Scientific Research Publishing

American Journal of Industrial and Business Management, 2022, 12, 731-749
https://www.scirp.org/journal/ajibm
ISSN Online: 2164-5175
ISSN Print: 2164-5167

Simulation in Project and Program Management: Utilization, Challenges and Opportunities

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How to cite this paper: El Khatib, M., Alhosani, A., Alhosani, I., Al Matrooshi, O., & Salami, M. (2022). Simulation in Project and Program Management: Utilization, Challenges and Opportunities. *American Journal of Industrial and Business Management, 12,* 731-749.
https://doi.org/10.4236/ajibm.2022.124037

Received: March 27, 2022
Accepted: April 26, 2022
Published: April 29, 2022

Abstract

Nowadays the program complexity increases and program manager needs to have specialized skills and knowledge as he faces the most challenging tasks in his job for making sure that all projects and program component are moving as per the plan. Thus, program management education plays a critical role in supporting and enhancing the skill and competencies needed for program manager so the training has to follow innovative way to overcome the limitation the traditional courses deliver. Introduction of simulations in project management has since helped in the exploration of opportunities, expect scenarios and identify limitations of several factors within the project at hand however the initial search shows the lack of dedicated and well-known simulation software for program management compared to many simulation tools for project management training. This research paper seeks to explore and study the usage of simulation tools in program management and study if Program Management can benefit from available Project Management simulation as well as how current can be enhanced for that and do we need separated software or better to enhance current software. For that, observation has to be done to explore that and come up with appropriate recommendations and suggestions. This will include defining the simulation tools in general, its objectives, pros & cons, challenges & opportunities, sample of project management simulation then followed by research methods including survey, questionnaires for interviewees and output from what we studied so method depends on qualitative data due to lack of secondary data. This will be built up to get understanding on program manager requirement for simulation as possible.

Keywords

Project Management, Program Management, Simulation, Project Management Education

1. Introduction

Project and program management is becoming more complex. Digital transformation and digital disruption programs and projects are becoming a necessity for all organizations. Embarking on the best scenario and best approach to be utilized is of high demand as this will lead to better risk management. Using big data, Artificial intelligence (AI), analytics, and other technologies for a data driven decision-making is requirement to be embraced. Extended reality (XR) in all its forms (VR, AR, MR) is potential tools to highlight different scenarios. All this emphasizes the need and the necessity for a better simulation tools in project and program management.

The objectives of this research are to highlight the importance of the topic, assess the present simulation status in project and program management, and to propose suggested improvements in usage and design of simulations.

Clarifying the needs and requirements is the main input to deliver the proper solution in any project. Simulation is not an exception.

The article is organized as follows:

Section one is an introduction to highlight the purpose, needs and requirements.

Section two covers the literature review including simulation description, objectives, advantages, disadvantages, challenges, opportunities, and a review on existing simulation in project management.

Section three covers the research methodology.

Section four covers the findings.

Section five demonstrates discussions and analysis.

Session six demonstrates the recommendations and lastly,

Session seven covers the conclusion.

2. Literature Review

2.1. Simulation Description & Objectives

Simulation software is fundamentally a tool or a program that lets the operator to observe an operation using this simulation tool without actual execution to produce a lifelike experience. Where processes will be intimated to see how they will perform under dissimilar circumstances. Simulation is also widely used in testing new theories and methods (wikipedia.org, 2016, 2017).

In project management, simulation tools are used in the fields of training and analysis. Where project managers are using simulation to get improvement on their various skills such as management skills, business awareness and attitude. Simulation tools can be used as well in what-if-analysis and to support decision making (Karen Lawson, 2015).

Using simulation tools by project managers can confront with real projects, and can track the influences of their decisions on different parameters that are related to the project such as cost, schedule, scope and quality. The simulation tool is also used in analyzing projects, where projects mangers can see the possi-

ble outcomes and impacts of their decision.

2.2. Advantages and Disadvantages

Advantages:

One of the most important aspects of using project simulation in management is the ability to receive immediate feedback from the performance. All the participants in the project eventually get to know how they did, during and after the completion of the project (Schwalbe, 2015). The simulation enables managers to understand the critical points in the team performance and as such, solve any problem that may be present itself during the process.

Simulation in project management helps in establishing new ways of thinking towards the progress of the process. The process results in useful information which gives the managers as well as other participants to understand and start implementing different lessons. Additionally, the data from the simulation offers people the opportunity to focus on the big picture by identifying the possible mistakes and redefine how various units in the project interact. Also, simulation in program management enhances the way participants interact and engage while working towards completing the project. The process further enables them to make useful decisions, identify and understand the consequences of every action towards the project. There is also a creation of an environment that opens up the team, making them more willing to acknowledge the mistakes (Verzuh, 2015). This, in turn, provides new skills and behavior to be applied in the actual program management.

Furthermore, it allows the trainees to purposely undertake high-risk activities in safe environment without dangerous effects as well as it will help trainees to learn from error and enable them to understand the results of their actions so similar to real situation can be experienced in virtual and not to wait till it happen. Simulation not only allow repeating the cases as often as needed but also can provide custom scenarios that suit different level from beginner to experts while feedback can be given instantly or gradually through the period of the play.

Disadvantages:

Despite the positive implications that result from successful project management, simulations are also disadvantageous and can lead to adverse situations in any project. According to Rosemann and vom Brocke (2015), simulations may never be able to re-create real-life conditions, as the way perceived during the planning of the project. As such, decisions made may not be practical when conducting the actual program management on the ground, resulting to uncertainties as well as it can't include all possible situations.

Additionally, for a project manager to be competent, the participants have to put in a lot of effort, both financially and physically. This makes it very expensive for managers and the relevant organizations to carry out the process. Upon deciding on carrying on with the simulation, the team has to ensure that the re-

sources needed are well available and failure to meet all the requirements disservices the project entirely (Schwalbe, 2015). Time investment and costs are the key factors that contribute to making the process expensive; meaning that if a team cannot manage on providing these resources adequately, the process will not result in positive outcomes. Additionally, it may take very long for managers establish good simulation models, which in turn may lead to the derailment of projects.

2.3. Challenges and Opportunities

Challenges

Indeed, for any projects identified expected challenges and make analysis and assessment for these challenges are very critical to overcome and tackle any issues that may occurred. Therefore, it will have a positive influence in order to achieve project goals and millstones in respect to the 3 project constrains, time, cost and quality. "One size fit all" approach is not practical; hence it will provide ineffective training and practice as we have different kinds/types of program management fields. In addition, simulator tools to be built with flexibility to meet all program management requirements. There are lots of challenges for Program Management Simulators such as: development of sophisticated simulators, development and implementation cost, interactive and easily accessible model as well as to be easy for adaption for any further enhancement are the major Challenges'.

Nowadays, developing user-friendly simulator is considered as one of the most important things to have smarter program management. In fact, in today market, only project management simulators are in used, and the main challenge here is how to obtain similar tools that can be used for program management purposes. As program management is a combination of multiple projects, such tool to be prepared to handle and implement the difference in program management simulator.

A well design simulator is very essentials not only to fit the needed and the requirements of program management simulators but also for better outcomes. Development of sophisticated models is a challenge, since in the real time, project is having complexity, dynamic, stochastic environment, in another mean uncertainty exist. Creating sophisticated tools will lead to higher benefits and raise smarter level, since there is a realistic challenge that often faced by project managers, by using this tool there will be an increase in program manager skills and knowledge.

Another challenge is to have enhancement and adoptability features on created simulator tools for further desired, that would facilitate the requirement instead of making major changes or to have other simulators tools. This is because of the dynamic changes and new innovations or new requirements.

In addition to above challenges, having an interactive and easily accessible interface by computers, tablets, and smart phones is considered as another chal-

lenge, which shall play an important role to make program management smarter, since we are having several Individual skills and knowledge, to allow them to practice and have better understanding of the relationship between project scope, resources, schedule, and other related matters (Robert D. Austin, 2014).

The major challenge is the cost involved for either development or implement or it could be for both. Definitely as the concept is still not extended widely in the market, simulator tools have higher cost in comparison to other tools used by program managers. Adding to that, as more features and being more sophisticated tools, the cost will be higher and higher, to allow user to examine and practice their task to know the result and requirements before proceeding in reality.

Opportunities

Actually, Program Manager shall obtain lots of opportunities while using simulator software, these opportunities are and not limited to: applying new method and theory, practice and increase knowledge and skills with real life scenarios, solve typical problems, to make mistakes and analyze them, resources and budget planning, support to eliminate failure, lessons learned, identifying limitations, that is either for training, analysis and decision-making purposes, and other opportunities that will be described below.

Simulator provides close to reality experience for program manager, since there will be an opportunity for practicing the execution phases of a project that shall ensure the knowledge and skill acquisition that will never be forgotten, help in acquire competencies by learning by doing approach.

In addition to the above, program manager will get a clear guidance on how to improve and enhance program quality, and in some cases he will be able to explore or apply a new innovation matters, which is considered as practicing business simulation model. Therefore, it will provide a comprehensive information such as: advantages and disadvantages, limitations, areas for adjustment or improvement, as well as the main decision to go ahead with such innovate ideas implementation or not based on different scenario he can compare among so it's really a great potential for program manager effectiveness.

2.4. Review on Existing Simulation in Project Management

1) Overview

There are many simulation applications for project management where those allows learner to work in team of few students to get the core competencies for project management, teamwork and leadership via game method similar to real project where are few examples of simulators or program used:

a) SimulTrain®;

b) Cesim Project;

c) Versatile's project management simulation;

d) Harvard Project Management Simulation.

In general, those simulators include all aspects of project management but

there is some different among them as some has more features than other,

- Project initiation
- Project planning
- Project execution
- Project controlling
- Project Closing

Those also allow the learners to practice the;

- Resource & budget allocation
- Decision making or project change
- Reporting

In SimulTrain simulator, learner can apply the theory they learnt and can select variety of project scenarios where this tool allows controlling the project from different aspects such as leadership, change management, risk management and human factor. During the training, team need to manage through project dashboard to control time, quality and budget. Everyone business is to maintain KPI which motivate learners and keep them always with attention to resolving conflict, improving quality and take the correct decision as well as they can always evaluate their performance.

In contrast, Cesim Project simulation focus on communication between people as essential element in project management to achieve individual and team goals since the goal is to complete the whole program while taking in consideration the unique requirement of each project. Different that SimuTrain, here each team member manager a project under one program where the goal to them is to complete the program so they need to have effective communication among them along with focusing on quality, budget and schedule of each project so the collaborative efforts and effective communication will lead them to success. Indeed, each of them to have to manage his project as each is independent and it has its own requirement & it need to go through all project aspect as the simulation track both project progress and program progress for each team. The project manager here should verify the skills that required by each task with the skills available with team members in order to have the effective match. Project manager can allocate more resources or overtime as well as the can use outsourcing. Also he can transfer resources among sub-projects

Versatile's project management simulation is another program which they describe it as "unique among project management programs as teams encounter realistic challenges such as scope changes, communication breakdowns and unexpected stakeholder inputs" (wikipedia.org, 2016, 2017). It has similar function of others where it will enhance learner experience through project management techniques however the course can be meet different level requirement by customizing it to match audience need (Versatilecompany.com, 2017).

On the other hand, Harvard Project Management Simulation is single player simulation where learner play role of project manager and the main objective is to execute a plan to deliver product within time and budget. Here instructor can

assign up to 6 scenarios instead of one so student will be trained for more challenges that usually project manager faced such as reacting to unanticipated outside events where this differentiate this simulation than other simulator where changes usually from higher management (forio.com, 2017).

2) How learner use simulation

Harvard Project Management simulation is selected to verify how it work where it will help in enhancing knowledge for scope, resources and schedule where there are many scenarios that can be assigned to learner. Once learner login, he can see the project information, prepare sections and how to play then he can start the play once he ready. Once learner start, he can see different parameter related to the assigned project along with management and his target hence he can select the product or scope he wants to work on and from schedule he can adjust the target completion weeks. Team size with skills needed and if any plan is there for outsources can be modified under resources menu and process will allow learner to call for meeting, allow overtime and make review with team which impact team moral and satisfaction. Learner can also identify if he needs to have prototype of product or not. Those changes in parameters affect the weekly cost and the decision affects the overall cost.

Learner can view the decision impact on the analysis graph which shows team status, schedule status and cost status. It will also show the result incurred from previous decisions with view of overall project status. Learner can always view the task completed and number of pending tasks along with problem that need his decision. In order to ensure meeting the target, learner has to always focus on the target and how to achieve it while all decisions he made through past period can be viewed in certain menu. The decision could be adding or reducing meeting, review session with team, number of resources, overtime, or umber of prototype while decision will impact the cost associated with parameter set as well as dashboard for different status will be updated once decision is submitted.

3. Research Method

This article used quantitative and qualitative approach. Quantitative approach is represented in a survey designed in survey monkey and distributed to project managers focus groups. 83 responses were received. The qualitative approach is represented by handling 4 interviews with open questions structure with subject matter experts.

As the secondary data is limited in this subject, data was gathered via two methods.

1) Survey where we used survey monkey web site to build the survey then we distribute the link to focused groups aiming to get feedback from sample who are working in project management fields to increase the opportunity for useful feedback.

2) Direct questionnaires to sample profession in project management field and the question build on two sets, one for those who aware about project man-

agement simulation and 2nd for those who are not aware where their expectation for such application is gathered.

4. Data and Findings

Data:

The survey opened for period of 10 days where total responses reached 83. The detailed questions can be found in appendix 01 and below is the summary of the finding.

- 78% of participants are working in project management field
- 65% of sample are aware of simulation in project management
- 39% of sample use simulation tool either now or in the past
- 72% believe that simulation add benefit to project management and 18% believe is not adding to expected level
- 62% of sample expected that the simulation will support in monitoring the benefit associated with the program while 33% are not sure if this can happen
- 67% agreed that simulator will support in resources optimization and 10% not see it to expected level
- 56% with the approach to enhance the current project management simulator to include program management and 18% have point view to have separate but integrated with current simulator

Interviews are done with different professionals in different companies or departments to collect feedback, expectation and suggestion. The detailed questions can be found in appendix 02 and below is the summary of the finding.

- "what if analysis" application simulation tools add value to traditional project management methods
- Oversee the delivery of all associated projects under certain program with identification of their interdependencies as well as help in getting better utilization of resources across projects and to identify possible risks.
- Analyzing dashboard and progress review need certain skills and as human we need some tools to support us making decision faster and in informed way.
- Decision making on how to implement the project in real life perfectly. Adding to that, to eliminate any issues that may be observed and to tackle happened issues.
- Currently available simulator is for project management, such simulators need to be enhanced to meet the requirement of program management.
- Two levels are required, high level (program management), in this level all the required parameters need to be built to be useful as program management simulator and lower level (project management). Data from lower level can be consolidated and then to share report and project update to higher level, allowing program manager to monitor and analyze projects virtually.
- Simulation tool will add fast feedback, risk and outcome benefit analysis of the project with more accurate results than the traditional method.

5. Discussions and Analysis

First of all, by reviewing the existing project management simulators, it found that there are slight differences on how to play the game but all of them has similarity in focusing of developing project management skills as some simulation can accommodate more participants than other or has more functions that others.

Furthermore, with verifying the description of Cesim simulation game, it is actually more toward being work for one project with sub-project/phases than being as program with different projects as the focus found on result within project constraint, budget, quality and schedule. They describe their product as "tool that allows the participants to experience the dynamics and complexity of a project that consists of multiple interrelated sub-projects". None of them is designed for program management.

The participation in survey was low as only 83 responses received which expected due to limited period of 10 days for survey as well as we were targeting certain samples in project management field or staff we expect they could have such knowledge hence 78% of sample found work in project management field where 39% of sample use or has experience in simulation program. Nearby 70% believe that simulation in program management will add benefit and it will enhance the skills for resources optimization hence most of them recommend enhancing the current simulator for project management to use it for higher level and enable it to train for program management as percentage was 56% compare to 18% who recommend having separate simulator for program management.

The expected benefit for such tool can be summarized as below based on responses;

- Build skill to react on different scenarios
- Support in making informed decision
- Reduce the risk by exploring different alternative
- Environment for practice risk impact without losing
- Train on how to analysis dashboard and react

The result from direct interviews align with the survey result although the interviewees were not having experience in project management simulator expect one of them while they do have experience in simulation in general and all of them see is beneficial to have program management simulator as such tool benefit a lot in reducing risk, saving time, support in exploring different scenarios as well as oversees all outcomes and how to better utilize the resources.

Also, such tool could help in real project or program and not only in training environment while none of them have idea if there is such simulator used in program management and as per our research in internet, e-Library and direct questions for related sections in our work, we also did not get any feedback on simulator tools use for real project or program.

The challenges which may appear for program management simulator are;

- Have different applicable scenarios for training
- Hesitant from companies to share lessons to build the logic

- Lack of open data source or big data to use
- Identifying the standard that needed so PMI role and effort to be there
- Cost of such tool either to develop or fees for training
- Usually program manager has experience and skills so tool need to add real value

After reviewing the feedback and input from all including survey, questionnaires as well as our research, we found that it is recommended to have simulation for program management as this skill is essentially needed although many program managers could be initially project manager and have practical experience, the learning in always needed to enhance the skill and provide save environment for making mistake which can't be accepted in real work. Simulation is one of great tool that will allow this and all agreed that simulation add benefit for training and even can be developed for work practice or operational use.

6. Recommendations

The propose simulation program expect to provide the trainees with needed skills that program manager need and current simulation preferred to be enhanced although there is difference in features and capabilities, hence each of them can develop their own way of enhancement and this may allow them to add more features to their existing software which we reviewed some of them earlier. The Project Management Institute (PMI) defines program as "A group of related projects, subprograms, and program activities that are managed in a coordinated way to obtain benefits not available from managing them individually" hence the software should involves aligning multiple components that have common outcome or delivery along with managing the associated benefits that contribute to consolidated benefits as defined by the program.

The propose application can be built on two levels, one for project management as currently many applications provide this and 2nd for program management where both will benefit from centralized database with full alignment and supplier of solution can maximize the benefit of having full control in one platform.

In term of features and learning outcome that program propose to have, we listed what we expect to improve learner skills as below.

1) Enrich with different scenarios

The simulation application should have many scenarios covering multiple fields and areas of knowledge that mostly program manager face as well as it need to have several levels to consider the difference in competencies and skills trainees have.

2) Program plan

The simulation should evaluate the learner competency to select related projects and link component outputs to planned program outcomes. This to be done based on each scenario when if leaner will not select the appropriate related projects depending on business case in the scenario, simulation either to dedi-

cate point and notify him or keep him going so he will experience the impact of not planning the program well.

3) Benefit management

Learners that act in role of program manager should identify the relationship between program activities and expected benefits along with properly mapping them so he can monitor them. This also reflects in dashboard that simulation has to support him making on time decision.

4) Manage stakeholders

Based on each scenario and simulation capability, there should be way to assist the program manager ability to identify the stakeholder, set stakeholder relationships plan and the way he manages them along the period of the program.

5) Resources management

Similar to the way current simulation does, the propose one has to be enhanced to allow same but in program level with evaluation will be done based on resources optimization across the program instead of on each project.

6) Dashboard

The dashboard and performance monitor have to be in higher level compare to what exist for project manager as it need to monitor the overall projects progress or outcome, benefit analysis and effectiveness of managing and utilizing the resources. By comparing figure AB001 and figure AB004, the first monitor the task for project level while 2nd monitor the different projects or components along with associated benefit and overall outcome achievement and this what need for program management simulation.

Finally, we would recommend some approaches that could improve the result and the outcome of this report as it will be better if we interview the trainers on current simulation as those are expert in such tool along with discussion with vendors or supplier who design the tools to come with better understanding on the way the current simulation could be developed to cover program management part.

7. Results and Conclusion

Results:

- The responses for how simulation can benefit program management are summarized below in points and only relevant feedback listed where other can be viewed in survey result link in references,
  - ✓ It will help in judging and react on different conditions and support for decision when deal with multiple highly constrained projects.
  - ✓ Support do to make an informed/calculated decision
  - ✓ Can give an indication of the various possible benefits which a program can give
  - ✓ Reduce risk of failure as it develops scenarios and analyze impact
  - ✓ Oversee future risks and estimate impacts of different flow of projects impacting each other's (mostly lead optimization and increasing critical

flow avoidance)

- The responses for what they expect from simulation tool for program manager are summarized below in points and only relevant feedback listed where other can be viewed in survey result link in references,
  - ✓ Centralized Program dashboard with flexibility in configurations to suit Program needs
  - ✓ User friendly
  - ✓ Allow injection of multiple scenarios to simulate agility associated with the projects of the programs
  - ✓ Availability of alternate course of action
  - ✓ Suggest optimal solutions for resource management
  - ✓ Ease the analysis efforts from progress monitoring

Challenges:

- The major challenge is to have standard simulation model which is applicable for different types of projects, since projects are varying and dynamic.
- Cost of such tools, since its will be new in the market and entitled overhead cost to run the program
- Capture much learned lessons from different projects in order to improve the accurse of the simulator. From example planning the budget of the project will includes a lot of cost estimations that will affect the simulator accurse.

Opportunities:

Knew how to:-

Execute the project in best practice.

If allocated budget and resources are sufficient to accomplish the project

What issues could occurred and how to overcome them

How to overcome these challenges?

Standard simulation model:

> By identifying standard requirements, tasks that are applicable for all

> Having flexibility to add tasks to meet various scenarios

> Creating groups, each group combined of functions list that are applicable for certain fields.

Cost:

- o Applying such tool, will support in big saving in terms of time, resources and better accomplishment of scope.
- o Ultimately, ROI will obtained in short term of time
- o To have partnership with big companies in this filed, who can benefits to advertise their name, and defiantly will apply all needed improvement and snags clearance.

Conclusion:

Analogous to the flight simulators that pilots use to practice on and learn about the complexities of flying an aircraft, a project management micro-world provides a virtual practice field for managers to "fly" a project and experience the long-term consequences of their decisions (Sterman, 1992).

In comparison with project management, program management is more complex, so simulation can give this skill in virtual environment.

This could be argued as simulation is different than real life but at least it will give certain level of knowledge and competencies and provide great opportunity to new program managers.

Additionally, Simulation-Based Training (SBT) is one of the many techniques that have been considered of great potential for effective management education.

In conclusion, despite the limited source for needed data and the dependence on primary data, we could say that the lack of dedicated simulation for program management training can be overcome by enhancing the current simulator for project management where most of professions recommend this approach based on the primary data collected. Also, the existing software can benefit the program management as IT or software developer can benefit from the way the current application work and build on it to suit the requirement for program management.

Thus, it is recommended to have a two levels simulator, 1st for project management and 2nd for program management where both will benefit from centralized database to maximize the benefit of having full control in one platform and don't start from scratch. This could reflect positively in reducing the cost.

The software must have multiple scenarios and multiple levels of complexity. This will make it suitable for all types of skills and competencies learner have or want to acquire. This will improve learners' knowledge, skills and the way they need to respond in real life.

Conflicts of Interest

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

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Appendix 1

A. Interview Question:

1. Are you aware of simulation application for project management or in general? (*If no, go to 2nd set of questions*)
2. Did you use any simulation tools?
3. In your opinion, to which extend a simulation tool adding values to the traditional project management method?
4. To what extend simulator can support in making decision or problem solving?
5. How can current simulator enhanced to support in program management?
6. What will be the main opportunities & challenges?
7. How to overcome these challenges?
8. Can program management simulator be applicable for different scenarios and dynamic environment?

a. In case interviewee are not aware of simulator in program management.

9. What you expect from application tool to support program manager?
10. Do you see it practical to have such tool in program management?
11. In general, do you think "what if analysis" application add value to traditional project management method

B. Survey questions:

1. Are you working in project management field? Yes ☐ No ☐
2. Are you aware of simulation application for project management?
   Yes ☐ No (if No Go to Q6) ☐
3. Do you use a simulation tool now or before?
   Yes ☐ No ☐
4. Do you believe that using simulation tool is beneficial to project management these days?
   Yes ☐ No ☐ Somehow ☐
5. Can simulation monitor the benefit associated with the program?
   Yes ☐ No ☐ Note Sure ☐
6. Can simulation support in resources optimization?
   Yes ☐ No ☐ Not to expected level ☐ Note Sure ☐
7. Do we need separated software for program management simulation or we can enhance the current project management simulator?
   Separate ☐ Separated but integrated ☐
   Better to enhance current project management simulator to have full set ☐
   Note Sure ☐
8. How simulation can benefit program management? (test box for free writing)
9. What you expect from application tool to support program manager? (test box for free writing)

Appendix 2. Interviews

B. From Interviews

Interviews are done with different professionals in different companies or departments to collect feedback, expectation and suggestion.

Interview number 1;

Interview with Mr. Mohammed AlShamsi, Vice President civil P&E Water Maintenance (Water &Civil) in Dewa.

1. Are you aware of simulation application for project management or in general?

Actually, we are using simulation tools in Dewa but not for project management. We use a number of simulation tools but are related to other areas. For example, one of these simulation tools is related to our Hydraulic Management System and is called (Varisim). Another simulator that we use in Dewa is called (Scada).

2. What you expect from application tool to support program manager?

It will for sure save time and effort and will help in reduce risks linked to the project. Program manager can see the impact of his decisions and actions before implementing it live. This can support him in front of the higher management of course.

3. Do you see it practical to have such tool in program management?

4. In general, do you think "what if analysis" application add value to traditional project management method

I trust it will add value, because from our experience and knowledge in using the other simulation tools in different areas we got a lot of benefits, so the same shall be applicable to project management for sure.

Interview number 2;

Interview with Mr. Blesson Idicula, Project Manager in Technology Department in Etisalat.

1. Are you aware of simulation application for project management or in general?

Simulator is known for me and we are using it in Etisalat for some sections but not for Project management and I did not work with such application before.

2. What you expect from application tool to support program manager?

Application that support the program manager to overseeing the delivery of all associated projects under certain program with identification of their interdependencies as well as help in getting better utilization of resources across projects and to identify possible risks.

3. Do you see it practical to have such tool in program management? Yes as we can see simulation benefit in operation

4. In general, do you think "what if analysis" application add value to

traditional project management method

Sure, it did as if we see application such as Microsoft Project and how it impact project compare to old ways, we can say that simulation will add more value as it will support in decision and show how different scenario if occur can impact the program or project as many time analyzing dashboard and progress review need certain skills and as human we need some tools to support us making decision faster and in informed way.

Interview number 3;

Interview with Mr. Khamis AlShamsi, Senior Manager/Transport and backbone Projects – Zone3, Etisalat (former employee)

1. Are you aware of simulation application for project management or in general?

I believe project management simulation usually used in construction field, for new projects. Also it's used for new airplane design in addition to other fields.

2. Did you use any simulation tools? Yes, but not for project management.

3. In your opinion, to which extend a simulation tool adding values to the traditional project management method?

PM can run the design for new project to see and analyze different scenarios, for better project implementation and to know what issues could occurred.

For new airplane design, they run simulators to test the airplane with its new design for take-off, landing and while flying on different weather conditions and several types of movement.

4. To what extend simulator can support in making decision or problem solving?

Simulator allow PM to apply their knowledge and to handle project in better implementation matter, since PM will be able to calculate the cost, time and verify scope of works, if can be obtained without any additional requirements. Therefore, they will make decision on how to implement the project in real life perfectly. Adding to that, to eliminate any issues that may be observed and to tackle happened issues.

5. How can current simulator enhanced to support in program management?

Currently available simulator is for project management, such simulators need to be enhanced to meet the requirement of program management. There could be for example two categories or

high level (program management), in this level all the required parameters need to be built to be useful as program management simulator and lower level (project management). Data from lower level can be consolidated and then to share report and project update to higher level, allowing program manager to monitor and analyze projects, virtually.

6. What will be the main opportunities & challenges?

Challenges:

- The major challenge is to have standard simulation model which is applicable for different types of projects, since projects are varying and dynamic.
- Cost of such tools, since its will be new in the market and entitled overhead cost to run the program

Opportunities:

Knew how to:-

Execute the project in best practice.

If allocated budget and resources are sufficient to accomplish the project

What issues could occurred and how to overcome them

7. How to overcome these challenges?

Standard simulation model:

> By identifying standard requirements, tasks that are applicable for all

> Having flexibility to add tasks to meet various scenarios

> Creating groups, each group combined of functions list that are applicable for certain fields.

Cost:

- Applying such tool, will support in big saving in terms of time, resources and better accomplishment of scope.
- Ultimately, ROI will obtained in short term of time
- To have partnership with big companies in this filed, who can benefits to advertise their name, and defiantly will apply all needed improvement and snags clearance.

8. Can program management simulator be applicable for different scenarios and dynamic environment?

Yes, program management to be created as standard simulation model, where there will be standard task which are applicable for all, as well as to have flexibility to add specific tasks to meet different programs requirements.

Interview number 4;

Interview Question: with project lead from program management office in ADASI (Abu Dhabi Autonomous Systems Investment)

1. Are you aware of simulation application for project management or in general? Yes, general idea with some article reading – zero use

2. Did you use any simulation tools? For project management, no

3. In your opinion, to which extend a simulation tool adding values to the traditional project management method?

Simulation tool will add fast feedback, risk and outcome benefit analysis of the project with more accurate results than the traditional method.

4. To what extend simulator can support in making decision or problem solving?

As the simulator will provide accurate picture about the project, it will be a big role in making decision and problem avoiding.

5. How can current simulator enhanced to support in program management? Simulation tool will improve the project planning including the resources (man hours and material), project scheduling and budget analysis.

6. What will be the main opportunities & challenges?

Main challenges from my view are to capture much learned lessons from different projects on order to improve the accurse of the simulator. From example planning the budget of the project will includes a lot of cost estimations that will affect the simulator accurse.

7. How to overcome these challenges?

Simulator should be applicable for different modules and settings allowing the user to develop and select the right modules of his project.

8. Can program management simulator be applicable for different scenarios and dynamic environment? Yes it should.