



FROM COLLABORATION TO SUCCESS: HOW KNOWLEDGE INTEGRATION
CAPABILITIES STRENGTHENS PROJECT OUTCOMES

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Abstract

Purpose: The significance of achieving specific goals and objectives lies with the ability to attract and accomplish projects successfully in organizations. Collaborative efforts in project-based industries and organizations are increasing to create value for the customers. Literature reveals that collaborations and co-creations lead to certain challenges and complexities. The objective of this study is to explore the moderating effect of knowledge integration capability on relationship between project collaboration qualities and project success.

Design/Methodology/Approach. This study used a survey questionnaire to collect data using the stratified sampling technique from the respondents from telecommunication and health sectors

Findings. Findings show significant positive relationship between project collaboration qualities and project success. In addition, moderation of knowledge integration capability strengthens the relationship between project collaboration qualities and project success.

Research Limitations. This study has only considered a limited sample size from telecommunication and hospitality sectors of Islamabad, Pakistan. Variations between different industries can be studied and researcher can also take organizations of diverse regions as population of their study. Thus, the future study can engage more sample size and different theoretical backgrounds from other disciplines for the development of models.

Practical Implications. This study implies that if project collaboration qualities are practiced adequately and the knowledge integration capability of collaborators is highly skilled, it provides an expert workforce which leads towards project success.

Originality/Value. This study points out important practical implications for project directors, project managers, project coordinators and team lead who are heading projects in their organizations.

Keywords: Project Management; Project Collaboration Qualities, Knowledge Integration Capabilities, Project Success.

1. Introduction.

Collaboration has been diverse like as the two or more independent partners interface (first or previous part of the sentence is unclear) and each of whom bring a unique analysis and proficiency to a common problem in teams (Ahmed et al., 2025). In today's competitive world most of the organizations prioritize diverse collaboration as a major concern so that they can state legal requirements (You mean 'comply with legal requirements? Which legal requirements are these?') and complete their projects in a competent way (Popescu et al, 2014). Project development teams get a better understanding of the market when they integrate knowledge about two or more external entities and understand each other's requirements and competency, which allow them to function and innovate better than their competitors (Elena Revilla, 2007). In a few spaces (spaces?), attracting a project and finishing it successfully compels the various partners to cooperate. Many associations inside of the sector are accounted for to be responding to the concern from customers for an



incorporated process that grows the significant chain of the undertaking, bringing about an entire life cycle of development—that is, improvement, execution, and function being considered over (Van Sante, 2009).

In an increasingly global world, the long-term, integrated process demanding multiple services, has made it broadly known to generate significance for the customers. In the project process formation of principles/standards allows corporations to overcome a lack of capability and collaborators deficiency. In other words, extensive collaboration is often required in every sector (Daniel & Davis, 2009). Due to the number of reasons, project-based collaboration, is challenging, because of the fact that the collaborators of different communities of practice are shaped to deliver new outputs together and the temporary nature of alliances, across national borders and between organizations. Lindkvist, (2005) stated that in accomplishing a project, multiple partners can be seen as a knowledge communal, and they are categorized by cross-disciplinary, slackly joined groups with a minimal common knowledge base.

Technology reduces barriers to communication, facilitates knowledge stream and within an organization. In a flexible organizational structure, knowledge sharing and collaboration across boundaries is encouraged within a project organization and is shaped by the organization's policies, processes, and system of rewards and incentives, which determine the channels' knowledge flow and integration (Leonard Barton, 2005).

Success of project depends upon following elements which are: a realistic goal, competition, client satisfaction, a definite goal, profitability, third parties, market availability, the implementation process, the perceived value of the project (Ahmed et al., 2025, Ahmed & Jawad, 2022; Ahmed & Philbin, 2021). In various definitions of project success there are three usual dimensions that comprise cost, time, and quality (Ahmed, Shaheen & Philbin, 2022)) but to measure project success only time, cost, and quality are not acceptable (Ahmed et al., 2025).

In organizations people put effort mutually in a juncture of mutual objectives by sharing knowledge, learning, and building consent which are a recursive process of collaboration. Associations are created in collaboration processes by individuals or organizations (Ahmed, Khan & Philbin, 2025; Ahmed, Khan & Philbin, 2022). Granovetter (1973) stated that depending on the strength nature of an association may vary. Embedded associations are associations in which organizations function by strictly following collaborative mode and to accomplish a common goal or gain mutual benefits they are generally characterized by trust and commitment (Uzzi, 1997). In project-based organizations, numerous studies have been conducted on organizational collaboration in which the links between organizations are implemented through projects (Ahola, 2009).

In several other organizations that are running projects, demands for collaboration needed to be ensued, e.g., in a high technology industry, where the work increasingly multifaceted and competition is intense (Daniel & Davis, 2009). Collaborative endeavours that share some of the risks and uncertainty in multifaceted environment is due to collaboration while benefiting from the mutual capability. A project accomplished by multiple collaborators which is categorized by cross-disciplinary, loosely attached collaborators with an insignificant mutual knowledge base can be seen as knowledge shared (Lindkvist, 2005).

Due to a gathering of reasons project-based collaboration, is thought-provoking, often covering across national borders and between organizations, together with the element that the collaborators belong to varied communities of practice (Lave et al., 1991) and to deliver new outputs the short-term nature of collaborations that are moulded collectively. Farris et al. (2002) added statement that workplace tensions for collaborators are probable to rise in the future due to the increasing complication and multiplicity of the technical collaborators. Although previous literatures aid on how to generate high performing collaborations, there is actually a slight effort concerned with the dynamics behind high performing collaborations amongst associates leading to knowledge integration in a project locale, even though both literatures of project management and project collaboration are rich in research.

A phenomenon that seems to become increasingly more applicable in realistic locales a gap is filled in the literature by this attempt. The collaborators must be willing and able to share knowledge to accomplish a multi partner project. Essential part of the project work is to integrate knowledge influenced by



the various collaborators. In a project framework knowledge-integration capability is a significant element of high-performing collaboration. Therefore, in the proposed model, literature on knowledge integration practices will be studied and integrated. The key success factor in projects is collaboration between different collaborators in project-based organizations (Vaaland, 2004). Relations between client and project collaborators are often emphasized on collaboration between project collaborators in existing research.

1.1 Problem Statement

Despite the increasing recognition of collaboration in project-based industries, there is limited empirical evidence on how knowledge integration capability moderates the relationship between project collaboration qualities and project success. The literature on the contribution of knowledge integration capability to strengthening project outcomes in developing country contexts is scarce. This poses a challenge to project managers, project coordinators, and team leads on how to effectively leverage collaboration qualities and knowledge integration capabilities for successful project delivery.

2. Literature Review

2.1 Project Collaboration Qualities

Collaboration is one of the most delicate matters that a project manager has to deal with; however, it can be worthwhile if coped effectively (Ahmed et al., 2015). Collaboration from two different regions/countries may have concerns with such as educational background, lifestyle, culture, age, infirmity and gender (Mohammed, 2008). In projectized organizations, multiplicity in team has been established to influence a wide assortment of dynamic team outcomes. In global projects, collaboration from diverse countries in teams can integrate the knowledge of different collaborators by giving out of different insights and ideas to common problem, which can improve performance of collaborators and enhance work motivation and serenity (Karim, S 2016).

Increasing number of people in human services, government, and community organizations is due to collaboration working together, rather than alone interests. Successful collaborative efforts can produce very beneficial results evidence suggested by some funders who promoted it (Mattessich et al.1992). In the theoretical literature, the significance of collaborators to the success of improved practices is well documented. Collaboration is considered as a critical success factor for some common methodologies such as project management (Gemunden et al., 1997).

Collaboration is the recursive process where people or organizations work together in a suitable environment that fit them together for achievement of mutual goals by sharing knowledge, learning, and building consent. Associations are generated in processes of collaboration by individuals or organizations. Granovetter (1973) stated that nature of collaboration may differ lying on its forte. Embedded associations are associations in which organizations function by strictly following collaborative mode and to accomplish a common goal or gain mutual benefits they are generally characterized by trust and commitment (Uzzi, 1997). In project-based organizations, numerous studies have been conducted on organizational collaboration (Ahola, 2009) in which the associations among organizations are implemented through projects.

In project-based industries, collaboration between different performers is seen as the significant success element in projects (Vaaland, 2004). Essential associations between different project collaborators and their effect on the project success are deliberated by thorough empirical research to understand this relation (Ahola, 2009). The achievement of the mutual objective is often critical for collaborators to collaborate between different organizations and organizational parts and is thus an important aspect that enlightens organizational consequences and performance. Several former studies have focused the association between project outcomes and collaboration (e.g., Ahola, 2009).

Grounded on the results of the communitarian developments past experimental investigates have assessed the value or execution of coordinated effort. In like manner, to order the viewpoints that enhance nature of coordinated effort among various partners, a broad measure of exploration has been led (Hoegl et al., 2004). Chiefs attempting to see how to conspire productive cooperative collaborations by these studies that give significant data. Working of coordinated effort however is not expressed specifically, but rather simply its considerable impacts. On the premise of the simplicity of interactional exercises occurring between



the collaborators, in this examination we characterize the nature of joint effort, not through its normal concerns.

In addition, the quality of a team's interfaces denotes the term collaboration quality used by Hoegl and Gemuenden (2001) and later Hoegl et al. (2004). The concept is derived from the previous work of Hoegl and Gemuenden (2001) and to familiarize the term collaboration quality the conceptual framework was developed. The concept through which the quality of collaboration is evaluated is based on the following five elements: "communication, coordination, mutual support, aligned efforts, and cohesion".

Merriam-Webster's Collegiate Dictionary describes communication as "a process by which information is exchanged between individuals or groups through a common system of symbols, signs, or behaviour." The eminence of communication specifies the capacity of collaborators to share their thoughts helpfully and to guarantee that the recurrence of correspondence is sufficiently high with a specific end goal to stay up to date to any modifications in a cooperative setting (Hoegl & Gemuenden, 2001). In addition, the characteristic of communication costs and efficiency are also covered in high quality in communication. Occurrences of communication and utilized communication media are related to the costs of communication (Daft & Lengel, 1986).

Excellent coordination indicates the common shared knowledge of the objectives, associated trainings, interdependencies between the workouts, and the evaluation of part commitments (Hoegl & Gemuenden, 2001). Coordination is intended to be productive and is therefore customized to learning and data sharing needs of every condition. For familiarity of connections in collaborative settings and guarantees facilitated and synchronized co-activity topmost coordination is a key. Alter (1990) stated that assignments that are well coordinated are additionally less influenced to conflicts. The presence of mutual support from participating collaborators is an essential measure of good collaboration, which in the case of unexpected incidents imposes collaborators to attain, decided goals and compromises flexibility (Ahola, 2009).

Several studies have mentioned well-functioning collaborative process's characteristics as of compliance and the ability to conciliation (Mattessich & Monsey, 1992). In addition, on the conduct of every collaborator to mutual support, finest collaboration is additionally described by mutual opportunities. In preventing disappointments and the appearance of conflicts, the realized efforts have a projecting role and Alignment between requirements on activities pursued by collaborative performers. Standards concerning required exertions be respected and accepted by each collaborative participant is required in high-quality collaboration. At last, tremendous collaboration in activities is described by cohesion—the shared soul between actors. Cohesion is a key issue that decides the individual's eagerness to take an interest in collaboration founded by some researchers (Cohen & Bailey, 1997). The emotional synchronization reinforces the surroundings of collaborative relationship and appreciates open sharing of data and information is initiated through cohesion.

Realistic evidence concerning the influence of collaboration is deficient in two ways on the success of collaborators with innovative responsibilities. First, Denison et al. (1996) found that without appropriately addressing the multi-faceted operational nature of the collaborators, past research has often worked rather rough measures of collaboration. While the linkage between the ordinary presences of collaboration-based association and creative execution is confirmed in many studies (Gupta et al., 1996), they neglect to state and measure the collaborative work of groups and to illuminate how this identifies with a few parts of the achievement of creative endeavours. Studies legitimizes influences of fluctuating amount on collaborators' evaluations of execution, administrative appraisals or different measures of inventive execution (e.g., number of outlines/ideas) appear to be less influenced by the nature of collaborators (Cohen et al., 1996).

An association between project actors, in the temporal nature of project relations, essentially complicates the appearance of long-term collaborative. In addition, the readiness of client-based associations to participate in a collaborative business association with the suppliers relies on upon the achievement of the endeavour, is because of the irregular way of business aptitudes (Hadjikhani, 2006). Because of uniqueness of the endeavour abilities gaining from projects can be constrained and, in this way, in project-based systems it can be seen as a counterforce that avoids effectiveness.



2.1.1 Dimensions of Project Collaboration Qualities: Finally, in the multi partner project, the network of collaborators with deviating objectives and enticements organize challenges for collaboration. Five elements of project collaborative qualities:

2.1.1.1 Communication. Amount of information exchange between collaborative actors should be sufficient, open, and efficient. “The quality of communication in a collaborative setting indicates the ability of collaborative actors to share their ideas openly and to ensure that the frequency of communication is high enough in order to keep all parties informed of any changes” (Hoegl et al., 2001).

2.1.1.2 Coordination. Collaborating actors are expected to perform on objectives, essential operations, and commitments by sharing mutual understanding (Perttu Dietrich, 2010). The common shared comprehension of the objectives, related activities, interdependencies between the activities, and the status of amount of assurance of members refers to High-quality coordination (Hoegl et al., 2001).

2.1.1.3 Mutual Support. In accomplishing generally settled upon objectives collaborating actors show willingness to help each other. If there should be an occurrence of unexpected occurrences and changes, there should be an existence of mutual flexibility. Mutual support gives adaptability on account of unanticipated occurrences and the presence of mutual support taking an interest performing artists is a necessary piece of high-quality collaboration, which implements actors to accomplish settled upon objectives (Ahola, 2009).

2.1.1.4 Aligned Efforts. Collaborating actors provide alignment of contributions with the desires of the commitments and in collaboration the correspondence between performing artists' needs (e.g., asset utilization) and generally settled upon needs (Perttu Dietrich, 2010). In anticipating dissatisfactions and the rise of conflicts alignment has a prominent role amongst anticipations on exertions pursued by collaborators and the apprehended work. To share expectations on behaviour group researchers, underline the part of standards as components (Feldman, 1984).

2.1.1.5 Cohesion. “Existence of the collaborative spirit between actors” (Perttu Dietrich, 2010). Collaboration in projects that is of high-quality is characterized by cohesion-the collaborative passion between performing artists. Willingness of individual to get engaged in collaboration is determined by Cohesion (Cohen & Bailey, 1997). Besides, the sentiment harmony reinforces the way of collaborative relationship and supports open sharing of data and information is generated through cohesion.

Table.1

Elements of collaboration quality (Perttu Dietrich, 2010)

Element	High-Quality Characteristics
Communication	“Sufficient, open, and efficient information exchange between collaborative actors”.
Coordination	“Shared mutual understanding on goals, necessary activities, and contributions needed to be performed by collaborating actors”
Mutual Support	“Willingness of collaborating actors to help each other in achieving commonly agreed-upon goals. Existence of mutual flexibility in case of unforeseen incidents and changes”.
Aligned Efforts	“Alignment of contributions provided by collaborating actors with the expectations of the contributions. The correspondence between actors’ priorities in collaboration (e.g., resource usage) and commonly agreed-upon priorities”.
Cohesion	“Existence of the collaborative spirit between actors”.

2.2 Knowledge Integration Capability

Knowledge integration capabilities are vital to integrate specialist knowledge and collaboration commencing diverse capability extents. Knowledge integration research established that by following the knowledge integration prototype team can be assisted from training designed: Causing existing thoughts and associations, adding new ideas to the existing catalogue of ideas, developing norms to discern ideas, distinguishing and cataloguing out substitute ideas, connecting ideas, and relevant ideas in multiple perspective (Ahmed et al., 2024). The capacity of a project association to transform learning actively is referred to knowledge integration. Grant (1996) contends that it is troublesome for individuals from different



competence areas to integrate the knowledge, and advocates integrating pro individual information to accomplish powerful knowledge collaboration and application.

Across boundaries, the channels of knowledge flow and integration are determined in an adaptable authoritative structure that energizes information sharing and collaboration inside a project association and is moulded by the association's arrangements, procedures, and arrangement of prizes and motivators (Leonard Barton, 2005). To facilitate knowledge flow between individuals, project organization society is key to motivate interaction and collaboration, and to assist solutions for problems and share knowledge, it additionally furnishes people with the capacity to self-compose their own particular information and take an interest in groups of practice (Ahmed, Khan & Philbin, 2025).

The capacity to incorporate it in a compelling way and the differing qualities and main assessment of information is key matter on which a project organization's competitiveness depends on. Knowledge integration can be perceived as "an ongoing collective process of constructing, articulating, and redefining shared beliefs through the social interaction of organizational members" (Huang, 2000), and to accomplish and oversee complex assignments and activities it helps high performing project teams. However, Ahmed, Khan & Philbin (2025) deliberate that within the context of coordinating specialized expertise and tasks, current conceptualization of how knowledge is integrated, remain constrained. These groups oversee vital and complex change activities, for example, actualizing new arrangements and procedure advancements, and produce thoughts that did not already exist, by concentrating on inventiveness and development through aggregate info.

An organization's knowledge-integration capacity is controlled by the two critical components of route and hierarchical agendas (Grant 2006). Communication between specialists through Direction enables by categorizing implied knowledge into obvious rules and the need for communicating explicit knowledge is lessen by organizational routines. Grant (2006) further stated that the organizational competitiveness is determined by effectiveness, opportunity, and flexibility of integration. The degree, to which normal learning, or comprehension inside a setting, exists inside project groups, is the fact where level of efficiency depends. Newell and Huang (2005) argue that to facilitate consistent coordination of information among colleagues, when basic learning is made; distinctive experts need to enhance constantly. The extent of integration indicates to the level of unpredictability concealed the integration of segregated knowledge, when the extent of integration broadens, it is suggested that an adequate level of basic learning may not be open.

Project organizations have capability to turn knowledge into action that is due to Knowledge integration. Grant (1996) argues that to accomplish effective knowledge collaboration and application, the integration of knowledge of people from various capability districts is troublesome, and supporters integrating expert individual knowledge. Expert knowledge from different competence areas is collaborated and integrated in Knowledge integration capability. Within an organization, technology helps knowledge flow and excludes obstacles to communication. A flexible organizational structure, within a project organization, empowers information distribution and collaboration crosswise over limits and is moulded by the organization's strategies, practices, procedures, and arrangement of prizes and motivations.

Project organization values are fundamental to inspire interaction and collaboration between entities to facilitate knowledge flow, and the collaborators also provided with ability to self-sort out their own insight, to share information and contribute to groups of practice to assist resolutions for problems (O'Dell & Grayson, 1998). Through the movements and activities of consolidating, improvement, mix, coordination, appropriation, and reformation of knowledge, knowledge integration is made potential. Knowledge integration requires shared frameworks and common representation, and for solving problem and making decisions for the same age group appliances are required. The procedures and actions of association, reaction, advancement, conceptualizing, and benchmarking empowered information arrangement. Key part in relocating knowledge is played by information technologies like e-mail, sources, intranet portals, teleconferencing, and the accomplishments of mentoring, collaboration, and training. Discussions, for example, groups of practice, focuses of value, and preparing give a phase to the designation of learning. To



supplement knowledge integration capability and encourage the procedure certain project association conditions are key.

The need to express indirect knowledge and ensure its approachability is synthesized by Grant's (1996) theory of knowledge integration, and the knowledge is attained by the help of underlying activities (Huber, 1991), mutual (Brown et al, 1991), created and applied (Nonaka et al, 1995). To accomplish economies of degree, or variety, the hypothesis can be connected to the requirement for specialization (Lawrence et al, 1967), and for connecting the instruments that refurbish and facilitate the specific achievements and aptitude of high performing endeavour collaborators. A task association's intensity relies on upon the variety and key estimation of knowledge and the capability to integrate it in a viable way.

Knowledge integration can be seen as “an ongoing collective process of constructing, articulating, and redefining shared beliefs through the social interaction of organizational members” (Huang, 2000, p. 15), and to accomplish and oversee complex chores and activities it helps high performing project teams, within and beyond the boundaries of high-performing project collaborators it is significant to ascertain the dynamics of knowledge integration. Ideas are generated by these teams that did not previously exist and through mutual input they oversee key and complex refinement activities, for example, applying new arrangements and procedure developments, by concentrating on inventiveness and advancement. Grant (1996) argues that by the two essential mechanisms of bearing and organizational practices an association's knowledge-integration capability is determined.

Demsetz (1991) stated that direction enables communication between experts by classifying implicit knowledge into clear rules, and organizational routines reduce the need for communicating explicit knowledge. Grant (1996) further states that organizational competitiveness are determined by the competence, scope, and flexibility of integration. Within a framework, the level of skill relies on upon the degree to which regular information, or comprehension, that exists within project collaborators. Newell and Huang (2005) argue that when common knowledge is created, continuous coordination of knowledge among collaborators is required between different specialists that are needed to be practiced continuously to facilitate them. The extent of integration states to the level of many-sided quality fundamental the integration of separated information, when the extent of assortment of integration broadens, it shows that an adequate level of regular knowledge may be problematic. Along these lines, if the extent of integration is more significant, it is believable that the lower the level of integration capability will be. If the knowledge involvements required to be more distinguished, the knowledge diversity will be the higher and greater the scope for knowledge integration.

Newell & Huang (2005) determines that the level of integration which gives aggressive change is controlled by a project association's capability for reconfiguring existing knowledge to advance constant development. Newell and Huang (2005) state that the creation of mutual knowledge strongly inspired by project organization, social capital, collaboration, goal measures, and methodologies toward learning. “Social capital requires a facilitating organizational structure” (Nahapiet & Ghoshal, 1998), and establishment of connections and configuration between collaborators is promoted by collaboration, while by creating mutual knowledge, procedures give substantial advantages to be chosen. In making basic information, colleagues should have the capacity to distinguish the worth to be chosen and thus attain and enhance to the exertion.

Further, Newell and Huang (2005) discuss a project organization's “past integration experience is found to be a perquisite condition, formed and based on the collective results of past project implementation experience,” and “embedded practices reflect an organization structure which may either facilitate or impede knowledge integration.” They state that, the path in which colleagues prepare their social capital and diffuse undertaking mindfulness through making basic learning, with regards to cross-practical task usage, is crucial. By promoting collaborative practices social capital is created in project organizations to empower the sharing of common knowledge between partners performing non routine tasks. While Grant's (1996) theory engrossed on usual routines of organizations, inside the framework of collaborators knowledge integration is a constant procedure through which social capital encourages the association, detachment, and/or reconnection between various partner bunches (Newell & Huang, 2005) trying to collaborate.



2.3 Project Success

In many industries, the capability to attract and accomplish projects is the key to success that lies in attracting and accomplishing projects (Ahmed, Samar & Philbin, 2025). In some areas, number of collaborators work together for attracting and achieving project's needs. The description of a project has recommended that on the way to advanced and enduring objectives there is an alignment. Return on investment, profitability, competition and market ability will be important parameters within goals (Skaates et al, 2003). The literature supported the way that the accomplishment of a project is contingent on having; a sensible objective, challenges, customer fulfilment, a positive objective, gainfulness, stakeholders, market accessibility, the execution procedure, the apparent estimation of the project.

In various definitions of project success there are three usual dimensions that comprise cost, time, and quality (Globerson et al, 2002) but to assess project success only time, cost, and quality are not satisfactory (Nixon et al., 2012). Quality of project management process and satisfying the expectations of project collaborators are additional dimensions that are also necessary to be considered (Baccarini 1999). Belassi et al, (1996) built-up a multidimensional success framework by grouping four consistent areas consists of: (a) the project; (b) the organization; (c) the project manager and project team; and (d) the external environment.

Project management plays a role in project success, yet the part is influenced by numerous different elements outside the immediate control of the project manager (Ahmed et al., 2021; Ahmed & Lodhi, 2021)). This would begin to clarify why projects can succeed or fail self-sufficiently of the project management practices. These components would recommend that successful project management requires arranging with a recruit to finish the chore, attentive arrangement of a skilful project manager, investing energy to describe the project satisfactorily, review assembling of the activities in the project, guaranteeing right and sufficient data streams, changing tasks to suit continuous changes on dynamic, considering representatives individual objectives with execution and rewards, and obligating a new beginning when errors in execution have been recognized (Ahmed, Philbin & Cheema, 2021; Skaates & Tikkanen, 2003).

The concepts of measures of project success are widely accepted and understood in project management field (Ahmed & bin Mohamad, 2017; Ahmed & Anantatmula, 2017). The literature related to project management and psyche of project managers involve the project performance measures (Ahmed (2023). Most of the projects, which are in accordance with their budget and schedule and meet their acceptance performance level and were considered as fail projects. On the other hand, there are many other projects that were over budget and completed late and were measured as successful. There are some long term and short-term project success dynamics, for example: the long-term indicator is distinct by the project success involving sustaining the objectives and needs of stakeholders. The theory emphasizes on not only assemble the project objectives but also managing the success (Cooke-Davies, 2002). There are many other examples of projects exists which when installed, were perceived as failure but time proves it as a major success. According to the researchers, due to this ambiguity of project success, project managers are forced either to go through the company's policy or the simplistic formula to execute the concept of project success measures.

Projects are deliberated as successful because they completed in budget and schedule and fulfilling all functional constraints (Ahmed & bin Mohamad, 2016). These are most common measures of project success within the organization because they are informal in measuring. (Jugdev et al., 2005). The triple constraint theory highlights the element that project success is defined as the project, which is in accordance with the time constraint, economic budgets, and customer requirements (Jugdev et al., 2005). This theory is still effective today, as multiple theories have extracted from this triple constraint theory. In contrast to triple constraint, a new theory drawing a line between internal factors below the control of project team and project manager and external factors beyond the control of project team, define the project success. It involves the factors controlling the project team as well as the client (Ojiako et al., 2008). Time, cost, and scope are triple constraints of internal factors whereas the satisfaction of client and accomplishment of strategic benefits contribute to external factors. The main concentration of the project team is to structure the project, procedures, and managerial tools to accomplish their goals.



Keeping in mind numerous dimensions of project success, (Shenhar et al., 1997) characterised project success into four dimensions. To measure the three dimensions of project success, author identified 13 items. Their study resulted in four different measures of project success. These are project goals; that can be evaluated throughout project execution, effect on customer; can be measured only after the completion of the project when the product is passed over to the customer, third is benefit to the organization; that can be measured as break even ROI is achieved, preparation for the future is long term measure of project success as it can be measured after three to five years of project accomplishment (Ahmed et al., 2016). Result of their study shows that project success is time depended.

2.3.1 Dimensions of Project Success. The theory of Willard explains three dimensions of project success naming: business success, project success, and project management success. The ROI describes business success, triple constraint defines project management success, and customer contentment defines project success (Willard, 2005). This study follows the PMI (2013) definition in the Project Management Body of Knowledge (PMBOK), of the triple constraints to measure project success, which is constant with the dimensions of project efficiency adopted from (Shenhar & Dvir, 2007). In this study, we adopted the multi-dimensional project success model from (Shenhar & Dvir, 2007) to form the dependent variable for measurement of project success. Thus, project success is comprised of the following five dimensions.

2.3.1.1 Project Efficiency. The project efficiency is defined by the schedule, cost, and resource utilization performances. The efficient and effective resource utilization can benefit the organization in long run (Ahmed & Mohamad, 2016). The short-term project success is titled as project efficiency (Shehnar & Dvir, 2007).

2.3.1.2 Impact on Customers. The impact on customer dimension is defined by the customer acceptance level, commitment of customer, and meeting functional and technical necessities (Ahmed et al., 2016). The impact on customer defines the standard to develop satisfaction of stakeholders by identifying whether the product meets the customer specifications or not (Shehnar & Dvir, 2007).

2.3.1.3 Impact on Team. The dimension of impact on the team investigates the measuring standard for growth of team in terms of their professional and managerial capacity and acquiring new skills (Ahmed et al., 2016). The impact on the team involves high motivation and devotion by the project team members (Shehnar & Dvir, 2007).

2.3.1.4 Direct Organizational and Business Impact. This involves influence of budget in terms of profit, income, cash flows, and sales of organization (Ahmed et al., 2016). It gives a broader view of growth and sales of product (Shehnar & Dvir, 2007).

2.3.1.5 Preparing for the Future. Preparing for the future involves growth and development of the competency level of organization by drafting competent processes, efficient product line, and implementation of new technology for better future (Ahmed et al., 2016, p. 12). The strengthening of infrastructure contributes to long term monetary and financial benefits to the organization (Shehnar & Dvir, 2007).

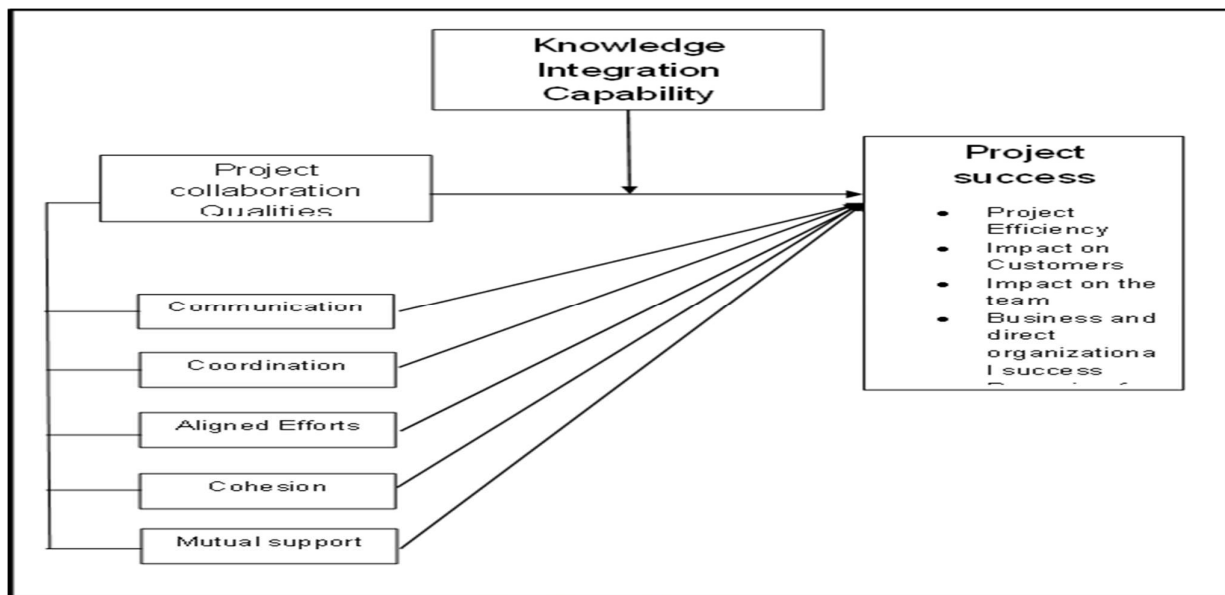
2.4 Theoretical Framework

The theory of this research study was based on Grant (1996) theory which deliberated the knowledge-based theory given to organizations and gave assumptions about the characteristics of knowledge and the knowledge requirements for progression. The organization is conceived as an association for integrating knowledge of collaborators of different areas that work together to achieve common goal of organization. The theory explored the mechanisms through which organizations integrate the high-quality knowledge of their collaborators.



Figure 1

Theoretical Framework



2.5 Research Hypotheses

The study is guided by the following hypotheses:

H1: There is a significant positive relation between Communication and project success.

H2: There is a significant positive relation between Coordination and project success.

H3: There is a significant positive relation between Aligned efforts and project success.

H4: There is a significant positive relation between Cohesion and project success.

H5: There is a significant positive relation between Mutual Support and project success.

H6: There is a significant positive relation between project collaborative qualities and project success.

H7: There is a significant positive relation between project collaborative qualities and project success in the presence of knowledge integration capability

3. Research Methodology

3.1 Research Design and Philosophical Orientation

This research study is based on the positivist philosophy of research and follows the deductive, quantitative approach through the use of cross-sectional surveys. This perspective is suitable for the task of hypothesis testing based on the existing theories and yielding results that can be generalized statistically.

3.2 Population and Sampling

For this research project two prominent industries of Pakistan were selected and those were Telecommunication sector and Hospitality sector. Telecommunication sector includes Ufone, Telenor, Zong, Mobilink and Warid while hospitality sector includes hotels such as Marriot, Serena, and private travel agencies that included airlines such as emirates and Shaheen airline were target population of this study. The projects of these sectors were studied which were outsourced in order to enhance the customer services. More specifically, focus was over that project only which were successful and through them industry earns high revenue. This study divided population into separate groups like project managers, project coordinators or project directors within target group. The sample population demographics were Project Experience, Project Duration, and Education level

3.2.1 Sampling Plan. The sampling plan (project managers, project coordinators or project directors within target group and are working on projects) was invited to participate in the survey. The final data generating sample was a selected and reported sample of the strata that agreed to participate in this study.



3.2.1.1 Sample Size. An acceptable sample size is needed to conduct statistical analysis and to allow generalization of findings to the target population. In this study, regression and correlation analysis were conducted. The scale with the greatest number of items used in this study is the measure of project collaboration qualities with 26 items. For this study, the intent was to have 500 participants, 250 from telecommunication sector and 250 from hospitality sector according to Krejcie and Morgan's (1970) formula. There are 56 measurement items used for survey questionnaire in this study:

Section 1: (Independent Variable) Project Collaboration Qualities = 26

Section 2: (Moderator) Knowledge Integration Capability = 5

Section 3: (Dependent Variable) Project Success = 25

3.3 Instrument Development

The research ruled out direct contact phone or e-mail contact with sampling population members as a methodology to gather data by using a survey questionnaire instrument that measures variables to collect data for the study adopted by previous research. Further, Tailored Design Method is deliberated in generating the survey tool (Ahmed & bin Mohamad, 2016). The goals of the design were: to take a scientific method to managing the sample surveys by reducing inaccuracy, being aware of the communications process and concluding ways to constantly develop the response rate. And provide non-monetary motivations to the survey participants to encourage them to respond, by building positive social exchange

Instrument comprises of 3 sections, section 1: (Independent Variable) Project Collaboration Qualities having 26 questions of five dimensions in which communication has 6 items only, section 2: (Moderator) Knowledge Integration Capability comprises of 5 items, section 3: (Dependent Variable) Project Success contains 25 items. Questionnaires were adopted as well as adapted from previous research studies (see Table 1). Fifty-six items comprehend the three sections of survey, which takes approximately 10 to 12 minutes to complete.

3.4 Data Collection Procedure

Survey questions are distributed to a selected group of project manager, project coordinators or project directors to gather required information. The data is captured from the online surveys on a spreadsheet, and looked at the responses of the independent variable versus the dependent variables via 56 questions asked on 5-point Likert scale in the survey questionnaire.

3.5 Measurement of Variables

The framework identified five dimensions of independent variable (IV) i.e. project collaboration qualities and dimensions are communication, cohesion, coordination, mutual support, and, aligned efforts. The dependent variables relate to the research questions. The research model firstly emphasizes the project collaboration qualities and examining the relationship between project collaboration qualities and project success. The second one includes an examination of the relationship between project collaboration qualities and project success in moderating effect of knowledge integration capability.

Project success assessment questionnaire (PSAQ) was adopted from Shenhar and Dvir (2007) and Ahmed et al, (2016) for measurement of project success, consist of five dimensions that are; project efficiency, effect on the client, impact on team, direct business/organization's success, preparing for the future. Project collaboration assessment tool is adopted as follows for its five dimensions that are communication (Jacinta M. Douglas et al, 2000), coordination (Jha & Iyer, 2006), mutual support (Salzer et al., 1999), aligned efforts (Ahmed et al., 2025) and cohesion (Ahmed, Khan & Philbin, 2025). While knowledge integration capability assessment tool is adapted by (Alavi, M., & Tiwana, A. 2002). The dimensions of project success and project collaborative qualities and knowledge integration capability were evaluated on 5-point Likert scale (1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; and 5 = Strongly Agree).



Table 2

Variables with Codes

Variable	Codes	No. of Items	Adapted by
Communication	PC_CM	6	Jacinta M. Douglas et al, 2000
Coordination	PC_CR	5	K.N Jha a et al, 2006
Aligned Effort	PC_AE	5	Bubner 2001
Cohesion	PC_CH	5	Bollen 1984
Mutual Support	PC_MS	5	Salzer et, al. 1999

3.6 Sampling procedure

According to Kifle (2008), organized questionnaire is the best method for gathering data, for a cross-sectional study. Therefore, the questionnaires are adopted for current study, which is best appropriate for collection of data from participants for quantitative research. The data gathering part of the study comprised of a self- administered on-line survey. The stratified sampling techniques will be used to collect data. This means that this study will divide population into separate groups like project managers, project coordinators or project directors within target group.

While this practice has low generalizability in command to approach the large sample size in limited times, it will best conduct this survey. Sample will be the Telecommunication sector and Hospitality sector in Islamabad. From 2010-2015 preferably the study will be conducted only successful third-party collaborative projects of these two sectors.

Table 3

Sampling Procedure

	Project Success	P_C_Q	K_I_C	Aligned Efforts	Communication	Coordination	Mutual Support
P_C_Q	.764**	1					
K_I_C	.487**	.745**	1				
Aligned Efforts	.463**	.465**	.395**	1			
Communication	.441**	.606**	.371**	.157**	1		
Coordination	.400**	.563**	.437**	0.239	.124*	1	
Mutual Support	.427**	.597**	.429**	0.36**	.238**	.206**	1
Cohesion	.386**	.535**	.433**	0.249	.135**	.184**	.137**

4. Results and Discussions

4.1 Data Analysis

Different methods, tools, and techniques were used to study the data in SPSS. SPSS stands for Statistical Product for Service Solution. A Windows based program that can be utilized to execute information passage and investigation and to produce tables and diagrams. The analysis of the data comprised of looking for patterns in the means between and amongst the dependent and independent variable along with moderator. Argument on results of search, including reliability and validity, factor analysis, correlation and regression analyses all the data was collected.

4.2 Reliability Analysis

The reliability analysis in quantitative data is the capability of an instrument to provide nearly the identical results in repeated measurement under the same conditions. The current study is conducted on a 5-point Likert scale (quantitative data), and reliability analysis is demonstrated by the Cronbach's Alpha (Hair et al. 1998), the minimum acceptable value of Alpha in social sciences is 0.70, for the questionnaire used in this study; but it is also accepted at 0.60. The value of Cronbach's Alpha for each variable is given in the following table:



Table 4

Reliability Statistics

Variable	No. of Items	Cronbach's Alpha
Project Collaboration Qualities	26	0.701
Knowledge Integration Capabilities	5	0.693
Project Success	25	0.721

The above table shows that the values of Cronbach's Alpha are above 0.69 and close to 0.70 for all variables, which indicates that our collected data is reliable and internally consistent.

4.3 Correlation Analysis

The correlation analysis is used to check the linear relationship between dependent variable and independent variable and also for all variable, the analysis is shown in a below matrix table with all possible pairs' correlations.

The above table shows the correlation matrix of all variables was positive and significant; which shows linear relationship between all variables. The entire hypotheses come true and accepted. Hypothesis 6 was that there is a significant positive relationship between project collaborative qualities and project success. The correlation between project collaborative qualities and project success is 0.764** which is high positive and significant hence this hypothesis is accepted. Hypothesis 1 was that there is a significant positive relation between coordination and project success. The correlation between coordination and project success is 0.400** which is positive and significant; which accept hypothesis. Hypothesis 2 was that there is a significant positive relation between mutual Support and project success.

The correlation between Mutual Support and project success is 0.427** which is positive and significant; which accept hypothesis. Hypothesis 3 was that there is a significant positive relation between aligned efforts and project success. The correlation between aligned efforts and project success is 0.463** which is positive and significant; which accept hypothesis. Hypothesis 4 was that there is a significant positive relation between cohesion and project success. The correlation between cohesion and project success is 0.386** which is positive and significant; which accept our hypothesis. Hypothesis 5 was that there is a significant positive relation between communication and project success. The correlation between communication and project success is 0.441** which is positive and significant; which accept our hypothesis.

4.4 Regression Analysis

In this section regression analysis was used, it was used to check the effect of independent variable i.e. project collaboration qualities with five dimensions: communication, aligned efforts, mutual support, cohesion and coordination, on dependent variable which is project success. The results of all regression models are given below:

Table 5.

Model Summary

R Square	Durbin-Watson	F	P-value
0.617	2.082	98.97467	0.000

The above table shows model summary, as R-square tells us model is good fitted, 61.7% variation in project success is explained by all independent variables. A Durbin Watson test value shows interdependence of observation and linearity of regression. Its standard value should lie between 1.5 to 2.5; whereas in this model summary shown in Table 4, its value is 2.082 which indicate there is no problem of auto correlation. The value of F-statistics is 98.97 with p-value 0.000 which is statistically significant and it shows model is jointly significant.

**Table 6***Regression Analysis*

Independent Variable	Unstandardized. Coefficients		Standardized. Coefficients	T	P-value
	B	Std. Error	Beta		
Knowledge Integration	-0.132	0.031	-0.207	-4.23	0.000
Aligned Efforts	0.274	0.022	0.452	12.445	0.000
Communication	0.168	0.02	0.292	8.352	0.000
Coordination	0.186	0.021	0.315	8.664	0.000
Mutual support	0.183	0.021	0.312	8.593	0.000
Cohesion	0.192	0.022	0.314	8.636	0.000

The above table shows regression analysis results by assuming project success as dependent variable and knowledge integration capability, aligned efforts, communication, coordination, mutual support and cohesion are as independent variable. The beta coefficient of knowledge integration capability is -0.132 with p-value 0.000 which is less than alpha value 0.05; which means knowledge integration capability is statistically significant and negative. We concluded that knowledge integration capability effect project success with 0.132 rate of change as one-unit increase in knowledge integration capability make 0.132-unit decrease in project success. The beta coefficient of aligned efforts is 0.274 with p-value 0.000 which is less than alpha value 0.05; which means aligned efforts is statistically significant and positive. We concluded that aligned efforts affect project success with 0.274 rate of change as one-unit increase in aligned efforts make 0.274 units Increase in project success.

The beta coefficient of communication is 0.168 with p-value 0.000 which is less than alpha value 0.05; which means communication is statistically significant and positive. We concluded that communication effect project success with 0.168 rate of change as one-unit increase in communication make 0.168 units Increase in project success. The beta coefficient of coordination is 0.186 with p-value 0.000 which is less than alpha value 0.05; which means coordination is statistically significant and positive. We concluded that coordination effect project success with 0.186 rate of change as one-unit increase in coordination make 0.186 units Increase in project success. The beta coefficient of mutual support is 0.183 with p-value 0.000 which is less than alpha value 0.05; which means mutual support is statistically significant and positive. We concluded that mutual support affect project success with 0.183 rate of change as one-unit increase in mutual support make 0.183 units Increase in project success. The beta coefficient of cohesion is 0.192 with p-value 0.000 which is less than alpha value 0.05; which means cohesion is statistically significant and positive. We concluded that cohesion effect project success with 0.192 rate of change as one-unit increase in cohesion make 0.192 units Increase in project success.

4.5 Regression Analysis for Moderation

In this section regression analysis was used, it was used to check the effect of moderator i.e. knowledge integration capability, on dependent variable which is project success. The result of regression model for moderation is given below:

Table 7*Regression Analysis for Moderation*

R Square	Durbin-Watson	F	P-value
0.599		278.3052	.000
0.6	2.082	185.6731	.000

The above table shows model summary, as R-square tells us model is good fitted, 61.7% variation in project success is explained by all independent variables. A Durbin Watson value is 2.082 which show there is no problem of auto correlation. The value of F-statistics is 98.97 with p-value 0.000 which is statistically significant and it shows model is jointly significant.



The table presented below of regression analysis was used to check moderator effect, so as if the predictor and moderator are not significant with the interaction term added, then complete moderation has occurred. So, in this research study complete moderation exists.

Table 8*Regression Analysis for Knowledge Integration Capability*

Model	Variable	B	Std. Error	Beta	T	P-value
1	Project Collaboration Qualities	0.819	0.036	0.764	22.891	0.000
2	Knowledge Integration Capability	-0.118	0.310	-0.185	-3.762	0.000
3	Project Collaboration Qualities × Knowledge Integration Capability	0.032	0.036	0.245	0.874	0.383

4.6 Mean and Standard Deviation

This table shows the results of descriptive statistics, such as number of respondents N, mean, standard deviation and standard error of mean for project success, project collaboration qualities and knowledge integration capability.

Table 9*Mean and Standard Deviation*

Measurement	Project Success	PCQ	KIC
N	375	375	375
Mean	3.21	3.37	3.64
Std. Deviation	0.504	0.471	0.794
Std. Error of Mean	0.026	0.024	0.041

The numbers of respondents were 375; the average of project success was 3.21 with standard deviation 0.504 and standard error of mean 0.026. The average of project collaboration qualities is 3.37 with standard deviation 0.471 and standard error of mean 0.024. The average of knowledge integration capability is 3.64 with standard deviation 0.794 and standard error of mean 0.041. The satisfaction level is highest in knowledge integration capability, and modest in project collaboration qualities and least in project success.

4.7 Future Direction of the Research

A meaningfully impact is added on area of discussion by the help of this research study, which was its main objective. During the research study, every single researcher suggests some future implication for other researcher to work on and explores further knowledge in their respective field. Following are the few future implications of this research which could eventually leads to an improved effort done in respective field. Here are some future recommendations for researchers to carry on this research and explore facts from their perspective: 1. To analyse the relationship of variable in the model, developed in this research, can be used in other sectors/industries for further study. 2. Knowledge integration capability can be used as mediator in same model for further research. 3. Elements of project collaboration qualities can be hypothesized individually on each dimension of project success in the presence of knowledge integration qualities.

4.8 Limitation of the Study

Towards knowledge, research study is the foremost contribution of the researcher. Simultaneously it is difficult for the researcher to focus on all the points in study. Due to this reason researcher leave some limitation in the study which provides a starting point for further work in same area that can be fulfilled in the future research, and it will be effective for the researchers.

First limitation of this study is that variations between different industries can be studied, and researcher can also take organizations of diverse regions as population of their study of different areas which have not been discussed in this research work. Second limitation of the study not catered in this research is that the same model can also be empirically tested on other industries within same country or outside the



country. Third one is that future researchers can change their population and may take samples of successful projects other than from managerial employees and projects from 2010-2015 of Telecom and Hospitality sector.

4.9 Implications of the Research

To contribute to the area of discussion significantly, and bring something dynamic and advantageous in previous research, is the key objective of this research study. Following are the few suggestions which can eventually advance the effort done in this area.

4.9.1 Theoretical Implications. To contribute in the body of knowledge in general and particularly in project management field this research studies the relationship of variable in the model, developed in this research, is used in two sectors/industries for comparative analysis. Knowledge integration capability is studied as moderator in this model. Elements of Project collaboration qualities are individually hypothesized to examine their significant relationship with project success without affection of knowledge integration capabilities. The findings of the study also help the collaborators to lead the projects with more willingness. Effect of Project collaboration qualities are examined in the presence of knowledge integration qualities on project success to examine how rate of success increases when project collaboration qualities are developed among collaborators.

4.9.2 Practical Implication. This study points out important practical implications for project directors, project managers, project coordinators and team lead who are heading projects in their organizations. According to this model collaborators must have all project collaboration qualities that are: communication, coordination, aligned efforts, mutual support and cohesion, which should be practiced well while implementation of project in assurance of integration of knowledge capabilities between collaborators, which enhance the probability of project success rate. In organizations, project collaboration qualities implemented by the project managers to cope with project complications more efficiently has thus increase level of success rate of project.

5. Conclusion

The study proved that independent variable i.e. project collaboration qualities and moderator i.e. knowledge integration capability escalates the capability of collaborators which eventually leads toward the success of project. The study anticipated that knowledge integration capability had played vital role in the relationship between project collaboration qualities and project success. If the project collaboration qualities are practiced well and knowledge integration capability of collaborators are highly skilled, it will ultimately provide organization with expert workforces which lead towards the project success. Telecom sector and hospitality sector of Islamabad Pakistan have carried enormous number of successful projects which indicates that knowledge integration capability enhances the competence level of collaborators hence significantly rises the magnitude of success of projects. Project coordinators, project directors, project managers and team leaders of telecom and hospitality sector implement project collaboration qualities in conjunction with knowledge integration capability of collaborators, in their organizations to accomplish mutual objectives. Well-managed project collaboration qualities and knowledge integration capability provide clear direction to collaborators to improve their performance. Elements of project collaboration qualities lead right to the successful accomplishment of project overall. Project coordinators, project directors, project managers and team leaders are accountable for clear agenda of particular project is communicated amongst collaborators, efforts of collaborators are aligned within project context, cohesion between team members is allowing them to perform well, coordination between teams is good and all collaborators are doing for accomplishing project by mutual support, in conjunction with moderating impact of knowledge integration capability.

Author Contributions

All authors participated in ideation, development, and writing the manuscript. All authors read and approved the final manuscript.

Conflict of Interest Statement

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Informed Consent

Informed consent was obtained from all participants.

Data Availability

The datasets generated during and analysed during the current study are available from the corresponding author on reasonable request.

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