

COVID- 19 and its Impacts on Project Management

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Abstract:

There have been various types of research and literature written to describe the impact of COVID-19 on business and the supply chain. However, data regarding the impact of the COVID-19 situation especially on project management has been very limited. The paper will attempt to reduce the literature gap by discussing the impact of COVID-19 on project management. Where we relied on a conceptual framework that uses COVID-19 as the independent variable and project management as the dependent variable, we used theoretical empirical research methods we collected data from a variety of sources, including online government documents and articles...etc. Through this, we concluded that the impact of COVID-19 significantly on the project management was negative, which caused the interruption of operations and unavailability of supplies and caused the restructuring. However, it has taught project management teams and other stakeholders some significant lessons including the importance of planning, flexibility, and collaboration.

keywords: covid-19, Project management, strategy

ملخص:

كانت هناك أنواع مختلفة من الأبحاث والأدبيات المكتوبة لوصف ثير COVID-19 على الأعمال التجارية وسلسلة التوريد. ومع ذلك ، فإن البيا ت المتعلقة بتأثير حالة COVID-19 خاصة على إدارة المشاريع كانت محدودة للغاية. لذلك حاولنا من خلال هذه الورقة تقليل فجوة الأدبيات من خلال مناقشة ثير COVID-19 على إدارة المشاريع. حيث اعتمد على إطار مفاهيمي يستخدم COVID-19 كمتغير مستقل وإدارة المشاريع كمتغير يع ، اتبعنا في بحثنا هذا طرق البحث التجريبية النظرية حيث قمنا بجمع المعلومات من مصادر متنوعة، بما في ذلك الوثق الحكومية عبر الإنترنت والمقالات ... إلخ. بعد معالجة البيا ت تخلصنا إلى أن ثير كوفيد -19 على إدارة المشاريع كان سلبياً بشكل كبير، حيث تسبب في توقف العمليات وعدم توفر الإمدادات وتسبب في إعادة هيكلة العديد من المشاريع والمنظمات. ومع ذلك، فقد قام بتعليم فريق ادارة المشاريع واصحاب المصالح اهمية التخطيط والمرونة والتعاون.

كلمات دالة: إدارة المشاريع، جائحة كورو ، الاستراتيجية

1 Introduction

1.1 Research problem

Project management is a complex process as it is impacted by various factors including economy, politics, and other such other micro factors. On the other hand, it is one aspect which resides in every job nowadays. Every strategic change, operation and task being done in an organization is part of a project. It has been stated by Picciotto (2020) the complexity of project management increases with the diversity of the skills required to manage and complete the project. In the view of Akkermans et al., (2020) the environmental conditions, economic and social scenario have much more severe impact on the project management today which was never the case in the past. Due to constantly changing scenario and the requirement to match with the trends, completion of the project was rather difficult and required high costs.

Projects are mostly time constraint and increase in time can lead to an increase in cost and can cause various other issues for the management team. When handling projects and planning the resources, activities and other such aspects, management teams also focus on risk management. However, at the end of 2019, it became very clear that there is no certainty whether risk management practices will be successful or not. COVID-19 impacted severely on the monetary power globally. The image below defines the statistical impact of COVID-19 on global economy and GDP.

Figure 1: Impact of the coronavirus pandemic on the global economy



(Source: statista, 2020)

The impact of COVID-19 on economy means that it reduce the monetary power of industries by impacting on profits, revenues and overall global trade. Wong & Jensen (2020) mentioned that 2019 was the appearance of a deadly and contagious virus, which forced governments to implement lockdown to prevent the disease from spreading all around. Governments were also forced to implement restriction on trade and transactions from one border to another.

The paper will be discussing the impact of COVID-19 on project management. There have been various researches and literature wrote to describe the impact on COVID-19 on business and supply chain. However, the data on the impact of the situation of COVID-19 especially on project management has been very limited. The paper

will try to reduce the literature gap by describing the impact COVID-19 had on project management, by describing what measures were taken by management teams. The most important think about the paper is that it will recommend some strategies stakeholders can take in the future to prevent any dire impact of global issues.

1.2 Research question

The research question, which will be answered, is “what are the impact of COVID-19 on project management and what management teams have learned from the pandemic?

1.3 Key assumptions

Since project management is a subset of the business industry, and because the data and research that are currently available, indicate that COVID-19 has had a negative impact on the business industry overall, the primary hypothesis that we will be testing is that COVID-19 will also have a negative impact on project management.

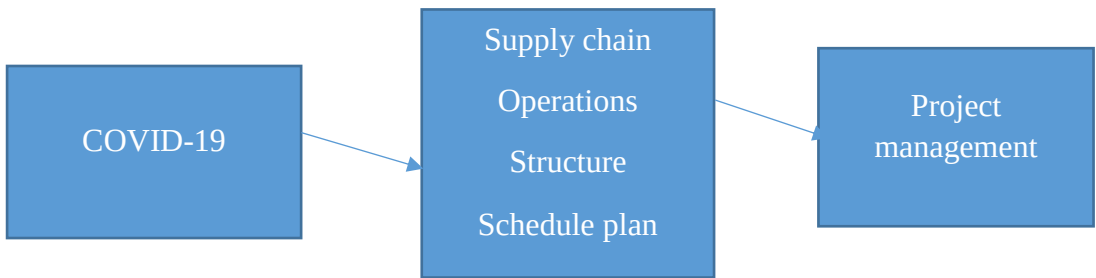
1.4 Central hypothesis

H1: "COVID-19 has a negative impact on project management"

H0: covid-19 has not impacted project management negatively

1.5 Conceptual framework

The independent variable in the research is COVID-19. Paper will identify the impact of the independent variable on the dependent variable which is project management. however, COVID-19 has not impacted the project manager directly. The negative impact of COVID-19 has resulted from the limitations of the supply chain, halt of operations, restructuring and allocation of the resources and so on. Below is the conceptual framework used to identify the impact of COVID-19 on project management:

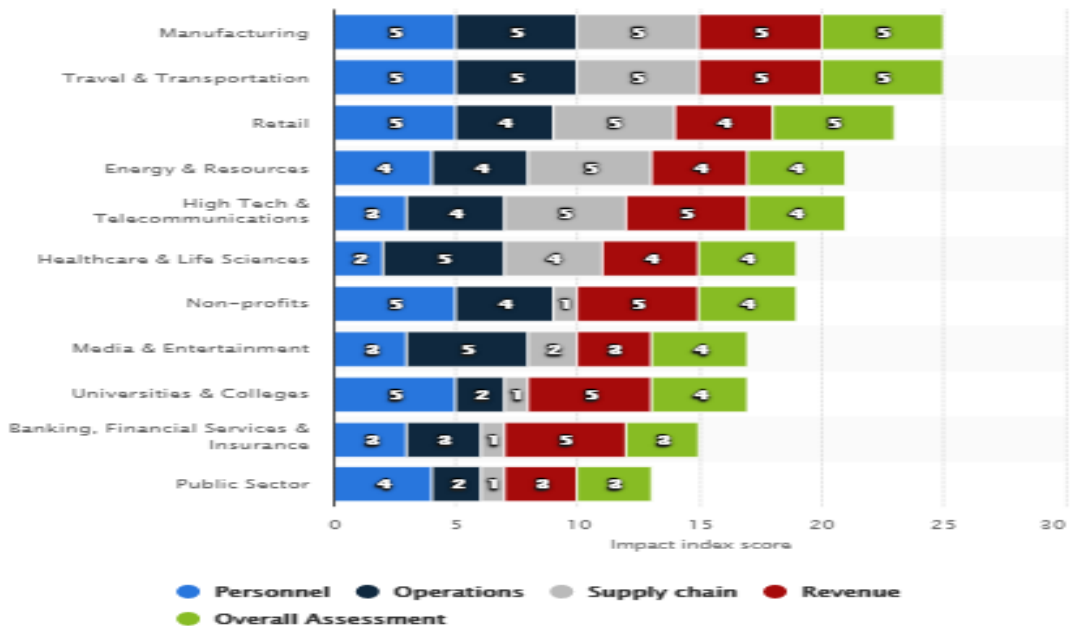


2 Literature review

2.1 Project management during COVID-19

Covid-19 was described as an unforeseeable event which impacted negatively on project management and project development in every sector (Tanrıvermiş, 2020). It impacted on demand and sales, ruined the cost estimations, rate of return of the project and so on. COVID-19 impacted almost every industry in all over the world one way or the other. The graph below describes the industries which have been hit majorly by the pandemic. The graph also describes the factors of the industries which have been impacted the most.

Figure 2: Coronavirus (COVID-19) impact index by major sector and dimension 2020



(Source: Holst, 2020)

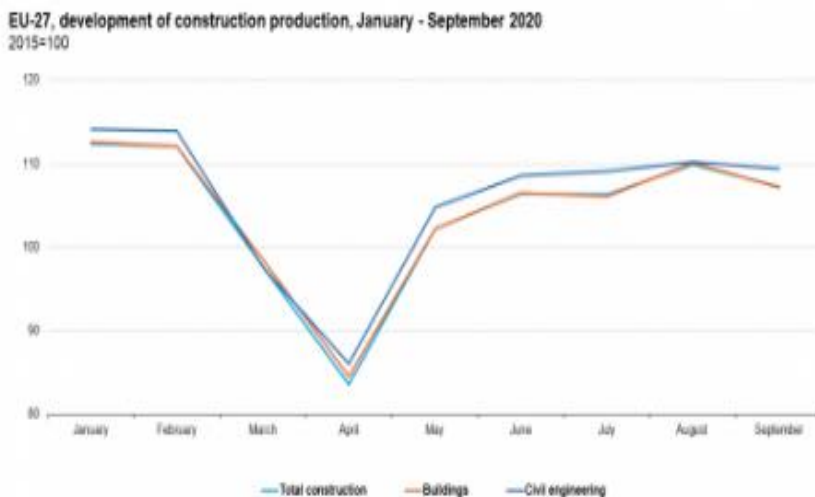
Graph defines that COVID-19 impacted on three aspects most severely including personnel, supply chain and operations. When it comes to project management, the biggest threat is dealing and handling unknown aspects. Project management is about planning and controlling the aspect to get the decided outcomes (Holst, 2020). However, unknown aspects prevent management teams to plan mitigation measures and ensure continuity of the projects.

In the view of Swan (2019) the black swan theory is associated with the project management very commonly. The black swan events refer to the events that come as a surprise at first and leave a significant impact on the outcomes of the projects. Black swan events are rationalized with the hindsight. It has been stated by Mishra (2020) that black swans are the unknown unknowns which means that identifying these issues is never possible.

COVID-19 was the black swan for the project management as no one ever predicted the existent of any virus like it. Low demand was not the actual problem which resulted from COVID-19. Projects were stopped completely due to the need to follow the SOPs. It has been stated by Wang et al., (2020) human resource is required to complete any project. Many projects were handled because teams were able to work virtually from their homes without meeting physically.

However, there were various project which required physical contribution especially the construction projects, real estate projects, manufacturing projects and so on. Construction industry was actually hot majorly with COVID-19 in the month of April 2020. The production rate of projects decrease severely. However, in started improving again in May yet another reduction was seen in September which was at lead 2.5. The overall decrease recorded on the production of construction projects in 2020 was 2.9%.

Figure 3: construction project productivity



(Source: ec.europa.eu, 2020)

In the view of Deloitte, (2020) during pandemic, many companies were able to use resilience because of the nature of as it did not require social contact. However, resilience was not an option for construction and real estate projects. It has been stated by stats.govt.nz, (2020) that the lost to the projects occurred due to delays of shipping material, due to health and safety measures. A decrease in the stock of some real estate projects was also noted.

Supply chain was impacted badly due to limitation on the trade. COVID-19 socially had varied impact on countries. However, in terms of business, the virus had the same impact on business activities and project management. It has been stated by Gamil & Alhagar (2020) planning and scheduling was impacted majorly mainly due to shortage of supply chain.

Countries which were not impacted by the virus directly and were able to take hold on the spread sooner than later still were not able to continue the activities due to supply chain limitations. The global supply chain was considered one major benefit of the globalization. However, Singh et al., (2020) mentioned that COVID-19 highlighted the negative impact of the global supply chain on businesses. In the view of there are various situations which cause projects to switch from day to day operations to crisis mode. However, converting to crisis mode, project management teams need a plan B and contingency plans. However, companies were not prepared for an issue which can hit projects from all around.

In the view of Craighead et al., (2020) project schedule was also an issue for companies to deal with during COVID-19. COVID-19 is a prolonging disease with no cure or vaccine. Therefore, the management team were unable to identify how they should reschedule projects. Along with the many other challenges project management teams faced was keeping the morale of the employees high and to ensure workers presence on the jobs.

COVID-19 took a toll on the investors as well as they didn't know whether their investments will be profitable or not (Banaszak et al.,

2020). The total cost of ownership theory suggests that when making purchases, it is important to consider the cost of resilience (Roda et al., 2020). Evaluation of costs of resilience means the evaluation of the cost of delays in delivery, change in freight rates and other such aspects. The cost of supply chain increased. However, only those projects who had focused on cost resilience were able to handle the cost change.

The supply segmentation theory states that the best way to have a supply chain risk management plan is to find alternatives suppliers (Hoek, 2020). Resilience is about dealing with issues as soon as possible and getting back to recovery mode (Yellow Brick Consulting, 2020). Many project managers' teams did not have alternatives because of global supply chain limitations. Suppliers and contractor were strained. The big threat was insolvency as many projects were not having any inflow of cash at all. Resources were scarce due to faltered economy and markets.

2.2 Strategies used by companies

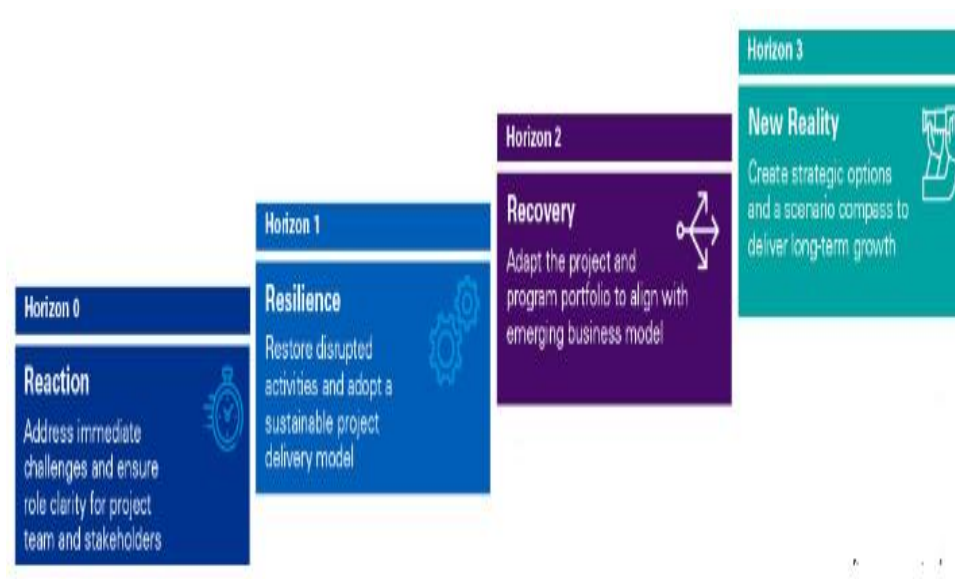
Resilience proved beneficial for project management. However, it took some time for project management teams to understand the strategies appropriate to continue the projects. Covid-19 explained that the working environment is characterized by volatility, uncertainty, complexity and ambiguity. Project management teams worked differently to deal with the challenges of the covid-19. Kpmg, (2020) define four horizons which organizations went through when dealing with Covid -19. Horizon 1 was based on reaction and immediate response to address the issues. Horizon 2 was about disruption and adaption activities against disruption. Recovery is the second horizon leading to change in project portfolio and new reality means creating new strategies to deal with the issue.

New operational rhythms were designed by experienced management teams with clear structuring, scope and governance regimes. Various projects teams were able to continue their work with the adoption of the PPE. On the other hand, Zhong et al., (2020) mentioned that

various local project were suspended during local lockdown. Experienced teams immediately converted to the local supply chain. However, less experienced teams had to struggle harder to deal with the change in structural governance.

Many companies which went to remote working find it hard to deal sustain change in the management process and formation of the discipline. It has been stated by Swan (2019) companies adopted technology to manage the human resource focus on individual schedules and so on. During the project which demanded social contacts, distancing and safety equipment's were provided to employees, the number of employees on-site was also reduced. New leadership skills were also adopted by companies to handle remote teams.

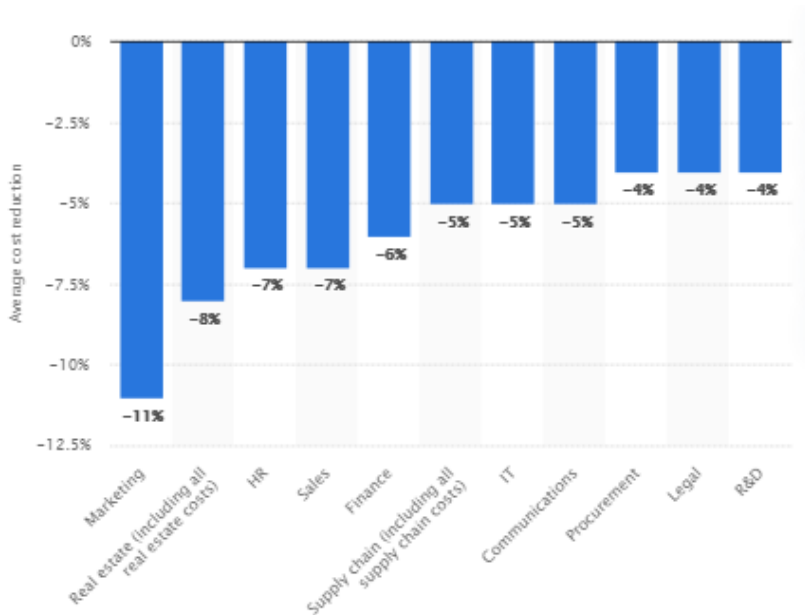
Figure 4: Actions relevant to the three horizons



Source: Kpmg, (2020).

COVID-19 forced big companies to cut project cost. The graph below is defining how many companies changed their cost plans for different budgets due to COVID-19.

Figure 5: Global cost management plans by organizations due to COVID-19 2020



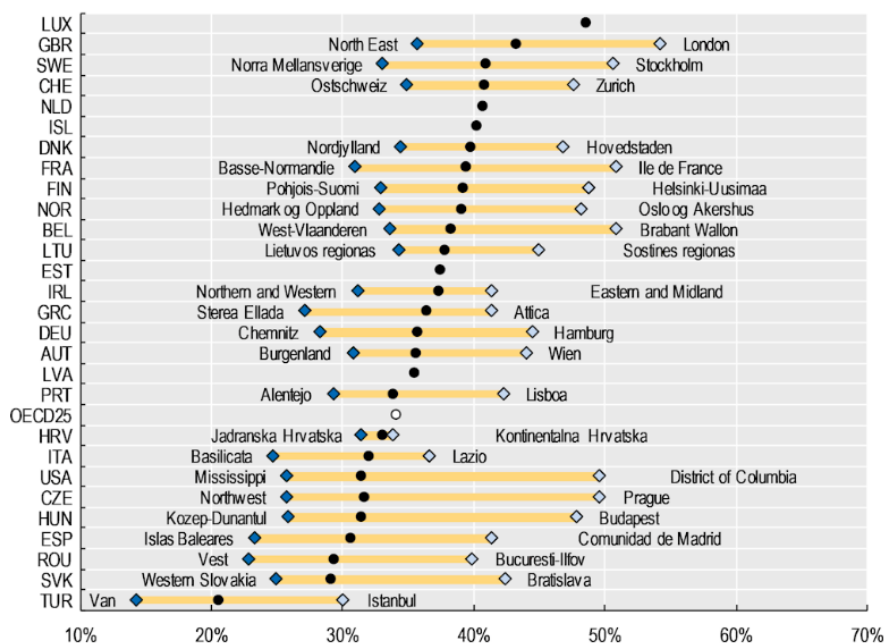
(Source: Norrestad, 2020).

The most basic instinct of project management teams in the result of the uncertainty amid to COVID-19 was to implement halt on the activities. Activities were also stopped due to the need to conserve the cash. Companies immediately stopped the transformative project. On the other hand, some projects investments became a priority for companies such as digital transformation, change in the operating environment and other such projects. Technology and automation became a need for companies to sustain their competitiveness and also to ensure project agility. Companies became keener on the adoption of technology-based collaboration tools. Artificial intelligence and cloud computing remained the main area of focused on terms of technology

investments by companies. Companies adopted agile disciplines for the sake of project management.

Agile discipline helped in many projects and programs of having a clear, well documented and agreed set of program schedules, planned outcomes and governance structures. There were many companies went agile in terms of remote working all over the world. The graph below defines the adoption of remote work globally.

Figure 6: The possibility to work remotely differs among and within countries



(Source: Cecd, 2020)

It has been defined by Hoek, (2020) that business is facing a constant struggle to grasp the new ways during the pandemic. The projects which are impacted the most are those with multiple components. Multiple component projects became proactive in the development of mitigation plans to deal with potential slow down and shutdown.

Project teams created new schedule assessments to plan out the project with slow speed (Deloitte, 2020).

It has been stated by Obrenovic et al., (2020) that project management teams revisited their resource plans and identify key resources and focused on them. The major challenge with projects was to the limitation of the contracts signed between agents and principles. Project management teams focused on open communication. Wang et al., (2020) mentioned in their research that to deal with shortage of human resource companies hired people who can work in multiple jobs. Traxler, (2021) defined that various companies limited their investments as an intervention to deal with cost overturn.

2.3 Governmental intervention for projects sustainability

COVID-19 impacts of almost every business all around the world and became a major threat for the economic sustainability. To ensure the sustainability of the global economy, to prevent high unemployment and to help business sustain themselves, governments along with other global decision making and authoritative bodies in the world worked out some plans. IFC is deploying \$8 billion in fast-track financing for the sustainability of business and to ensure they can work on their projects (worldbank.org, 2020).

The main purpose of the investments was to ensure that people are getting the job. The funds were mostly deployed in the medium and small business as it is the biggest source of job creation. MIGA has launched a \$6.5 billion facility so that they can help investors and lenders to handle finance during pandemic (worldbank.org, 2020). The reason was to ensure that investors can keep investing in the projects. Soon after realizing the constant negative impact of COVID-19 on lockdown on businesses and project, governments gave some standard SOPs to the businesses. Governments, WHO (world healthcare organization) formed a collaboration to form standard SOPs to be followed by business working in different sector. Governments of different countries invested funds into the small infrastructure projects. The governments were focused on to using

strategic regional priorities to allocate the funds to prevent any fragmentation.

Governments planned the funds to ensure quality investments which can bring resilience and sustainability. Implementation of appropriate strategies to present formidable governance was a challenge for many countries. European Union also increased coordination and collaboration with member countries to facilitate regions with funds required to sustain projects and businesses. In 2015 OECD Principles of Budgetary Governance was created with the purpose to help business in bad times (oecd.org, 2020). However, the principles were not able to help decision makers decide how to facilitate large capital projects. 15 new projects were created by OECD with the purpose to help business to mobilize their projects. However, governments focused on digitalization for mobility of stakeholders.

2.4 Learnings from pandemic

The pandemic of COVID-19 has made the decision-makers focused on various elements of the business. Companies had to reallocate their resources, change their plans for uncertain time and take much other decision about operational changes and restructuring. The pandemic did not give much time to businesses to plan their mitigation strategies at all. Companies had to respond immediately. Below are some aspects which were learned from the outcomes and impact of COVID-19 on project management.

2.4.1 Contract flexibility

Supply chain contracts were impacted the most causing disputes between agents and principles. Delays in supplies were inevitable (Hoek, 2020). Companies who already paid for the supplies had no way to get their money back and find alternative and more approachable option. The situation has taught the importance of flexible contract clauses on supplies. Contract flexibility clauses are beneficial for suppliers as well as for agents.

2.4.2 Resilience and adoption of supplier's segmentation

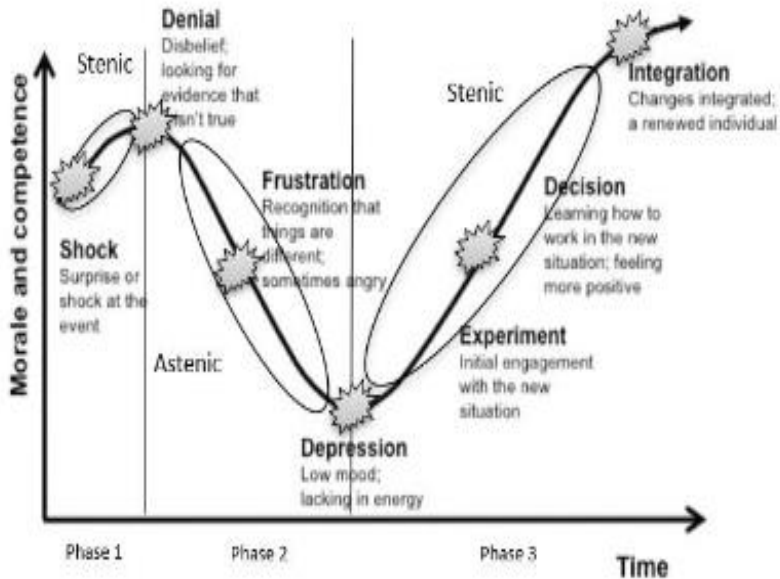
It has been identified that companies have to become more resilient to deal with situations like covid-19. Being resilient means that there should be mitigation plans for all kind of certain and uncertain risk including any actor such as the pandemic (Zhong et al., 2020). Businesses have to have a plan B for their every plan. The resource dependency theory states that companies depend on other actors in their environment for the access of vital inputs such as material, labour and cash. Dependency creates uncertainty (Kim et al., 2020). To reduce risk, companies will have to reduce their dependency on external factors. Dependencies are effective in a normal situation but not during the hypersensitive environment. The dependency cannot be removed completely. However, it can be reduced by making an alternative plan for suppliers. Adoption of suppliers segmentation will mean that companies will have some local suppliers (Hoek, 2020). Global factors will not limit the supplies.

2.4.3 Enhance agility

Agility has become intensively important for companies especially to manage the projects, programs and project portfolio post COVID-19. Due to uncertainty, companies only have rumours and assumption based information to focus on. Companies are suggested to focus on agile transformation in the project management system due to the influence of knowledge and information on decision making (Zhong et al., 2020). Agile transformation means that companies should adopt more linear research to get accurate information.

One way to become agile is to prefer infographics to get an accurate understanding of what is going on which leads to appropriate decision making. In the view of Bushuyev et al., (2020) companies need to become agile in every aspect of management especially human resource management for the completion of the projects. For example, the change related to COVID-19 went through various phases including shock, surprise and denial. The second phase was blaming and fear. However, accurate information will help in going to the third phase faster which is acceptance and understanding.

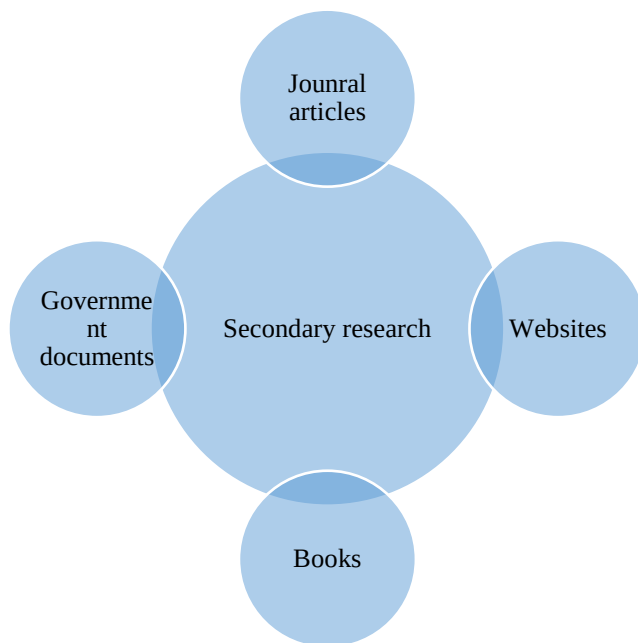
Figure 7: agile management



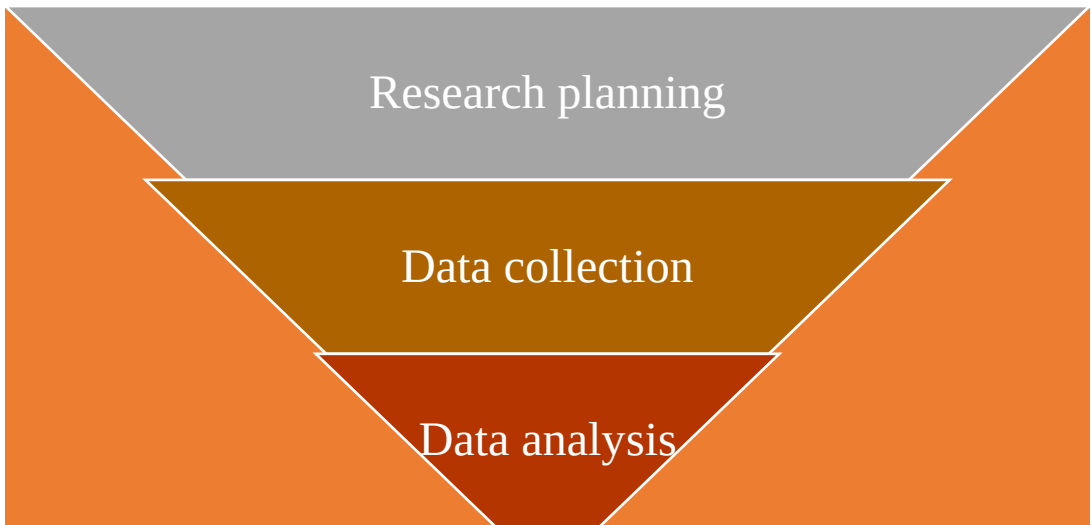
(Source: Bushuyev et al., 2020)

3 Methodology

To write the paper, the researcher has focused on theoretical data which is gathered from various sources available. The secondary sources which have been utilized in the project are government documents available online, journal articles on project management, COVID-19 and its impacts, books and new articles.



However, the main resource of the research have been the journal articles. The paper has been writing based on various researches conducting on the same and relevant topic. Empirical research has helped the writer to compare his observation with the findings of other authors as well as with the ideas defined in various theories. The information has been gathered based on the conceptual framework defining the variables to be focused upon. The researcher has used secondary information only. There is no specific sample selected for the research. The research has been conducted for the benefits of the business, government and readers who want to learn about the impact of COVID-19. Empirical research is useful to compare to gathered information against the theory and hypothesis. Therefore, it can be stated that empirical research has proved beneficial and appropriate for the current paper. Empirical research has helped the researcher in authenticating the traditional research method with experiments and observations.



4 Results

The paper used a conceptual framework based on COVID-19 as independent variable and project management as the dependent variable. The theoretical information gathered in the research has identified that project management teams do not fail only because of the environmental uncertainties and issues arise from that. Management teams fail because of their weaknesses and lack of competencies and appropriate plans to handle risk. There have been many crises which have impacted projects in the past and have been uncertain such as floods, the financial crisis of 2008 and so on.

However, there are still various business and project where teams just do not add uncertain situations in their risk management plans (Kim et al., 2020). After facing financial crisis of 2008 and the flood, companies should have been prepared for any kind of uncertain situation and should have alternative options for continuity of the projects. However, it has been found out in the theoretical research conducted that large ratio of companies were not prepared to handle

any uncertain situation. The research helped in identifying some of the issues which were resulted from COVID-19. The table below described the outcome of the pandemic related to project extracted from the academic resources.

Identified Impacts from qualitative information	Number of articles	Impact	Level of impact
Suspension of projects	4	Negative	Medium
Cost overturn	1	Negative	High
Financial impact	7	Negative	High
Supply shortage	6	Negative	High
Resource shortage	4	Negative	Medium
Impact on technology	1	Positive	High

Table 1: impact of COVID-19 on projects

The table shows that large number of academic resources focus on supply shortage, human resource shortage and most important the financial aspects which was effected. Many investors stopped their investments due to the fear of losing money. Stocks of various projects were down due to fund limitations. However, the only aspect which was not impacted by COVID-19 negatively was the technology advancement. The research found out that digitalization and information technology were two aspects which actually helped the companies to sustain some of its projects. It has been resulted from the theoretical information gathered in the research that in terms of sustainability of the projects to protect investment is for the government to come forward are help companies to continue the projects.

It has also been found out from the empirical and theoretical information that companies which were resilient and had plan B with

them were able to normalize their operations to some extent. It has also been identified in the research that suppliers and principles need to work on their contracts to deal with pandemic situations. Project management needs to be agile and more linear to handle the uncertain crisis in future.

5 Practical implication

The information gathered in the research will be used by the project management teams to identify better strategies for their risks management plans and find better strategies. Project management teams will be able to use this paper to identify better strategies to deal with risks and uncertain situation. The paper will be useful for employees working on the project-based assessment. The investor can use this paper to learn about issues they can focus on when investing in a project. Readers can use the paper to enhance their understanding of project management, the effects of COVID-19 and risk management.

6 Limitation

Research has provided detailed information on the impact of COVID-19 on project management by using theoretical empirical research methods. However, there are still some limitations related to the paper. Below are the limitations

- The Researcher used only secondary information to complete the research which reduces human participation and limited the findings.
- The paper has focused on every area of research management which is why information on each area is limited.
- Information provided in the paper is mostly qualitative only and there is no quantitative data used in the research.
- The researcher has evaluated the impact of COVID-19 only on project management. However, there were other managerial processes which have been impacted during the pandemic.

7 Future research

Considering the limitations of the current paper and the research conducted to gather the information for the current paper, future research will be based on a mixed approach based on qualitative as well as quantitative information. The researcher will use both primary and secondary information to increase the findings and more reliable information to the researcher. In future, the author can select a specific industry such as construction industry to evaluate the impact of COVID-19 and to evaluate the strategies used by companies operating in the industry. In future research, the researcher can select the aspects of project management which have been affected the most during COVID-19.

8 Conclusion

A conceptual framework was constructed with COVID-19 and project management has variables to identify the impact of the first variable on the later. The empirical and theoretical research evaluated that majorly the impact of COVID-19 on project management has been a negative causing halt on the operations, unavailability of supplies and causing restructuring. The paper evaluated that COVID-19 was black swan as it was completely unpredictable and hit the world from nowhere. However, it has taught project management teams and other stakeholders some significant lesson including the importance of flexibility, agility, resilience, and collaboration.

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