

# Hard and Soft Dichotomization of Project Management: A Critical Analysis

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**Abstract** This work analyses the dichotomization of “hard” and “soft” terms in the context of Project Management (PM) and Project Management Research (PMR). In the area of PM and PMR, the term dichotomization is used resourcefully in various dimensions. For example, in the field of project management (PM), some projects are categorized as “hard” and some projects are treated as “soft” based on projects’ nature, deliverables, scope, management style, and stakeholders’ expectations. The objective of this study is to analyze and critique this dichotomization within PMR and facilitate project manager to clear their understanding regarding project nature and types and set policies and strategies to run the project in real life smoothly. The study also makes a critical review of hard and soft dichotomization based on recent Covid-19 pandemic to show the impact of project management thinking and leadership to cope up with the new-normal situation.

**Keywords** Hard, Soft, Dichotomization, Project Management, Covid-19

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## 1. Introduction

In recent times, “hard” and “soft” terms have received much attention in the field of project management research (PMR) because of the high percentage of project failure. PMR activities can be classified into two methods – hard and soft PMR [1]. Researchers treated some projects as hard and some projects as soft in terms of project nature. Hard projects are clearly defined projects that follow systematic approaches while soft projects are ambiguous and do not follow any hard and fast rules and approaches [2]. Gustavsson and Hallin [3] compared the hard and soft projects, giving the example that traditional management projects are generally hard and leadership-based management projects are soft. In the context of PMR, the term ‘hard’ and ‘soft’ are classified in terms of management style, financial output, stakeholder involvement, and expectation, mode of communication, cultural differences and different leadership point of views [4].

In this work, extensive literature has been done to explain hard and soft issues in PM. For this purpose, some specific framework, for instance, seven-dimensional framework (SDF) [4] is used to explain dichotomization of hard and soft projects with waterfall and agile methodology. Moreover, hard and soft project dichotomization can also be investigated through qualitative and quantitative methods

[4]. The projects that have smooth interaction and communication with its client, encourage debates, discussion in problem-solving and seek success in the form of qualitative ways are categorized as soft, in contrast, projects that give priority in the procedure, maintain strict controlling and monitoring process and finally evaluate the rate of success in quantitative the format is categorized as hard [4]. Project success could be materializing in the form of qualitative and quantitative approaches [4]. Sometime dichotomy determines the success criteria of projects, like projects that consider environmental issues, community involvement and give priority in social, legal and political and safety issues are treated as soft [5] and the success rate of these projects is not in satisfactory levels. Conversely, if the scopes of the projects are well-defined [6] and allow less community and stakeholder involvement are treated as hard and have a better success rate than soft.

The dichotomization can also be described in an objectivist and subjectivist point of view [4]. More systematic projects that apply scientifically management techniques can easily be called objectivist (hard) projects while those deal with creating knowledge in society are treated as subjectivist (soft) [7]. The hard project contains positive and realistic ideas while the soft project contains intersubjective knowledge [8]. Hard approaches are specific result-oriented that’s why it uses more scientific and engineering techniques while soft approaches are creative in nature that’s why it encourages critical thinking, debates, negotiation to create new knowledge [4].

This paper explores the hard and soft dichotomy to facilitate project management thinking into the new

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dimension through critical literature review. This work first categorized projects by using a framework then explore the meaning of dichotomy in the other disciplines and then discuss, compare the hard and soft dichotomy in different project management approaches. This work also argues the term hard and soft dichotomy in the real-life project practice. Finally, we discuss how project management could adopt new strategies in the recent Covid-19 pandemic situation and ensure project success.

## 2. Categorizing Projects by Using Framework

Projects are categorized as hard and soft based on seven-dimensional framework (SDF) [4]. Generally, the framework helps to identify the structure of projects for evaluating projects performance and success, which would be treated as lessons for the future PM practice [9]. According to Crawford and Pollack [4] framework, seven dimensions are: “(1) Goal/objective clarity (2) Goal/objective tangibility (3) Success measures (4) Project permeability (5) Number of solution (6) Degree of participation and practitioner role (7) Stakeholder expectations”.

The first and foremost dimension of the framework is about the goals and objectives of a project. In a hard project, the goals and objectives are defined clearly with definite assumptions, so the projects do not require any scrutiny. On the other hand, in soft projects, goals, and objectives are not well defined as hard methods and require more scrutiny [10].

Generally soft projects deliverables are not clear and have ambiguity in objectives, as a result, soft method invites argument, problem clarification, and investigation [4]. To get a more perfect idea regarding project nature (soft or hard), it would be more fruitful if goal and objective tangibility are analysed distinctly rather than collectively [4]. Project’s goals, methods, and results are directly impacted by project permeability that also affects project scopes and issues [9,11].

Soft scopes are unclear by its nature and the opposite for hard projects [4]. Hard projects always strive to achieve the targeted goals where soft always search for new prospects [12]. Soft projects care and encourage a warm environment for example community perception, legal and political acceptability, social and environmental impacts, and safety [5]. Soft projects also practice participatory and consultative and collaborative management system, for example, consider stakeholders values and benefits and sound communication [13] and uncertainty [14]. On the other hand, hard is result-oriented and its organogram is designed to deploy the specialist person for the job and expected to finish the assigned job within given timeframe and budget [3]. It discourages participatory and collaborative management concept [3]. Normally hard projects work under regulated and controlled governance that allows the stakeholders participation and intervention in a certain level [15,16]. It

does not give any additional space for the stakeholders’ participation without logical reason [1]. In contrast, the nature of the soft projects requires expert opinion, stakeholder’s participation and seek valued opinion to find new opportunities and knowledge [17]. Thus, stakeholders’ interaction is more in soft than the hard projects, emphasizing logical relationships between project elements [1].

In PMR field, seven dimensions could be considered as an outline to determine the project type, either hard or soft, though it does not consider biases, values and behaviour [4]. The SDF would be helpful to come up in solution regarding project types in terms of projects scopes and deliverables, administration including controlling and monitoring, human and material resource planning, control the internal and external environment of organizations [4]. This outline may also help to get the contributors’ understanding and opinion regarding the nature of the project in terms of softness and hardness.

## 3. Dichotomies in Other Disciplines

Existence of dichotomization is controversial. Gustavsson and Hallin [3] thought that dichotomization is logical thinking and some researchers use this term for a clear understanding of subject matter. Often, dichotomy is used to split mutually exclusive part of a whole thing or object [4]. It could be used as a daily practice where there is no logical opposite meaning. Moreover, some dichotomies do not exist in the real world [18]. People used the dichotomies to enhance their ways of thinking [19]. Dichotomies are used to analyse, compare, contrast, and providing arguments for a topic or object [19]. In the field of social science, dichotomies are used as nouns (life and death, private and public) and adjectives (masculine and feminine, factual, and imaginary) [3]. Dichotomization exists in every discipline like in business, income- expenditure, in social science death and reproduction and in everywhere there are some opposite terms [19]. So, we may consider and treat all these thinking in the field of soft and hard dichotomization. When employees are monitoring and controlling in a systematic way and give punishment against deviation in the language of human resource management, these employees lies in theory “X” type and in the language of project management dichotomy we may call it a hard issue and the opposite one is called “Y” type or soft issue [20].

## 4. Hard and Soft Dichotomy in Project Management

The terms hard and soft are used to determine the success factors of projects [21] and consider these terms when a project try to apply new methods and approaches in the project [22]. These terms also used in the arena of project management research as well [23]. The term hard

emphasizes defining and analysing closed systems for example system analysis and system dynamics [2]. Furthermore, hard categories of projects generally have clear objectives that focus on systematic monitoring and controlling where success is measured on quantitative approaches [4]. The projects those objectives are unclear and influenced by value relationships and cultural differences are known as soft [4]. It requires more discussion and negotiation with the stakeholders and success is measured by qualitative outcomes [4]. The aim of a hard project is to minimize uncertainty while soft projects work on minimizing ambiguity [4]. According to Frame [12], hard and soft projects could be categorized based on PM skills and roles and responsibilities. For example, hard skills in projects management are arranging sound contracts among the parties, managing project finance, controlling project cost, maintaining the schedule, determining Key Performance Indicators, ensuring quality and desired deliverables and preparing a strong Risk Management Plan [9]. In contrast, soft skills refer to understanding stakeholders' needs, managing personnel, initiating and managing changes with solid negotiation [13]. In addition, soft includes community, environment, political, legal and social issues [5] that enhance stakeholders' benefits, value addition and ensure sound communication [13]. According to Cleland and King [9], hard issues emphasis on triple constraints (time, cost, quality) for project success by focusing project management plan, implementation and monitoring and controlling project activities. Hard refers to skills and issues that help the project to work with the systematic process by breaking down project activities into smaller chunks while soft helps project to think integrated and holistic approach [3].

## 5. Hard and Soft Dichotomy in Waterfall and Agile Approach

Waterfall projects emphasize systematic governance and maintain strict controls of project activities [15,16] while agile emphasis on flexibility [24,25,14]. Waterfall approach follows a systematic process that proceeds to the next phase of project activities after finishing the previous phase [15]. This approach could be considered as an operational map for completing project efficiently [15] that emphasizes the hard issues.

Agile methodologies focus on iterative activities and incremental development [26]. It delivers output and upgrades the deliverables continuously [26]. Its activities focus on interaction, collaboration and require intensive leadership for example servant leadership [14,16] that match with the soft issues. Agile allows flexibility in control mechanism in project activities with the help of testing, and frequent delivery in every stage of the project [26]. Due to its incremental development and iterative delivery characteristics, it could easily respond to the change and help innovation in the project [27]. Since the agile methodology is individual, employee and customer-oriented so it could be

treated as soft [28]. In addition, it involves stakeholders and maintains close communication and relation with project team members [3]. It also encourages stakeholder's participation and welcome debate that refers to soft issues. Furthermore, agile welcome changes and give priority to the change management that means agile methodologies are emphasizing soft issues [3].

Agile manifesto acknowledge soft methods (agile) are good because agile methodology emphasis on contract with project sponsor and project team and hard methods (waterfall) are not sufficient because hard emphasis on product [16]. Though agile method is soft, adaptable and flexible but in the area of project management it create a strong relationship with waterfall approach. Sometime agile manifesto can be used as the foundation of waterfall approach, for example waterfall project could be built on agile or adapt by agile. So it can be said that the dichotomy of hard and soft (waterfall and agile) are not distinct in project management, for example in an agile project some dimensions could be treated as hard ("functioning software" of agile can be measured as SMART goal) and in a waterfall project some dimensions could be considered as soft (effective leadership in waterfall project should be flexible instead of rigidity) [15]. According to Karlstorm and Runesor, [16] in real life project waterfall project incorporate some elements of soft methods and agile project adapt some elements of hard methods too. Project management need to adapt a combination of soft and hard approach in a project to run it successfully either in waterfall and agile projects because both soft and hard elements are essential for project success due to their interdependencies.

## 6. Is There Any Absolute Dichotomies Exists in the Real-World Project Management?

Hard is related to routine practical activities and soft is related to people thinking [3]. More elaborately, it can be said when project managers follow a systematic approach for some activities, then he or she follows a hard approach and when managing workforce and human resource, then it is called a soft approach [3]. The project that follows prescribed methods and the process to govern and run its activities and scope is restricted is classified as hard [16]. In contrast the projects that do not follow any hard and fast rule in its activities, give employees more freedom, welcome debate and unrestricted scope is called soft project [14].

In practical world, can we find any single project that we can call it absolute hard or absolute soft project? Every project has some components that could categorized as soft for its nature and some components could be called hard for its nature as well [3]. For example, an agile project is considered as soft but some of the components of this project have hard characteristics, the same thing is true for the stage-gate (hard) projects as well [3]. Project is a combination of several sub-task, (either agile or engineering),

the project manager is responsible to combine these subtasks into a smooth sequence and it needs to treat these subtasks according to their nature [3]. In the modern era of PM, it is impossible to categorize any project exclusively hard or soft nature due to technological advancement and stakeholder expectation [4]. Project managers are bound to set a balance between hard and soft approach for smooth completion of any projects [4].

It might be said that hard and soft approaches are not contradictory of each other since both have dissimilar perspectives [3]. Engineering projects have more components that could be considered as hard, but a mentionable number of subtasks have the soft nature [3]. Agile projects have the maximum number of subtasks are soft in nature, but these projects have some hard-categorized subtask as well [3]. For this reason, no organization merely used hard and soft methods and they found a mixture of both like internal and external environment, its strategy, culture and structure [20].

So, it can be said that we cannot come up with a conclusion directly regarding hard and soft issues in PMR. But project management researchers and professionals have to have a clear idea of how to analyse and handle hard and soft factors in a project and also have the ability to use these factors to run the project smoothly to achieve project goals [4].

## 7. New Normal and Its Challenges

The COVID-19 has changed the livelihood and work pattern around the world [29]. Individuals and organizations require preparation to face the worst situation that may need huge changes in the personal and organizational level. To cope up with the new normal environment projects need to realize the situation clearly, take preparation and then apply appropriate reaction [30,31,32]. Project management should have competencies to face the post COVID-19 situation [33]. The new normal situation demands project and organization to provide efficient and rapid responses to the upcoming changes for better adaptation. It is seen that after any global crisis organizations and projects are seems stronger than the past to recapitalize the new opportunities and mitigate the probable risks.

The post COVID situation will be different from the present scenario for example it could bring changes people belief, thinking, upcoming generations need and attitude to face the crisis. The new normal challenges would be multi-dimensional and most of the challenges would also be competence based [30]. The pattern and nature of the challenges would be more complex that we can imagine. Due to complex mode of challenges, organizations and project should address and recognize the need of these challenges carefully and treat them as per organizations and community demand [34,35]. The new normal environment could speed up the organizational changes. Generally, these changes would be considered as problems but from the optimistic

point of view these challenges would be considered as opportunities and possibilities. For example, risks have two sides, one is down side (possible losses) and another is upside (opportunities) [29]. To face new normal challenges and capitalize opportunities, organizations need to assess its requirement and address them properly to achieve its goals and objectives by incorporating critical thinking skills, collaboration and encouraging new idea generation. For optimizing organizational output, management could give emphasis on addressing and aligning upcoming challenges with its goals and objectives [29]. Management mindset and attitude are correlated to adapt and control competencies variables [35,36]. Management attitudes plays vital role to manage changing environment such as COVID-19 situation because management need to adjust, reshape and introduce new policies, strategies and course of action to face the uncertainty of the new situation [29]. For mitigating risks and eliminating uncertainty building employees' confidence and fare less opinion is crucial [36]. Organizations could face new types of untapped challenges in the post COVID-19 era. These challenges have both the opportunities and threats. Management need to address them carefully with humanitarian perspective and provide on time responses to manage the newly changed environment [35]. Management could handle the changing situation by introducing new policies and strategies, appropriate leadership, collaboration, team integration and ensuring job security of the employees [37]. Along with these, organization need to consider the emerging trends of technology and adopt suitable technologies and building professional competencies of the employees [30].

## 8. Impact of Covid-19 in Project Management

Today the work pattern of the project and approach of project management has changed and is changing dramatically due to the Covid-19 impact [29]. Businesses and organizations are adapting cost-saving strategies [29]. This pandemic affects the exchange rate, public consumption, foreign direct investment that affect every sector of business in the world [38]. Due to social transmission of diseases, organizations are encouraging and adapting remote working strategies for its employees, for example, they allow employees work from home [39]. This concept (open workplace) match with agile methodologies and cultures [40]. A new normal pattern could enhance the importance of a virtual team where skills, empathy, virtual trust, collaboration would crucial for team communication and bonding [41]. Team members are geographically distributed but work with collaboration to accomplish a certain objective and goal. Team members could have prior experience in a virtual team or that could be a totally new experience for them [41]. In this regard understanding team's dynamic, members' attitude, preferences, background, work patterns, and styles and cultural differences are vital for team and

project success [38]. All of these are soft issue, so projects need to be more adaptive and flexible [40]. In contrast to managing project activities management need to establish appropriate and suitable systems, methods, and approaches for monitoring and controlling the team's work from home activities [42]. So technological support including cloud technology, systems, methods and, processes could be considered as hard issues [42]. To materialize project success in the special situation, for example, COVID-19 situation project management should have capabilities to establish team collaboration with clear communication, selecting appropriate communication tools and centralized data and need close monitoring [43].

## 9. Conclusions

In this critical review, the framework is used to shape a relationship of hardness and softness in a project. The research on hard and soft dichotomization investigated the differences between hard and soft skills in a project with the help of a seven-dimension framework [4]. It would not be fruitful to define project hardness and softness based on seven dimensions because of its simplistic definition. Seven dimensions could be helpful to analyze projects on the basis of philosophical point of view for example objective reality (hard) and subjective interpretation (soft). This work explores and insight new ideas, dimensions, and thinking regarding hard and soft issues in the real-life project and project management research. This work tries to provide insight for the project professionals on how to manage projects in the new-normal situation of the recent challenges of Covid-19. For coping up with the new normal situation soft skills require more attention like agile methodology and cultures [40] but for on time delivery and project success hard skills like appropriate and suitable systems, methods, and approaches, governance and control mechanism also require similar attention [42,44]. Firstly, we analyzed the seven-dimension framework for summarizing the dimensions of hard and soft issues in projects. Then analyzed and compared hard and soft issues in the light of the project management approach, its tasks and subtasks, and the project management point of view. By discussing the hard and soft issues in the waterfall and agile approach this work tried to show how soft and hard issues influence project management governance and control, process, methods, stakeholders' engagement, participation, expectation, and change management processes [44]. This paper also argued that in the real-life project no project could be treated as an absolutely hard or absolutely soft project. For managing projects with the desired expectation, management should consider both issues to achieve project objectives. Now the world is facing new sort of challenges due to Covid-19, so PMR should give more attention to the soft and hard issues because the traditional work pattern of the project is shifted from the physical workplace to the virtual workplace. This shift could require rethinking the soft and hard issues

especially for the human side of the projects. In this regard, soft issues could get more attention because stakeholders' engagement and active participation would be a great challenge for the projects. Future research could explore how the project could adapt with new work arrangement of the new-normal situation and how soft and hard issues could help project management. In addition, further research on the critical analysis of hard and soft issues in PMR with different management framework would be worthwhile.

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