

The role of organizational learning and innovative organizational culture for ambidextrous innovation

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Abstract:

Purpose: In the era of hyper-competitiveness, firms, especially project-based management structures, have to focus on ideas for both new and existing sets of products and services, i.e., ambidextrous innovation. The ambidextrous innovation can be helpful, but achieving such a level is a problem to be solved. The present research is aimed at yielding ambidextrous innovation by utilizing innovative culture and knowledge that has been gained from learning.

Research Methodology: The present research collected data from Saudi Arabian public-sector firms. The data collected is analyzed using the Partial Least Squares Structural Equation Modelling (PLS-SEM).

Findings: The findings of the study suggest that a range of factors can be operationalized in project-based firms to establish organizational learning and innovation culture. These factors include agile-based project management, leveraging existing innovative capabilities and growth mindset in case of innovative organizational culture and additional factors of agile-based knowledge management along with others in case of organizational learning. The PLS-SEM further concluded that both organizational learning and innovative organizational culture, in turn, help project-based Saudi Arabian public-sector firms to develop their ambidextrous innovation capability.

Keywords: Ambidextrous innovation, Organizational learning, Organizational innovative, Agile, Knowledge Management, Project Management, Growth mindset.

1. Introduction:

The ambidextrous innovation has attracted a lot of interest from the scholarly and managerial community over a period of time (Grover et al., 2007). Ambidextrous innovation can be defined as an innovation that balances the innovating of new products and services (Grover et al., 2007), referred to as explorative innovation and develops and improving the existing product and services to meet existing needs, referred to as exploitative innovation (Martini et al., 2003). The recent literature suggests that ambidextrous innovation has helped organizations, especially project

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3 teams, gain a competitive advantage by using available in-house and out-house knowledge,
4 competencies, and insights (Xie et al., 2020). So, it enables the project team to keep up with the
5 fast-paced market trends and continuously provide value to their consumers by launching products
6 and services demanded by consumers (Lee et al., 2023). Although ambidextrous innovation offers
7 a wide range of advantages to organizations and project teams, as concluded by recent systematic
8 review studies conducted by Chakma et al. (2021), it still remains a problem for firms to achieve
9 the level of ambidexterity in the innovation sphere. Researchers from theoretical aspects, such as
10 (Simsek, 2009; Werder & Heckmann, 2019), have been conceptualizing various antecedents that
11 can help the organization to develop the dynamic capability of ambidextrous innovation. But, such
12 theoretical conceptualization would need empirical support from the project level to make a solid
13 contribution to the current literature on ambidextrous innovation. It is worth mentioning that
14 various empirical studies, such as (Lee et al., 2023), have added critical insight into the current
15 literature.

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17 In recent years, scholars have been focusing on the construct of organizational culture (Ouchi &
18 Wilkins, 1985) and learning (Levitt & March, 1988). The culture would be defined as the set of
19 shared rules, norms, values, and behavioral patterns (Ouchi & Wilkins, 1985), while learning
20 would be better defined as “development of insights, knowledge and associations between past
21 actions, the effectiveness of those actions, and future actions” (Fiol & Lyles, 1985, p. 811). A
22 culture that is rooted in innovation can be a determining factor for a project team's success (Joseph
23 & Kibera, 2019). The literature suggests that innovative culture can also enhance ambidextrous
24 innovation through the instrument of empowerment and collaboration, which can push teams to
25 try and experiment with new ideas for products and services (Ju et al., 2020). Learning is quite a
26 consistent phenomenon within the project with ambidextrous innovation as both attempts to
27 employ the knowledge available inside and outside organizations for their relative purposes (Guo
28 et al., 2020). Thus, organizational learning and innovation culture can help the organization
29 achieve its ambidextrous innovation ambitions. However, despite the importance, complimentary
30 role, and logical consistency of both culture and learning of organization with ambidextrous
31 innovation, empirical evidence, especially at the project team level, is negligible in the present
32 literature.

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To make the current discussion more impactful from an empirical perspective, we have to dive deep into the literature and attempt to understand the possible set of dimensions that can impact ambidextrous. One of the key elements that have really attracted scholars' attention is the agility of the project team (Lill & Wald, 2021). The literature suggests that agility can make teams both innovative and help them acquire and use knowledge for product innovation and improvement (Ju et al., 2020). Secondly, knowledge management is also cast as an important driver in learning and making an organization's culture innovative through acquiring and utilizing experience and information (Azeem et al., 2021). Thirdly, the dynamic, innovative capability is a natural driver of innovative organizational culture (Iranmanesh et al., 2021) and learning (Bell & Figueiredo, 2012). Finally, the present research has focused on the novel construct of the growth mindset, which is belief that individual's varying natural capabilities can be improved through learning, experiences, and experiments (Yeager & Dweck, 2020). The presence of a growth mindset would always expedite the process of both learning (Hanson et al., 2016) and innovation in the organization (Canning et al., 2016). Thus, the purpose of the present research study is to examine ambidextrous innovation (Xie et al., 2020). Present research theorizes that organizational learning and innovative culture can play an important role in achieving ambidexterity. The learning is important as ambidexterity would require a high level of knowledge of the product, services, and process to reconfigure (Joseph & Kibera, 2019). Further, an innovative organizational culture that values new ideas and experiments can complement learning within the organization. Although such theorization is widely prevalent in the literature, it would need empirical support in context of project organization. Thus, the purpose of the present research is to collect empirical evidence and assess the effect of factors organizational learning and innovative organizational on project organizations' quest for ambidexterity. The rest of the paper follows the research purpose, literature review, research method, data analysis, discussion, and conclusion.

2. Literature review

2.1. Agile project management:

Agile project management can be defined as tools and techniques in which a project is efficiently managed in situations of both complexity and uncertainty (Dybå et al., 2014). In general, "agile project management is characterized by short cycles of iterative and incremental delivery of product features and continuous integration of code changes" (Dybå et al., 2014, p.280). Agile

project management encompasses an important element of up-front planning in which important and essential decisions are being undertaken during the implementation phase of the project itself (Dybå et al., 2014). Agile project management can be a very important driver in enhancing both innovative culture (Highsmith, 2009) and organizational learning (Flumerfelt et al., 2012). Agile project management heavily relies upon the ideas of an empowered team. The empowered team in the agile project can make crucial decisions while executing the projects during the execution phase. So, it creates a culture in which such ideas are respected and promoted (Highsmith, 2009). The literature suggests that implementing an agile philosophy into the project would push the project organization to become innovative and gather a wide range of knowledge that can be continuously used while making the decision as part of upfront project planning (Flumerfelt et al., 2012). Thus, present research hypothesizes that,

H1: *There is a positive and significant impact between agile project management and the project organization's innovative culture.*

H2: *There is a positive and significant impact between agile project management and project organization's learning.*

2.2. Agile knowledge management:

Knowledge management can be defined as the process through which project teams or organization search, acquire, build the database, share and disseminate, and use the knowledge to improve products, services, productivity, and organizational performance (Pérez-Bustamante, 1999). Although its proper conceptualization is non-existent in the present literature, Agile knowledge management would be better referred to as the usage of agile philosophy in the knowledge management process (Singh et al., 2014). Agile knowledge management specifically focuses on building and using the stock of knowledge, which can help project teams enhance their flexibility, adaptability, and cross-functional collaboration to yield better performance (Levy & Hazzan, 2009). Agile knowledge management makes a project organization's culture innovative by collecting and using a stock of information aimed at solving the problem arising from the project's unpredictability and complexity (Pérez-Bustamante, 1999). Therefore, the present research hypothesizes that:

H3: *There is a positive and significant impact between agile knowledge management and the project organization's innovative culture.*

H4: *There is a positive and significant impact between agile knowledge management and project organization's learning.*

In order to improve knowledge management, absorptive capacity is crucial for making good use of external knowledge. Organizations must build their "absorptive capacity," which is the ability to take in, process, and modify external information (Cohen & Levinthal, 1990). Strong absorptive abilities facilitate the assimilation of outside knowledge, which is essential for investigating novel ideas (Azeem et al., 2021). The connection between absorptive capacity and ambidextrous invention is essential for creating an atmosphere that promotes creativity and improves knowledge management (Anderson et al., 2014). Utilizing outside data to gain a sustained competitive edge, absorptive ability aids in striking a balance between exploratory and exploitative innovation.

2.3. Innovative capability:

The innovative capability is referred organization's dynamic capability, which helps it to develop and execute new and creative ideas for product, services, and business model that is instrumental in capturing the value from the consumers (Iranmanesh et al., 2021). The innovative capability has been linked with various positive outcomes such as higher productivity, financial performance, and satisfied customers (Çakar & Ertürk, 2010). The present research has operationalized the innovative capability of project teams as the antecedent of organizational culture (Iranmanesh et al., 2021) and learning (Bell & Figueiredo, 2012). The existing literature, albeit somewhat limited, tends to define innovative capability as outcomes rather than causes (Çakar & Ertürk, 2010). Moreover, certain researchers, like Iranmanesh et al. (2021), have utilized innovative capability as a moderator, while others, such as Azeem et al. (2021), have considered it an independent variable in conjunction with organizational culture. Therefore, it can be concluded that the literature on the operational aspect of innovative capability as a construct in relation to organizational culture is inconsistent. The present research, by agreeing with the empirical evidence that innovative capability can be a consequence of organizational culture, argues such assertion lacks a proper explanation of the process through which organizational culture would yield innovative capability.

Further, the present research argues that a difference exists between traditional and innovative organizational cultures. The innovative organizational culture is different with respect to various elements. Therefore, the present research hypothesizes that;

H5: *There exists a positive and significant relationship between innovative capability and innovative organizational culture.*

Further, the present research has also hypothesized that innovative capability can also yield organizational learning (Bell & Figueiredo, 2012). The project teams acquire innovative capabilities by acquiring information and knowledge from various sources. Thus, by developing innovative capabilities, organizational learning can have natural consequences.

H6: *There exists a positive and significant relationship between innovative capability and organizational learning.*

2.4. Growth mindset

The growth mindset can be described as the belief that an individual's or employee's varying nature of capabilities can be improved through learning, experiences, and experiments within and outside of the organization (Yeager & Dweck, 2020). The concept of a growth mindset further illustrates that employees with a growth mindset always embrace challenges to go out of their way to achieve something very special and extraordinary in nature, which also helps the organization in its quest to create higher value for its stakeholders (Yeager & Dweck, 2020). The view that failure is due to their abilities is not consistent with their mindset, but it is taken as an opportunity to learn and improve (Dweck, 2016). The present research has conceptualized that a growth mindset can positively affect organizational culture (Canning et al., 2016) and learning (Hanson et al., 2016). An innovative organizational culture always requires employees to develop a shared behavioral pattern in which they continuously seek new information, implement new ideas, and continuously improve themselves (Canning et al., 2016). Thus, the present research hypothesizes that;

H7: *There exists a positive and significant relationship between the growth mindset and organizational innovative culture.*

H8: *There exists a positive and significant relationship between the growth mindset and organizational learning.*

2.5. Organizational Innovative Culture:

Organizational culture can generally be defined as a set of values, norms, standards and behavioral patterns that are commonly shared by the organization's members (Ouchi & Wilkins, 1985). The innovative organizational culture can be defined as the values, norms, standards, and behavioral pattern of an organization that promotes activities of pursuing new ideas for products and services that are aimed at providing higher value to consumers and performance (Harmancioglu et al., 2020). For yielding ambidextrous innovation, innovative organizational culture plays an important role (Wang & Rafiq, 2014). Ambidextrous innovation requires the project team to successfully balance between developing new products and services from existing ideas, knowledge, and information and improving existing products from the same kinds of ideas, knowledge, and information (Khan & Mir, 2019). Such a balancing act, which is an inherent requirement of ambidextrous innovation, cannot be possible without a culture of project empowerment and motivating them to try and test ideas, look out for new information, and implement such kind of knowledge (Harmancioglu et al., 2020). Therefore, it can be hypothesized that;

H9: Innovative organizational culture has a positive and significant impact on the ambidextrous innovation of project team

2.6. Organizational Learning:

Organizational learning can be better defined as a “*process of improving actions through better knowledge and understanding*” (Fiol & Lyles, 1985, p.803). Organizational learning can be further explicated as it is processed through which organizations successfully obtain, develop a stock of knowledge, and implement such knowledge in order to develop better quality products, services, and value for the customers. The present research has hypothesized that ambidextrous innovation can be a natural consequence of the sustained and strategic level of organizational learning activities (Harmancioglu et al., 2020). Organizational learning helps the organization build a stock of knowledge and information on ideas that can be used to develop new products and improve existing ones (Prieto-Pastor & Martin-Perez, 2015). The organization tends to develop such kinds of ideas by actively seeking information and experience and experimenting both inside and outside of the organization (Li et al., 2022). Thus, it has been hypothesized here that,

H10: *Organizational Learning has a positive and significant impact on the ambidextrous innovation of the project team.*

2.7. Ambidextrous Innovation:

Ambidextrous innovation can be defined as the type of innovation that involves balancing between two types of distinct innovation strategies, which include both exploratory innovation and exploitative innovation (Hughes et al., 2010). Exploratory innovation can be defined as a type of ambidextrous innovation that is focused on meeting new kinds of consumer needs and demands by innovating new products and services (Grover et al., 2007). In contrast to exploratory, exploitative innovation is defined as the process of innovation in which the project team develops a product and services to meet existing needs and uses an existing set of knowledge (Martini et al., 2003). The present research has conceptualized that organizational learning (Prieto-Pastor & Martin-Perez, 2015) and innovative organizational culture (Khan & Mir, 2019) can play an active role in helping the firm achieve its ambidextrous innovation capabilities. The organization's learning always empowers the project team to collaborate cross-functionally to seek new insight and experiment with ideas that can develop an environment that may support explorative innovation (Prieto-Pastor & Martin-Perez, 2015). Further, organizational learning through the instrument of empowerment allows the project team to use the current set of information and knowledge while improving the current set of products (Li et al., 2022). In the end, a company is well-positioned to accomplish ambidextrous innovation and spur long-term success and growth if it values both exploratory and exploitative innovation and promotes a culture of continual learning and improvement (Wang & Rafiq, 2014). March (1991) argues that ambidextrous innovation entails resolving the conflict between exploratory and exploitative innovation techniques. While exploitative innovation maximizes current resources for operational efficiency, exploratory innovation seeks new opportunities and fosters creativity in unpredictable marketplaces (Battilana & Lee, 2014; O'Reilly & Tushman, 2013). Businesses operating in dynamic marketplaces must balance these strategies to foster innovation and stay competitive (Battilana & Lee, 2014).

2.8. Conceptual Framework

The present research underpinning the ambidexterity and dynamic capability theory proposes that the act of balancing between explorative and exploitative innovation can be fostered through organizational culture (Iranmanesh et al., 2021), which values experimentation with ideas and

organizational learning (Bell & Figueiredo, 2012) which develops a stock of knowledge that can help in better both experimentation with new ideas of products and services and improving the existing one. The research further proposes in its conceptualization that both learning and culture appropriate for achieving ambidexterity should be based on antecedents such as agile-based project management (Lee et al., 2023), innovative capabilities (Ju et al., 2020), agile knowledge management (Azeem et al., 2021) and growth mindset (Yeager & Dweck, 2020). Thus, research proposes that such antecedents will help organizations develop culture and learning practices that are highly suitable for ambidexterity (Chakma et al., 2021).

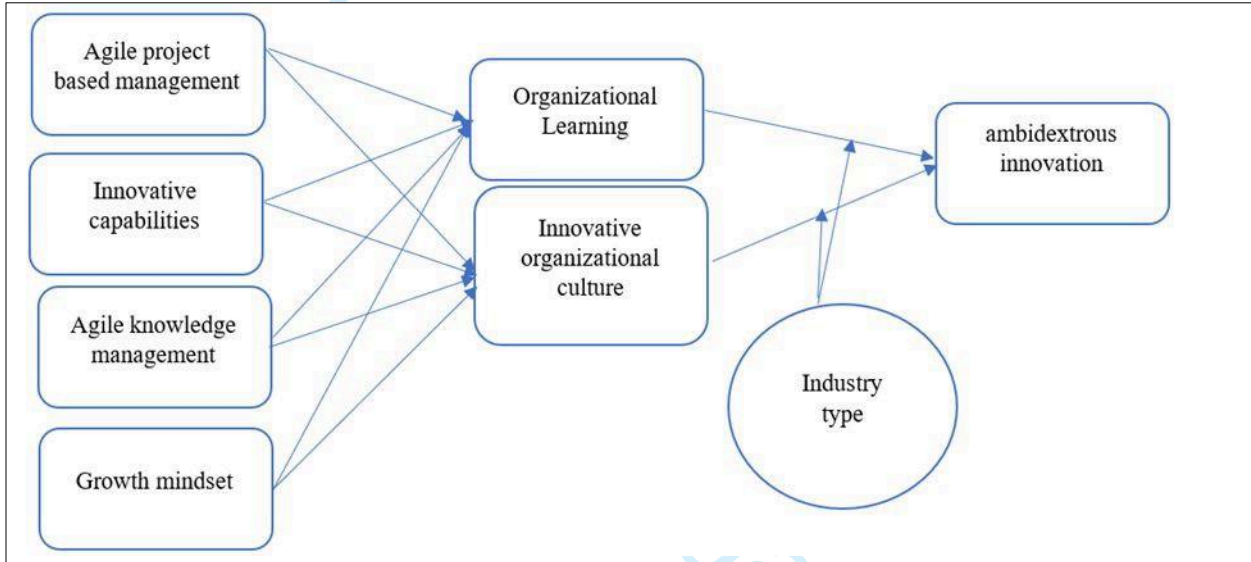


Figure 1: Conceptual Framework

3. Research Method:

3.1. Research Design:

The present research has employed the quantitative research design. The current research aims to understand the impact of organizational learning and innovative organizational culture on ambidextrous innovation; thus, a quantitative research design can be used here to achieve such a purpose (Saunders et al., 2009).

3.2. Data Collection Method:

The present research has employed the survey questionnaire as a data collection tool. The survey questionnaire is a popular data collection instrument in the quantitative research design in management science and organizational behaviour (Krosnick, 2018). The survey is an effective data collection instrument as it helps gauge respondent views, opinions and thoughts using a five-point Likert Scale.

3.3. Data Collection Instrument:

The present research has developed its data collection instrument from previous studies. The data collection instrument of the current research is divided into three parts. The first part is used to collect the demographic data of the respondents. The second part is developed to assess the relative knowledge of respondents on the phenomena of ambidextrous innovation. The last part consists of items to measure the variables of the study's conceptual framework. Table 1 shows the items used to measure each variable and their source.

Table 1: Data Collection Instrument

3.4. Sampling and Population:

The present research aims to collect data from Saudi Arabian public-sector firms with an increasing focus on using project management methodology and Ambidextrous Innovation to provide greater value to their stakeholders. Therefore, the population of the present research is the mid and senior-level managers handling projects and innovation at public sector firms, ranging from Small and Medium level enterprises to large sector corporations. To select the sample from a defined population, the present research has employed the non-probability purposive sampling strategy (Vehovar et al., 2016). The non-probability choice of sampling is appropriate as researchers cannot define the population from both qualitative and quantitative characteristics effectively and reach such population for data collection (Schreuder et al., 2001). The purposive sampling is effective here as the researcher has attempted to collect the data from qualified managers because such respondents either handle Ambidextrous Innovation, project management, or both (Etikan et al., 2016). The present research has employed the g*power software to draw the sample size(Kang,

2021), which stands out at 290. Ther current research floated a questionnaire to 500 respondents into various SMEs firm using project management in different industries. The 373 respondents returned the questionnaire filled with their response. While further inspecting, 316 responses were filled fully with due diligence. So, the number of sample included in our data analysis stands at 316.

3.5. Data Analysis techniques:

The data analysis method used in this study was called Partial Least Square Structural Equation Modeling (PLS-SEM), and it was carried out with SmartPLS 3.40 (Hair et al., 2011). According to Hair et al.'s research from 2020, PLS-SEM is widely acknowledged as the tool of choice for evaluating complicated conceptual and route models and determining the nature of cause-and-effect interactions. In the current study, a measurement model and a structural model were used. The measurement model used a variety of statistical analyses and tests to evaluate the relative validity and reliability of the data and data collection instruments (Sarstedt et al., 2020). The structural model used a bootstrapping procedure that involved the creation of 5,000 subsamples to test the study's hypotheses.

4. Data Analysis

4.1. Demographic Analysis:

The data on demographic have been presented in Table 2. The results suggest that most of our respondents have reported the male gender, i.e., 63%, and the respondent who has reported the female gender is 37%. Further, most respondents have reported having an age group of 26-35 years (34%) followed by 18-25 years (28%). Further, respondents aged 26-45 years have reported 22%, and respondents aged 45 and more are reported to be 16%. The data on the respondents' experience suggests that most respondents have experience of 4-7 years, i.e., 43%, followed by 0-3 years, i.e., 29%. Moreover, 16% of people have reported having experience of 8-10 years, and 12% have reported having an experience of 11 years and more. Finally, the results of the data have suggested that the majority of respondents belong to the Department of Marketing and Sales (28%), followed by the Product Developed (22%) and Information Technology (20%). The respondents reporting Human resource management are 8%, operation management 6%, and finance 4%. The data also

shows that most of the firms in our data belong to the construction industry (53%). Project management is a widely used tool to provide products and services in the construction industry. Construction is followed by the IT and technology services industry (35%). IT and technology companies such as IT services, software houses and others are increasingly using project management as a tool to achieve their productivity. Finally, we have grouped different industries using project management into one or more functions as others.

Table 2: Demographic Analysis

4.2. Construct Reliability and Validity

The present research, with the help of PLS-SEM, has assessed the construct reliability by employing the test of Cronbach alpha (Tavakol & Dennick, 2011) and composite reliability (Bacon et al., 1995) while construct validity is assessed through average variance extracted (AVE) (Dos Santos & Cirillo, 2023). The literature suggests that for the construct to achieve its reliability through both Cronbach alpha and Composite reliability, the value of both should be equal to or higher than 0.70 (Hair et al., 2011). Further, for the construct to achieve its validity through AVE, the value of AVE should equal or be higher than 0.50 (Hair et al., 2021). The results, which are shown in Table 3, conclude that every construct of the study has achieved its required threshold values on both construct reliability and validity.

Table 3: Construct Reliability and Validity

4.3. Discriminant Validity:

The discriminant validity refers to the ability of each construct in the research model to report its uniqueness and distinguish itself from other constructs (Rönkkö & Cho, 2022). The discriminant validity is assessed in SEM to confirm the assumption that every construct is unique and measures its own phenomena (Rönkkö & Cho, 2022). The present research, with the help of SmartPLS 4.0, has assessed the discriminant validity through the Heterotrait-Monotrait ratio of correlations (HTMT). The research by Henseler et al. (2015) concludes that an HTMT value of 0.90 or below is considered to be the satisfaction of the discriminant validity assumption. The results for discriminant validity through HTMT are shown in Table 4, and it can be observed that HTMT

values in the table are lower than 0.90. Thus, it can be concluded that the present research has achieved the discriminant validity criterion.

Table 4: Discriminant Validity

4.4. Indictor reliability:

While construct reliability measures the reliability of a construct in the research model, item or indicator reliability measures the internal consistency of each of the items with its constructs (Hair et al., 2011). The PLS-SEM, through the use of SmartPLS 4.0, has allowed us to measure the indicator reliability through the criterion of outer loading. The wider literature suggests that, for each indictor to be assumed as reliable, it must report a value of 0.70 or higher. But, literature also suggests that outer loading with values lesser than 0.70 can be considered as reliable if the construct of the item has achieved its reliability (Hulland, 1999). Thus, the present research based upon the assertion of (Hulland, 1999) has retained items with outer loading value lower than 0.70. The results of outer loading are shown in Appendix 1.

4.5. Explanation of variance:

The test of variance assessment has been conducted to determine the predictive power of the research model by understanding the extent to which the variance of each endogenous or independent variable contributes to the variance of exogenous variables or dependent variables. The variance assessment in the present research has been undertaken through the statistical criterion of R square (Hair et al., 2011). The results, as depicted in Table 5, show that both Innovative Organizational Culture and Organizational Learning, being endogenous variables in relation to Ambidextrous Innovation combined, contribute 44.4% variance. While agile knowledge management, agile project management, innovative capability, and growth mindset contribute a variance of 70% to innovative organizational culture and 69.4% to Organizational learning.

Table 5: Explanation of Variance

4.6. Model Fitness:

Model fitness refers to the idea of how well a research model fits with observed data. The model fitness helps us to determine whether or not the research model is able to adequately represent the relationships among the variables in the data (Hair et al., 2021). The PLS-SEM through SmartPLS 4.0 has allowed us to measure the model fitness with the help of Square Root Mean Residual (SRMR). The literature suggests that assuming the research model has achieved fitness, the SRMR value should be less than 0.10 (Hair et al., 2021). The results presented in table 6 show that the present research has achieved the model fitness through values of SRMR.

Table 6: Model Fitness

4.7. Graphical Model

Figure 2: Measurement Model

4.8. Structural Model:

The study used bootstrapping in PLS-SEM to assess hypothesis effects. Most direct hypotheses were supported with significant values below 0.05, except for the relationship between agile knowledge management and innovative organizational culture. Additionally, both moderating hypotheses, examining industry type's impact on relationships, were not supported. The detailed analysis of these hypotheses is outlined in Table 7.

Table 7: Assessment of Structural Model

5. Discussion

Organizations have difficulties in maintaining their competitive advantage through products, procedures, and services in the face of intense rivalry, rapid technological advancement, and environmental concerns (Xie et al., 2020). However, firms may balance these demands and improve their competitiveness by implementing ambidextrous innovation (Santoro et al., 2019). Although academics and managers struggle with its implementation, it has tremendous potential

for organizations since it requires harmonizing old and new concepts to create distinctive solutions for consumers (Hughes et al., 2010). In response to this demand, ongoing research attempts to offer a framework that helps businesses achieve ambidextrous innovation.

5.1. Organizational learning:

Organizational learning is an important source of building ambidextrous innovation capability. The ambidextrous innovation would require to use quality stock of knowledge which can be acquired through active engagement in learning activities at organizational level (Harmancioglu et al., 2020). The current study has hypothesized that innovative capability (Hanson et al., 2016), agile knowledge management (Morawiec et al., 2022), agile project management (Flumerfelt et al., 2012) and growth mindset (Hanson et al., 2016) can play an instrumental role in developing learning capabilities at the organizational level.

The result of PLS-SEM analysis has confirmed all such hypotheses. The results suggest that agile knowledge management has both a positive and direct effect on organizational learning ($p=0.000$, $\beta=0.331$) and an indirect effect on ambidextrous innovation through learning ($p=0.015$). Thus, it can be concluded that organizational learning is directly affected by knowledge management by 33.1% ($\beta=0.331$), which in turn results in ambidextrous innovation. The idea of agile knowledge management can help organizations build their organizational capacity for learning by focusing on the acquisition of knowledge, which helps them to navigate into an environment of uncertainty (Morawiec et al., 2022). Thus, this kind of knowledge will help the organization to build the optimum level of ambidextrous innovation (Li et al., 2022). The results on agile project management have also confirmed the direct effect on organizational learning ($p=0.003$, $\beta=0.174$) and the indirect effect on ambidextrous innovation through learning ($p=0.038$). So, it is concluded that, organizational learning is directly affected by agile project management by 17.4% ($\beta=0.174$), which in turn results in ambidextrous innovation. Further, project management, most importantly along the lines of agility, is becoming a favored management structure due to its efficiency and effectiveness. Agile project management can also help the firm build a level of learning capabilities through the experience of managing projects in uncertainty (Flumerfelt et al., 2012). Such experience can be converted into a stock of knowledge which can be helpful in the building of ambidextrous innovation (Wang & Rafiq, 2014).

Finally, our data analysis through PLS-SEM has also shown that a growth mindset directly affects organizational learning ($p=0.000$, $\beta=0.478$) and indirectly affects ambidextrous innovation ($p=0.011$). Therefore, it is concluded that the growth mindset affects organizational learning by 47.8% ($\beta=0.478$). The growth mindset entails that organization continues its growth trajectory by learning, experiencing, and experimenting with the capabilities required for optimal performance. Thus, learning is one of the key direct effects of a growth mindset (Hanson et al., 2016). Lastly, the present research has also found that innovative capability also has a direct effect on organizational learning ($p=0.000$, $\beta=0.239$) and an indirect effect on ambidextrous innovation ($p=0.034$). So, it can be concluded that innovative capability has adequate 23.9% effect on the organizational learning ($\beta=0.239$). The innovative as dynamic capability can continue to be replenished by actively experimenting with new ideas. Such experiments with new ideas develop the organizational capability of learning and provide a very significant source of developing ambidextrous innovation (Çakar & Ertürk, 2010).

5.2. Innovative organizational culture:

The present research has proposed that innovative organizational culture is also an important predictor of ambidextrous innovation capability. The continuing balance between explorative and exploitative ideas requires favorable culture. The present research theorizes that innovative capability, agile knowledge management (Pérez-Bustamante, 1999), agile project management (Highsmith, 2009), and growth mindset (Canning et al., 2016) are important antecedents of innovative organizational culture.

The result data analysis has confirmed that agile project management ($p=0.000$, $\beta=0.291$), growth mindset ($p=0.000$, $\beta=0.324$), and innovative capability ($p=0.000$, $\beta=0.309$) have a direct effect on the innovative organizational culture. The results concluded that agile project management affect the innovative organizational culture by 29.1% ($\beta=0.291$), and it could be an important source of developing an innovative organizational culture. The agile project management idea entails that project teams need to be highly agile by operating in a very volatile and uncertain environment (Highsmith, 2009). Thus, once the project team starts working on the agile philosophy, the development of innovative culture in organization in which teams are empowered to explore and work on new ideas can be the important consequence. Further, agile project management through innovative culture can also lead to ambidextrous innovation ($p=0.000$).

Further, results also entail that innovative capability is a strong predictor of innovative organizational culture by 30.9% ($\beta=0.309$). The strong innovative capabilities exhibit a culture of adaptability and evolution in the market. Such kind of behavior as part of innovative capability ignites the passion for generating and experimenting with new ideas. Further, innovative capabilities with a strong culture can push members of teams to actively seek different ways through which exploitative and explorative ideas are balanced. Thus, an indirect effect of innovative capability on ambidextrous innovation can also be found here ($p=0.00$).

Finally, our data analysis through PLS-SEM has also shown that a growth mindset has a strong direct effect on innovative organizational culture by 32.4% ($\beta=0.324$) and an indirect effect on ambidextrous innovation ($p=0.000$). When teams and individuals within an organization accept a growth mindset as a way to lead through a hyper-competitive world, they start to believe that teams' abilities and intelligence can be developed through learning and development. Such attitude at the organizational level fosters a culture of new ideas and innovation (Canning et al., 2016)

5.3. Ambidextrous innovation:

The present research has further hypothesized that innovative organizational culture (Khan & Mir, 2019) and organizational learning (Prieto-Pastor & Martin-Perez, 2015) directly affect ambidextrous innovation ($p=0.007$). The results further conclude that organizational learning affects ambidextrous innovation by 16.7% ($\beta=0.167$). The research finds that for organizations to balance new radical ideas and those improving existing ones, they need substantial knowledge. This knowledge helps project teams explore new concepts and crucially, integrate them into enhancing current product and service lines. Further, the present research also concludes that the innovative culture of an organization that focuses on innovation also plays an important part in balancing explorative and exploitative ideas ($p=0.000$). The results of PLS-SEM analysis have confirmed that organization with innovative cultures can enhance their ambidextrous innovation by 55.4% ($\beta=0.554$). The explorative and exploitative ideas can not be developed in an environment defined by a traditional management structure. These ideas need a culture in which new ideas are not just appreciated, but teams are empowered to experiment with those ideas. Thus, it is concluded that innovative organizational culture can be an important source for developing ambidextrous innovation capability.

5.4. Moderation effect of Industry type.

The present research proposed that, there is a moderating effect of industry types on innovative organizational culture, organizational learning, and ambidextrous innovation. It implied that different consequences would be seen in sectors like software and technology, which are renowned for their agile and project-based organizational structures. In the meanwhile, thanks to economies of scale, project-based yet resource-constrained businesses like construction may prosper. However, our analysis did not support the theorization of moderation analysis of industry types as both hypothesis of moderation analysis of ambidextrous innovation with organizational learning ($p=0.379$) innovative organizational culture ($p=0.473$).

6. Conclusion:

In an increasingly hyper-competitive and technologically sophisticated industrial macro-environment, present research concludes that firms need to develop capabilities in which not just new ideas for products and services are being increasingly focused, but existing products and services are also improved through fresh insights and ideas. The ambidextrous innovation research has taken an interest in the scholarly community. The present research first theorized and tested the significant impact of both organizational learning and the innovative culture of the organization. It is concluded here that idea both for new and existing product and services requires a significant quantity and quality of knowledge, and such knowledge can be acquired and used through the active process of learning at organizational level. Further, the present research also concludes that it is also indeed important to have a stock of knowledge that is significant from qualitative and quantitative dimensions. Still, a culture of innovation will play a complimentary role in which knowledge is applied, experimented, and tested for new and existing products and services. Therefore, innovative organizational culture, along with organizational learning, can play an important role in enhancing the firm's ability to ambidextrous innovation. Further, this study also has broadened the conceptual building of ambidextrous innovation by incorporating factors that can have indirect effects. The research concludes that various factors can play an important indirect role in yielding ambidextrous innovation through organizational learning and culture. These can include agile project management, agile knowledge management, a growth mindset, and innovative capabilities.

6.1. Theoretical implications

The current research offers implications for the theory of ambidextrous innovation and dynamic capability. First, the present research has concluded an important role that ambidextrous innovation can play in today's era of competition and technological sophistication. Thus, it is imperative for firms that navigating into such an environment would require them to try out new ideas for products and services and seek a way to improve existing ones. Secondly, by building upon the dynamic capabilities, our study has concluded that both learning and culture are important sources of ambidextrous innovation. Third, important capabilities such as agility in project and knowledge management, general innovative capability, and growth mindset can also have a significant impact on developing a firm's capability of ambidextrous innovation. Thus, present research has attempted to advance the field and theory by deepening our understanding of the role of ambidextrous innovation and dynamic capabilities. The present research further highlights the important role of organizational learning and culture that postulates that organizational ambidexterity as a dynamic capability can be continuously enhanced through learning and experimenting with explorative and exploitive ideas. The ideas for both exploration and exploitation are a direct result of active learning that takes place within the organization with an additional role absorptive capacity plays. Further, present research postulates the additional capabilities of organizations, such as agility and growth mindset. It enriches the theoretical landscape by providing a more comprehensive framework for analyzing how firms can achieve ambidextrous innovation in today's competitive and complex business environment.

6.2. Managerial implications

The present research offers numerous implications for managers. First, for developing ambidextrous innovation, present study provides managers the opportunity to keep the focus on developing organizational learning capabilities through actively seeking knowledge on the philosophy of agility. Second, current research offers project managers to become more agile in their nature to achieve ambidextrous innovation. Third, the study offers managers to focus on a growth mindset and unleash their innovative capability to develop knowledge that will help them achieve ambidexterity. Finally, the present study offers managers to focus on a culture that fosters innovation. The culture that fosters innovation should empower employees in seeking and experimenting with ideas for new and existing products and services. From this study, managers may gain practical insights to strengthen the ambidextrous innovation initiatives inside their firms.

The study emphasizes how crucial it is to actively encourage organizational learning, cultivate an innovative culture, and embrace agility in project management. The need to encourage a growth mentality among teams is also emphasized. This will allow managers to lead their organizations toward striking a dynamic balance between exploration and exploitation, which will promote long-term success and flexibility in a market that is changing quickly.

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Tables

Table 1: Data Collection Instrument

S.No	Variables	No. of Items	Source
	Agile project-based management	7	Sheffield & Lemétayer, 2013
	Growth mindset	4	Mesler et al., 2021
	Agile knowledge management	5	Singh et al., 2023
	Innovative capabilities	9	Guan & Ma, 2003
	Organizational Learning	6	López et al., 2006
	Innovative organizational culture	8	Wallach, 1983
	Ambidextrous Innovation	8	He & Wong, 2004; Jansen et al., 2006

Table 2: Demographic Analysis

Gender		
1	Male	63%
2	Female	37%
Age		
1	18-25	34%
2	26-35	28%
3	36-45	22%
4	45 and more	16%
Experience		
1	0-3 Years	43%
2	4-7 years	29%
3	8-10 Years	16%
4	11 and More	12%
Department		
1	Marketing and sales	28%
2	Human Resources Management	8%
3	Product Development	22%
4	Information Technology	20%
5	Operation Management	6%
6	Finance	4%

Table 3: Construct Reliability and Validity

Constructs	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Agile Knowledge Management	0.892	0.920	0.699
Agile Project	0.929	0.945	0.742
Ambidextrous Innovation	0.927	0.940	0.663
Growth Mindset	0.951	0.964	0.871
Innovative Capability	0.910	0.921	0.566
Innovative Organizational Culture	0.937	0.951	0.713
Organizational Learning	0.922	0.945	0.811

Table 4: Discriminant Validity

	AKM	AP	AI	GM	IT	IC	IOC
Agile Knowledge Management							
Agile Project	0.598						
Ambidextrous Innovation	0.663	0.628					
Growth Mindset	0.742	0.511	0.561				
Industry Type	0.100	0.070	0.080	0.144			
Innovative Capability	0.670	0.795	0.815	0.612	0.264		
Innovative Organizational Culture	0.687	0.753	0.652	0.739	0.289	0.765	
Organizational Learning	0.779	0.435	0.557	0.828	0.101	0.605	0.753

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Table 5: Explanation of Variance

	R-square	R-square adjusted
Ambidextrous Innovation	0.444	0.435
Innovative Organizational Culture	0.700	0.696
Organizational Learning	0.694	0.690

The Learning Organization

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Table 6: Model Fitness

	Saturated model	Estimated model
SRMR	0.913	0.985

The Learning Organization

Table 7: Assessment of Structural Model

Hypothesis	Original sample	T statistics	P values	Decision
Agile Knowledge Management -> Innovative Organizational Culture	0.058	1.169	0.243	Rejected
Agile Knowledge Management -> Organizational Learning	0.331	5.724	0.000	Accepted
Agile Project -> Innovative Organizational Culture	0.291	4.772	0.000	Accepted
Agile Project -> Organizational Learning	0.174	2.926	0.003	Accepted
Growth Mindset -> Innovative Organizational Culture	0.324	5.778	0.000	Accepted
Growth Mindset -> Organizational Learning	0.478	8.823	0.000	Accepted
Industry Type -> Ambidextrous Innovation	0.234	5.660	0.000	Accepted
Innovative Capability -> Innovative Organizational Culture	0.309	4.962	0.000	Accepted
Innovative Capability -> Organizational Learning	0.239	3.659	0.000	Accepted
Innovative Organizational Culture -> Ambidextrous Innovation	0.554	9.525	0.000	Accepted
Organizational Learning -> Ambidextrous Innovation	0.167	2.688	0.007	Accepted
Moderation Analysis				
Industry Type x Organizational Learning -> Ambidextrous Innovation	-0.052	0.717	0.473	Rejected
Industry Type x Innovative Organizational Culture -> Ambidextrous Innovation	0.064	0.880	0.379	Rejected
Specific Indirect Effect				
Innovative Capability -> Organizational Learning -> Ambidextrous Innovation	0.040	2.122	0.034	Accepted
Innovative Capability -> Innovative Organizational Culture -> Ambidextrous Innovation	0.171	4.316	0.000	Accepted
Agile Project -> Organizational Learning -> Ambidextrous Innovation	-0.029	2.072	0.038	Accepted
Agile Project -> Innovative Organizational Culture -> Ambidextrous Innovation	0.161	4.127	0.000	Accepted
Growth Mindset -> Organizational Learning -> Ambidextrous Innovation	0.080	2.550	0.011	Accepted
Growth Mindset -> Innovative Organizational Culture -> Ambidextrous Innovation	0.179	5.384	0.000	Accepted
Agile Knowledge Management -> Organizational Learning -> Ambidextrous Innovation	0.055	2.429	0.015	Accepted
Agile Knowledge Management -> Innovative Organizational Culture -> Ambidextrous Innovation	0.032	1.135	0.256	Rejected

Figures

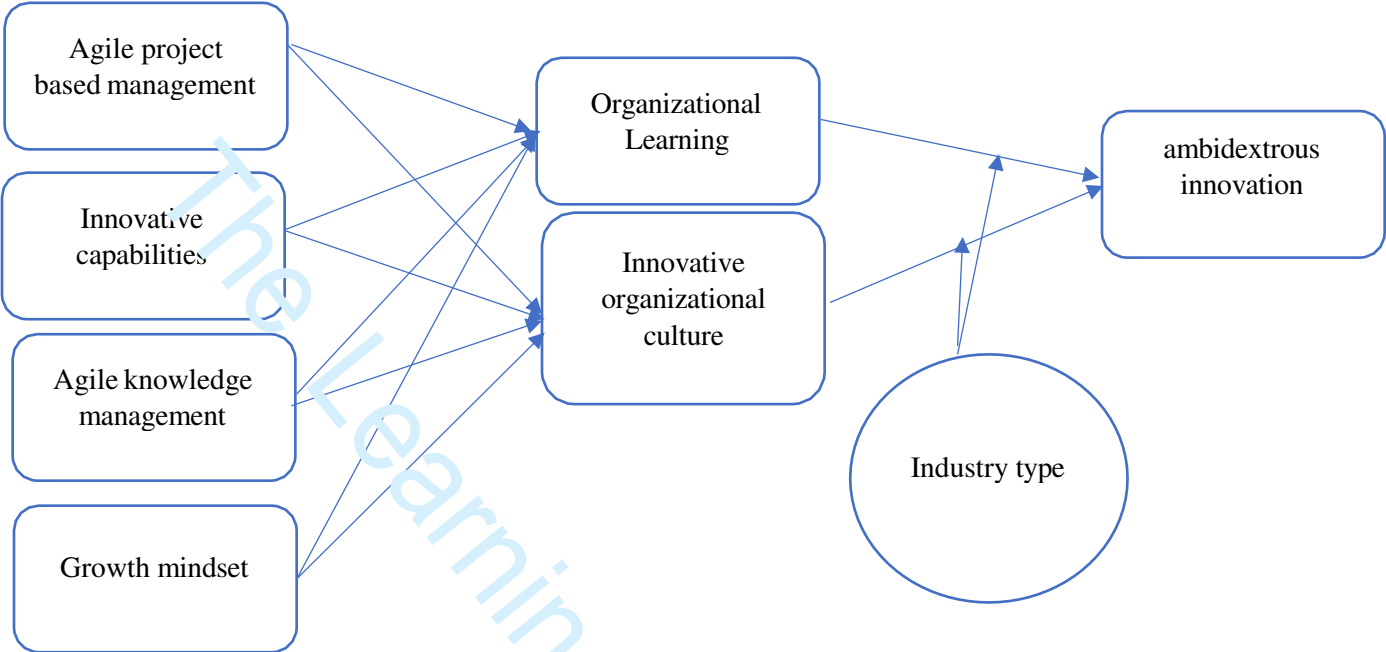


Figure 1: Conceptual Framework

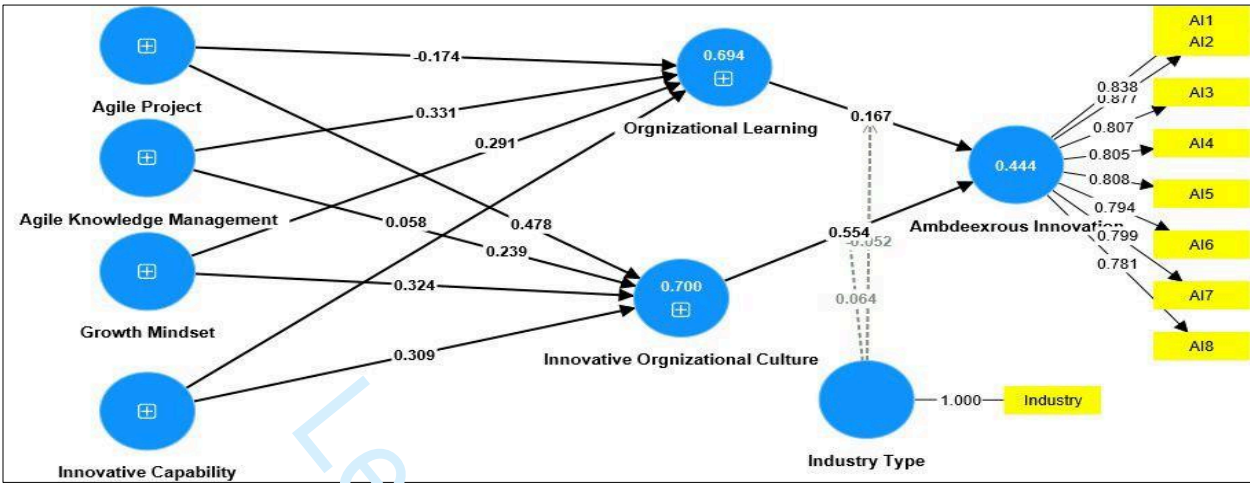


Figure 2: Measurement Model

Appendix 1: Data Collection Instrument

SD=Strongly Disagree D=Disagree N=Neutral A=Agree SA=Strongly Agree

Agile Project Management	SA
Do you agree that, top management actively supports the agility into the project from planning to completion phase?	0.754
The project organization actively supports the entrepreneurial spirit of project teams.	0.896
For better result of the project, organization encourage project team to take risk	0.860
In situation of organizational instability, project team is given full control and responsible of project's works.	0.864
In situations where technology have created various uncertainties, project team is independent in finding solutions which best fit in solving uncertainty.	0.875
The project team is always in the close collaboration with customers to learn about their requirements and needs.	0.908
Agile knowledge Management	
The Knowledge Management environment in our organization is highly flexible.	0.883
The organization is very active in disseminating and sharing the Knowledge with project team.	0.867
The project team and organization always focused upon Training and Mentoring to develop new set of skills and knowledge within organization	0.896
The project team and organization actively focused upon Knowledge Management Technology for the purpose creation and dissemination of knowledge.	0.808
The project team and organization actively focused upon Knowledge Acquisition from different and various sources.	0.713
Growth mindset	
The intelligence of people within organization is something that we can change very much.	0.928
There is no anything which we are not capable of learning.	0.938
The challenging oneself can make them very smarter.	0.946
People can still learn anything into which they are not naturally smart.	0.921
Organizational Learning	
Information technology is used to improve the flow of information and to encourage communication between individuals within the company	0.852
The company has databases to stock its experience and knowledge so as to be able to use them later on.	0.927
There is access to the organization's databases and documents through some kind of network (Lotus Notes, Intranet, etc.)	0.905
Current organizational practice encourages employees to solve problems together before discussing them with a manager.	0.916
Innovative Organizational Culture	
My organization culture is challenging.	0.910
My organization culture is creative.	0.912
My organization culture is enterprising.	0.925
My organization culture is stimulating.	0.912
My organization culture is driving.	0.919
My organization culture is risk taking.	0.907
My organization culture is result-oriented.	0.592
My organization culture is pressurized	0.585
Ambidextrous Innovation	

Our firm introduces generation of products or services	0.838
Our firm opens up totally new markets of new products or service	0.877
Our firm enters new technology field	0.807
Our firm put heavy R&D investments on product process	0.805
Our firm improves existing product or service quality	0.808
Our firm extends the functions of existing products or services	0.794
Our firm lowers cost of existing products or services	0.799
Our firm improves existing production or reduces material consumption	0.781
Innovative Capability	
Adjusting organization structure flexibly according to new innovation projects.	0.795
Centralizing resources on innovation activity quickly.	0.822
Overlap between R&D, marketing and manufacturing functions.	0.849
Coordinating multi-product development functions.	0.644
Encouragement/punishing system.	0.683
Autonomy of low managers.	0.741
Adapting and responding to exterior environment.	0.745
Information flow and interconnection between different function department.	0.703
Communication with dominant customers and suppliers	0.766



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The role of organizational learning and innovative organizational culture for ambidextrous innovation

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