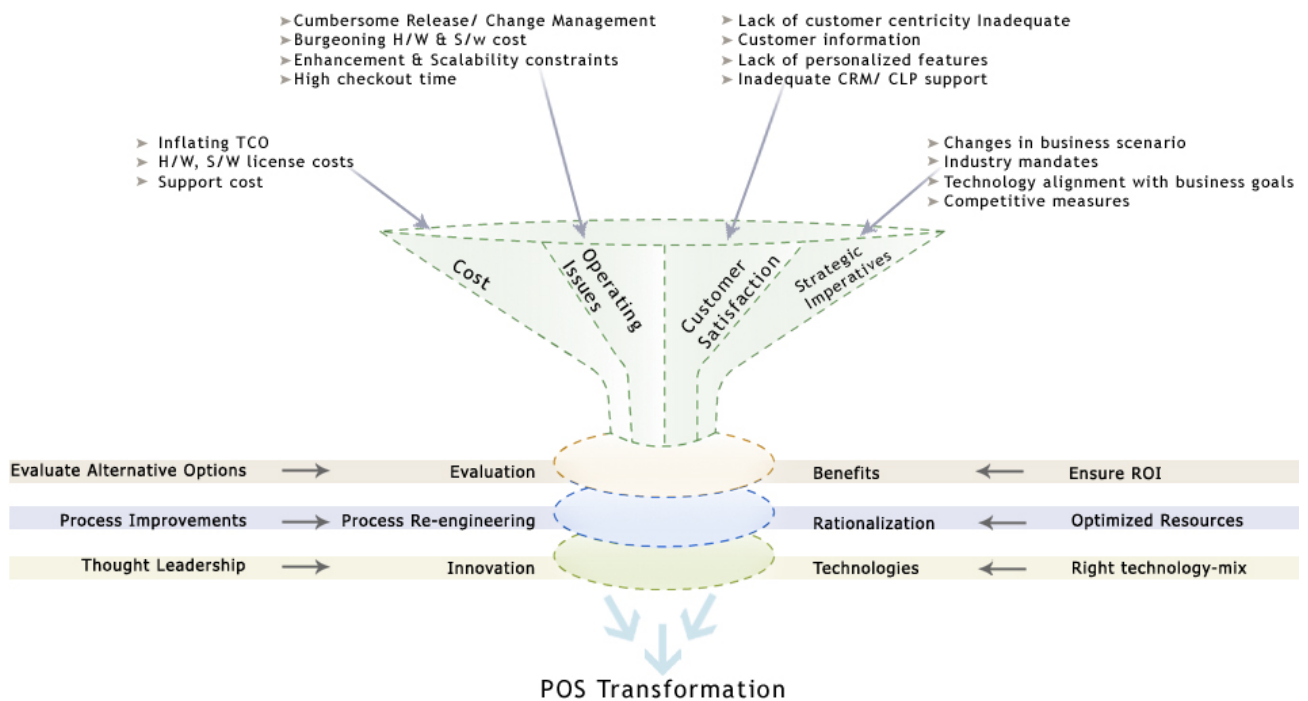
Identifying POS Change Drivers

Normally, the first thought would be to hold 'Unmanageable Cost' as the main reason for prompting POS changes. In most cases, 'Cost' is a cumulative effect of different causes rather than the cause itself. However given the importance of it, cost can still be classified as one of the primary transformation drivers.

The primary drivers necessitating transformation at POS are:

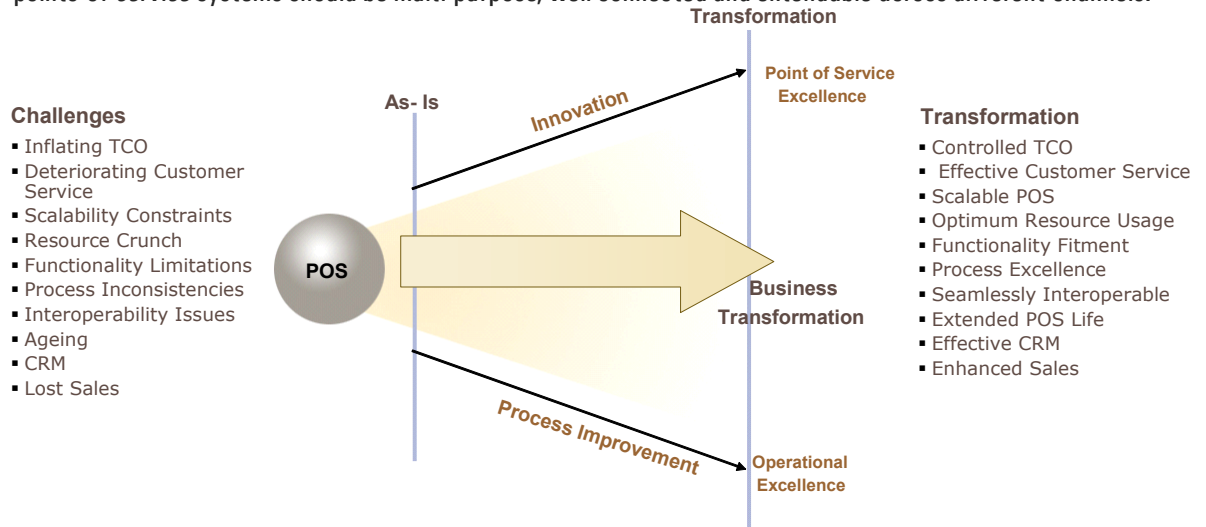
- **Cost:** Spiraling cost of ownership
- **Operating Issues:** Difficult maintenance, lack of features/functionality
- **Customer Satisfaction:** Inadequacy to scale to changing customer expectations, in-efficient checkout
- **Strategic Imperatives:** Non-alignment with present organizational goals and changing business scenarios

POS transformation could be partial or total in nature. By total transformation it is indicated that POS hardware will also get transformed along with the software. The drivers ideally should be verified and processed through several stages of analysis and value-adds -- ranging from evaluation of different options, re-engineering to bringing in innovation-- both in terms of business processes and technology-mix. POS transformation could be achieved only through thorough and judicial analysis, optimization and re-engineering.



Formulating a Transformation Roadmap

Transforming isolated point-of-sale systems into multipurpose point-of-service systems should be guided by roadmap. A *Transformation Roadmap* should use innovation and process best practices as the basis to address POS challenges and to bring business benefits that result in excellence in points of service and optimize operating levels. A successful POS transformation should lead to a reliable and flexible 'points-of-service' system and not just a stand-alone point-of-sale system. It should be able to conceive a POS system that will have an extended life, connect every device with back-office applications that in turn infuse every activity with real-time data. Such points-of-service systems should be multi-purpose, well connected and extendable across different channels.



There is a need to formulate and standardize a strategy in order to drive POS transformation.

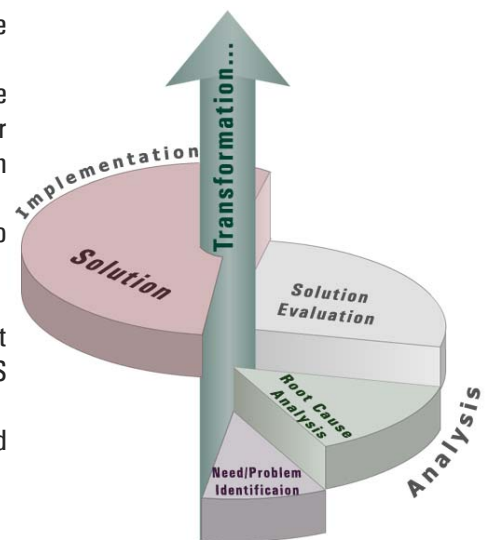
The strategy should aim primarily at:

Analyzing the challenges: A thorough analysis of the POS should be undertaken to identify the perennial and acute pain points. The objective of this stage of the exercise should be to:

- Identify existing POS pain points.
- Perform root-cause analysis to 'zero down' on the core reasons leading to these pain points.
- Map the pain points to identify the current lifecycle stage of the POS. This should help to understand other characteristics and challenges typically associated with that particular lifecycle stage.
- Analyze requirements and evaluate available options to identify solution alternatives.

Implementation: Focus should be on amalgamation of right resources and competencies to ensure a smooth and successful POS implementation.

- Identify and formulate an implementation milestone based roadmap.
- Identify the right solution option.
- Identify the right implementation partner(s).
- Govern implementation program.
- Conduct Pilot tests in a subset of locations to confirm ROI.

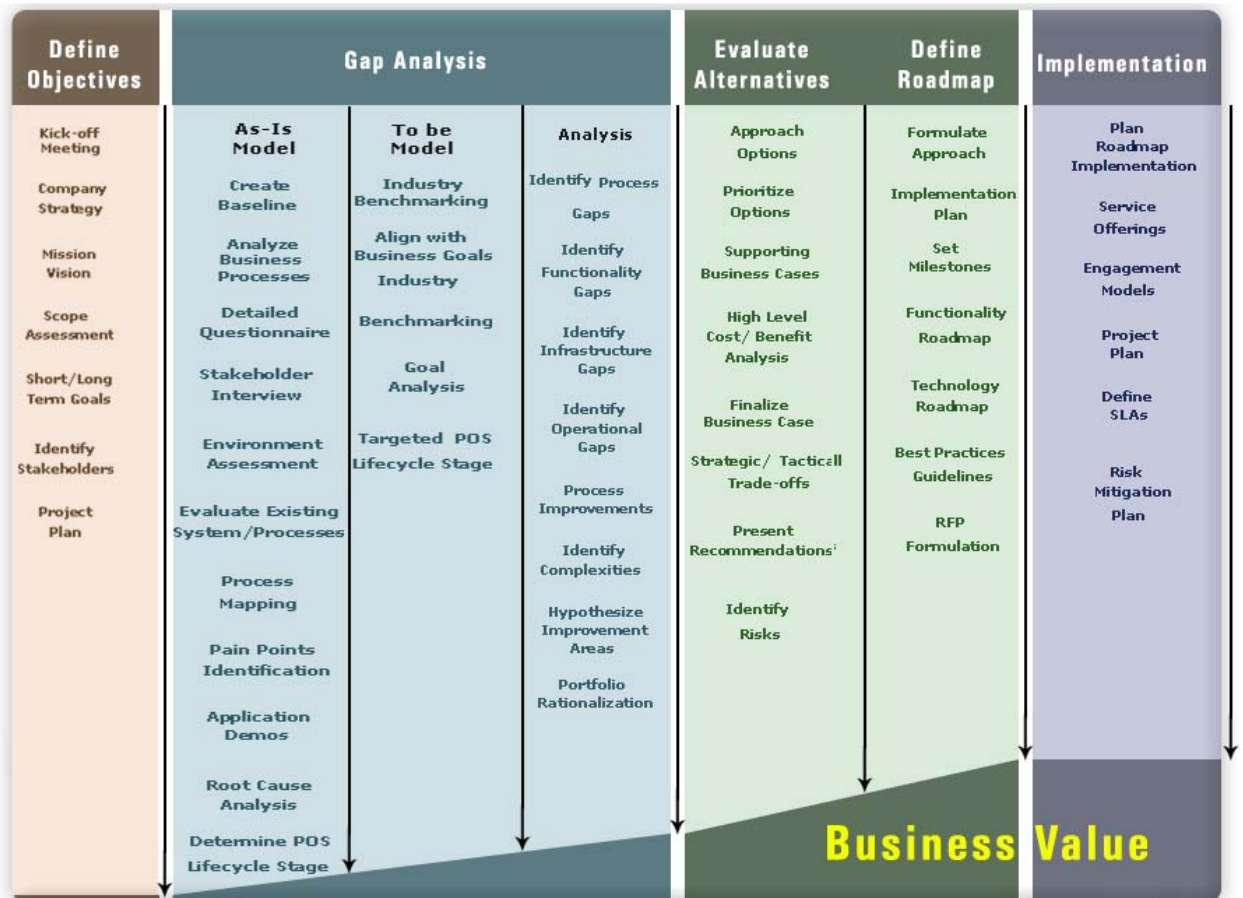


POS Transformation- Approach and POS Transformation- Approach & Recommendations

As a best practice, it is important to adopt a standardized approach and methodology to carry out POS transformation. It lays out guidelines to carry out renovation at any stage of POS lifecycle and acts as an enabler in delivering the projected business values.

A transformation methodology should lay out the roadmap for performing reconnaissance as well as detailed analysis to identify the gaps in the 'As-Is' state and their perceived solutions in the 'To-Be' stage.

The methodology should be adaptable and flexible to fit into and cater to the needs of different stages of the POS lifecycle. It should be a systematic and componentized approach to an engagement starting from defining the goals to defining the roadmap to working out a risk management plan. Each step of the methodology should be associated with activities which deliver value-adds to the overall exercise and should be substantiated by quantifiable outputs. The activities under each step should be derived based on their applicability



The activities within each step of a Transformation Methodology could be-

Define Objective: As a first step, the goals, objectives and strategies should be defined and set as the guiding principle for the whole exercise.

Gap Analysis: A gap analysis could be performed to identify the difference that exists between the 'As-Is' POS system and the 'To-Be' system. It would help to identify the existing state of POS lifecycle and to estimate the level of work needed to transform the POS into its projected state.

Evaluate Alternatives: All available options e.g. 'Build' v/s 'Buy' v/s 'Buy & Customize' should be evaluated for subsequent considerations. POS packages could be short listed and evaluated at this stage. Solution alternatives should be compared against the requirements to find the best fit. Risks associated with each approach should be identified and cost-benefit analysis should be performed. Each alternative should be supported by a business case for fact-based selection or rejection.

Define Roadmap: It is useful to formulate a solution implementation strategy at this stage with clear plan and milestones chalked out. Depending on the strategic imperatives, the option to float a 'RFI/RFP' could be weighed to explore the appropriate package vendors and implementation partners.

Evaluation Implementation Proposals: Off late POS features/functions, system reliability and vendor reputation have emerged as leading influencers of decisions around POS. Partnering with carefully chosen package vendors and implementation specialists could result in significant cost benefits and strategic value propositions. Implementation proposals from prospective vendors should ideally encompass all aspects of the engagement ranging from engagement models, solution details, risks, mitigation plans and costs.

To ensure effective implementation program governance, it is advisable to have specific deliverables associated with step of the approach. An indicative list of deliverables associated with each phase could be:

Approach Steps	Interim Steps	Deliverables
Define Objective		<ul style="list-style-type: none"> ▪ Scope Document ▪ Project Plan ▪ Data Collection Templates
Gap Analysis	As-Is Model	<ul style="list-style-type: none"> ▪ POS Process Maps ▪ Pain Points Documentation ▪ POS Application Evaluation Report ▪ High Level Assessment Report
	To-Be Model	<ul style="list-style-type: none"> ▪ Requirement Specification Document ▪ Shortlist POS Evaluation Criteria
	Detail Analyses	<ul style="list-style-type: none"> ▪ Detailed Gap Analysis Report on the 'Current' and 'To-Be' POS lifecycle states ▪ Documentation of required process changes ▪ POS Interface Details ▪ PO and BO applications Portfolio Rationalization Report
Evaluate Alternatives		<ul style="list-style-type: none"> ▪ Present Approach Options each alternative ▪ Develop supporting Business Cases for each alternative ▪ Recommendation Document ▪ Documentation of Perceived Risk Factors Pertaining To The Approach
Define Roadmap		<ul style="list-style-type: none"> ▪ Define POS Implementation Strategy ▪ Implementation Plan with Milestones ▪ Formulate RFP inviting for tenders from vendors and service providers
Proposal Evaluation		<ul style="list-style-type: none"> ▪ Evaluate Implementation Proposals for Requirements Fit

Conclusion

As retailers deploy new POS systems, the focus should continue to be on the business value of these applications and functional alignment with the overall business strategy. The effort and financial implications required to renovate POS is colossal and should be supported by strong business cases. To lessen risk implications, implementation should be preceded by Pilot tests to confirm ROI. Given the nature of importance POS plays to the top and bottle line of retail business, it is prudent to keep it in good health and equipped with features that are foremost to the business.

Periodic audits to ascertain the health of POS and interim upgrades can not only let retailers be abreast with the latest requirements but also prolong their life which effectively results in significant cost savings in the long run. Performing audits and re-engineering are specialized activities and should be governed by standardized approaches and helped by time-tested methodologies, frameworks and tool sets. Partnering with specialized vendors and experienced POS service providers can significantly reduce the risks involved while delivering assured values. By rejuvenating point-of-sale, the top and bottom lines can only get higher!

About the Author

Abhishek Das is a Retail Domain & IT Consultant with the Cognizant Technology Solutions. His areas of specialization encompass the functional and technical aspects of Retail IT and business process management space. Prior to Cognizant, Abhishek was a retail domain consultant with Wipro Technologies. He has been a consultant to a number of leading retailers in North America and Europe.

Cognizant in Retail

Cognizant Technology Solutions (henceforth referred to as Cognizant) offers world-class software and technology solutions for the retail industry. Cognizant combines years of technical experience and domain knowledge to provide end-to-end consulting, technology infrastructure and BPO solutions to retail corporations globally. Cognizant has established Centers of Excellence (CoEs) in the areas of Point of Sale, Supply Chain Execution, RFID, Merchandizing and Pricing to provide best-in-class solutions to its customers.

Based on its POS engagement experience Cognizant has developed and componentized a comprehensive POS solutions framework, *PO\$abilities*, to meet the POS requirements of retail customers around the world.

Cognizant's Retail vertical has more than 1000 person-years of experience in retail domain consulting, system integration, application development & management. With its 1400+ strong - Project Managers, Business Analysts, IT Architects and Software Professionals; Cognizant offers comprehensive end-to-end set of services – from solution conceptualization, consultation, package implementation to application maintenance. It carries in-depth experience across the entire Retail *Value Chain* spanning across In-store Systems, Enterprise Management, Supply Chain Management and Execution, Merchandise Management, Pricing, RFID and CRM.

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