

National College of Ireland

Project Submission Sheet

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Programme Name:	MSc in International Business	Year:	2023-2024
Module:	Strategic Project Management		
Lecturer:	Dermot Bradfield		
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Project Title:	Part 1,2 and 3 - Implementation of HRIS in a HR consultancy Part 4 – Challenges faced during the shift from Water to Agile Methodology		
Word Count:	8439		

I hereby certify that the information contained in this (my submission) is information pertaining to research I conducted for this project. All information other than my own contribution will be fully referenced and listed in the relevant bibliography section at the rear of the project.

ALL internet material must be referenced in the references section. Students are encouraged to use the Harvard Referencing Standard supplied by the library. To use other author's written or electronic work is illegal (plagiarism) and may result in disciplinary action. Students may be required to undergo a viva (oral examination) if there is suspicion about the validity of their submitted work.

Signature:	Gayatri Ajay Dalvi
Date:	26 th April 2024

PLEASE READ THE FOLLOWING INSTRUCTIONS:

1. Please attach a completed copy of this sheet to each project (including multiple copies).
2. Projects should be submitted to your Programme Coordinator.
3. **You must ensure that you retain a HARD COPY of ALL projects**, both for your own reference and in case a project is lost or mislaid. It is not sufficient to keep a copy on computer. Please do not bind projects or place in covers unless specifically requested.
4. You must ensure that all projects are submitted to your Programme Coordinator on or before the required submission date. **Late submissions will incur penalties.**
5. All projects must be submitted and passed to successfully complete the year. **Any project/assignment not submitted will be marked as a failure.**

Office Use Only	
Signature:	
Date:	
Penalty Applied (if applicable):	

AI Acknowledgement Supplement

[Strategic Project Management]

[Implementation of HRIS in a HR consultancy]

Your Name/Student Number	Course	Date
Gayatri Dalvi/ x22200975	MSc in International Business	26 th April 2024

This section is a supplement to the main assignment, to be used if AI was used in any capacity in the creation of your assignment; if you have queries about how to do this, please contact your lecturer. For an example of how to fill these sections out, please click [here](#).

AI Acknowledgment

This section acknowledges the AI tools that were utilized in the process of completing this assignment.

Tool Name	Brief Description	Link to tool
Chat GPT	An overview of Cost Estimation	https://chat.openai.com/?sso=
Chat GPT	An overview of Days Estimation	https://chat.openai.com/?sso=

Description of AI Usage

This section provides a more detailed description of how the AI tools were used in the assignment. It includes information about the prompts given to the AI tool, the responses received, and how these responses were utilized or modified in the assignment. **One table should be used for each tool used.**

[Chat GPT]	
I have used Chat GPT in my project for the cost estimation of scope mentioned in my project. However, I have either used the average cost or the minimum cost from the provided range as per my understanding.	
What is the cost in Euros for Finalized RFP Document scope for the HRIS implementation in a HR consultancy Project Execution?	Here's an approximate breakdown of expenses for Finalized RFP document scope in euros for implementing an HRIS in an HR consultancy: Finalized RFP Document: €1,000 - €3,000

[Chat GPT]

I have used Chat GPT in my project for the Duration estimation of scope mentioned in my project. However I have mentioned the minimum days as per my understanding.

How many days does it take for Technical Feasibility execution in an HRIS implementation project?

Here's a breakdown of the estimated duration for each technical feasibility activity for implementing an HRIS in an HR consultancy:

Infrastructure Assessment:

- Duration: 5-7 Days

System Integration Analysis

- Duration: 5-7 Days

Evidence of AI Usage

This section includes evidence of significant prompts and responses used or generated through the AI tool. It should provide a clear understanding of the extent to which the AI tool was used in the assignment. Evidence may be attached via screenshots or text.

Additional Evidence:

ChatGPT 3.5 ▾



ChatGPT

Certainly! Here's an approximate breakdown of the expenses for each scope in euros for implementing an HRIS in an HR consultancy:

1. Clarify and Address Vendor Questions: €500 - €2,000
2. Finalized RFP Document: €1,000 - €3,000
3. Issue Amendments: €500 - €1,500
4. Conduct Market Research for Vendors: €1,000 - €5,000
5. Request Recommendations for Vendors: €500 - €2,000
6. Explore Vendor Databases: €500 - €2,000
7. Issue Request for Information: €500 - €1,500
8. Evaluate Vendor Credentials and Experience: €1,000 - €3,000

These are approximate estimates and can vary based on the complexity and scale of the HRIS implementation project, as well as the specific requirements and market conditions. Additionally, these costs do not include the expenses related to the actual HRIS software, implementation, training, and ongoing support, which would be separate and typically more substantial.



Message ChatGPT...



ChatGPT can make mistakes. Consider checking important information.



Additional Evidence:

ChatGPT 3.5

Can you be specific in minutes or days

ChatGPT

Certainly! Here's a more specific breakdown of estimated durations in terms of days for each scope:

1. Data Extraction: 5-20 days

2. New System Reports: 3-5 days

3. Data Validation: 10-30 days

4. Dual Maintenance of new and old data: Throughout project duration (ongoing)

5. Project Kick-Off and Stakeholder meetings: 1-5 days

6. Installation: 3-10 days

7. Test and Training: 20-60 days

8. Go-Live: 1-3 days

9. Rollout: 30-90 days

10. Communication: Throughout project duration (ongoing)

11. Q&A Responder: Throughout project duration (ongoing)

12. Data Security and Privacy Risks: Throughout project duration (ongoing)

13. Integration Risks: 5-15 days

14. Prevention: Throughout project duration (ongoing)

15. Set Design: 10-30 days

16. Budgetary Considerations: Throughout project duration (ongoing)

17. Gap Analysis: 10-30 days

18. Creating RFP (Request for Proposal): 10-20 days

19. Shortlist and Select a Vendor: 10-20 days

20. Vendor Selection: 5-15 days

21. System Pricing: 5-15 days

22. Technical Feasibility: 10-20 days

23. Operational Feasibility: 10-20 days

24. Legal and Political Feasibility: 10-20 days

25. Post-Implementation Review: 10-30 days

Message ChatGPT...

ChatGPT can make mistakes. Consider checking important information.

Additional Evidence

ChatGPT 3.5

You

Kindly mention the days for this technical feasibility elaboration

ChatGPT

Certainly! Here's a breakdown of the estimated durations for each technical feasibility activity in an HRIS implementation project:

1. Infrastructure Assessment:

- Duration: 5-7 days

2. System Integration Analysis:

- Duration: 5-7 days

3. Scalability and Performance Evaluation:

- Duration: 5-7 days

4. Data Security and Privacy Review:

- Duration: 5-7 days

5. Technology Selection and Vendor Assessment:

- Duration: 7-10 days

6. Prototype Development (Proof of Concept):

- Duration: 10-15 days

7. IT Resource Assessment:

- Duration: 5-7 days

8. Technical Architecture Design:

- Duration: 10-15 days

Note:

- The durations provided are estimates based on typical timelines for conducting each technical feasibility activity in an HRIS implementation project.

Message ChatGPT...

ChatGPT can make mistakes. Consider checking important information.

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IMPLEMENTATION OF HRIS IN A HR CONSULTANCY

STATEMENT OF WORK

Introduction and Background

HRIS (Human Resource Information System) is a software solution that allows you to manage one of the important elements of a company that is human resources. It provides discipline while maintaining, managing, and providing or processing thorough employee information which includes information of each employee whether they are currently working in the organization, if they are currently not working in the organization, even if they are prospects or if they are rejected during the process of selection. Along with this information, it also stores human resources related policies and procedures and facilitates accurate record keeping and reporting. This software solution has been proven as a perfect replacement for the processes that used to be conducted decades ago manually. It allows organizations in today's world to conduct all the HR related practices and tasks efficiently and it creates a kind of employee-company interaction which is good for the company in the long run. Hence, HRIS helps in optimizing the HR operations, providing a great experience to employees by tapping into the digital workplace.

Speaking of today's workplace in terms of the evolution of HRIS and its necessity in every organisation, it has gone through a profound transformation through an extraordinary spectrum of software solutions. These software solutions have changed the entire picture of human resource management upside down and played a pivotal role in modern organizations. Considering 1950s, the initial HRIS journey was conceived as a basic payroll system all the way to automated routine administrative tasks in 1960s. HRIS has come a long way where it currently handles complex functions from recruitment, data savings, performance management through report generation, making employees independent while conducting their personal tasks and analytics. From just being conceived as a payroll system to analytics, HRIS has evolved and the reason behind the same is nothing but the demand from the HR departments over a period and their willingness to provide strategic value to the organizations through data -driven insights (IceHRM, 2020).

Objectives

Nowadays, HR consultancy faces many challenges when it comes HRIS. Challenges like manual activities that are time consuming, limited data visibility and analysis, difficulty in compliance management, risks of data security, inconsistent service delivery, scalable operations, limited integration with other systems, higher costs and ROI, lack of real-time insights and at the end employee dissatisfaction. It is necessary for HR consultancies to address this issue by investing in a comprehensive HRIS that helps tackling these challenges.

Along with tackling these challenges, the objective of this project is to focus on certain elements such as the customization of HRIS. The aim is to implement an HRIS that allows the consultancy to customize the information system as per their needs. There are times when people working on HRIS have an idea or a process ready in their head to conduct a specific task, however, HRIS which are non- customizable will not allow you to do so. This creates employee frustration and productivity loss. The aim is to also provide streamlined HR processes that include compliance management related to HR practices, payroll processing, data privacy and client contracts. Here, the aim is to make sure that HRIS helps in reducing the compliance risks and upholds legal obligations. There are situations where employees prefer a level of independence in their workplace. The aim is to provide employee self – service where they can have access to certain features of HRIS wherein they can apply for leave, update their personal information in case of any changes, etc.

Speaking in terms of improved reporting and analytics, the goal is to also allow the consultancy in conducting performance management where it will calculate the employee performance weekly, monthly, yearly, etc. based on the consultancy's needs. This will allow the company to take important decisions with respect to employees such as employees who have a low performance percentage and need further training. This HRIS will provide training and support to those employees as well as clients and allow them to maximize their benefits.

Lastly, it also aims at enhancing data security, achieving scalability and flexibility, making sure that it integrates with client systems and more ROI. Ultimately, a goal of this HRIS implementation would be allowing the consultancy to transform their HR operations, providing better client service, and allowing the consultants to adopt a new system and address the pain points within the HR function.

MSCW Methodology

Sn	Scope	MSCW	Cost
	Total Cost of Project		€ 293,000
S1	Data Extraction	S	€5,000
S2	New System Reports	S	€5,000
S3	Define Data Validation Objectives	M	€1,000
S4	Plan Data Validation Approach	M	€2,000
S5	Data Profiling	M	€3,000
S6	Preliminary Checks of Data Validation	S	€2,000
S7	Comprehensive Validation	M	€5,000
S8	Manual Reviews on Data Validation Activity	S	€3,000
S9	Resolving Issues Related to Data Validation	C	€3,000
S10	Integration and Post-Implementation Validation	M	€4,000
S11	Creating Validation Plan	S	€2,000
S12	Project Kick-Off and Stakeholder Meetings	M	€1,000
S13	Installation	C	€5,000
S14	Test Planning	M	€5,000
S15	Test Case Development	M	€3,000
S16	Test Execution	M	€8,000
S17	Defect Resolution and Retesting	M	€5,000
S18	Test Reporting	M	€3,000
S19	UAT Planning	M	€4,000
S20	UAT Execution	M	€7,000
S21	Defect Management and Resolution of UAT	M	€4,000
S22	UAT Sign-Off	M	€2,000
S23	QA and Bug Fixing	M	€6,000
S24	Training Needs Analysis	M	€3,000
S25	Content Creation	M	€4,000
S26	Review and Iteration	C	€3,000
S27	Training Preparation	M	€4,000
S28	Training Delivery	M	€6,000
S29	Go-Live	C	€3,000
S30	Integration Risks	S	€5,000
S31	Set Design	W	€5,000
S32	Identify Current HR Processes and System	M	€5,000
S33	Document Desired HRIS Requirements	M	€3,000
S34	Analyze Current State for Gap Assessment	W	€4,000
S35	Analyze Desired State for Gap Assessment	W	€3,000
S36	Prioritize and Define Gap Resolution Strategies	W	€3,000
S37	Prepare Gap Analysis Report	M	€2,000
S38	Clarify and Address Vendor Questions	S	€500
S39	Finalized RFP Document	M	€1,000
S40	Issue Amendments	C	€500
S41	Conduct Market Research for Vendors	S	€1,000
S42	Request Recommendations for Vendors	S	€500
S43	Explore Vendor Databases	C	€500
S44	Issue Request for Information	C	€500
S45	Evaluate Vendor Credentials and Experience	S	€1,000
S46	Shortlist and Select a Vendor	S	€2,000
S47	Vendor Selection	S	€2,000
S48	System Pricing	S	€20,000

S49	Infrastructure Assessment	S	€8,000
S50	System Integration Analysis	M	€6,000
S51	Scalability and Performance Evaluation	M	€7,000
S52	Data Security and Privacy Review	M	€10,000
S53	Technology Selection	S	€5,000
S54	Prototype Development	S	€12,000
S55	IT Resource Assessment	W	€4,000
S56	Technical Architecture Design	S	€10,000
S57	Conduct Stakeholder Interviews or Surveys	M	€1,000
S58	Assess Organizational Culture	S	€1,500
S59	Evaluate Change Management Capabilities	M	€1,500
S60	Review Technical Infrastructure	M	€2,000
S61	Assess Data Management Practices	S	€1,500
S62	Identify Training and Development Needs	C	€1,000
S63	Evaluate Resource Availability	S	€1,500
S64	Compile Readiness Assessment Report	C	€1,500
S65	Risk Assessment and Mitigation	S	€2,000
S66	Cost Benefit Analysis	S	€1,500
S67	Prepare Feasibility Report	M	€2,000
S68	Legal Compliance Assessment	M	€8,000
S69	Policy and Regulatory Analysis	W	€6,000
S70	Risk Assessment and Mitigation	M	€7,000
S71	Stakeholder Communication and Alignment	M	€5,000
S72	Documentation and Compliance Reporting	M	€4,000
S73	Define the Scope of PIR	M	€1,000
S74	Feedback of Stakeholders	S	€1,000
S75	Evaluation Whether Project Goals are Achieved	M	€1,500
S76	Review Implementation Process	M	€1,500
S77	Evaluate the Functionality of HRIS	M	€1,500
S78	Analyze the Change Management	M	€1,500
S79	Identify Lessons Learned	C	€1,000
S80	Review Key Documents	C	€1,000
S81	Prepare PIR Report	M	€2,000
S82	Present and Discuss PIR Findings	M	€1,500

include understanding the requirements of data, deciding the ground rules for validation, different ways of conducting the validation, validation report, using the appropriate tools and technologies, etc.

S5 - Data Profiling – Data profiling is a process of understanding the characteristics of data and its quality by reviewing and cleansing data. Data profiling in a data migration-oriented project is a must since it can change your entire understanding of data. This allows the developers to identify the anomalies and resolve them early which in turn helps them to perform necessary tasks to standardize them. It helps in gaining the trust of business decision makers and guides them in taking effective decisions (IBM, 2024).

S6 - Preliminary Checks of Data Validation – Preliminary checks of data validation is a necessary task during the initial stage of the project before tapping into more comprehensive validation of the data. This is done to recheck if there are any sort of errors in data at the initial stage of the project as well as to make sure whatever data is available is suitable to go ahead in the process of integration.

S7 - Comprehensive Validation – Once the preliminary checks are done, comprehensive validation on data takes place which verifies the data to understand its accuracy and consistency after the transfer of data from one system to another. This validation is also done to check whether the data format is correct, the structure is up to date, and it adheres to the standards.

S8 - Manual Reviews on Data Validation Activity – Manual reviews are done by a human and its commonly known as human- driven inspection which helps in identifying unforeseen or unusual errors or any anomalies. It helps in providing a human perspective towards complex data issues.

S10 - Integration and Post-Implementation Validation – Integration validation and post-implementation validation are considered as important phases in the data transfer process. Integration validation verifies whether the data that has been transferred is perfectly integrated with the current application without any disruption. Post – implementation validation verifies the accuracy after the transfer of data in the system followed by checking whether it adheres to organizational needs.

S11 - Creating Validation Plan – This project specific plan is created to ensure that there is a systematic approach in this validation plan. This plan includes objectives, methods, criteria, schedule, roles and responsibilities and scope definition which helps in determining the accuracy and reliability of the transferred data.

S12 - Project Kick-Off and Stakeholder Meetings – A project kick – off and stakeholder meeting is considered as the initial meeting for the project where the project team members and the stakeholders are present. The

purpose of these meetings is to avoid miscommunications and convey delicate information to the team members and the stakeholders.

S14 - Test Planning – Test planning helps in preventing the chaos that might occur during the implementation of a system. The chaos is prevented by developing a strategy for the functionality of the system. Objectives of test and training execution such as the reliability of the system and identifying errors are defined. Along with that it also focuses on determining the resources required for the project.

S15 - Test case development – Test cases is a process of developing scenarios in which the system would be tested to discovers errors that have been missed. It allows the developers to understand how the system would react in different scenarios and it would also detect the limitations of the system.

S16 - Test Execution – Once the scenarios are decided in the test case development, test execution is the step where it is time to run those tests by inputting the specified data in each test case. Before this process, developers note down certain expected outcomes of these test cases. After running these tests, the outcomes are compared with the predefined outcomes and the gap has been noted as deviations from actual outcomes.

S17 - Defect resolution and retesting – The deviation gap noted by developers in the test execution stage is considered as defect and developers investigate those defects and try to resolve them. Once the defects or bugs has been resolved it undergoes further retesting to ensure that the deviation gap has been completely fixed.

S18 - Test reporting – Test reporting refers to the documentation process of testing, from predefined objectives and outcomes to actual outcomes, the comparison between the expected and the actual outcomes, the solution of the defects. This helps in decision-making as well as providing documented information to stakeholders, project managers and product owners.

S19 - UAT Planning – User Acceptance Testing planning refers to the planning process of tasks referred to end users wherein the software which has been designed is tested by end users. These planning is done based on the organisational requirements.

S20 - UAT execution – Once the tasks are defined, UAT execution stage is about executing those tasks and releasing software to designated end users. During this process, the experience is critically analysed to verify whether the software meets the predefined objectives of the organisation and whether it is fully ready for installation.

S21 - Defect management and resolution of UAT – Once the UAT execution is completed, developers focus on resolving any errors identified during the UAT execution. The developer in this stage takes actions upon the critical analyzation of UAT execution.

S22 - UAT sign-Off – UAT sign – off or UAT approval is the stage where the application has been approved by the stakeholders after several tests and retests. It is a confirmation that the software adheres to the organisation's requirements and is ready for deployment.

S23 - QA and bug fixing – Quality assurance is a process of identifying the weaknesses of the software presented. It also refers to acting upon as a prevention from any bugs or errors. If any bugs are identified during QA, bug fixing process helps in resolving those errors so that there is streamlined functionality of software.

S24 - Training needs analysis – Training needs analysis is a gap analysis with respect to what is the current position of the team in an organization in terms of what skills they have, what knowledge they possess and their expertise and the organisation's requirements. To reduce this gap, organizations conduct an analysis of training needs to create a hook.

S25 - Content creation - Content creation refers to developing the required resources for testing activities. It aims at resource optimization. The focus of content creation is documenting the resources for better understanding of objectives and requirements.

S27 - Training preparation – Training preparation is a well-planned training session organized for personnels. The training session focuses on optimum utilization of resources documented during content creation and making sure that it will result in increased efficiency of personnels.

S28 - Training delivery – Training Delivery refers to the execution of well- planned training session. The main objective of training delivery is that the team can undertake the content of the training session like new skills, new system, new management, etc.

S30 – Mitigation of Integration Risks – When two systems are integrated in an organization, it creates certain risks which can release sensitive information or data, create errors such as data duplications, etc. These risks are necessary to mitigate and the only way to do that is conducting regular audits, prevention of data strategies and constantly monitoring the solutions.

S32 - Identify current HR Processes and system – This stage is about identifying what HR processes or systems exist in the market in current scenario. This identification helps in understanding how organisations nowadays are having streamlined HR operations and how we can improve our system in terms of enhanced efficiency and technological optimization.

S33 - Document desired HRIS requirements – Before implementation of HRIS, it is necessary to document what organization expects from new HRIS in terms of user interface, data management, reporting, management of personnel, data security, reporting, customization, etc.

S37 - Prepare Gap analysis report – Once the identification of current HR system present in market and requirements of organization with respect to HRIS is completed. There is a gap or disparities that has been created between them which is analysed in the gap analysis report. This report allows developers to analyse the area in which they need to improve and make the system more efficient.

S38 - Clarify and address Vendor questions – This stage refers to resolving any questions or queries vendors have during the selection process. Questions might be related to information about organisation, terms of engagement, etc. This helps in creating a positive relationship amongst vendors even before the engagement and avoid miscommunications and create transparency.

S39 - Finalized RFP Document – The finalized Request for proposal document refers to an official request or invitation provided to the vendors so that they can submit their proposals. Through RFP, organizations can bring in potential and qualified vendors.

S41 - Conduct Market Research for Vendors – This research can help the organization in gathering all the necessary information on prospective vendors before their selection and through analysis of this information helps organizations in making informed decisions about vendors.

S42 - Request Recommendations for Vendors – Before selection of vendor, it is important to take recommendations from the individuals or entities which makes the process easier for our organization. This helps in narrowing down the search process of vendors and mitigate any risk involved.

S45 - Evaluate Vendor credentials and experience – This stage before vendor selection refers to setting a bar when it comes to background of the vendors, vendor's reputation, experience, qualifications, etc. This helps in making informed decisions before shortlisting a vendor and defines the suitability of vendor.

S46 - Shortlist and Select a Vendor – Once the organization has all the required information through the research, evaluation process and the recommendation process, after critically analysing everything, organizations can shortlist the prospective vendor and move them to the next stage which is vendor selection.

S47 - Vendor Selection - Vendor Selection is the ultimate stage of vendor selection process where in a suitably qualified vendor is selected for the project who adheres to the organization's requirements and performance efficiency.

S48 - System Pricing – System Pricing refers to cost which is associated with the system in terms of expense of its implementation, maintenance, purchase, etc. This may include costs like implementation costs, subscription costs, software license fees, hardware costs, etc.

S49 - Infrastructure Assessment – It refers to identifying resources in the organisation that would be suitable for technical infrastructure of the system. After identification, the developers ensure that this infrastructure would be suitable for the targeted system or not and if it aligns with the organization's needs.

S50 - System Integration analysis – This analysis helps organizations in defining the integration solutions that helps organizations in streamlining the system integration process. It refers to systematic evaluation of activities such as integration of existing targeted system and helps in analysing the functionality of the system.

S51 - Scalability and performance evaluation – This refers to how much a system can deal with the demands of the end users, how much amount of data it can store, etc. at the same time maintaining its scalability. This evaluation helps organizations in prevention of any errors and respond to them quickly.

S52 - Data security and privacy review – It refers to protecting the data in terms of confidentiality, sensitive information and adherence to rules and regulations. It promotes data protection practices. The privacy review helps in mitigating any risk associated with the exposure of data.

S53 - Technology selection – Technology selection refers to the selection of appropriate technology based on organisational requirements in terms of features, performance, alignment with the objectives, budget, etc. This is a very critical decision as the decision is made keeping long – term goals in consideration.

S54 - Prototype development – Prototype refers to initial developed application which is provided to end users with an aim to get certain feedback from them so that the developers can utilize that feedback in making the actual system which would be ready for installation. It is a very critical phase since it creates a first impression on the end users.

S56 - Technical architecture design – It refers to the interface of the system. Technical architecture design is important for an organization to consider since it determines the scalability of the system. The focus on this aspect of the project can also be considered as a problem-solving strategy in the long run.

S57 - Conduct Stakeholder interviews or surveys – It is necessary to consider stakeholders feedback through interviews since it provides the details of who would be involved, impacted, and interested in the change management process.

S58 - Assess organizational culture – This refers to change management in an organization. Organization needs to critically evaluate if the current organization's culture and the targeted system are in alignment which

is necessary since cultural change is considered as one of the major challenges when it comes to implementing new technologies and tools in the organization.

S59 - Evaluate change management capabilities – This evaluation includes all aspects of change management such as clear communication, stakeholder management, organization culture, etc. and ensuring whether these are at a capable position or creates a suitable environment for introducing or implementing any technological change.

S60 - Review technical infrastructure – For reviewing technical infrastructure it is important to understand the current technical infrastructure so that it can be compatible with the targeted system. This also helps in taking decision as to whether the current technical landscape is suitable for any new technical infrastructure or not.

S61 - Assess data management practices – Assessing data management practices refers to determining the current scenario of how the data is collected in the organisation, once it is collected where it is stored, how it is further processed and utilised. Once these practices are evaluated, it is checked whether these practices would be suitable or aligned to the targeted system organization is about to bring in.

S63 - Evaluate resource availability – This ensures that required resources are available within the organization to implement the proposed system and whether the resources are scalable or not. This aims at avoiding any risks related to non- availability of resources and helps in making the required decisions.

S65 - Risk Assessment and Mitigation – Risk Assessment and Mitigation in operational feasibility refers to the process of identification of any potential issues or challenges within operational area that may lead to project failure. These challenges are necessary to mitigate by allocating extra resources and implementing appropriate strategies to monitor them.

S66 - Cost benefit analysis – Cost benefit analysis is a systematic process of critically analysing the cost associated with the project and the respective benefits that comes along with those costs. These costs can include expenses such as capital, production cost, training cost, etc. With respect to the mention cost benefits like increase in sales, increase in efficiency, competitive advantage, etc.

S67 - Prepare feasibility report – Preparing feasibility report in operational feasibility refers to the process of documentation of outcomes or results that has been gathered and which provide valuable insights on proposed system and how feasible the project is in operational perspective. These insights also help in decision making process and provides an overview of potential success.

S68 - Legal compliance Assessment - Legal compliance assessment refers to evaluating the alignment of project with legal perspective. In other words, it refers to identifying the required rules and regulations, requirements, assessing those requirements, identifying any associated risk and coming up with appropriate mitigation measures and documentation of this entire process.

S70 - Risk assessment and mitigation – Risk assessment and mitigation in legal and political feasibility refers to the process of identifying any challenges involved in the project that are associated with legal frameworks and political zone. These also refers to critically assessing any legal or political challenges that may lead project to failure. These challenges are required to be mitigated by structuring the project in such a way that it aligns with both the legal framework and the political landscape.

S71 - Stakeholder communication and alignment – Stakeholder communication and alignment in legal and political feasibility refers to communicating regulatory compliances and political dynamics to identified stakeholders. These can be conducted through various ways such as meetings however it is suggested that the meetings should be conducted by a legal consultant who can communicate with the stakeholders and maintain transparency. The main aim of these meetings is to align the interests of stakeholders with the project from a legal and policy perspective.

S72 - Documentation and compliance reporting – Documentation and compliance reporting in legal feasibility refers to documenting the outcomes of rules and regulations, contracts, amendments, etc. In political feasibility refers to documentation of communication and engagement with stakeholders for avoiding any future political challenges and miscommunication.

S73 - Define the scope of PIR – Post Implementation Review is all about continuous improvement. It focuses on staying updated on each task involved in the project such as system performance, regular feedback, industry trends, etc.

S74 - Feedback of stakeholders – This refers to taking stakeholders opinions under consideration at the end of the project so that it can provide organisations the required insights on which stakeholders were impacted by the change that has been brought forward through the project. The aim is to understand the stakeholder's perspective and coming up with the appropriate strategies which can help in incorporating those stakeholders' expectations with future projects.

S75 - Evaluation whether project goals are achieved – At the initial stage of the project, there are certain predefined goals by the organization which are critically evaluated while Post implementation review process. The aim is identifying the areas that needed improvement and making notes on those improvements so that it can be used as a leverage while working on other projects in future.

S76 - Review implementation process – This is conducted at the end of the project to understand how the team performed the entire project right from defining the objectives. This review process helps the team to identify any potholes in the process which might have created problem in the project. It also analyses whether the team was able to fill those potholes or not with suitable strategies and tactics.

S77 - Evaluate the functionality of HRIS – At this stage, organization evaluate whether the HRIS is functioning properly without any defect and at the same time it is aligning with the predefined requirements of the organization. Here, the organization can again find any bugs or errors that still exist in the system and works as weakness which needs to be addressed.

S78 - Analyse the change management – This refers to the evaluation and management of changes during the project such as to what extent organisation can manage stakeholders' engagement, resistance, change in communication, change in requests, etc. This can provide the merits and the limitations of organisation in change management and learnings.

S81 - Prepare PIR report – This refers to the documenting the outcomes of PIR. This also includes lessons learned from the project, what kind of challenges were faced by the team and how they were tackled. It is a very important tool for an organization since it is a thorough record of continuous improvement and learning.

S82 - Present and discuss PIR findings – Once the PIR report has been created, the next step is to discuss the content of the report with the involved and impacted stakeholders who can provide a constructive opinion on those outcomes. This discussion allows the team to understand stakeholders' perspectives and use them in areas which requires improvement.

WORK BREAKDOWN STRUCTURE (WBS)

Task ID	Project Task	Duration	Dependency
	Phase 1- Gap Analysis	13	
T1	Identify current HR Processes and system	3	-
T2	Document desired HRIS requirements	5	T2
T3	Prepare Gap analysis report	5	T3
	Phase 2 - Technical Feasibility	41	Phase 1
T4	Infrastructure Assessment	5	-
T5	Data security and privacy review	5	T4
T6	Technology selection	7	T5
T7	Technical architecture design	7	T6
T8	System Integration analysis	5	T7
T9	Scalability and performance evaluation	5	T7
T10	Prototype development	7	T8
	Phase 3 - Operational Feasibility	59	Phase 2
T11	Review technical infrastructure	7	-
T12	Assess data management practices	7	-
T13	Evaluate resource availability	5	T11
T14	Conduct Stakeholder interviews or surveys	7	-
T15	Assess organizational culture	7	-
T16	Evaluate change management capabilities	7	T14, T15
T17	Risk Assessment and Mitigation	7	T16
T18	Cost Benefit analysis	7	T17
T19	Prepare feasibility report	5	T19
	Phase 4 - Legal and Political Feasibility	14	Phase 3
T20	Legal compliance Assessment	5	-
T21	Risk assessment and mitigation	3	T20
T22	Stakeholder communication and alignment	3	T21
T23	Documentation and compliance reporting	3	T22
	Phase 5 - Data Security	5	Phase 4
T24	Integration Risks	5	-
	Phase 6 - Creating RFP (Request for Proposal)	23	Phase 5
T25	Conduct Market Research for Vendors	5	-
T26	Request Recommendations for Vendors	3	T25
T27	Evaluate Vendor credentials and experience	5	T26
T28	Clarify and address Vendor questions	5	T27
T29	Finalized RFP Document	5	T28
	Phase 7 - Selection of Vendor	10	Phase 6
T30	Shortlist and Select a Vendor	5	-
T31	Vendor Selection	5	T30
T32	Phase 8 - System Pricing	5	Phase 7
T33	Phase 9 - Project Kick-Off and Stakeholder meetings	3	Phase 8
T34	Phase 10 - New System Reports	3	Phase 9
	Phase 11 - Test and Training	48	Phase 10
T35	Test planning	2	-
T36	Training needs analysis	2	-
T37	Content creation	5	T36
T38	Training preparation	2	T37

T39	Test case development	3	T35
T40	Test Execution	5	T39
T41	Defect resolution and retesting	3	T40
T42	QA and bug fixing	5	T41
T43	UAT Planning	2	T41
T44	UAT execution	7	T43
T45	Defect management and resolution of UAT	3	T44
T46	UAT sign-Off	1	T45
T47	Training delivery	7	T38
T48	Test reporting	1	T40
	Phase 12- Data Transfer	32	Phase 11
T49	Data Extraction	5	-
T50	Define Data Validation Objectives	3	T46
T51	Plan Data Validation Approach	3	T47
T52	Data Profiling	3	T48
T53	Preliminary Checks of Data Validation	2	T49
T54	Comprehensive Validation	5	T50
T55	Manual Reviews on Data Validation activity	3	T51
T56	Integration and Post-Implementation Validation	5	T52
T57	Creating Validation Plan	3	T53
	Phase 13 - Post – Implementation Review	46	Phase 12
T58	Define the scope of PIR	3	-
T59	Feedback of stakeholders	7	T55
T60	Evaluation whether project goals are achieved	5	T56
T61	Review implementation process	7	T57
T62	Evaluate the functionality of HRIS	7	T58
T63	Analyze the change management	7	T59
T64	Prepare PIR report	7	T60
T65	Present and discuss PIR findings	3	T61
	TOTAL DAYS	302	

RISK MANAGEMENT

Risk Table

Risk ID	Name	Probability	Impact	Rank
R1	Data Security Breaches	High	High	1
R3	Technological Changes	High	High	1
R4	Vendor stability and reliability	High	High	1
R15	Regulatory changes	High	High	1
R2	Trade and Tariffs	Medium	High	2
R5	Global Events	Medium	High	2
R6	Government Policies	Medium	High	2
R7	Scope Creep	Medium	Medium	2
R10	Integration and data migration challenges	Medium	Medium	2
R11	Change management and user adoption	High	Medium	2
R12	Malware and ransomware attacks	High	Medium	2
R13	Phishing and social engineering	High	Medium	2
R14	Insider threats	High	Medium	2
R8	Inaccurate Initial Budgeting	Low	Medium	3
R9	Inadequate resource allocation	Medium	Low	3
R16	Loss of Legacy Data	Low	Low	3

Risk Matrix

		Impact					
		Low		Medium		High	
Probability	High			R11 R13	R12 R14	R1 R4	R3 R15
	Medium	R9		R7	R10	R2 R6	R5
	Low	R16		R8			

CHALLENGES FACED DURING THE SHIFT FROM WATERFALL TO AGILE METHODOLOGY

INTRODUCTION

Project management encapsulates knowledge, skill sets, methods, strategies and tactics, and tools which are used to structure the project work. It also provides a steady base for efficient planning, organizing, resourcing, decision – making process, management, and plan amendment (**Richman, 2011**). Project management provides a framework or a map that guides the project team through the entire journey of the project completion. In today's dynamic business environment, project methodologies work as a guiding compass to navigate the compounded landscapes of project management and provide directions in creating successful project management. It provides directions in terms of initiation and planning where it helps in defining the project scope, developing plans and identifying stakeholders. This is specific to who are going to be involved which depends upon who are going to be impacted in the process of change and are actively participating in the project and interested which refers to the stakeholders that have interest in the project but not necessarily involved or impacted directly. Furthermore, it also helps in executing and monitoring, controlling, closure and evaluation along with continuous improvement.

UNDERSTANDING WATERFALL AND AGILE METHODOLOGIES

Waterfall methodology

Waterfall methodology is usually considered as a traditional methodology is considered as a process used to conceptualize, develop, and create a product (Kalso, 2020). There are six steps or phases in the waterfall approach (Refer to fig no: 1). It is said that this approach is usually used during those projects where the people working have a clear understanding of the project while as per the requirements it cannot be broken down into different parts and where the client's priorities are the results.

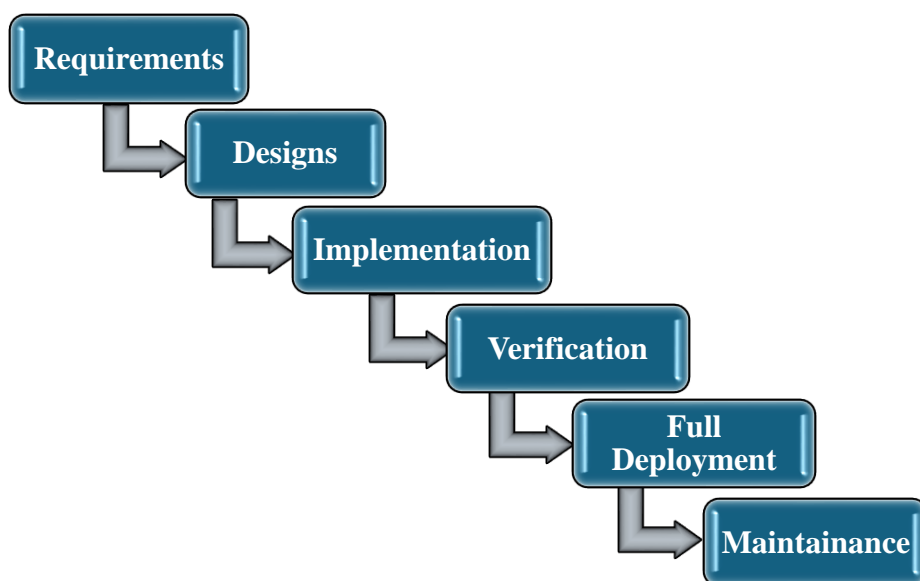


Fig 1: Waterfall Method (Kalso, 2020).

Like any other approach, this approach also has its limitations. The major limitation of this approach is that everything is on the line of arc itself which means that it is inflexible in nature where it typically emphasizes a logical series of phases where each phase cannot start until one is done with the previous phase. Put simply, it is characterized by sequential progression. Waterfall projects are always of short duration. It is said that if a project duration is of two weeks, the better choice would be utilizing the waterfall approach because it is going to be just one sprint.

When it comes to the six steps of the waterfall approach, the first step; where requirements of the projects are gathered from stakeholders and domain experts where requirements are in the form of cost of production, time limitation, what needs the project is going to accomplish, etc. (Kalso, 2020). These requirements are usually documented in the software requirement specification (SRS) (Hussain *et al.*, 2012).

The next stage is system design which puts reflection on the requirements collected in the first stage where in based on stage 1 a system design or architecture is created by examining the technical aspects of the project. This stage refers to examining and analyzing the existing hardware in terms of the way the system is structured, the components it contains, the interface and the flow of data and coming up with different ideas to make it work more efficiently (Kalso, 2020).

In the third phase, it is about acting on the ideas decided in the 2nd phase of making the system more efficient by coding or implementation of the system. In this stage, developers write a code which allows the system to function in such a way that it ticks at least maximum number of requirements discusses in stage 1. Based on the complexity of this stage and how crucial the situation is since a code is created and it is necessary to check the accomplished work, this is available to a few selected individual's group (Kalso, 2020).

Once the code has been created, the fourth phase is to test the code. As discussed in third phase, the code should meet the gathered requirements as well as the software should function correctly. This stage makes the system go through different scenarios for verification to check the response of the system, analyzing the situation where the system is facing any issue, foreseeing situations where in user may put stress on it through user acceptance testing and determining the limitations of the system (Kalso, 2020).

In the fifth phase, once the system has been successfully tested, it is time to install the software. Once the system is installed, feedback of the customers is noted based wherein the developers are aware of the problems caused by unforeseen or unpredictable activities which were not in discussions in the third stage (Kalso, 2020). This stage also helps in analyzing whether the software was a success or a failure in the eyes of the public. During this stage, a regular tap in is required from developers end so that they can analyze complains, expectations, etc. from customers and utilize them in making the software more efficient (Kalso, 2020).

The last stage is maintenance which refers to acting up on the feedback collected in the fifth stage. Developers focus on improving the software which might include fixing any kind of bug complaints, enhancement and focusing on its functionality. Once the changes are done, it is developers' responsibility to check whether it functions properly and adhere to the complaints and feedback.

Agile Methodology

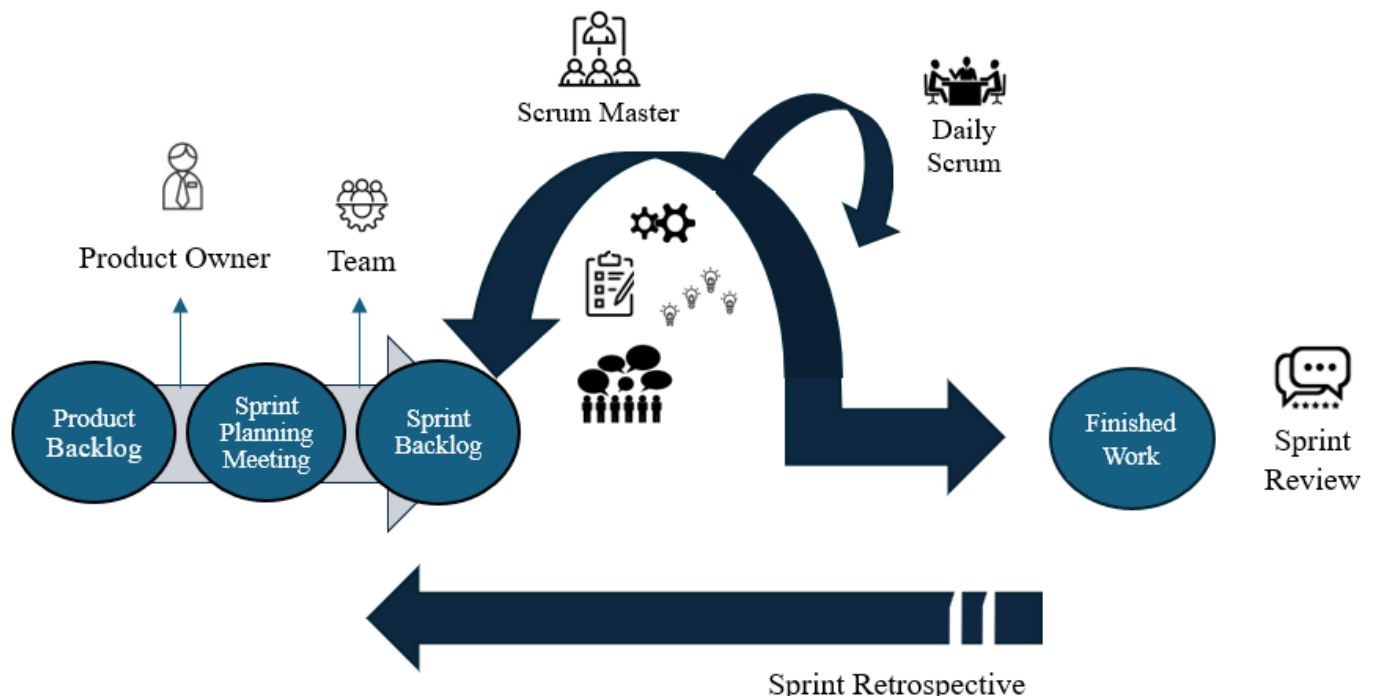


Fig 2: Agile Process (Andriadi et al., 2023; Işık and Çifci, 2023)

In simple words, Agile Project Management, also commonly referred to as Scrum allows you to divide the entire project into small sprints (Laoyan, 2024). A Sprint is usually considered as a repetition of the agile planning and executing cycle. They are usually 1- 4 weeks long (Refer to fig no: 3).

In Agile methodology there are many key roles and responsibilities involved withing a development team namely a product owner, scrum master and a development team (Ref. to fig no: 1). When it comes to product owners, they represent the stakeholders and the customers. Product owners should be business analysts who are focused on providing value. Their focus is more on doing the right thing unlike project managers focus on doing things right. The responsibility of product owners is doing the project under the budget, under the timeline, deciding on release timelines. Scrum master is the facilitator of the agile team. Scrum master can be considered as a leader of the process of execution of project planning where he/she ensures that the team is following the agile practices, assisting in removing obstacles and helping the team in achieving their goals.

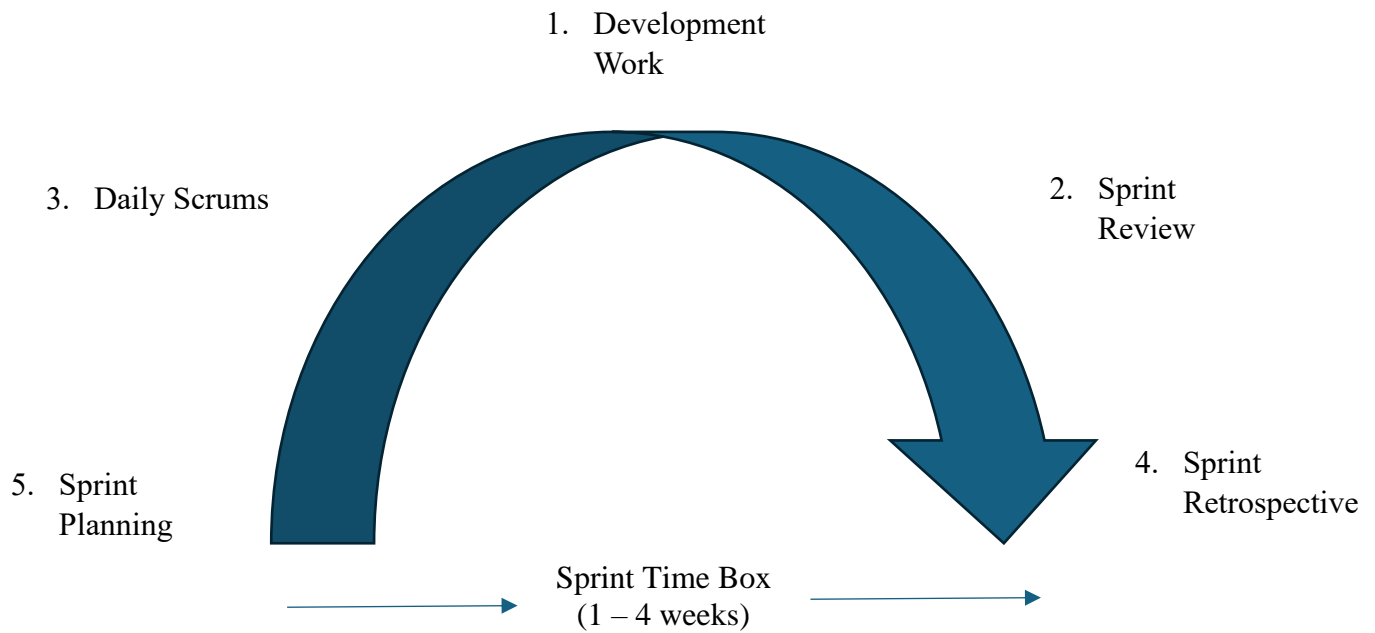


Fig 3: Stages in a Sprint

The above figure describes and explains the steps in Agile or stages in a Sprint. It starts with planning an entire Sprint and ends at Sprint Retrospective. Starting with sprint planning, scrum master organizes the sprint planning meeting (Ameta, Patel and Sharma, 2022). The purpose of sprint planning is to initiate a sprint and decide what are going to be the achievements and various ways of achieving it. Usually at this stage, the participants are product owner, scrum master and the development team (Refer to Fig no: 2).

Going ahead, it is necessary in a project to conduct daily scrums or daily standups. Daily scrums are usually sharp and quick. Team members are wide awake and committed in front of their peers. There are 3 questions that are always discussed in such daily scrums:

1. What have we done since we last met?
2. What is the progress in the project?
3. What would we do till we meet next?

The development team who are professional coders and testers are responsible for performing development work in a sprint is responsible for collaborating with the product owner to select the items from the product backlog and create a sprint backlog. This sprint backlog contains user stories. Development teams oversee carrying out performing quality assurance activities for these user stories (Ameta *et al.*, 2022).

The penultimate stage is sprint review which is conducted to demonstrate the accomplished work to stakeholders so that they can gather feedback along with checking the progress (Ameta *et al.*, 2022). At this

point there are certain things that are noted by the product owner which helps the team in adjusting the product backlog as well as warn them before taking a wrong step (Ameta *et al.*, 2022).

The ultimate step is sprint retrospective, which is considered as a crucial ceremony, usually conducted at the very end of the each sprint (Ameta *et al.*, 2022). The sprint retrospective stage inspects the past sprint in terms of opportunities identification for improvement and challenges faced. In other words, this stage is a significant aspect of the inspect-and-adapt principle in scrum (Ameta *et al.*, 2022).

CHALLENGES ENCOUNTERED DURING THE TRANSITION

When a company decides to shift from waterfall approach to agile approach, they understand that agile brings in lot of benefits and flexibility. However, during this transition there are several challenges that are important for an organization to analyze.

Cultural change

One of the major obstacles an organization might face during this shift is cultural change. The personnel in the organization are used to the rigid traditional methods. This creates a resistance to change. Considering waterfall methodologies, different people or personnel are oriented to different phases of the project (Natarajan, Pichai ,2024). When it comes to Agile methodologies, they work in cross – functional teams. In simple words, waterfall approach used to follow hierarchical decision-making process and agile approach has different roles like scrum master and product owner. This management shift can also create reluctance or resistance to change due to disagreements.

Tools

Waterfall approach is known for its comprehensive project documentation (Natarajan, Pichai ,2024). Agile approach bends towards working on software and necessitating required changes. The tools or system which a particular company used while using waterfall approach won't be suitable while adapting agile practices. This may create a requirement for investments into new technologies and tools. Here, resistance to change can be created due to lack of experience with the new technologies which can impede the successful adaptation of agile practices.

Mindset

As Jason Clarke has mentioned in one of his famous Ted Talk, there is a process to accept change: Negative, interesting, and positive. This can create a sense of concern for individuals working in the organizations with respect to their responsibilities. Considering the traditional roles in waterfall approach, project managers used 2 pillars of management namely controlling and directing. When it comes to agile approach, here the leader is a scrum master. This can create a challenge in the mindset of people involved in the agile framework.

Lack of agile experience

Lack of agile experience or a shortage of personnel experience in agile can be a major setback during this transition. This further creates a necessity of investment in appropriate training for adapting agile practices before the entire team starts struggling in implementing agile practices and due to muscle memory there are chances that the team may go back to their old traditional methods.

Measurement and metrics

There are different ways to measure success or progress in a project in agile approach and waterfall approach. Usually, when it comes to waterfall approach, progress or success is measured based on whether the team has adhered to the objectives / goals / aims and budget decided at the initial stage of the project. However, when it comes to agile approach there are many metrics such as business value and ROI (Hartmann, Dymond, 2006). Business value can be measured by its Net present value (NPV), Internal Rate of Return (IRR) and Return on Investment (ROI) (Hartmann, Dymond, 2006). It is said that even project managers use NPV to decide whether to choose that project or not. The project has the highest NPV, it is an analytical decision for project managers to choose that project. There are other metrics that exist such as Velocity, The compounding return of value (Hartmann, Dymond, 2006), outcome -oriented metrics, cycle time and lead time, quality metrics, customer feedback and satisfaction, adaptation, and learning, etc. The shift in approaches is also going to create a major shift in how success or progress is going to be measured.

Change in planning and estimation.

Waterfall planning is all about pre-deciding the aims and objectives of the project at the initial stage and making sure that everything is documented comprehensively. On the other hand, agile planning is iterative and believes in taking regular sprints and daily standups throughout the project and making improvements in every sprint and finding different opportunities at the end of each sprint. The transition can create a challenging environment for the team working on the project and due to lack of practice of agile planning, the situation can also lead to scope creep.

Organizational structure

Before transition, there are many organizations that have an organizational structure which does not align with the agile principles. Most of the structures are hierarchical in nature. Whereas cross- functional teams are one of the key elements and are one of the keys to a successful agile project management. Cross – functional teams consist of professional individuals from different professional backgrounds and are considered to be self – directed and would prefer working independently on their executions (Kiruba Nagini, Devi, Mohamed,2020). Hence, while transitioning, the company should come up with a top-notch plan to avoid resistance from the organizational hierarchies.

CONCLUSION

In conclusion, this essay helps in understanding different stages of waterfall approach and agile approach and how they are different from each other in terms of planning, management, characteristics, etc. It also incorporates how personnel of organizations play an important role in adaptation of agile practices. Furthermore, this essay highlights the challenges that an organization might encounter when they decide to shift from waterfall approach to agile approach.

The company can overcome the challenges through systematic and consistent strategies. The challenge of cultural change requires proper education and training, a level of autonomy, clear communication and feedback at the same time patience and persistence. The idea of celebrating success and learning from failures can also contribute towards overcoming cultural change. Lack of hands-on experience in required tools and lack of agile experience can be mitigated through comprehensive training programs. When it comes to lack of agile experience, it is suggested that the team starts with small steps by handling pilot agile projects in a controlled environment. Speaking of necessary tools management, the first instinct should be identifying someone from the team itself who are advocates for agile tools and can be considered as tool champions and superusers. Appropriate selection of tools is necessary so that if the situation demands, it can be further integrated into other systems for a streamlined workflow. Measurement and metrics are totally dependent upon choosing the appropriate metrics. It is suggested that the team utilizes metrics that can provide a certain outcome such as business value, customer satisfaction, etc. which aligns with the agile practices. Changes in planning and estimation challenge can be solved through Kanban which works well with scrum and agile approaches. In other words, iterative planning should be considered. Overall, it is suggested that to overcome the mentioned challenges, companies should promote cross-functional collaboration, focus on continuous improvement, and provide coaching and support.

Group	Last name	First name	Level of influence	Level of Impact	Current support for change	Required support for change
IT	Smith	James	Medium	Medium	High	Medium
Occasional End Users	Williams	Daniel	Low	Low	Low	Medium
Super users	Stone	Emma	Medium	High	High	High
Executive Sponsors	Dsouza	Lauren	High	High	High	High
Steering Committee	Sharma	Sameer	High	Medium	Medium	High

Fig 4: Sample of Stakeholder analysis where the coloring is based on their gap between current support for change and required support for change (Carr, 2014).

Project management is all about bringing change to an organization. The company should be in a state of mind to understand the importance of change management and how it plays a critical role in this transition process. Stakeholders' engagement helps in overcoming the resistance and helps in successful adaptation of Agile

approach. It is important for a project manager to identify the stakeholders based on the who are going to be involved in the project, who are going to be impacted by the change and who are interested. This can be done through conducting a stakeholder analysis to understand who will be impacted by the process of change (Refer to Fig no: 4) (Carr,2014).

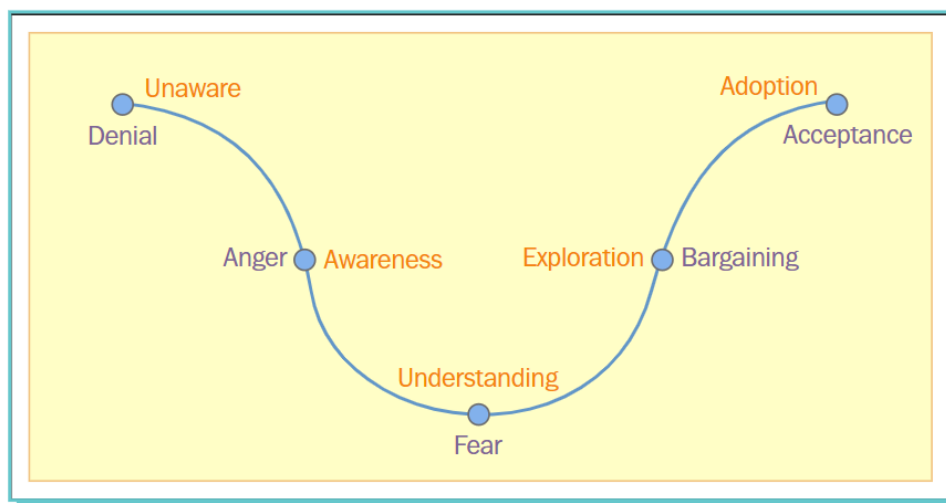


Fig 5: The Change curve (Carr, 2014).

Furthermore, just analysis is not enough, measuring their progress towards acceptance of agile approach is necessary. Emily Carr in her book Practical Change Management for IT projects suggests that stakeholder's behavior towards change can be measured through change curve (Refer to Fig no:5) (Carr, 2014). Organizations can leverage the change curve analysis for smooth facilitation of agile adaptation by understanding the emotional and psychological phases that personnel go during the transition. This can help the organization in keeping a continuous track on the mindset of the personnel which is one of the challenges organizations face during the shift.

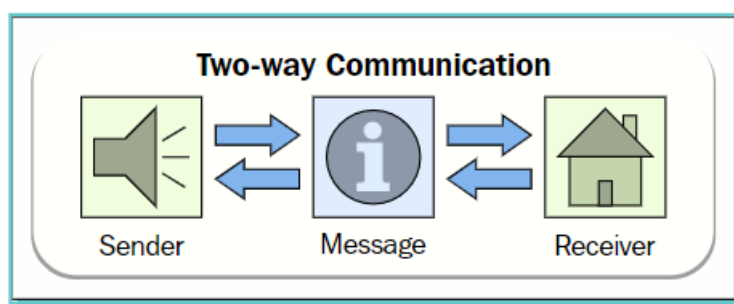


Fig 6: Two-way communication chart (Carr, 2014)

Along with stakeholders' management, one of the important key elements is clear communication. Two – way communication is the key element for a successful agile project management. While transitioning from waterfall to agile approach, people working in agile cannot rely on Magic Bullet Theory or Hypodermic

Needle Theory which promotes one- way communication wherein the individual on one side of the communication performs his/her duties based on assumptions (Carr, 2014).

There are many papers which prove that adaptation of agile methodology is beneficial because it focuses on current needs (Işık , Çifci ,2023). Going through the process of transitioning from waterfall to agile approach is going to bring in major benefits for the organization such as clear communication and coordination, increase in productivity, improvement in quality and high morale (Tripp, Riemenschneider and Thatcher, cited in Bonner *et al.*, 2016; VersionOne, 2015; Van Oyen, Gel and Hopp, 2001). The only thing the organization needs to do is provide commitment after the shift to sustain the entire agile transformation journey. This journey might need skills like perseverance, patience and persistence, adaptability and maturity and shared understanding in achieving long-term agile approach.

REFERENCES

1. Ameta, U., Patel, M. and Sharma, A. K. (2022) 'Scaled agile framework implementation in organizations', its shortcomings and an AI based solution to track team's performance', in *2022 IEEE 3rd Global Conference for Advancement in Technology (GCAT)*. Bangalore, India, 7-9 October 2022, pp. 1-7). doi: 10.1109/GCAT55367.2022.9971968.
2. Andriadi, K., Soeparno, H., Gaol, F. L. and Arifin, Y. (2023) 'The impact of shift-left testing to software quality in agile methodology: A case study', in *2023 International Conference on Information Management and Technology (ICIMTech)*. Malang, Indonesia, 24-25 August 2023, pp. 259-264. doi: 10.1109/ICIMTech59029.2023.10277919.
3. Bonner, N. A., Kulangara, N., Nerur, S. and Teng, J. T. (2016) 'An empirical investigation of the perceived benefits of agile methodologies using an innovation-theoretical model', *Journal of Database Management (JDM)*, 27(3), pp. 38-63. doi: 10.4018/JDM.2016070103
4. Carr, E. (2014) *Practical Change Management for IT Projects*. Birmingham, U.K.: Packt Publishing. Available at: <https://research.ebsco.com/c/x47o15/search/details/5pbtwivahf?limiters=FT1%3AY&q=Practical%20Change%20Management%20for%20IT%20Projects>
5. Hartmann, D. , Dymond, R. (2006) 'Appropriate agile measurement: using metrics and diagnostics to deliver business value' in *AGILE 2006 (AGILE'06) AGILE 2006 Agile Conference, 2006*. :6 pp.- 134 2006, IEEE Xplore. doi: 10.1109/AGILE.2006.17
6. Hussain, S. N., Hundewale, N., Aljahdali, S. and Ahmed, K. A. (2012) 'A methodology for the abstraction of design components from the software requirement specification to the object oriented system', in *2012 IEEE International Conference on Computer Science and Automation Engineering*. Beijing, China, 22-24 June 2012, pp. 311-315. doi: 10.1109/ICSESS.2012.6269468
7. IBM (2024) *What is data profiling?* Available at: <https://www.ibm.com/topics/data-profiling> [Accessed 26 April 2024].
8. IceHRM (2020) 'Evolution of the human resource information system', *IceHRM*, 5 March. Available at: <https://icehrm.com/blog/evolution-of-human-resource-information-system/#:~:text=The%20history%20of%20HRIS%20began%20in%20the%20late,when%20the%20first%20automated%20employee%20data%20was%20used> [Accessed 26 April 2024].
9. Işık, G. and Çifci, M. C. (2023) 'A model proposal for scaling the productivity increase in agile project management methodology', *International Journal of Pioneering Technology and Engineering*, 2(02), pp. 147-164. doi: 10.56158/jpte.2023.48.2.02.
10. Kalso, R. (2020) 'Waterfall model', *Salem Press Encyclopedia of Science*, pp. 1-3.

11. Kiruba Nagini, R., Devi, S.U., Mohamed, S. (2020) 'A Proposal on Developing a 360° Agile Organizational Structure by Superimposing Matrix Organizational Structure with Cross-functional Teams', *Management and Labour Studies*.
12. Laoyan, S. (2024) *What is Agile methodology? (A beginner's guide)*. Available at: <https://asana.com/resources/agile-methodology> [Accessed 26 April 2024].
13. Natarajan, T. and Pichai, S. (2024) 'Transition from waterfall to agile methodology: An action research study', *IEEE Access*, 12, pp. 49341–49362. doi: 10.1109/ACCESS.2024.3384097
14. Remedios, P. (2024) 'A step-by-step guide to HRIS implementation', *peopleHum*, 5 April. Available at: <https://www.peoplehum.com/blog/a-step-by-step-guide-to-hris-implementation> [Accessed 26 April 2024].
15. Richman, L. (2011) *Successful project management*. EBSCO eBook Business Collection. Available at: <https://research.ebsco.com/linkprocessor/plink?id=1c71a1cd-b33c-391c-8b3f-c07d772a38d5> [Accessed 26 April 2024].
16. Ungashick, B. (2023) 'A step-by-step guide to HRIS implementation for non-technical HR professionals', *OutSail*, 4 July. Available at: <https://www.outsail.co/post/a-step-by-step-guide-to-hris-implementation> [Accessed 26 April 2024].
17. Van Oyen, M. P., Gel, G. S., & Hopp, W. J. (2001) 'Performance opportunity for workforce agility in collaborative and noncollaborative work systems', *IEEE Transactions*, 33(9), pp. 761-777. doi: 10.1080/07408170108936871
18. VersionOne (2015) *9th Annual State of Agile Survey*. Available at: <https://www.watermarklearning.com/downloads/state-of-agile-development-survey.pdf> [Accessed 26 April 2024].