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Agile Project Management and Project Risks Improvements: Pros and Cons

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Abstract

This report discusses improving Project Risk Management in agile projects in different sectors in the UAE and explores if adopting a hybrid approach can deliver better results in project risk management in an agile environment. Also, it was aimed to understand if enhancement of project risk management for agile projects will have a positive impact on project success. Both qualitative and quantitative data were collected for this report. Data was collected through qualitative interviews, observations and surveys. The research was conducted in Al Dhafra Municipality, DEWA, Etisalat & Abu Dhabi Government. The findings identified risks like Organizational risk, Process risk, Business risk, Technology risk and Monitoring and analysis risk. It was also found that while all projects contain some risk, using agile projects or hybrid projects can reduce the risk in comparison to a waterfall. The underlying reason was that splitting the project into smaller pieces reduces risk and fulfills quality requirements easily. The research recommended using customer vision, selecting the right approach for project selection, having an experienced project manager and team, customer involvement, organizational policy support for an agile approach, having a supportive culture and using analytical tools. The research suffered from the limitation that only 4 organizations could be used, which may limit the scope of applicability of the findings to diverse settings.

Keywords

Project Management, Risk Management, Agile, Hybrid

1. Introduction

Many companies are trying to adopt an agile project to gain customer satisfaction and respond rapidly to change in order to meet or exceed customer requirement, indeed, many plan or requirement is subject to change and the tech-

nology is also subject to change over time which needs to plan or consider that technology which not yet come. Nowadays, projects need to be managed in a complex environment, with fast change & frequent change in the environment in tool or methodology hence the project to have many waves which first few to have details and other to be as high level so allow a company to compete. Due to many changes in technologies, customer demand, environment or methods so agile project make dealing with change easy and deal with high risk. The agile manifesto has four important values:

1) Focus should be more on individuals and interactions instead of processes and tools.

2) Working software is more important than comprehensive documentation.

3) Customer collaboration is more vital than contract negotiation.

4) The process should respond to change rather than follow a plan.

Actually, the agile project has also a risk which as scope creep, timeline issues and budget issues so need to be addressed and managed in order to achieve the project target and satisfy the customer. Both risk and project are two terms that work simultaneously, and they symbolize the two sides of a coin. In project risk management, projects are evaluated starting from their definition, planning, control of the stages, and execution until, completion.

In this report, we are going to discuss improving Project Risk Management in agile projects in different sectors in UAE and the hypothesis that is going to be examined as follows:

- Does adopting "hybrid' approach deliver better results in project risk management in an agile environment?
- Is there a positive impact on improving Project Risk Management in agile projects & success rate in UAE?

There are three mains design used as a framework for collecting & analyzing the data which are cross-sectional, case study & comparative we did survey to collect quantitative data and interviews with profession to gather qualitative data to have in-depth knowledge as well as literature review conducted along with reviewing possible documents to explore more in this subject.

2. Literature Review

Risk management in agile projects is very essential and leads to projects success. A clear plan is necessary for reducing scope creep, maintaining the required timeline and sticking to the budget. Scope creep refers to the inclusion of new ideas and opinions that were not present at the beginning of the project which leads to the project taking longer than necessary (Ahimbisibwe et al., 2015). A successful project should consume the projected amount thus the team should be keen on sticking to the budget and ensuring that the company does not incur unnecessary all extra expenses that had not been included prior.

For the success of a project, it is important to incorporate strategies that members are familiar with so that they work with effectiveness and produce the

desired results. It has been established that many project teams are more accustomed to the waterfall approaches that employ the use of extensive documentations which is not the case in agile methods (Campanelli et al., 2018). In addition, waterfall methodologies have wide timelines as well as several tasks outlines as they are more focused on the end result as opposed to the agile method which requires incorporation of few tasks and short timeframes whose outcomes are presented to the customers since their feedback determines the next course of action. It should be noted therefore that a smooth transition is required for the success of the project since managers that are accustomed to one method may be unable to shift to the other within a short period of time thus incorporation of several methods would bear better results.

Ways of monitoring and controlling risk in agile projects include having a steering committee that oversees the entire project, creating a culture that adopts agile projects, and training employees on the hybrid. Scope creep, timeline and budget are risk factors that can have either positive or negative impacts if not well planned from the onset of the project. Mitigations programs include ensuring that the manager makes firm decision and is not swayed by various stakeholders who want to interfere with the set targets, there should be a clear outline of the deadlines that need to be met as well as the tasks for everyone in the team and it is necessary to review projects undertaken in the past which would give an insight on what to expect during the project (Parker et al., 2015). Having risk mitigation factors helps in ensuring that the success of the project is guaranteed as it promotes client satisfaction as well as its efficiency. Further, when minimal resources are used to achieve the said outcome it leads to the Satisfaction of the stakeholders and the project is usually effective and efficient in promoting its initial goals.

Flexible Hybrid method is considered as the most appropriate solution has been applied in the IT Department of FSQM financial services company on several real-life industrial projects; additionally they have made some changes for organizational structure to implement this model. Flexible Hybrid method combines components from traditional and agile methods. Moreover, by blending both methods it's completely flexible and adaptable to the unique characteristics of the project. Hence at the beginning for creating project structure transitional method can be used and both to be implemented to maintain the flexibility till project completion, which support to increase project success rate by enhanced risk management concept. Such changes required hence several projects was not accepted while they are using traditional management, hence the final product was not satisfying customers' needs as specification or its not user friendly. Indeed, doing changes at late stages will lead to cost overruns and extra time for completion.

Subsequently, IT Department decided to re-organize their departments and adopt new management trend which is applying hybrid method. One of the factors that helped with such changes is introducing QA after completing each phase for independent part of project, that lower the percentage of reported

malfunctions in comparison with the past.

Furthermore, less documentation observed in comparison to past method and by having prototype it will enhance project success rate since customer can provide his feedback prior to complete the project phases. With new approach, the success project completion considering customer satisfaction and on time is 80%, so only 20% left and it could be due to customer need changes, etc… one of the good example of success project using such model is Project Migration of Financial Services Company's Websites to the New Hosting Company, hence IT team and business users were satisfied with the project outcome.

Additionally, our second hypothesis is about if enhancement of project risk management for agile projects will have a positive impact on project success. There is a valid question Can software risk management improve system development? Indeed, software risk management can reduce likelihood system failure, since it improves system development performance and risks will be better managed by assigning experience project manager, who are aware, and having enough knowledge about risk management deliberations as well as selecting correct project size. Another example in construction, hence often construction project often failed. Furthermore, to identify risks, analyze and manage them, risk model been introduced to help contractors that is called construction risk management system (CRMS). In order to evaluate and analyze risk, Monte Carlo and diagramming technique tools are used for the purpose of risk transfer, prevention, avoidance, retention.

Ghobadi and Mathiassen (2017) in their article "Risks to Effective Knowledge Sharing in Agile Software Teams" did Identification of Risk Items and Resolution Actions in the following:

1) Knowledge Sharing Risks: covering Team Diversity, Team capabilities, Team Perceptions, Project Communications, Project Organization, Project Technology and project setting.

2) Comparison between the high-performing and low-performing projects in terms of the risks they faced and the resolution actions.

3) Risk Items, Resolution Actions across Projects.

4) Conceptualization of Knowledge Sharing Risks and Resolutions: 7 Risk Areas and 37 Risk Items. 5 Resolution Strategies and 31 Resolution Actions.

5) Risk Assessment Framework.

KPMG (2019) in their Survey on Agility titled "From Agile experiments to operating model transformation concluded the following:

1) A fast uptake of new frameworks and methods that help organizations operationalize the agile way of working.

2) Organizations must realize that the road to agility is not realized through a Big Bang but through applying agile concepts in itself.

3) Every path to agility is unique.

4) Countries differ widely in their adoption of agile.

5) It is essential to pursue value in everything that is done in order to achieve

organization-wide agility.

In the study "How Does Hybrid Project Management Create Value for Telecommunication Industry?" Wu (2020) discusses the operation of the three project management modes based on the improvement of the network service. The study summarizes the way the project is carried out and its benefits analysis through the field research and then uses the empathy analysis tool to make the project colleagues think in perspective and deeply understand the customer's pain points can also modify the function of the product (service) from customer feedback. The study found that if the hybrid project management model can be used well, in addition to speeding up the solution of customers' network usage problems, it can also reduce unnecessary high network construction costs, which is a way of generating high value for both the company and customers project management model.

How is Hybrid Development Approach Organized? This question is answered by Prenner, Unger-Windeler, and Schneider (2020), they mentioned the agile and the classical methods as "Agile software development methods promise shorter time-to-market and higher product quality, but lack the ability of long-term planning or coping with large projects. However, software companies often also want the ability of long-term planning, promised by traditional or plan-based methods". To benefit from the strengths of both approaches, they suggest that software companies often use a combination of agile and plan-based methods, known as hybrid development approaches. These approaches strongly depend on the individual context and are customized. Therefore, companies have to organize their hybrid development approach individually. However they highlighted that practitioners often have difficulties with the organization of hybrid approaches. The organization considers how the phases, activities, roles, and artifacts are arranged and connected. Research lacks the necessary detailed insight into how hybrid development approaches are organized to support practitioners. To gain better understanding of the organization of hybrid approaches, they conducted a systematic literature review to gather descriptions of hybrid approaches. They analyzed the found papers thoroughly and could identify three general patterns of how hybrid approaches are organized. They found that all these patterns are still based on Royce's waterfall model and use the standard software engineering activities. Their findings shall help to lead further research and help practitioners to better organize their individual development approach. CCS CONCEPTS·Software and its engineering → Collaboration in software development; Agile software development; Waterfall model.

Deloitte Business Agility Survey (2021) highlights "What is the current pulse of business agility in Nordic organizations" as:

1) Improving business agility is a high priority in most of the organizations.

2) Many leaders seem to be lacking a complete vision or understanding of why business agility matters.

And the concluded that This may be the reason why many organizations are

only following agile practices and doing agile rather than exhibiting agility and not focusing on the business outcomes that the agile ways of working can help to achieve.

Airmic Annual Survey (2021) sub-report on "Agility and Adaptability" concludes that building the right organizational culture is an important first step to enable greater agility and adaptability, and highlighted the four basics to keep in mind:

1) Lead, don't micro-manage.

2) Keep everyone up to date, all the time.

3) Don't get distracted.

4) Avoid blame.

These points are to be taken into consideration when benchmarking and considering best practices.

3. Data Collection

The data collection depended mainly on two approaches:

- Qualitative data collection: it covered 30 interviews, observation, and discussion with staff or groups and document analysis.

Four big enterprises were selected based on the big size, big number and complexity of projects executed. Another factor for selecting these enterprises was the availability and usage of both Agile and classical project management methodologies. This gives the selected candidates the knowledge and expertise to provide the best judgement on the topic. These enterprises are:

- Abu Dhabi Government: 12 interviews.
- Emirates telecommunication group—Etisalat: 9 interviews.
- Dubai Electricity and water Authority—DEWA: 6 interviews.
- Al Dhafra Municipality: 3 interviews.

Interview questionnaire consisted of 6 questions was asked to candidate to highlight the risk management in agile methodology vs other methodologies.

The questions were derived based on literature review, agile context and features and the researchers and the interviewees' skills and expertise.

- Quantitative data collection: was gathered using surveys developed in survey monkey website targeted candidates with experience in agile project management methodology as well as the classical project management approaches.

A survey with ten questions derived by the same criteria as the qualitative approach is used resulting in 49 responses.

The 30 interviews and 49 surveys together make a nice presentation to the population taking into consideration the criteria for selecting projects and enterprises which makes the compliance somehow difficult. Appendix is attached for the interviews and the survey analysis.

In survey, 65% believe that risk in lower in agile project compare to traditional project as splitting project to many waves (smaller pieces) reduces risk and fulfill quality requirement easily as per 86% of responses. 71% of responses agreed that risk can be controlled in agile environment however this depend on the maturity

and the knowledge of practice area as per 86%. In UAE, 69% think that adopting hybrid approach help to mitigate risks easier in agile project compare to just adopt agile approach. This doesn't mean that agile project has no risk as 61% believe that fast change in requirement in agile make risk out of control as well as 45% think that less documentation in agile project consider as risk and affect the project control. Finally, 73% agreed that risk management in agile project need to be enhanced.

The first principle: In the interview address the effect of risk management in agile project. Agile projects are fast and constantly changing so no matter how smart this approach is, this type of project has risks therefore, risk management in agile projects is very important as per Mr. Ahmed Al Hammadi from Al Dhafra Municipality. He added that priority risk list can be developed through detailed risk analysis steps and continuously monitor with the risk management plan so progress report will support doing needed respond which lead to reduces risks and increases project success. This also supported by Mr. Abdulaziz Alhosani from DEWA who added that agile methodology allows the project managers to monitor and assess the risks in each sprint, hence they will manage the risks in a more efficient and effective manner. Etisalat staff agreed on this as they said risk management can be so effective due to small iteration of deliverables within agile approach that allow stakeholders to focus and control the risk easily. Mr. Abdulla Al Naqi from Abu Dhabi Government, see risk management as governance to ensure project success in agile method as there is always change by end user and sometime demand face limitation of resources so it helps to address concern to team to take care as well as help to set priority and responses to risk if appear leading to support eliminating issue or conflict as fast deployment could cause issue that need to have way of handling.

The second principle: We seek during the interview is the main challenges affecting risk management in agile project as Mr. Al Hammadi point in the issue when project manager delays work on the risk as not giving importance to challenges and risks may lead to failure of the project hence solution from his point view is to guide project manager to raise the challenges and risks they face to decision-makers on an ongoing basis to minimize the risk. Mr. Alhosani added, risk analysis to be perform in each sprint and unavailability of resources to perform it led to an issue as well as lack of risk communication and lack of cooperation among team affect the project completion if they do not have the ability to accept such risks. Etisalat staff highlighted risk associated with the speed of implementation without having proper planning which affect having effective risk management plan as well flexibility in scope changes and some risk could affect the progress in next sprint if not action by the risk owner. Mr. Al Naqi added that the delay of accepting the development in each sprint or poor validation, delay the next sprint while this become worst if there are two projects intel-inked as well as one of main challenges he sees is the lack of expert in agile project.

The third principle: About the impact of adopting "hybrid' approach on agile project as Mr. Alhosani advised that this approach can be an effective in completing complex projects with shifting requirements where combination requires proper planning on early stages which support fast track the project. In contrast Etisalat staff addresses the negative impact of hybrid approach as agile approach use to be more flexible to changes and faster in terms of providing products of value to end users. Also they see positive aspect as it can help to assess the requirements easily then it can be divided into small iteration to focus in the delivery. Mr. Alnaqi advised that most of project they handle are hybrid as many end user more comfortable to have documentation and some sort of clear process and phases especially when projects are combination of IT and no IT so hybrid is suiting this and satisfy end user as this give range of choice for better approach that need to be selected and give strength to traditional method which make agile more practical in our region as we are not fully mature and there is lack of expert in agile approach.

The fourth principle: About the best way to monitor and control risks in agile projects. The common risk identification can be used in agile as well as per Mr. Al Hammadi & Etisalat staff where experience staff can list them, and project manager need to encourage all team to patriciate and provide guidance and way to control. Mr. Alhosani added that risk assessment and mitigation has to be in each phase or sprint with on time escalation for open risk or if there is risk that nobody can accept it. in addition, the daily meeting team member do and having experience scrum master support to identify and respond to risk faster and put control along progressing. Also expert can support in resolving conflict and close variance in skills.

The fifth principle: About the mitigation of scope creep, timeline & Budget risks in agile projects where Mr. Al Naqi see it as issue we need to live with it as part of agile nature of work and it is built in within agile approach which need to respond/adjust risk in each sprint. He added speed up the sprint may need extra budget so this to be addressed in initial estimate or added as part of contingency plan to avoid issue in delivering. Etisalat staff added the need of having governance cycle that involves the product owner to prioritize user stories then get needed approval for any extra time and budget if necessary, as change management. Mr. Alhosani believe that traditional way of risk management and mitigation can be also applied in agile to certain extend. For that applying risk management improve the efficiency and shareholder satisfaction as per Mr. Al Hammadi as it supports to overcome the issue and identify any possible risk then do needed respond as this also highlighted by Mr. Alhosani. Etisalat staff added, it enables having quality shippable products on time and save the efforts from being wasted. Mr. Al Naqi believe that agile address the needed efficiency to deliver the project faster than traditional, so risk is kept under control which increase project success rate and ensure delivering the needed outcome or exceed.

In the era of digital transformation, Etisalat is working to be fully digitalize so

agile is a best fit for that an in order to reduce failure risk after full development cycle, development in sprint is suiting the requirement so observation is done for the recent approach used to enhance Mobile Network Information System which is application used for process of backhaul provision and database for all attributes related to mobile site backhaul. It found that hybrid approach is used by combining agile with waterfall where waterfall used in planning phase to ensure full adherence to policy and security requirement along with ensuring readiness on needed API for integration with other systems or platform then development is done by agile approach as outcome or product is provided in sprints to shorten the time and having continuous delivery which followed by user acceptance of features after each sprint and correction is done if needed. This reduce the risk of having major change & respond to any scope change compare to traditional waterfall approach of doing acceptance at the end of development cycle as well as make any change to requirement easier which satisfy the end user as during the frequent meeting all issue is discuss including any change needed to how to mitigate the risk as well as identify any future risk and keep the risk log update. Although this reduce risk but moving toward cloud and evolving technology and method for moving to cloud and use of Network function virtualization could affect the way feature is designed and deployed so this to be consider.

4. Analysis

All projects have some risk regardless of the approach used hence using agile project or hybrid reduce the risk compare to waterfall as splitting project to many waves (smaller pieces) reduces risk and fulfill quality requirement easily but it doesn't mean there is no risk as some risk appear which need to be consider and take needed action to mitigate in order to ensure project success. Therefore, risk can be controlled in agile environment however this depend on the maturity and the knowledge of practice area.

Based on the collected data and the observation, risk can be categorized in agile as following:

1) Approach risk: This risk associated with selection of approach itself by adopting agile or hybrid need to be done with careful selection that meet the end user requirement and expectation so selecting wrong approach can bring failure risk or issue in delivering of requirement and may dissatisfy customer especially in two type of project combined together such as IT & none IT. The risk here occurred by applying approach outside of its range of applicability as each technique has advantages & disadvantages.

Proposed enhancement: This need an expert project manager who can select the right approach and support in on time decision making that drive project for success.

2) Organizational risk: This risk related to company policy and way the sections work as it could create barrier or affect the speed associated with adopting

agile approach as well as the lack of expert team in agile method, lack of communication or coordination due to section barrier. Another risk is after project or sprint completion and handover to operation team as fast production could lead to issue in handover or ability of operation to run what was developed. Another important risk is when no attention given to work in risks registers or lists the challenges which lead to failure due to work practice or lack of experience.

Proposed enhancement: This can be overcome by guiding project manager and select expert scrum master or PM along with educating team and section about the agile approach and nature of work. Adding, this many need to do need change n structure to allow adopting agile compare to traditional functional units. Adding to that operation staff need to ready to accept and operate after fast development and ensure they are ready and capable to ensure business continuity and feedback in case of any demand of change.

3) Process risk: This risk associated with type of process either selecting agile approach of hybrid as each of it has its own arrangement and mechanism. Adding the acceptance of output from each sprint as any delay affect the overall progress & put extra load at later stage if all feedback provided at once. Adding monitor and assess the risks in each sprint is important and to be part of process and monitored by project manager.

Proposed enhancement: There should be well defined time or SLA to accept sprint outcome as well as company should have an overall governance strategy & milestones that motivate teams to address issues & ensure they produced sufficient functionality for deployment.

4) Business risk: This related to change of requirement of priority due to market shift or competition as well as could be inappropriate budget allocation either more or less. Also starting fast before understanding clearly the vision of target feature may waste time and budget for repeating the work.

Proposed enhancement: One of solution is to have quick cycle and swift feedback from end user so adjustment can be done quickly to meet the idea. Other solution is to reprioritize the requirement to keep project within approved timeframe to support delivering value rather than just completing work. In addition, a clear plan or vision is necessary for reducing scope creep, maintain the required timeline and be within the budget. Furthermore, removing a low-priority requirement of equal time and cost can support adopting needed change and study within budget and time.

5) Technology risk: His risk could occur due to disrupt technology change and competitive advantage new software of cloud platform could provide, selecting of way of developing the product or service.

Proposed enhancement: We need to consider the future evolving technology platforms and end user expectation

6) Monitoring and analysis risk: The risk is being handled using almost similar approach to manual method which could cause a risk of not having real-time data to enable better decisions and depend on staff experience to raise any risk

on time or provide it to risk owner for action.

Proposed enhancement: To use automated tools or simulations such as Monte Carlo Simulation is "a problem-solving technique used to approximate the probability of certain outcomes by running multiple trial runs, called simulations, using random variables". Hence, this supports to reducing risk. Also, risk analysis tool can be used to perform in real-time during meeting and it can handle the list of iterations and backlog of issues along with dashboard as this will support also to overcoming the shortage of expertise in this domain as automated tool used to analyze, assessment and do report hence as risk is kept under control, it increases project success rate.

5. Limitation

Reaching the needed related data for research purposes could be difficult and due to time constraints, we might not be able to get a large number of responses on the survey due to course period as this will impact us to check the maturity to classify if the measure is stable over the time as repeating the survey in short period may cause the participants to remember the answer they did in the last survey, and this could lead to bias the result. Indeed, we will try to get senior-level support for that and use university support if needed to get concerned companies' support in responding to our mail or questions. Also, the major challenge we faced is the lack of research evidence and data, especially in UAE. Furthermore, ineffective feedback could cause variation in understanding and analysis of data.

6. Conclusion

Nowadays, many companies are trying to adopt an agile project to gain customer satisfaction and respond rapidly to change aiming to meet customer requirements and compete in fast change & frequent change environments. The agile project focus on interaction rather than process, focus on working software rather than documentation and customer collaboration rather than contract negotiation which give flexibility and speed while change during development is accepted as it is done in small waves or sprint to ensure continuous delivery of the product.

Actually, the agile project has also a risk which are scope creep, timeline issues and budget issues so those need to be addressed and managed in order to achieve the project target and satisfy the customer hence risk management in agile projects is very essential however team should not mix the practice with waterfall mechanism as teams are more accustomed to the waterfall approaches that employ the use of extensive documentations which is not the case in agile methods (Campanelli et al., 2018).

A clear plan is necessary for reducing scope creep, maintaining the required timeline and sticking to the budget however due to accepting any changes, list re-prioritization can be done by removing a low-priority requirement of equal time and cost. Adding creating a culture that adopts agile projects, training employees

and selecting expert project manager is essential to mitigate risk and have better control in agile projects. Cooperation with customer and ensuring on-time acceptance after each sprint is important to avoid having bulk changes due to late feedback in some cases since their feedback determines the next course of action.

Therefore, risk can be controlled in an agile environment however this depends on the maturity and the knowledge of the practice area including the following:

- Approach or project type selection risk.
- Organizational risk.
- Process risk.
- Business risk.
- Technology risk.
- Monitoring and analysis of risk.

Finally, we recommend considering the following to support risk management in agile projects:

- Customer vision to be clear to maximize the success rate.
- Selecting the right approach is the main factor for project selection depending on the nature of work and size.
- Agile required an experience project manager and team to function and deliver as per expectation.
- Customer involvement and fast response from him are essential to keep sprint moving and avoid delay.
- Organization policy and procedure should allow adopting an agile approach to overcome rigidity within the process.
- The company may restructure to support implementing agile or consider flexibility.
- Company culture should be enhanced to support adopting agile and avoid the limited agile skills.
- Business demand and future change to be taken into consideration.
- The use of analytic tool is important to support a decision in an agile project as it adds value.

The study supports the use of empathy analysis tools to make the project colleagues think in perspective and deeply understand the customer's pain points and can also modify the function of the product (service) from customer feedback.

Hybrid approaches are based on 3 patterns and the 3 patterns are still based on Royce's waterfall model and use the standard software engineering activities. Their findings shall help to lead further research and help practitioners to better organize their individual development approaches. CCS CONCEPTS Software and its engineering → Collaboration in software development, Agile software development, Waterfall model.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix

A1. Interviewer Data

Organization: Al Dhafra Region Municipality.
Name: 3 interviews
Job Title: Director of Planning and Technology—Acting (IT Specialist).
Department: Technology and Planning Division.

1) What is the effect of risk management in agile project?

Agile projects are fast and constantly changing. No matter how smart this approach is, this type of project has risks. Therefore, risk management in agile projects is very important, and we are applying the risk management module in Al Dhafra Region Municipality which is the priority risk list can develop through detailed risk analysis steps, which can be managed continuously with the risk management plan, thus creating risk-based protection and maintenance. Updated reports can generate from the process and the current state of risk analysis. That is led to reduce risks and increases project success.

2) What are the main challenges affecting risk management in agile projects?

One of the principal challenges we face in agile projects is that when the project manager delays work on the risks. The most appropriate solution is to guide project managers to raise the challenges and risks they face to decision-makers on an ongoing basis to minimize the risk of the project. Therefore, not giving importance to challenges and risks may lead to failure of the project.

3) What is the impact of adopting "hybrid' approach on agile project? Note: Hybrid is the combination of Agile methods with other non-Agile techniques.

We in Al Dhafra Region Municipality, do not prefer to combine hybrid approaches with agile projects and we see that the best is to take every project individually as a hybrid or an agile.

4) What is the best way to monitor and control risks in agile projects?

It is very important to identify risks in projects for control. There are different types of techniques that can be used to identify risks. Few of the common risk identification methods used by experienced practitioners are comprehensive risk checklists, document review, analysis of assumptions, limitations, etc. Since the project manager encourages the whole team to identify the risks involved, it should also provide guidance on risk identification to achieve control and risk reduction objectives.

5) How risk mitigation can support to success projects dimensions (efficiency and stakeholders' satisfaction)

Risk management has been established to improve project efficiency and shareholder satisfaction. By identifying risks and project priorities as well as the project manager may overcome obstacles that may adversely affect his project.

Organization: DEWA
Name: 6 interviews
Job Title: Specialist/IT Security
Department: IT Department

1) What is the effect of risk management in agile project?

Proper risk management will ensure that your scope, time and cost are monitored and maintained correctly. It will give you an accurate estimation for the plan and progress of your project. In addition to that, the agile methodology allows the project managers to monitor and assess the risks in each sprint, hence they will manage the risks in a more efficient and effective manner.

2) What are the main challenges affecting risk management in agile projects?

The availability of the resources is one of the main challenges since you cannot guarantee that you will find them to perform risk management in each sprint of the agile project. Moreover, the second challenge we are facing is that lack of risk communication and the risk owners sometimes not cooperating with the risk management team or project managers. Also, in case there are residual risks it might affect the project completion if they do not have the ability to accept such risks.

3) What is the impact of adopting "hybrid' approach on agile project? Note: Hybrid is the combination of Agile methods with other non-Agile techniques.

The hybrid approach is to fast track the project or to increase the quality of project implementation. Furthermore, this approach can be an effective means of completing complex projects with shifting requirements. This combination requires proper planning on early stages in order to achieve desirable outcomes.

4) What is the best way to monitor and control risks in agile projects?

You have to apply risk assessment and risk mitigation tasks at each phase of the project lifecycle. Develop escalation sheet for the higher management in case of risk owners not responding well or there are any residual risks that nobody can accept it. This will help you to control the risks in an efficient way.

5) How to mitigate scope creep, timeline & Budget risks in agile projects?

For the scope creep, we can prevent this by writing a clear scope of the project and get all stakeholders sign off on it. Then, implement change control process and monitor the project progress against the scope.

For timeline, you should give padding for known/unknown factors such as holidays, unexpected sick days, team member leaves, emergencies…etc.

For budget, take the feedback from the subject matter experts before you estimate the budget if you face uncertainty. Always keep reserve budget.

6) How risk mitigation can support to success projects dimensions (efficiency and stakeholders' satisfaction)

If the risk mitigation is done on the planned manner for each task in the project lifecycle, this can increase reliability, quality, timeliness, effectiveness and

stakeholder satisfaction which bring the success to the project.

Organization: Etisalat
Name: 9 interviews
Job Title: Engineers/Service Automations
Department: Technology Department

1) What is the effect of risk management in agile project?

Proper risk management can eliminate, mitigate or reduce the effects of Risks on the agile project deliverables, time and budget. Moreover, Risk management can be so effective due to small iteration of deliverables within Agile approach allowing stakeholders to focus and control the risk easily

2) What are the main challenges affecting risk management in agile projects?

- Agile projects usually don't spend enough time in planning and documentation. More focused towards implication and development. There might be no enough time to focus on Risk management.
- Agile projects are more flexible in terms of accepting scope changes. This increases the risk violating project timelines and budget.
- Any single risk can block the whole iteration and requires attention from all stakeholders and not specific to the owner.

3) What is the impact of adopting "hybrid' approach on agile project?

Note: Hybrid is the combination of Agile methods with other non-Agile techniques.

It might give further flexibility to the project manager to run certain methods in old style. However, in my opinion, it can have negative impact on the project as agile project management was designed in a way to be more flexible to changes and faster in terms of providing products of value to end users.

Furthermore, by adapting hybrid approach documentation of project will help to assess the requirements easily then it can be divided into small iteration to focus in the delivery

4) What is the best way to monitor and control risks in agile projects?

I prefer to use Risk registers for overall project and in iterative sprints as well. In addition to use standard monitoring tool to manage and control the risk like burn down chart.

5) How to mitigate scope creep, timeline & Budget risks in agile projects?

i think the best way handle it is by having governance cycle that involves the product owner to prioritize user stories (newly added or existing ones). Then Involve project sponsors to approve time and budget changes if necessary, as change management

6) How risk mitigation can support to success projects dimensions (efficiency and stakeholders' satisfaction)

Following are main points for how risk mitigation can support

- Avoiding issues from happening.

- Saving efforts from being wasted.
- Having quality shippable products on time.

Risk mitigation is something that would please project sponsors, project team, end customers and all stakeholders in general

Organization: Abu Dhabi Government
Name: 12 interviews
Job Title: Manager/Innovation and intelligent technology
Department: IT Department

1) What is the effect of risk management in agile project?

It provides a governance of the project as in agile there is always change by end user and sometime demand face limitation of resources. It helps also to address concern to team to take care as well as help to set priority and responses to risk if appear. I support us to eliminate issue or conflict as fast deployment could cause issue that need to have way of handling.

2) What are the main challenges affecting risk management in agile projects?

From my point view, main challenges are

- Unclear vision or scope of end user.
- Time end user takes to test and accept the development in each sprint.
- Poor validation or test that affects later deployment/sprint.
- Lake of expert in agile project.
- In two projects intel-inked then delay of any of them affect other even if we use agile.

Other point that can be added is after go live sometime issue raise about who will maintain or operate as fast development may cause issue of handover if company IT staff is not ready or aware of what was built

3) What is the impact of adopting "hybrid' approach on agile project?

Note: Hybrid is the combination of Agile methods with other non-Agile techniques.

Actually in our work most of the projects we are doing are hybrid as many end user more comfortable to have documentation and some sort of clear process and phases. Also some of the project are combination of IT and no IT so hybrid is suiting this and satisfy end user which if one of main output of any project. In government usually we use it as we deal with program of portfolio which combine agile and none agile projects and some of them hybrid. This give us range of choice for better approach and end user can select what he prefer. In hybrid there is needed documentation and time to plan which also support us due to lack of expert and understanding of some government unit about agile as well as this combination give strength to traditional method and make agile more practical in our region as we are not fully mature.

4) What is the best way to monitor and control risks in agile projects?

- Daily or frequent meeting with team members.

- To have experience scrum master or PM who can identify and respond.
- Agile risk registers which is update and support in control.
- Expert who can resolve conflict and close variance in skills.

5) How to mitigate scope creep, timeline & Budget risks in agile projects?

This is built in within agile approach as you need to respond/adjust risk and live with. Also sprint make speed action some sometime need budget hence it this was not addressed before them you may face issue to deliver

6) How risk mitigation can support to success projects dimensions (efficiency and stakeholders' satisfaction)

Satisfaction will be ensure by delivering the needed outcome or exceed it and agile address the needed efficiency to deliver the project faster than traditional so risk is kept under control or mitigation as more success project will be.

A2. Survey Result

SL	Question	Feedback	
		Per %	Responses
1	**Risk is lower in agile project compare to traditional project?**		
	Strongly agree	20%	10
	Agree	43%	21
	Neutral	4%	2
	Disagree	22%	11
	Strongly disagree	10%	5
			49
2	**Split project to many waves (smaller pieces) reduces risk and fulfill quality requirement easily**		
	Strongly agree	22%	11
	Agree	63%	31
	Neutral	6%	3
	Disagree	6%	3
	Strongly disagree	2%	1
			49
3	**Managing risks in agile project is different than traditional project**		
	Strongly agree	18%	9
	Agree	63%	31
	Neutral	16%	8
	Disagree	0%	0
	Strongly disagree	2%	1
			49

Continued

4	**Adopting hybrid approach help to mitigate risks easier in agile project**		
	Strongly agree	12%	6
	Agree	57%	28
	Neutral	29%	14
	Disagree	0%	0
	Strongly disagree	2%	1
			49
5	**Risk can be controlled in agile environment**		
	Strongly agree	14%	7
	Agree	57%	28
	Neutral	22%	11
	Disagree	6%	3
	Strongly disagree	0%	0
			49
6	**Current risk practice in agile project is suiting the requirement**		
	Strongly agree	10%	5
	Agree	45%	22
	Neutral	35%	17
	Disagree	10%	5
	Strongly disagree	0%	0
			49
7	**Agile risk depend on the maturity and the knowledge of practice area**		
	Strongly agree	27%	13
	Agree	59%	29
	Neutral	4%	2
	Disagree	8%	4
	Strongly disagree	2%	1
			49
8	**We need to enhance risk management in agile project**		
	Strongly agree	27%	13
	Agree	47%	23
	Neutral	20%	10
	Disagree	6%	3
	Strongly disagree	0%	0
			49

Continued

9	**Fast change in requirement in agile make risk out of control**		
	Strongly agree	6%	3
	Agree	55%	27
	Neutral	14%	7
	Disagree	22%	11
	Strongly disagree	2%	1
			49
10	**Agile risk can be under control even with less documentation**		
	Strongly agree	6%	3
	Agree	33%	16
	Neutral	16%	8
	Disagree	35%	17
	Strongly disagree	10%	5
			49