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## Article

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## **Breaking Down the Success Barrier: The Mediating Role of Absorptive Capacity in Linking Entrepreneurial Orientation to IT Project Success**

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### **Abstract**

A pragmatic approach to business innovation is to bridge transformational entrepreneurship with the management of innovation-based projects. However, scholars have given limited attention to the underlying factors that explain linkages between entrepreneurial orientation and project success. Moreover, the lack of absorptive capacity touch points, limits the organizational potential to cope with innovation-based project challenges. Hence, the study purpose is to investigate the impact of entrepreneurial orientation (EO) on IT project success, under mediating conditions of absorptive capacity (ACAP). The study employed a deductive approach to empirically test the conceptualized model using partial least squares technique for structural equation modeling, involving surveyed data of IT professionals. The results confirm the significantly positive effect of EO on IT project success. The findings further verify that ACAP partially mediates the EO relationship with IT project success. From managerial perspective, the study highlights the importance of aligning project management practices with organization's entrepreneurial orientation that empowers organizational members to maximize on successful project outcomes with the timely consumption and application of new knowledge.

**Keywords:** entrepreneurial orientation, innovation, absorptive capacity, information technology project success, IT industry.

## 1. Introduction

The survival of the modern businesses in the twenty first century's innovation revolution and fast-paced global environment requires re-examination of the entrepreneurial spirit of its business leaders (Lüdeke-Freund, 2020; Mitra, 2019). As executives make pursuit of novel ideas for unique business models and ensuring continuous innovations, the entrepreneurial attitudes and behaviors have become highly critical for transforming the companies, processes, projects and products for greater success (Lüdeke-Freund, 2020; Martens et al., 2018). Market dynamics have been considered as a principal factor for stimulating innovation and firm's growth, as the fast-paced technological advancements influence the global competitive landscape. For this reason, the firms are under huge pressure to adapt to the market conditions and undertake more complex projects in order to survive tough market competitors and to improve and sustain their market share (Martens et al., 2018; Mitra, 2019). Organizations are continuously exploring novel and innovative measures to distinguish themselves from their competitors in order to boost their market position (Rothaermel, 2008). Entrepreneurial orientation (EO) has emerged as an integral component for firm level strategy, and it has been around for more than three decades encompassing various organizational aspects that explain the concept of entrepreneurship (Lüdeke-Freund, 2020; Wales et al., 2013). Entrepreneurial orientation adopts a dynamic working approach with emphasis on organization's competencies to create steady improvements, embrace proactiveness in firm activities, and high-risk behavior regardless of the probability of losses (Lüdeke-Freund, 2020; Mitra, 2019; Stam & Elfring, 2008). According to a recent study, entrepreneurial orientation (EO) has received significant degree of empirical and theoretical attention to fully comprehend the entrepreneurial process and its effect on business performance (Arshad & Rasli, 2018), however, limited scholarly attempts have been made in the project-based environments (Lüdeke-Freund, 2020; Martens et al., 2018; Mitra, 2019).

Entrepreneurship orientation (EO) shows how new ideas should be incorporated by the employees through key entrepreneurial processes that have a significant positive influence on individual and/or team performance, as well as positive organizational outcomes (Lüdeke-Freund, 2020; Mitra, 2019). Centered on the seminal work by Miller (1983), EO has been operationalized with the help of three dimensions; namely proactiveness, risk taking and innovativeness. According to a recent research, these aspects identify and describe key entrepreneurial strategies and portray the firm-level entrepreneurship (Martens et al., 2018). The first dimension (i.e. innovativeness) is the propensity of an individual or an organization to take part in innovative manner, consequently supporting the production of new products and/or services, as well as innovations in operational processes and organizational management. The second dimension (i.e. risk taking) means higher tendency of daring and risk-taking actions with the help of which organizations take bold strides and step into unknown territories, thus capturing the first-mover advantage. The third and the last dimension (i.e. proactiveness) means organizations and/or individuals have the inclination to seek new opportunities and they have a vision to introduce novel products and services, way before their

competitors, that subsequently allows them market leadership (Lüdeke-Freund, 2020; Martens et al., 2018; Mitra, 2019).

Previous studies on entrepreneurship fundamentally inspect how EO improves the survival rate and performance of new business ventures; though the results of these studies are often mixed. According to some studies, there exist a strong association between EO and organizations' performance; hence, the new businesses having high level of entrepreneurial orientation deliver superior performance than those organizations that lack on EO capabilities (Aljanabi, 2018; Hult et al., 2003; Su & Sohn, 2015). In other research studies, scholars found little difference in performance, and yet some other scholars did not find any significant correlations between the entrepreneurial orientation and performance (George, 2011; George & Marino, 2011; Hart, 1992; Smart & Conant, 1994; Wiklund & Shepherd, 2005). Most researchers credit these contradictions to factors that moderate or mediate the entrepreneurial orientation and project success relationship, particularly internal and external factors that define this relationship. Thus, in recent years, researchers have tried to understand this link by exploring the theoretical structure of EO and project success, by examining potential mediators, and investigating the magnitude of the association between EO and measures of performance. And in some studies, the researchers have considered the effect of internal factors which explain new business activities on the EO and project success relationship (Latif et al., 2020; Martens et al., 2018).

Metawa (2018) presented his key findings in an entrepreneurial orientation research that highlighted innovation strategy as a key driver. Moreover, Clausen and Korneliusen (2012) evaluated survey data from entrepreneurial organizations, and argued that entrepreneurial orientation has noteworthy impact on innovative capabilities and readiness for product to market. According to a study by Su and Sohn (2015), in absence of entrepreneurial orientation, the firm will abstain from engaging in research and developmental activities and/or exploring high-potential markets, thus it is more likely to fail in those markets. Now a days intensifying competition, product life cycle durations, and rapidly-changing business conditions, especially in a sector like IT, are continuously evolving, which implies that absorptive capacity is increasingly gaining importance not only because of its impact on organization's performance, but also due to the fact that it has a potential to play a significant role as a link between EO and performance outcomes.

Absorptive capacity (ACAP) for the last thirty years or so, has played its vital role in the area of innovation (Zou et al., 2018). The concept of absorptive capacity given by Cohen and Levinthal in their study in 1990 is termed as "...a firm's ability to generate innovation and facilitate learning". Since then the concept has been used by researchers within the context of innovation and entrepreneurship in a number of studies, including a prominent study by Liao et al. (2003). However, the mediating role of absorptive capacity (Bjorvatn & Wald, 2018) in the relationship between EO and project success (Martens et al., 2018; Mitra, 2019) has been largely ignored by the scholars. Similarly, the impact of EO on project success has been studied by researchers in IT sector (Latif et al., 2020), but again the mediating role of absorptive capacity has not been studied before. The role of absorptive capacity is very important for improving the innovation performance which

has been strongly associated with higher market and financial performance of the firms and projects (Aljanabi, 2018; Bjorvatn & Wald, 2018). Thus, it is critical to fully investigate its role.

Hence, the purpose of this research study is to investigate the connection among PS and EO (Martens et al., 2018; Mitra, 2019) and furthermore empirical test the intervening mechanism of ACAP (Bjorvatn & Wald, 2018) in the information technology industry. This study has many implications. Theoretically, first, the study empirically validates the role of EO and ACAP in enhancing the rate of project success. Second, it contributes to the stream of literature on entrepreneurship and innovation. The results of this research will contribute mainly in the software industry and help software engineers in the problems they are facing due to growing number of IT project failures. It will also contribute in developing appropriate project management strategies that will enable to create an environment of entrepreneurship in projects as it provides empirical evidence for EO and its positive impact on IT project's success.

This research proposes a theoretical model to study how absorptive capacity (ACAP) intervenes the relationship between entrepreneurial orientation (EO) and project success. Following this introduction, theoretical framework and literature review are discussed that extensively explain the study concepts, theoretically supported conceptualized model and hypothesized relationships. Results are presented and discussed after the research methodology section. Finally, the limitations of the study are provided in the last section which provides avenues for future work in this area.

## **2. Literature Review**

The theory of entrepreneurship in conjunction with the theory of entrepreneurial value creation has been used as a theoretical lens in this study. By using a two-step value creation structure, entrepreneurship theory gives the internal aspects of the business process in sufficient detail (Mishra & Zachary, 2015). A business model with coordinated unique competencies can reconfigure business competition to create significant competitive advantage. Researchers have argued that entrepreneurship is not simply the process of establishing a new firm but also recognizing opportunities external to the organizations in order to increase the performance of the firms. As per Mishra and Zachary (2015) "Entrepreneurship is defined as a process of value creation and appropriation directed by entrepreneurs in an uncertain environment". The entrepreneur is at the heart of the process of innovation in the organizations and thus such orientation can finally lead an organization to improve their performance. In our study, we posit that the same relation holds true for the organizations that are actively involved in projects and thus EO will lead to higher project success as well.

### *2.1 Entrepreneurial Orientation (EO)*

EO, as an idea, is "a *company's key stance towards entrepreneurship*" (Anderson et al., 2015). Holistically, entrepreneurial orientation is associated with basic strategies and behaviors for the advancement of the activities that are related to entrepreneurship and choices and the procedures that leaders use to advance the objectives of their firms, achieve competitive advantages and strengthen their vision (Rauch et al., 2009). Lumpkin

and Dess (1996) had examined EO by its three-dimensions in an organizational context i.e. proactiveness, risk-taking, and innovativeness.

EO includes an ability to take part in innovativeness and investigation, through innovative work (i.e. Research & Development) (Rauch et al. 2009). In this way, proactiveness is portrayed as the firm's propensity to confront the opposition when deploying new projects, services and technologies, instead of just continuing the existing market activities (Miller, 1983). It also helps generate new ideas to develop new and improved products, services and administrative procedures proactively (Lumpkin & Dess, 1996). Risk taking ability, as the name indicates, includes various risk related concepts including risk related to leadership, human resources and financial resources. Risk-taking is closely related with inventiveness, including those activities that results in ambiguous and uncertain conditions and results (Rauch et al., 2009), with anticipation of higher profits (money related or opportunity-wise) (Lumpkin & Dess, 1996). EO is linked with the capacity to foresee and look for new chances that impacts the innovativeness of the organizations (Lumpkin & Dess, 1996) and taking appropriate action for the realization of such opportunities (Rauch et al., 2009).

In the past decade, entrepreneurial orientation and project management approaches have become the cornerstone for sustaining modern businesses. Recently, the relationship between EO and firm's performance has been highlighted in various studies (Martens et al., 2015). The results of majority of these researches have shown that EO is positively linked with the performance of the firms (Shan et al., 2016; Wang, 2008). The majority of the studies suggest that EO plays a critical role in explaining the growth opportunities and also helps in investigating the potential market openings, and improving competitive benefits, all of which improve the performance of the firms. Gemünden et al. (2017) explored the concept of project-intensive organizations and investigated the relationship of EO and PS but they maintained that there is a need to fully explore this relationship. On the other hand, a recent study demonstrated a missing link between project success and entrepreneurial orientation (Venkataraman, 2019). Such conflicting results stress the need for fully understanding this behavior and our study aims to fill this gap. The main objective of this study is to explore in detail the relationship between project success and entrepreneurial orientation.

## *2.2 Absorptive Capacity (ACAP)*

Absorptive capacity has been referred as the organizational ability to accomplish competitive advantage by acquiring and organizing information for creating operational capabilities (Zahra & George, 2002; Sun & Anderson, 2010). According to researcher's absorptive capacity is embedded in the frameworks, procedures and schedules of an organization (Todorova & Durisin, 2007). Absorptive capacity comprises of four characteristics corresponding to the learning processes of the organization; namely "acquisition, assimilation, transformation and exploitation" (Zahra & George, 2002). As per studies acquisition capacity indicates a company's capacity to distinguish and secure outer information that is imperative to its organization. Assimilation indicates to schedules and procedures which are used by the company to examine, process, translate

and capture the procured information. Similarly, transformation refers to a company's capacity to manufacture and improve the plans that link existing information with recently obtained expertise. Lastly, exploitation means a company's capacity to integrate current and changed information into its operations. Focal point of exploitation is on the transformation of information into new processes.

First two capacities can be joined as potential ACAP that catches the company's capacity to value and acquire outside knowledge, expecting to develop and increase in a company's information databases. The last two can be consolidated as realized ACAP that use the obtained information regarding its activities to create innovation. Potential ACAP empowers firms to investigate new foundations of information, while realized ACAP guarantees that recently obtained knowledge can be utilized at to the commercial ends. Existing literature mostly focuses on high tech organizations in manufacturing industries (Gao et al., 2008) but they study this construct in developed nations (Fosfuri & Tribo, 2008). So, it is necessary to see the impact of ACAP in firms belonging to the technology-based sectors in developing nations as the results might differ due to differences in infrastructure and support provided to them.

### *2.3 Project Success (PS)*

Success of project has been defined by multiple ways by researchers in recent literature. At first, it is important to highlight to a difference between accomplishment in projects and achievement in PM. As indicated by De Wit (1988), PS is identified with objectives and benefits to a project and to the firm as a whole, managing the targets and advantages that are realized as a result of the project. Accomplishment in project management is characterized by the effort exerted by the project manager, using PM tools as defined by scope, cost and end date of each individual project. A detailed explanation on the project management focus has been presented by Cooke-Davies (2002), as well as Martens and Carvalho (2016). Generally, the mainstream literature characterizes PS either in some model e.g. the iron triangle framework, or as a uni-dimensional measure (Adnan et al., 2013). Recent studies are focusing on measures that comprise of diverse sets of variables (Dvir et al., 2003; Zaman, 2020, Zaman et al., 2019a).

It is an ongoing pursuit to identify the variables that influence PS in positively manner (Mir & Pinnington, 2014). The multi-dimensional measurement for PS as proposed by Shenhar and Dvir (2007) highlighted five independent sub-dimensions including productivity, effect on client, effect on project team, direct success related to business and readiness for future. This measure assists understanding of effect of projects on each of these dimensions. The methodology of these dimensions is also supported by different scholars. As indicated by one of the studies by Shenhar and Dvir (2007) some of the commonly used dimensions, like proficiency are not a long-term measure but rather short-lived measures that evaluate and check that the project was finished by due date, within scope and budgeted cost (Adnan et al., 2013; De Wit, 1988). The second dimension, "effect on client", brings up how will be the outcome of the project affects the clients or how it will affect the business of client (Mir & Pinnington, 2014). Third dimension is "effect on project team" evaluates total effect of project, i.e., analyze the project group contentment, morale, loyalty to the firm, and also the retaining of project

team in the firm when the project is completed/closed (Martens et al., 2015). As per the study of Cooke-Davies (2002) the project success is related to the success of the business and mainly it is focused on commitment to development of a new and unique product of the firm (Cooke-Davies, 2002).

#### 2.4 EO and PS

Recently, the researchers have focused their attention on the intricacies emerging from the relationship between EO and improved organizational outcomes (Filser & Eggers, 2014; Rauch et al., 2009). For around thirty years, researchers have shown their interest in the impact of EO on the performance outcomes at the organizational level (Martens et al., 2018). Lumpkin and Dess (1996) highlighted the impact of entrepreneurial orientation on performance outcomes which can be moderated by various organizational factors. These include size, organizational structure, strategic systems and linkages between various actors in the network of firms. Rauch et al., (2009) defines EO as “EO may be viewed the entrepreneurial strategy-making processes that key decision makers use to enact their firm's organizational purpose, sustain its vision, and create competitive advantage (s)”. According to Vezzoni et al. (2013), the most critical features of project success includes risk preparation and empowerment. These factors are closely associated with two of the aspects of EO, namely risk-taking and autonomy. In a research by Ahmed et al. (2014), the researchers demonstrated that entrepreneurial people in different project groups increases the chances of project's success. In a study by Gordon and Tarafdar (2007) the researchers relate innovation to project management. Another research by Meredith and Mantel (2008) related innovation to the development of processes, services and products.

According to researchers, proactivity is expected to be as one of the main characteristics of project managers (Kerzner, 2004). As per some authors (Brown & Eisenhardt, 1998) the attitude of entrepreneurial firms that introduce and develop new technologies and products to the market can achieve higher economic performance. Setiawan et al. (2015) discussed in their study that firms that are proactive in nature have the ability to create a competitive market position based on this ability. In spite of the fact that the association between the existence of EO and PS isn't clear, as some researcher found little difference in performance, and yet some other scholars did not find any significant correlations between the entrepreneurial orientation and performance (George, 2011; George & Marino, 2011; Hart, 1992; Smart & Conant, 1994; Wiklund & Shepherd, 2005). But, majority of the authors have concluded that firms with a greater EO perform better because they have tendency to yield successful projects (Rauch et al., 2009). Accordingly, understanding the relationship between PS and EO is very critical in order to explore the factors of project success. Therefore, we propose our first hypothesis as:

- **H<sub>1</sub>**: EO positively influences project success of the firms belonging to the IT industry of Pakistan

#### 2.5 Absorptive Capacity (ACAP) as a Mediating Variable

ACAP is characterized as the capacity to perceive the information that is new, assimilate this information, and apply this knowledge in business. It is described with the help of



three basic dimensions of knowledge which are: acquiring, absorbing, and applying (Cohen & Levinthal, 1990). Constant investments in such resources that lead towards higher values of absorptive capacity can lead such firms to achieve persistent performance improvements even after a period of major market fluctuations (Todorova & Durisin, 2007).

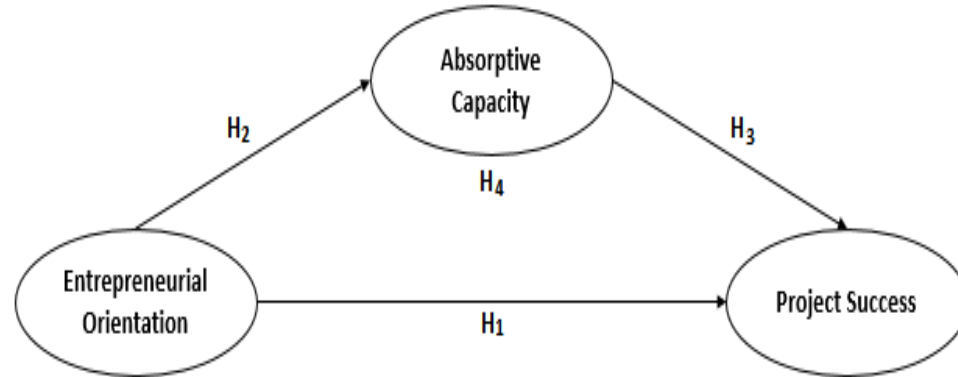
According to literature the realization of EO is the link between firms and the external environment, as well as the internal communication among different departments. It is a nonlinear process that successfully incorporates external and internal resources of firms and is firmly linked with the acquisition, absorption, change, and use of knowledge. One of the dimensions of EO is risk taking that enables the firms to undertake actions to seek better performance outcomes (Miller, 1983). From the market point of view, risk taking means firms have a tendency to embrace different operational risks to attain end goals to progress in the market. A high ACAP assists firms to make use of higher dynamic utilization of ideal entrepreneurial chances. Therefore, it can react rapidly to the changes that are generated in external environment, and it can decrease the uncertainties and risks that are related to market. The firms that are EO based typically have strong nature of inventiveness, which inspires organizations to build capacity to develop innovation advancement activities, for example, securing new inventions, development of new products, etc. In this way, inventiveness can enhance organization's performance.

Higher absorptive capacity can also assist firms to recognize and get new external information, acclimatize recently gained knowledge, and consolidate it with current knowledge to produce new information. Consequently, many practical issues can be resolved if firms utilize the knowledge acquired through different sources (Zahra & George, 2002). Higher ACAP can increase the recurrence of innovation as well (Lane et al., 2006), and enhances the speed of development of innovative projects. Firms with proactiveness abilities have quicker environmental scanning speed and their ability is stronger to identify the opportunities in market than other companies (Anand & Khanna, 2000). Because of the potential of development opportunities, firms will act more readily to get knowledge resources from the external world (clients, contenders, markets, and so forth) (Keh et al., 2007). With a greater ACAP, firms can comprehend these knowledge resources rapidly and precisely, consolidate the acquired knowledge resources with their current learning more efficiently, and recommend the change of new information. The effectiveness of changing this information into new services and products increases, which can enhance firms' innovation performance and in return it will increase the success rate of projects. Compared with the other firms, the entrepreneurial organizations with great ACAP are frequently ready to distinguish opportunities of markets, get information related to market, and comprehend clients' requirements; in doing this, they appropriately undertake the innovation development activities, enhance the performance of firm and increase opportunities for high-success rate for projects. Overall the entrepreneurial orientation organizations with great ACAP can improve the performance of project and promote innovation performance. Based on the above argumentation, it can be hypothesized that:

- **H<sub>2</sub>:** EO positively influences the ACAP of the firms belonging to the IT industry of Pakistan

- **H<sub>3</sub>**: ACAP positively impacts the project success of the firms belonging to the IT industry of Pakistan
- **H<sub>4</sub>**: ACAP mediates the positive relationship between EO and project success in the firms belonging to the IT industry of Pakistan

The proposed model of the research is shown in Figure 1.



**Figure 1: Proposed Research Model**

### 3. Methodology

#### 3.1 Data Collection and Sample

This research is based on a quantitative methodology. About 200 questionnaires were distributed amongst the employees of IT industries having different positions, education and experience. The questionnaire primarily consisted of two sections. In the first part, the demographic information was asked from the respondents, while the second part consisted of the scale items of the variables. The respondents were guaranteed of the privacy of their responses. Convenience sampling was done due to non-availability of database in light of similar previous research by Latif et al. (2020). Out of 200 circulated questionnaires, 160 responses were received (with a response rate of 80%) while 40 (20 %) questionnaires were not returned. Additionally, 20 questionnaires (10 %) were completely filled by the respondents, through Google Docs and they were received electronically. After scrutiny it was observed that out of 180 responses, 5 were unusable as they had missing values or multiple options were selected to a single question. In this way 175 questionnaires were deemed fit for further analysis. The sample size seems appropriate as previous relevant studies have similar or less sample size (100) (see Martens et al., 2018).

The demographics of the participants are listed in the table 1. Majority of the respondents (61%) were male employees with highest group belonging to the age group of 20-29 (72%) followed by the age group of 30-39 (25%). Similarly, most of the respondents were graduates (52%) and worked full time team members. Finally, majority of the respondents had up to four years (85%) followed by up to 8 years of experience (14%).

**Table 1: Demographics of the Respondents**

Items	Characteristic	F
Gender	Male	107
	Female	68
Age	20-29	126
	30-39	44
	40-49	4
	≥50	1
Level of Education	Undergraduate	16
	Graduate	91
	Masters	63
	PhD/ Post Doctorate	5
Job Title/ Role	Team Lead/ Project Manager	27
	Team Member	148
Professional Experience (Years)	≤4	131
	5 – 8	24
	9 – 12	17
	> 12	3

### 3.2 Measures

The scales for the variables were all adopted by the past literature. The researchers used Likert scale (five-point) for measuring the study constructs (from 1 as strongly disagree till 5 as strongly agree). The detail of the study constructs, including operationalization of the key concepts along with the reliability of the scales is provided below.

#### 3.2.1 Entrepreneurial Orientation

In this research researcher discusses 3 dimensions of EO. Entrepreneurship orientation (EO) comprises of three dimensions: “proactiveness, innovativeness and risk-taking”. According to recent research these dimensions describe and recognize key entrepreneurial strategies and portray the firm-level entrepreneurship (Martens et al. 2018). Entrepreneurial Orientation was measured through the 8 items and was adapted from the study by Covin and Slevin (1989), as well as Lumpkin and Dess (2001). Later studies (e.g. Martens et al., 2018) have also utilized the adapted EO scale. The three dimensions of the EO were “innovativeness”, “risk taking” and “proactiveness”. Sample items from innovativeness were “Changes in products or services in my firm have usually been quite dramatic in the past 5 years” and “In general, the top managers of my firm favor a strong emphasis on R&D, technological leadership and innovations”. The sample item for risk taking was “In general, the top managers of my firm have a strong proclivity for high-risk projects (with chance of very high return)”, while a sample item from

proactiveness was “In dealing with its competitors, my firm typically initiates actions which competitors then respond to”.

### 3.2.2 Project Success

Five items were used for the evaluation of project success adapted from the study by Belout and Gauvreau (2004). Two of the sample items were, “Technical requirements specified at the beginning of execution phase were made” and “Technical problems were successfully identified and resolved.” The reliability for the project success has been established in prior research. In the present study, the project success construct was specifically used to measure the success in the IT related projects measured through the perceptions of the project managers and team member. The likert-type scale for measuring the IT project success provided empirical assessment for the PLS SEM measurement and structural model.

### 3.2.3 Absorptive Capacity

Earlier studies measured absorptive capacity through a uni-dimensional scale (Gao et al., 2008; Rothaermel & Alexandre, 2009). More recent studies use multi-dimensional models (Flatten et al., 2011). The items used for our survey was adopted from the study of Popaitoon and Siengthai (2014). In continuation with the theory of Cohen and Levinthal (1990), our study consisted of three dimensions namely “Acquisition”, “Assimilation” and “Transformation”. The sample item from acquisition was “We collect industry information through informal means (e.g. lunch with industry friends, talks with trade partners)”. The sample item from assimilation was “We quickly analyze and interpret changing market demands”; while the sample item from transformation was “Project members’ record and store newly acquired knowledge for future reference”.

## 4. Results

### 4.1 Measurement Model

Partial Least Squares (PLS) method was used to test the proposed model and hypotheses. PLS is a powerful quantitative procedure used by previous studies in this field (Aljanabi et al., 2018; Zaman et al., 2020; Zaman & Abbasi, 2020). Moreover, SmartPLS has been used in this research as it is proposed to achieve high levels of statistical power over other SEM technique i.e. CB-SEM especially with smaller-sample size (Hair et al., 2012). More specifically, we followed Peng and Lai (2012) who highlight the frequent use of PLS-SEM (Zaman et al., 2019b) ideally for small samples (Hair et al., 2014). Measurement and structural models were assessed following the recommended two-stage procedure (Hair et al., 2014). Table 2 shows item loadings, composite reliability (CR) and average variance extracted (AVE). AVE for all variables included in the analysis was above the required 0.5 and their CR was above the required 0.7 threshold. Similarly, the factor loadings were above the threshold of 0.600 except three items in ACAP but they were retained as they were close to 0.6 value.

**Table 2: Item Loadings, Composite Reliability (CR) and Average Variance Extracted (AVE)**

Variables	Items	Loadings	CR	AVE
Entrepreneurial Orientation	EOI1.1.1	0.693	0.907	0.551
	EOI1.1.2	0.831		
	EOI1.1.3	0.689		
	EOR1.2.1	0.831		
	EOR1.2.2	0.800		
	EOR1.2.3	0.632		
	EOP1.3.1	0.805		
	EOP1.3.2	0.623		
	Project Success	PS1.1		
PS1.2		0.794		
PS1.3		0.823		
PS1.4		0.794		
PS1.5		0.734		
PS1.6		0.762		
PS1.7		0.731		
Absorptive Capacity	ACAP1.1	0.551	0.910	0.509
	ACAP1.2	0.549		
	ACAP1.3	0.561		
	ACAP1.4	0.749		
	ACAP1.5	0.785		
	ACAP1.6	0.777		
	ACAP1.7	0.825		
	ACAP1.8	0.801		
	ACAP1.9	0.744		
	ACAP1.10	0.713		

Correlation analysis was carried out that showed positive link among all the variables. Correlation values are tabulated in the Table 3. As shown in the table, all correlations are significant. According to Field (2013), the correlation is weak if the coefficient value is  $\pm 0.1$ , medium if it is  $\pm 0.3$  and strong if it is  $\pm 0.5$  or above. As shown in the Table 3, all the values of correlation coefficient represent strong correlation between the variables.

**Table 3: Correlation Analysis**

	EO	PS	ACAP
EO	1.0		
PS	.571**	1.0	
ACAP	.626**	.736**	1.0

\*\* Correlation is significant at the 0.01 level (2-tailed)

#### 4.2 Structural Model

Table 4 shows results of hypotheses testing. Hypotheses were tested through regression analysis to ascertain whether a significant relationship exists between elements of entrepreneurial orientation, project success and absorptive capacity. Mediation analysis is done to ascertain whether a relationship between two variables is mediated or affected by the interaction of another variable.

#### 4.3 Hypotheses Testing

For hypothesis 1 the value of  $R^2$  is 0.325 which is showing that 32.5 % variation in PS by EO. The value of F is 83.4837 shows model fitness for regression. The coefficient value  $\beta$  is 0.571 which indicates that with that with one-unit change in EO will cause 0.571-unit change in PS. The value of t is 9.137 and p is 0.000 which indicate a significant impact. Therefore hypothesis 1 is accepted. For hypothesis 2 the value of  $R^2$  is 0.392 which is showing that 39.2 % variation in ACAP by EO. The value of F is 111.419 shows model fitness for regression. The coefficient value  $\beta$  is 0.626 which indicates that with that with one-unit change in ACAP will cause 0.626-unit change in EO. The value of t is 10.556 and p is 0.000 which indicate a significant impact. Therefore hypothesis 2 is accepted.

For hypothesis 3 the value of  $R^2$  is 0.541 which is showing that 54.1 % variation in PS by ACAP. The value of F is 203.992 shows model fitness for regression. The coefficient value  $\beta$  is 0.736 which indicates that with that with one-unit change in PS will cause 0.736-unit change in ACAP. The value of t is 14.283 and p is 0.000 which indicate a significant impact. Therefore hypothesis 3 is accepted.

**Table 4: Summary- Regression Analysis**

Hypothesis	Coefficients				Model Summary			ANOVA	
	B	$\beta$	T	Sig	R	$R^2$	Adj $R^2$	F	Sig
<b>H<sub>1</sub></b>	.594	.571	9.137	.000	.571 <sup>a</sup>	.325	.322	83.4837	.000 <sup>b</sup>
<b>H<sub>2</sub></b>	.568	.626	10.556	.000	.626 <sup>a</sup>	.392	.388	111.419	.000 <sup>b</sup>
<b>H<sub>3</sub></b>	.536	.736	14.283	.000	.736 <sup>a</sup>	.541	.538	203.992	.000 <sup>b</sup>

The role of absorptive capacity as a mediator between entrepreneurial orientation and project success was tested through Preacher and Hayes method. Bootstrapping gives most reasonable and powerful method of attaining confidence limits for mediation effects under different circumstances (Preacher & Hayes, 2008). Table 5 discusses the values of mediation effect, whereas upper bound and lower bound for the indirect effect from EO to project success does not include zero. Results found support for the hypothesis 4 that absorptive capacity mediates the positive relationship between EO and the PS. additionally, the variance accounted for (VAF = 0.682; VAF < 0.80) showed that ACAP partially mediated the relationship between EO and PS (Hair et al., 2017).

**Table 5: Mediation Analysis**

	<b>Effect</b>	<b>Se</b>	<b>t</b>	<b>p</b>	<b>LLCI</b>	<b>ULCI</b>
<b>Total Effect</b>	.5935	.0650	9.1369	.0000	.4653	.7218
<b>Direct Effect</b>	.1883	.0674	2.7948	.0058	.0553	.3214
<b>Indirect Effect</b>	.4052	.0611			.2877	.5284

## 5. Discussion

The outcomes of this research have shown empirical validation of a positive link among the entrepreneurial orientation, absorptive capacity and project success. These results confirm the stance that in order to increase opportunities for successful projects, the firms should develop an environment of entrepreneurial orientation, which is categorized by proactiveness, risk taking, and innovativeness. Similarly, firms having high levels of absorptive capacity will have increased chances of project success. Therefore, the outcomes from this research are in line with the previous research by Hernández-Perlines et al. (2017) in which the researchers concluded that companies with higher EO are more likely to get more benefits in terms of increased performance.

The existing literature on entrepreneurial orientation demonstrates a strong relationship between firm's performance improvement and EO (Engelen et al., 2015; Filser & Eggers, 2014). The present research empirically confirmed that the effects of EO are advantageous to the success of project, and this relation will eventually increase the performance of organizations that undertake such projects. Researchers have argued that the organizations with strong entrepreneurial orientation have enhanced features of innovativeness, risk taking and proactiveness capabilities and firms should exploit such capabilities through higher absorptive capacities.

While exploring the relationship between innovation and entrepreneurship in the domain of PM, researchers have maintained that entrepreneurship and innovation plays a key role in explaining this relationship (Gordon & Tarafdar, 2007; Kuura et al., 2014). All the three dimensions of entrepreneurship namely, proactiveness, innovativeness and risk-taking are closely linked with performance outcomes both at firm level and project level.

As per the studies of Brown and Eisenhardt (1998) innovativeness can contribute significantly in order to improve the financial and overall performance of the organizations and those companies that have higher capabilities of innovativeness, get more profit through the engagement of stakeholders as compared to organizations that are low in these capabilities. This study also maintains that the projects can achieve better outcomes if the firms adopt policies aimed in increasing the innovativeness capabilities of their employees.

In a similar vein, risk taking capability is also a key part of EO of the firms. Risk taking has been characterized as a sub-dimension of EO involving the firm's tendency to engage in projects that are risky, but at the same time promising to bring profitable returns. In the research study of Carvalho and Rabechini (2015) the authors explain that for the project activity risk is essential especially if the technology level and project complexity are greater. Vezzoni et al. (2013) maintain that for each risk a comprehensible risk tackling methodology should be adopted, and the project managers should keep it in mind that the planning to face the project risks could be critical factor for achieving success in projects. Carvalho and Rabechini (2015) highlighted the project risk management and the dimension of EO risk taking having similar objectives. These objectives include the maximizing of the effects that are positive, while minimizing or mitigating the negative effects; obtaining higher or significant revenues, and always pursuing the objectives of the organization.

The third dimension of EO is proactiveness. As per Lumpkin and Dess (2001) when the organization is the first to introduce new services/products, and the organization has a resilient propensity to be ahead of different competitors in introducing innovative products or ideas then the firm is considered to have proactiveness. In a study, Setiawan et al. (2015) explain that the organization can develop its leading position in the market by taking an advantage from its proactive behavior. Similarly, organizations can be proactive by discovering particular markets ahead of different rivals (Zahra & Covin, 1995). Proactiveness is the dimension of EO that can contribute towards the project success and proactivity is something that is expected by project managers (Kerzner, 2004). Supporting the significance of proactiveness as an element of the EO in the project management context, past studies have linked proactiveness with planning activities like preparation of portfolio synergy and future decisions (Rank et al., 2015). The outcomes from this research are in line with the past research which indicates that in organizational performance EO is playing major part (Filser & Eggers, 2014; Rauch et al., 2009), so in other words, organizational performance can be significantly enhanced by successful projects.

The results of our study also confirmed the mediating effect of ACAP in the relationship between EO and PS. The role of ACAP has been studied in previous research by Leal-Rodríguez et al. (2014), who focused on innovation as an outcome of ACAP. In a similar view, Liu et al. (2013) examined ACAP in a mediating role while linking IT capabilities to firm performance. Finally, Hernández-Perlines et al. (2017) found evidence of the mediating role of absorptive capacity in the relationship between entrepreneurial orientation and family firm performance. However, our study significantly confirmed ACAP in a partial-mediating role to link EO and PS.



### *5.1 Theoretical and Practical Implications*

We expect that our findings can add more to the current literature on entrepreneurial orientation and absorptive capacity in project management domains. This research improves and investigates a research framework of relationship between PS and EO and analyzes the impact of mediating variable ACAP on the EO and the PS. The EO of the firms involved in projects, including their capabilities of proactiveness, innovativeness and propensity for risk-taking, determines their ability to explore, adopt and exploit new knowledge. This role of entrepreneurial orientation as an antecedent of absorptive capacity has been highlighted in prior study by Hernández-Perlines et al. (2017) of family firms. Our study offers novel contributions by presenting a performance driven model for project-intensive firms. Thus, project-oriented firms can significantly improve their performance outcomes through focusing critically on the mediating role of ACAP in the relationship between EO and PS.

The results of this current study will allow researchers to get an advance understanding as to why and how can EO impact project success in a technology intensive industry namely IT sector. The present study may give workable suggestions to leaders or top administration of firms. Firms should keep all the three factors of EO balanced and also strive to improve the absorptive capacity in their firms in order to achieve their goal of project success. Inadequate access to resources and information undermines the absorptive capacity, while making the costs of high innovativeness unjustified and causing project failure. Managers should also participate in innovative, proactive and risk-taking strategies in order to achieve their objectives. The organizations with entrepreneurial environment should balance the capabilities of innovativeness, risk taking and proactiveness if they wish to increase the rate of project success, they should apply absorptive capacity. Thus, they should have the potential to identify the significance of external knowledge, incorporate it in their processes, and finally apply this knowledge on the products or services produced by them. It will all lead towards higher project success rates.

### *5.2 Conclusion, Limitations and Future Recommendation*

Our research theoretically proposed and empirically investigated the impact of EO and ACAP on project accomplishments. The study findings highlight that entrepreneurial orientation has a strong impact on higher rates of project success. Furthermore, ACAP plays an intervening role in the link between EO and project performance. Simply put, due to the mediating role of absorptive capacity acting as an intervening variable between EO and project success increases the probability of project being successful. The outcomes of previous study mentioned that EO describes only 20% of the influence on project success (Martens et al., 2018). In comparison, this study has studied the intervening role of ACAP in EO and PS relationship and the results of show that EO has a significant impact on project success when absorptive capacity is mediating between EO and PS.

As obvious, this study also has some specific limitations allowing avenues for future research. Since our study only investigated the mediating role of absorptive capacity, future studies can study other variables like the effect of many internal variables like knowledge sharing and leadership and external to the firm variables like environmental uncertainty and technological dynamism in order to understand the mediator or

moderator mechanisms in the relationship of EO and PS and to fully comprehend the relationships of this model. Similarly, different types of projects could be studied and compared. Our study did not aim to examine entrepreneurial orientation through its multi-dimensions. Future studies can study the effect of multi-dimensional EO on projects success as this understanding will lead to better policies and strategies to improve the characteristics of entrepreneurial orientation, and thus ensuring higher rates of project success. Finally, we collected data using cross sectional methodology. Future researchers can use longitudinal or time lagged data to carefully ensure the causality of the model.

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