

Managing the Multi-project/Programme Environment

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Abstract: Resources management plays significant roles during the project management process. For the different types of project, which includes project, programme and portfolios, the methods implemented of resources management are various. Based on this background, this study aims to investigate the similarities and differences of implemented resources management strategies for different types of projects. To achieve the objective of this research, it is necessary to indicate the stages of resources management, and compare the collected information of the key points in each stage. There will also be an analysis of an in-module exercise, which provided an example to readers to have a comprehensive and clearly understanding of how the resources management works. The unique value of this research lies in the detailed illustration of the normal method of resources management and it also provided recommendations for project managers to improve their governance standards for project management (Alies, 2015).

Keywords: Project Management; Resources Management; Structure Management; Portfolio; Programme.

1. Resource Management

1.1. Introduction

Resource management is to manage all resources required by the organizations to deliver their project, programme or portfolio. Those resources include the human resources, properties, equipment or anything else required for producing works. Good resource management will help the project, programme and portfolio managers (also known as P3 managers) succeed (Association for project management, 2020).

The first part of this report will compare the similarities and differences with the resource management for projects, programmes and portfolios, after that, there will be an evaluation for the resource management of the in-module exercise. In addition, some recommendations will be provided for improving the resources management for project, programme and portfolio.

1.1.1. Similarities and Differences

There are some similar stages for resource management in all projects, programmes and portfolios. For example, Reiss (2007) has indicated 5 major stages for resources management. The first stage is the resource definition which means that all P3 managers need to think about what resources that they will need, once they identified all resources required, they will need to check the availability of those resources. The resources allocation is the second stage, in which managers will allocate some resources to some of the tasks that have been planned. The next stage is the resource aggregation that management teams need to record the demand for the resources and compare the estimated requirement and the availability of all required resources. Next comes stage which was called the resource levelling or limiting. It is a process that the project or multi-project teams need to ensure that the resources demand will never exceed the resource availability. The final stage is the resource smoothing stage in which Reiss (2007) said that all the project and multi-project teams should attempt to smooth the demand for resources. In addition, Reiss (2012) said after the project, programme or portfolio teams made decisions on the resource allocation, the information should be delivered to all project

teams or workers to ensure that everyone will know what will happen next.

Those stages above could be regarded as the common rules for all projects or multi-project teams. However, according to the differences between the concept of project, programme and portfolio, there also are several differences in some aspects of the resource management between them.

	Components	Resources definition	Resources Smoothing
Project	One single project	Resources for all tasks	By using float and moving resources from task to task
Programme	Several projects	Resources for all projects	By prioritizing some projects and moving resources from project to project
Portfolio	Several independent projects or some projects and programmes.	Resources for all projects and the business as usual	By prioritizing some projects and moving resources within the organization

Figure 1. The difference between the project, programme and portfolio for the resources management (Reiss, 2007., Dye & Pennypacker, 2000. And Lock and Wagner, 2019)

For the single project which contains several tasks, the project teams only need to identify the resources for all tasks within the project and most project teams can predict the demand for resources on a task-by-task basis. In addition, the resources conflicts will occur between tasks, therefore, some tasks will be delayed until the required resources become available to avoid exceeding the resources levelling. Furthermore, most project teams will smooth their utilization of resources by using the float of tasks to adjust the timing of them, or by moving resources from task to task. Based on that,

some tasks will be accelerated and some will be delayed by the project teams to solve the resources conflict (Reiss, 2007).

Compared with projects, the resource conflicts will be more obvious in the programme and portfolio. Reiss (2012) has indicated that the reason of resource conflicts occurring in the programme and portfolio is because there is more than one project manager who has started more than one project which contains more than one task simultaneously. Based on that, it seems that the resources management of the programme is as same as that of the portfolio, however, Dye and Pennypacker (2000) said that there are some similarities but also some differences between them.

Firstly, both programme and portfolio contain more than 1 project but a portfolio can be made up of only several independent projects, or it will consist of a range of projects, programmes and sub-portfolios. Furthermore, if there is any limitation of resources, both programme and portfolio teams will need to think about how to move resources between each project or tasks to avoid exceeding the resources levelling and smooth the utilization of resources (Reiss, 2012). Sometimes, the programme and portfolio teams will need to prioritize some projects and they will need to define what are the critical resources, then allocated those critical resources for some important tasks or projects with high priority. However, some tasks or projects within the programme and portfolio will be delayed so as to await the resources being released from other tasks or projects (Lock and Wagner, 2019).

There are something should be highlighted for the portfolio. The management team will not only need to consider the resources required for each project team but also need to define the resources required for tasks of the 'business-as-usual'. In addition, the manager of the portfolio needs to know how to use resources more effectively to help the projects or programmes with high priority to achieving their objectives earlier (Dye and Pennypacker, 2000).

1.1.2. Evaluation of the In-module Exercise

The programme in the in-module exercise consisted of 6 projects which were the UK, China, Pakistan, Nigeria, Germany and Thailand projects, respectively. All of them had the same work-breakdown structure, therefore, they had the same resources requirement for designers, assemblers, testers and inspector. However, only 25 designers, 12 assemblers, 10 testers and 1 inspector were available for the programme. As can be seen, all resources required by each project team were well defined and the availability of each type of resources was checked by the programme team, which was helpful for the programme team to allocate those resources for those project teams.

After defined all resources required, the programme team noticed that there were not enough resources for supporting all projects at the same time. Therefore, the programme team decided to prioritise the U.K. and China's projects and would allocate as many resources as possible for them. Therefore, those two project teams became the leading teams and were intended to be finished their projects before the day 120. At the same time, Pakistan and Nigeria were defined as the 'middle project teams' with fewer resources than the leading teams. For the Germany and Thailand project teams, the programme management team could only allocate a few resources for them at the first 3 or 4 periods, however, after the two leading teams finished, there would be more available resources for them.

The initial resource allocation strategy adopted by the programme team was good, which could minimize the impact

of the resource conflicts within the programme. The programme team's utilisation of available resources was also improved by prioritizing some projects. Moreover, a plan for moving resources within the programme was made by the team to help the component projects to use resources more effectively and smoothly. However, because of the limitation of resources, some project teams had to decelerate their projects to wait the resources required being released by the leading teams, which would lead to the delay of some projects if the leading teams could not finish their projects on time.

Furthermore, the programme management team has regularly asked the project teams for the type and quantity of resources required, then compared the total resources requirement with the availability of resources to check whether there were enough resources or not. This method used by the programme team could be regarded as an effective method for implementing the resources aggregation and the resources levelling. The programme management team could find the resources conflicts or any other problems related to the resources allocation in advance by recording the resources requirements regularly.

Sometimes the availability of resources could not satisfy the requirement of all project teams and some projects might face some unexpected problems on their resources allocation. When those issues happened, the programme management team did adopted appropriate methods for addressing them. For example, the U.K. project team did not finish their designing works before period 4, therefore, they needed one more designer at that period. At that time, the programme manager held a plenary meeting for solving this problem, asked all project managers to evaluate the impact of removing one designer from their projects, then identified the least affected team and moved one designer from this project to the U.K. project.

After allocated resources for all project teams, the manager and deputy also helped each project team to formulate the resources plan on the task-by-task basis to try to smooth their utilisation of resources. Besides, all deputies would make the available resources visible for all project teams on a whiteboard during their working lifetime. It was good that the management team used the whiteboard to deliver the resources information to all project teams. This method could improve the efficiency of the programme and which also made the resources allocation plan clearer.

1.1.3. Recommendations

A successful resource management will consist of a good resource allocation plan and realistic strategy, a timely responses for change and suitable methods for solving the resources conflicts (Pennypacker, 2008). By considering with those factors, there are some recommendations for improving the project, programme and portfolio success based on this topic.

Firstly, for all projects, programmes and portfolios, it is recommended that the management teams make a clear and realistic plan for the resources allocation at the planning phase of their project, programme or portfolio. All the management teams need to identify all the possible resources required to ensure that their plan of the resources allocation is based on the correct resources requirement (Pennypacker, 2008).

Moreover, based on the theories of part a and the experience from the part b, floats of tasks or projects are significant for the programme and portfolio management team when allocating resources and trying to avoid the resources conflicts. By considering with that, it is suggested

that the management teams arrange enough floats to some tasks or projects at the planning phase. When the resources conflicts occurred, those projects or tasks with enough floats can be delayed without affecting the plan of the whole programme or portfolio (Reiss, 2012).

In addition, because of the limitation of resources, prioritizing some projects or tasks is one of the best methods for programme and portfolio teams to smooth their utilization of resources. Based on that, it is recommended that the management team prioritize some projects, and allocated as many resources as possible for those leading projects to accelerate them and finish them earlier (Dye and Pennypacker, 2000). Sometimes a leading team will face problems due to the unpredictable risks and those resource allocated for them will not be used. At that time, the management team can transfer the resources of the leading team to another team that has better performance to ensure that there will not be any wastes of resources.

Furthermore, it is important that the management teams show the plan and decisions of their resources allocation to all project teams within the programme and portfolio in an appropriate way. The reason is that the programme or portfolio management teams can ensure that all project managers will know the information about the resources availability on time. Therefore, if there is resources conflict, those project managers can find a solution in advance (Reiss, 2012).

1.2. Conclusion

In conclusion, this report has listed some common method for the resource management of all projects, programmes and portfolios. Some common rules that can be used by both the programme and portfolio teams for solving the resources conflicts were also introduced. Furthermore, the differences of the resource management methods between the project, programme and portfolio were given at the part a. Moreover, the performance of the programme team on the resources management aspect of the exercise was evaluated at the part b, some approaches used during the exercise were effective. At the end, there were some recommendations for the project, programme and portfolio teams to improve their resources management.

2. Organizational Structure

2.1. Introduction:

There will be a description of the organizational structure and the governance of the project, programme and portfolio. The similarities and differences will also be mentioned. Then an evaluation on the organizational structure and the governance of the in-module exercise will be provided. In the end, there will be some recommendations for project, programme and portfolio teams based on this topic.

2.1.1. Similarities and Differences:

Generally, the structure of each project, programme and portfolio will be different due to the different situation and specific needs of the organisation. However, most projects, programmes and portfolios will have 4 levels. As shown in figure 1.

The first level represents the host organisation or the main board of the project, programme or portfolio. The sponsorship level is the link between the organization and the management level, sponsors are also the owners of the business case. For the management level, people at this level are those who

manage the project, programme or portfolio. The management team will be made up of the management level and the sponsorship level. The fourth level is the delivery level which represents people who produce deliverables. Moreover, there also are the assurance and administrative support alongside the four main levels. The assurance will monitor the management and delivery of the project, programme or portfolio and it will report issues to the higher level. The administrative support is which will provide technical support services to the management team (Association for project management, 2020).

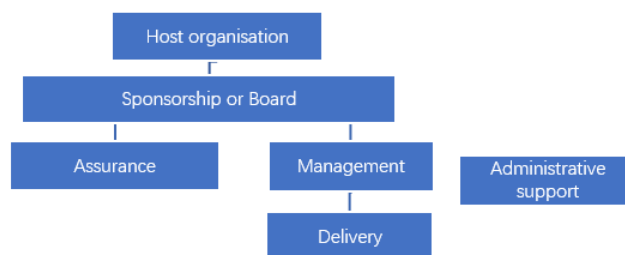


Figure 2. Generic organisation structure (APM, 2020)

There are also some organisations which are based on the functional structure in which workers are managed by different departments and some organisations adopt the project-based structure that people will be managed by different projects that they work for. There is also a structure consist of both the functional and project structure, which is called the matrix structure (Project Management Institute, 2017).

Furthermore, the organizational structure also involves the governance aspect which is the key factor for the success of project, programme and portfolio. Generally, good governance should contain (Alie, 2015):

	Key roles	Governance
Project	The project sponsor, project steering group, project manager, project team or team manager.	Self-governance Reported to the project sponsor
Programme	The organisation or portfolio. The programme sponsor or the programme board. The programme manager and the business change manager. Some project managers.	As a part of a portfolio: Applying the standards set by the portfolio board or sponsor.
		Along-side Programme: Creating its own governance. Applying the governance to its component projects.
Portfolio	The senior management, the portfolio, programme and project managers and the portfolio office.	Driving the governance of all component programmes and projects. Problem can be solved at the highest level.

Figure 3. The difference of the key roles and governance between project, programme and portfolio (Alie, 2015., Robert, 2013 and Khan, 2015)

- Clear governance structure, processes, decision-making line and role descriptions
- A clear and agreed vision and strategy
- More communication opportunities, adequate meeting and reporting
- Regular review of project, programme and portfolio

There are also some differences between the key roles and governance of projects, programmes and portfolios. As shown in figure 3.

For the project, the first level of its structure can be an organisation, a programme or a portfolio. The project sponsors or the project steering group which should be made up of people who can make decisions are at the second level and they are accountable for the success of this project. For the management level, the project manager is responsible for the day-to-day management on behalf of the steering group and who needs to escalate problems to the sponsorship level. The delivery level represents the project team (Robert, 2013). An example of the project structure is given below.



Figure 4. Project organisation structure (APM, 2020)

In addition, if the project is a part of one programme or portfolio, the project will be requested to adhere to the governance standards set by the programme or portfolio and the manager will also need to report to the programme or portfolio management level (Muller, 2009).

For the programme, the major difference between the generic organisation structure and the programme structure is that there is an additional business change manager at the management level. At the same time, the key roles of the delivery level of programme will become the managers of all component projects, as shown in Figure 5 (APM, 2020).

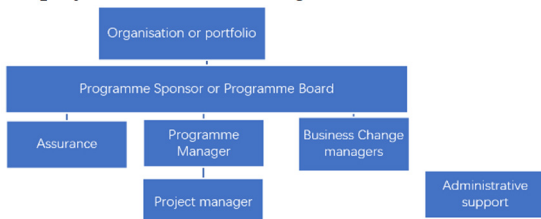


Figure 5. Programme organisation structure (APM, 2020)

The programme management team and the assurance are responsible for ensuring that the governance standards are applied by all projects within the programme. The governance standards of the programme are created by the programme itself or it is represented by the portfolio board if the programme is within the portfolio (Khan, 2015).

Compared with the programme, the portfolio structure only contains three levels. As shown in Figure 6.

The senior management level in this structure consists of the highest level of portfolio and the portfolio sponsorship level. The key roles of the management level of the portfolio

can be the portfolio manager or the enterprise project management office which is made up of a group of managers. Moreover, the portfolio governance standards will be set by the senior management level and the governance of the portfolio will drive the governance of all component programmes and projects. Based on that, the issues of the resources allocation can be resolved at the top level of the portfolio (Lock and Wagner, 2019).

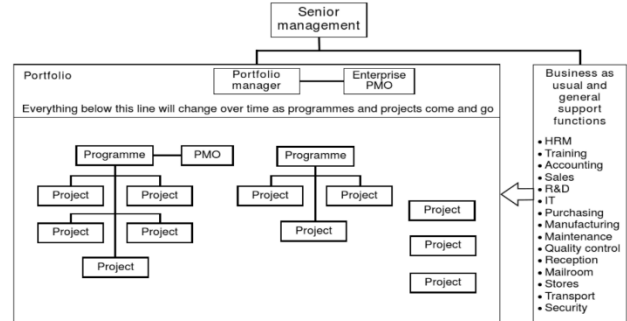


Figure 6. A portfolio structure (Lock and Wagner, 2019)

2.1.2. The Evaluation of the In-module Exercise

The structure of the programme of the in-module exercise comprises 3 levels which consisted of the programme sponsor, programme managers and project managers. The programme sponsor could be considered as the top level of the programme. For the management level, the programme has had 4 programme managers and 4 deputies from the start to the end, each manager managed the programme for 40 days, then the deputy became the manager for the next 2 periods. Besides, the programme had 6 component projects, theoretically, there should be 6 project managers. However, the role description for each project team was not clear. The project team member who was responsible for reporting to the programme manager was randomly determined within the project team. Moreover, because there was no assurance which is responsible for reporting to the sponsor about the governance or issues in the programme, the programme manager had to be the one who took this responsibility.

As can be seen, the structure and the role description of each project team were not clear. The lack of some key roles in the programme also made the structure and responsibilities of the programme team more ambiguous. Some people did not only need to fulfil their own responsibilities but also needed to take the responsibilities of other roles sometimes. This situation has led to an ineffective structure and decision-making line at the later period.

For the decision-making aspect, including the decisions made by the manager and deputy on the resources allocation. At the beginning of the exercise, the decision-making line was clear. All the members of the project teams and the programme management team followed the same decision-making process. For example, the project manager would report the issues to the programme manager or the deputy. If this issue would affect the whole programme, the manager would report it to the sponsor. However, after the period 4, the decision-making process became more complex. The reason was that some project managers would like to report the issues to the previous manager who had retired instead of the current manager. In other words, the handover of the manager led to the change of the governance of the programme but the project teams were not familiar with the change. To some extent, the lack of communication between each programme management members and the ambiguous of the role description were also the significant reasons for this problem.

In the exercise, the communication between each project team, as well as between the project teams and the programme management team were good. Each project team would like to share their experience on the resources allocation and resources conflict solving. Moreover, all programme managers have held regular meetings for discussing the performance of the programme with each project team and they also reported to the sponsor regularly.

Furthermore, there were also some problems at the regular review of the projects. Some project managers did not report the issues in their projects to the programme management team, besides, the programme manager did not check the accuracy of the information provided by those project members before they signed the document at the early stage of the programme. Those issues that could be avoided still led to the delay of those projects. However, this situation has been improved in later periods.

Overall, the structure and roles of the programme were not completed, which has led to lots of problems on the governance of the programme at the early stage. At the same time, the decision-making line and the issues escalating process were complicated. However, some problems have been improved in the later periods after they affected the performance of the programme. Therefore, the structure and the governance of the programme in the last few periods were acceptable.

2.1.3. Recommendations

A good organisational structure and governance structure should define the suitable structure and governance framework, the roles and responsibilities for all levels and the communication and decision-making process within the structure. At the same time, the adequate meeting, reporting, risk and issue management, assurance and the project management control processes should also be provided (Alies, 2015). Some recommendations are provided below.

Initially, it is suggested that the organisation defines the structure for the project, programme and portfolio by considering their specific needs and situations. The levels and roles within the structure should be defined at the early stage. The responsibilities of each level and roles of the structure should be illuminated to all stakeholders and should be accepted by them. Moreover, a clear decision-making line and the process should be provided. A suitable structure can improve the efficiency and performance of one organisation (APM, 2020). In addition, the organisation also needs to define an adequate governance model for its project, programme or portfolio by considering its situation and needs. The responsibilities and the accountabilities in the governance structure should be explained to all stakeholders at the early stage in order to avoid the negative influences on the effectiveness of the organisation (Muller, 2009).

Furthermore, it is necessary that the organisation develops a communication plan within the structure. One good communication plan can help the organisation or the management team to deliver the information more efficiently. It is also recommended that the organisation provides more communication opportunities and platforms for the project, programme and portfolio. Those platforms could be the regular meeting or reporting. However, managers need to ensure that the meetings and reports are well-balanced. All of that information that needed to be communicated should be precise and to the point (Project Management Institute, 2017).

Moreover, as mentioned at both the part a and part b, the

assurance and the administrative support are very useful and helpful for the organisation. Therefore, it is suggested that organisations add those two roles into the structure of their project, programme and portfolio. The assurance can help the management team to manage the issues and risks more effectively and it can provide confidence in the delivery and management of the project, programme and portfolio. The administrative support can provide the administrative and technical support to the manager of the project, programme and portfolio, which can help the management team to solve the issues and problems (Association for project management, 2020).

Furthermore, the regular review of the structure and the governance standards is significant to the success of the programme and the portfolio. The managers need to ensure all the component projects of the programme or portfolio has applied the governance standards set by the higher level. Moreover, they also need to ensure that all issues of the projects will be reported on time to them. This process is also a good opportunity for the management team to avoid the problems in their structure and governance (Alies, 2015).

2.2. Conclusion:

In conclusion, this report has discussed the similarities and differences between the organisational structure, key roles, responsibilities, and the governance of the project, programme and portfolio. The components, decision-making process, responsibilities and the communication of the structure and the governance of the programme of the in-module exercise has been evaluated at part b. Some recommendations for improving the structure and governance standards for project, programme and portfolio was provided at part c.

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