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Dynamic Capabilities To Absorb Knowledge In Promoting Innovative Performance And Organizational Resilience: The Moderating Role Of Organizational Culture

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ABSTRACT

Purpose: *This study used the Knowledge Based View (KBV) theory to examine the effect of Knowledge Absorptive Capacity (KAC) and Knowledge-based Dynamic Capability (KBDC) on Organizational Resilience (OR) and Organizational Innovative Performance (OIP). The moderating role of Organizational Culture is checked. Moreover, [1]the mediating effect of Organizational Resilience between KAC, KBDC and Innovative Performance is also checked.*
Design/Methodology/Approach: *The population selected and targeted for the research is based upon service and manufacturing industries of Pakistan and analyzed using the structural equation modelling (SEM) technique using SMART PLS.*
Findings/Results: *The findings suggest that an organization can create resilience through the capability of adopting new technology, clear objective, preservation, having diverse solutions and taking rapid action on these solutions. This all can only be achieved if the organization can absorb advanced knowledge of their domain.*
Research Limitations/Implications: *Practically this study indicates that resource and knowledge based dynamic capabilities are grounded in the true expertise of individuals, teams and organizations who can work when proper structures are built, and physical and social resources are distributed evenly. Generalization can be achieved if data from other regional countries is gathered which share common region and similar environment with almost same international competitors.*

Originality/Value: *This study suggests that knowledge absorptive capacity impacts directly on resilience of the organization and makes it more flexible towards innovation. Results show that Organizational Culture strengthens the association between Knowledge Absorptive Capacity and Organizational Resilience.*

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Conclusion: *Researchers conclude that to reap the benefits of new trends of competing organizations, organizational executives should highlight the whole process of acquisition & dissemination of knowledge among all levels of workers and must ensure that knowledge and value is being extracted in its true essence.*

Keywords: *KBV theory, Knowledge Absorptive Capacity (KAC), Knowledge-based Dynamic Capability (KBDC, Organizational Resilience (OR), Organizational Innovative Performance (OIP).*

Introduction

Recent decade has significantly shown the effect of organizational strategies on all societies and different economies of the world (Abbas & Kumari, 2023); (Abbas et al., 2021a). These strategies negatively affect quality of products and services cosseting top management to compromise on statutory requirements and regulatory environment but the competitive pressure has transformed organizational strategies to betterment (Demir et al., 2023; Neyestani & Juanzon, 2017; Neyestani & Juanzon, 2016).

In order to achieve customer satisfaction through quality products and services, improved processes and regulatory requirements, United Nations has called all its member countries to work on SDGs.(UNGC, 2018). Keeping this in view, various firms are adopting different techniques including quality management principles to increase customer satisfaction and to meet overall statutory requirements (Abbas et al., 2021b); (Abbas et al., 2021b); (Fu et al., 2022). ISO 9001 has been significantly applied by more than one million manufacturing and service industries in over 170 countries, regardless of their sizes and fields of activity. ISO 9001: 2015, which has been recently revised in 2001 serves mainly four SDGs, 1 (No Poverty), 9 (Industry Innovation & Infrastructure), 12 (Responsible production & Consumption) and 14 (Life below Water)(ISO:9OO1:2015). In light of these SDGs, companies are bound to strategize their knowledge absorptive capacity in order to align and sustain their dynamic capabilities with their culture to gain customers' trust and loyalty through resilience and innovative performance (Cheng et al., 2023); (Fu et al., 2022); (Sun, 2022).

With the theory of absorptive capability by (Cohen & Levinthal, 1990), Knowledge Absorptive Capability (KAC) of organizations comes up with the contextual lens of innovation and acquisition of inventive and borrowed knowledge. This borrowed knowledge from other competitors and technological giants can impact on innovative performance of the certain industry. (Khraishi et al., 2023); (Q. Fan et al., 2023). KAC is the name of acquiring and absorbing the relevant outside knowledge and assimilating it with inside already exiting knowledge and information in order to transform new knowledge. This acquired knowledge is further used to achieve competitive edge and organization resilience (Lyu et al., 2022); (Q. Fan et al., 2023).

Dynamic capabilities (DC), being another trajectory of organization, lead towards innovative steps and cause resilience by affecting organizational culture. These are commonly known as organization's ability to quickly identify the external opportunities and integrate them with its internal and external resources(Sun, 2022); (Song et al., 2020). DC can be categorized into resource-based and knowledge-based capabilities which comprise of product development, decision making in processes, knowledge absorption & transfer and finally its acclimatization through collaboration with other stakeholder (Sun, 2022). Organizations embed their vision, mission and strategic plans using through these capabilities (Al-Ghazali & Afsar, 2021).

Latest researches on DC have directed towards vaster and interwoven links of DC with other research areas like study by (Sun, 2022) attached DC with online platform for literature readings. (Wu et al., 2023) argue that competitive edge can be achieved when organizations use their dynamic capabilities, absorb them effectively and link them with latest technology. Research have proved that DC and KAC are established through knowledge recognition, based upon organization's existing relevant capacity like its common set of languages and skill sets. Organizations build their absorptive capacity by valuing the prevailing knowledge, through embracing it and its final usage in its innovative performance and gaining resilience. (Sánchez-García et al., 2023); (Pai & Hung-Fan, 2013); (Daghfous, 2004); (Cohen & Levinthal, 1990). (Sun, 2022) depict that DC plays a mediating role between KAC and innovation performance of the organization.

Organizational innovation Performance (OIP) includes its ability of improvement in products, processes and strategic plans through line and staff management (Murrieta-Oquendo & De la Vega, 2022). (Orfila-Sintes & Mattsson, 2009) and (Tsai & Tsai, 2010) argue that it specifically focuses on financial, market and cost aspects of the organization for value chain additions. In order to exchange their internal unused resources with external techniques and processes, organizations tend to use their absorptive capacity and transform dynamically (Rehman et al., 2023). It is all about how well organizations adopt new technologies and advancements while producing new products or improving their quality through innovation in relation to their competitors. Literature supports that OIP can be achieved when organizations tend to work dynamically and opt new knowledge by adding new products, cutting the costs, introducing optimized products & services and ultimately accumulating the market share (Roberts & Grover, 2012).

Organizational Resilience (OR) is referred to organization's ability to resist against unanticipated, cataclysmic events and leading it beyond planned set of activities without severe losses (He et al., 2023). OR also covers organization's response towards different risks such as disputes in economics and industry, natural disasters, pandemics or quality and innovation down curves (Nauck et al., 2021). (Kaplan & Mikes, 2012) state that OR is extremely important in production and service industries where usually organizations are indulged in rapid change and adoption of new technology. Recent research by (He et al., 2023) showed that OR can be achieved through limited investment and control over different operations such as internal linkages among staff and management through investment in information technology. (Dahles & Susilowati, 2015) discussed three perspectives of OR. The first one is Reactive perspective which works on crises management and shows firm's ability to return to the preceding state in response to adversative situations. Second is Adaptive response which works on absorption, adoption, survival and recovery in the times of crises through business rescue and restore damage in infrastructure or market share. Third is transformative perspective which leads towards dynamic capability to meet with surprises and unforeseen situations through deliberate effort (Wildavsky).

Based on the above-mentioned variables, this study aims at finding the effect of Knowledge Absorptive Capacity and Knowledge-based Dynamic Capability on Organizational Resilience and Organizational Innovation Performance. The moderating role of Organizational Culture is also checked. Despite many studies on process-based DC and KAC, this study aims at focusing on impact of knowledge-based DC along with absorptive capacity of the organization in service and manufacturing industries of Pakistan. Further impact of study shows control over contextual perspectives such as gender, employee designation (Non-managers or Managers) and industry type (service or manufacturing). This technique helped researchers in maintaining

internal validity through limiting the different unmeasured variables' impact. Eight essential hypotheses were generated through this study and are discussed in the later part of the article. The findings would educate the managers of the service and manufacturing industry as well as its stakeholders on how they can achieve quality standards through better organizational culture. Moreover, it would highlight the need for strategies for innovative performance together with resilience by inculcating the new trends of knowledge absorption and making the organization dynamically capable. It will also serve as a valuable source for the customers of these organizations to better understand the way organizations are working these days and will help them understand the importance of careful use of resources.

2. Theoretical and Literature foundation:

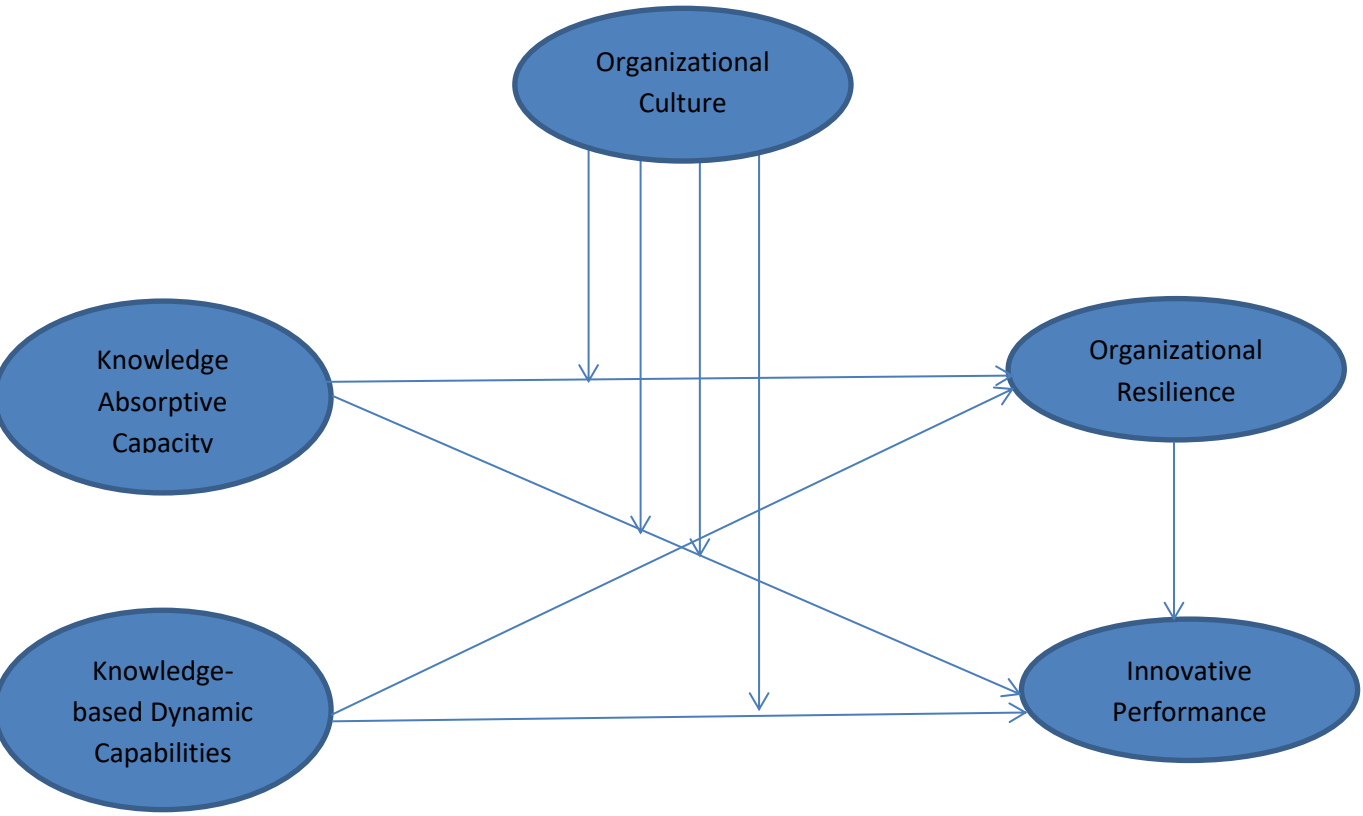
2.1 The knowledge-based theory:

Extracted from the Resource-based theory of the firm (RBV) by (Penrose, 1959; Penrose, 2009; Volpe & Biferali, 2008)**,** further streams were introduced including the concept of capability analysis of the firm by (J. Barney, 1991; Barney, 1996; Prahalad & Hamel, 2003). In later years, further concepts of knowledge-based organization by (Brown & Duguid, 1991), knowledge-based analysis by (Demsetz, 1988), knowledge-processing institution by (Kogut & Zander, 1992) and analysis of knowledge-creation within the firm by (Nonaka, 1994) were introduced.

Knowledge-based theory, also known as knowledge-based view (KBV) is used to highlight the importance of knowledge in more complex and dynamic environments of the firms (Nickerson & Zenger, 2004). This theory focuses on the efficient ways of generating alternative forms of knowledge and capability based upon contemporary resources. To generate efficiency, (Nickerson & Zenger, 2004) advocated that organizations should have sufficient knowledge to treat boundary choice and alternative choice effectively. Boundary choice includes internal and external environments of the organization whereas alternative includes substitute internal slants for organizing firm's culture through resilience and innovation. However alternative knowledge-based approach should have sufficient capability to meet the required benefits and costs (Grant, 1996).

This theory has been applied to the proposed theoretical framework based upon the implications of the organization's capability to dynamically design and determine the vertical and horizontal limitations of the firm. Dynamic organizations can absorb and implement knowledge in their culture which fosters innovative performance in decision-making and hierarchical analysis, and organizations are in a better position to create required resilience. This knowledge-based approach brings better innovative steps which are required to meet not only best organizational practices but to meet customer demands as well keeping regulatory and statutory provisions in view (Sveiby, 2001).

Figure1. Research Framework



2.2 Organizational Resilience and Innovative Performance:

(Holling, 1973) introduced this concept depicting the absorptive capacity of an organization through its ecology system for uncertain changes and rebounding. 'Resilience' means a broad capability of an organizational system to handle outside disparities and disorders which affects its internal model and mechanism (Mousa et al., 2020). In organizational literature, it reflects the initiatives taken by an organization for professional trainings, process advancements and development in order to manage crisis or unanticipated conditions (Mousa et al., 2018). Organizational resilience was introduced in two phases by (Coutu, 2002; Crichton et al., 2009; Worline et al., 2004) where one group considered it as organization's ability to face the challenges and threats whereas other group defined it as a throwback mechanism which has ultimate capacity to absorb and modify required external knowledge in order to meet its contemporary regulatory and legal requirements as depicted by ISO 9001.

Innovative performance (IP) is viewed as a process integrated by an organization to achieve excellence in its processes and production by minimizing costs, change in style or through creating new ideas (Sánchez-García et al., 2023). IP includes innovation in product, process, marketing and management and the same dimensions have been covered in the scale for its measurement. Organizations can outsource and seek external knowledge in order to avoid any loss in innovation process (Arranz et al., 2020). It is important where organizations are not fully aware of external technological advancements or it has weak organizational culture which lacks

in adoption of dynamic capabilities or has no resilient capacity against outside pressures (Valdez-Juárez & Castillo-Vergara, 2021). Many studies have highlighted the importance of organization's learning capacity and have associated it with its innovative performance (Eiriz et al., 2017).

In light of previous research, this research tries to find the impact of organization's absorptive and dynamic capabilities on its capacity of resilience and innovation performance.

2.3 Knowledge Absorptive Capability, Organizational Resilience and Innovative Performance:

KAC is considered as an ability of an organization to absorb and transform outside knowledge and integrate it with existing in-house knowledge (Si-Meng et al., 2021). According to the literature, this variable covers Acquisition, Assistance, Transformation and Exploitation of knowledge and the same scale has been used to measure this variable (W. Fan et al., 2023; Pai & Hung-Fan, 2013). Organizations' capability to learn and absorb knowledge affects the ability of knowledge integration and acquisition (Wingwon, 2012). According to (Cohen & Levinthal, 1990), acquired knowledge covers contemporary common languages and required basic skills necessary for knowledge valuation, integration and its final usage in organizational innovative performance. These skills show the 'Absorptive Capacity' of the organization. On the other hand, if the firm is good at its absorptive capability, it would be able to acquire the external knowledge and would quickly assist and modify its strategies (Pai & Hung-Fan, 2013). Knowledge absorption through transformation includes the ability of an organization to fuse the existing and new knowledge to integrate in innovative performance (Zahra & George, 2002). Finally knowledge absorption through exploitation covers the strategic and systematic flow of the acquired knowledge in to the firm in order to expand its competitive capability through innovation, extension and modification (Q. Fan et al., 2023).

KAC of the firm depicts its position to recognize the value of new knowledge which it can successfully assimilate and apply to the commercial zeniths (Abourokbah et al., 2023). Innovative performance of an organization largely depends upon its ability how it collects, analyzes, combines and responds to the knowledge gathered from different sources (Zhou & Wu, 2010). High absorptive capable firms tend to acquire more knowledge from rivals, partners and stakeholders and collectively work for ultimate betterment of the society providing opportunities to the supplementary firms(Rehman et al., 2020). Market opportunities aggregating high profits along with customer expectations and environmental innovations are the fruits of these capabilities (Abourokbah et al., 2023).

Fore frontal daily routines and operations in organizations slow down their pace of learning and adoption of innovation and it ultimately compromises their innovation process which needs high attention apart from routine work (Vigren et al., 2022). Therefore, firms need to show some resilience and should limit the rapid absorption of new knowledge. It will slow down their hassle and new knowledge would get sufficient time to be engrossed in organizational culture. (Lim, 2021) posit that firm's absorptive capability defines its capacity to opt innovation and strengthens its processes.

In addition to the literature, as knowledge-based theory significantly explains the relationship among organization's absorptive capability, its resilience capacity and innovation in order to achieve competitive advantage(J. B. Barney, 1991), so based upon these it is proposed that:

H1. Organizational resilience is positively and significantly impacted by its absorptive knowledge capability.

H2. Organization's knowledge absorptive capability relates positively to its innovative performance.

2.4 Knowledge-based Dynamic Capabilities, Organizational Resilience and Innovative Performance:

KDC is defined as an ability of an organization to assimilate, shape and reallocate in-house and external resources to respond effectively to the changing vicinity (Pai & Hung-Fan, 2013; Sun, 2022). Competitive advantage can be achieved when an organization has a capacity to value new knowledge and further utilize it in order to analyze, create and sustain innovation_ this process is known as dynamic capability. Therefore, this paper assumes that when organization improves its dynamic capability along with its absorptive capacity, it brings rapid changes in its culture which fosters the innovation process and restructures the organization as a resilient firm.

Literature on organizational resilience has shown that less work has been done in quantitative studies whereas most of the work is attached with disintegration (Bhamra et al., 2011; Cooper et al., 2014; Oeij et al., 2017). On the other hand resilience was discussed as an opportunity to connect resources (capabilities) with outcomes (innovative performance) (Duchek, 2020; Williams et al., 2017). (Lengnick-Hall et al., 2011) considered resilience as a measure to grip the nerve-racking events and resist against hostile circumstances and adopt the required change through innovation whereas (Clément & Rivera, 2017) presented resilience as a business model against inner and outer astonishments and dynamic changes.

If we talk about individual level or organizational level dynamic capabilities in the firm, resilience still plays its part and plays proactively against technological and procedural advancements and bounces back unnecessary pressures and filters out substantial level of functioning. It goes same with the study mentioned by (Gittell et al., 2006) and (Clément & Rivera, 2017). Previous researches have shown that organizations have started opting resilience as a tool to develop their organizational culture which boosts the ultimate innovative performance (Mousa et al., 2018). Department at US for homeland security has realigned its strategic plan focusing on its dynamic capabilities provoking resilience for enhancing security and economic development (Kelly et al., 2008).

In the world of technology, IBM has introduced its own resilience mechanism which revolves around data fortification, staff acquaintance and market inclination, business flow management and combined risk management through its dynamic capability of knowledge absorption and implementation across the whole culture of the organization (Resilience, 2004).

The motive to use organizational resilience as a mediator between KBDC and IP strengthens more as the KBV theory supports this relationship as well depicting that firm's capabilities explain the relationship between its resources and performance (J. Barney, 1991; Q. Fan et al., 2023; Mousa et al., 2020).

Based upon the literature and KBV theory, it is proposed that:

H3. Knowledge-based dynamic capabilities of the organization bolster its innovative performance.

H4. Knowledge-based dynamic capabilities of the organization bolster its resilience.

H5. Organizational resilience strengthens organizational KBD capabilities to achieve innovative performance.

2.5 Moderating role of Organizational Culture:

Literature shows that Dynamic Capability is a cultured and established pattern of communal activities through which organization transforms and generates its operating schedules. These schedules are established in daily routines of the firms through their culture (Zollo & Winter, 2002). (Zollo & Winter, 2002) posit that DC comprises of ingredients such as capability of possession, deployment and upgrading and these ingredients cannot be achieved without proper resource allocation and learning.

(Eisenhardt & Martin, 2000) argued that certain processes in organizational culture are assimilated and systematically positioned in order to craft a competitive dynamic environment. In sum, it is the culture of an organization which decides how to shape and how much to shape by transforming its processes and be able to show up as a cultured dynamic organization which has an ultimate capability to be called as grown up organization. ISO standards not only monitor but also assure the compliance of physical and non-physical ethics, be it virtue or deontological. Hence it opens a new door of responsibilities to the organizations to work on its transcendent areas.

It is important to know the difference between two types of absorptive capacities to realize its effect on organizational resilience and innovative performance, realized (RAC) and potential absorptive capacities (PAC). Literature shows that both type of capacities are necessary for performance enhancements and create a cause for robust organizational culture (Zahra & George, 2002). Further literature creates a basis for our hypothesis by depicting that increased ratio between these two capacities means an organization is better able to use the knowledge acquired by it in achieving maximum growth and sustainable performance (Pai & Hung-Fan, 2013). The gap between two is only realized by weak inter-organizational communal cognizance based system. As organization increases its knowledge sharing and absorption capacity, it becomes dynamically strong and resilient which in return impacts positively on its internal (organizational culture) and external environment (customer relationship) (Pan et al., 2022; Qu & Liu, 2022; Qu et al., 2022).

(Johnson & Johnston, 2004; Xue et al., 2019) and (Teece et al., 1997) differentiated IP from KDC by stating that it focuses more on cost cutting and maximization of production through utilitarianism. Utilitarianism can be achieved by enhancing organizational ethics which reflects its ultimate effects in the production and process line. Hence, nowadays it is becoming a great concern to work on the ethical side of organizations and make a balanced, sensible diverse culture where employees can tolerate and cooperate with each other and play their fair role in organizational growth. ISO standards focus on value creation for all, be it employees or customers. Value can be achieved when organization keeps such a flexible culture which has ultimate potential to use and absorb dynamic competitive filtered knowledge that can ultimately be used for innovative performance and resilience remaining any ways sticks to its underlying core concepts. Hence based upon previous studies in different dimensions and arguments provided by the researchers, it is hypothesized that:

H6. Organizational Culture strengthens the association between Knowledge-based Dynamic Capabilities and Organizational Resilience.

H7. Organizational Culture strengthens the association between Knowledge-based Dynamic Capabilities and Innovative Performance.

H8. Organizational Culture strengthens the association between Knowledge Absorptive Capacity and Organizational Resilience.

H9. Organizational Culture strengthens the association between Knowledge Absorptive Capacity and Innovative Performance.

3. Research Method:

3.1. Sample and procedure

Population selected and targeted for the research was based upon service and manufacturing industries of Pakistan. These industries included confectionery, glass, pharmaceutical, automobiles, shoes, leather, tire, solar, textile and IT. The purpose of both types of industry inclusion was to get a more versatile response and generic data to check the overall implication of ISO standards in poverty reduction, responsible and directive production and consumption.

Table 1. Demographic Information.

Particulars	Description	Values	%
Gender	Male	315	53.8
	Female	248	42.1
	Prefer not to say	24	4.1
Age	20–29 years	192	33
	30–39 years	264	44.8
	40 or above	131	22.2
Education	Undergraduate	192	32.5
	Postgraduate	256	43.4
	Technical education	81	14.1
	Miscellaneous	58	9.9
Job Experience	0–3 Years	140	24
	4–6 Years	239	40.5
	7–9 Years	131	22.1
	More than 10 Years	77	13.3
Nature of Firm	Textile	103	17.5
	Furniture and Wood	41	6.9
	Surgical Instruments	42	7.1
	Pharmaceutical	69	11.7
	Food Industry	88	14.9
	Petro-Chemical Industry	27	4.5
	Auto and Spare Parts	66	11.2
	Construction and Cement	41	6.9
	Agriculture and Fertilizer	59	10.0
	IT Firms	51	8.6
Job Title	Non-Managerial	198	33.6
	1st Line Manager	278	47.5
	2nd Line Manager	69	11.9
	Top Manager	42	7

Moreover, general behavior and tendency of industries towards innovation and advanced infrastructure was displayed in life saving activities, on land and in water. Industries selected for data collection were chosen based upon their registration from (TDAP, 2023) and (FPCCI, 1950), Pakistan. Major cities of Pakistan were selected where most of these industries were located such as Lahore, Kasur, Faisalabad, Karachi, Muridke, Nooriabad, Raiwind and Gujranwala etc. Due to lack of access to all branches, non-probability convenience and snowball sampling techniques were opted. Duration of data collection comprises of April to June 2023. In total, 1216 respondents were contacted through different means such as emails, surveys, google forms, calls, personal visits and reference groups and 430 useable responses were collected for final studies after discarding incomplete or vague responses. Information regarding respondents has been provided in Table 1.

Sample size for the study was determined in the light of recommendations by (Barclay et al., 1995).They highlighted the importance of valid and reliable measure of constructs before test of structural and measurement model and recommended ten times more sample size than the number of independent variables in PLS path model's regression. In SEM approach, (Hair Jr et al., 2021) recommended the same criteria.

3.2. Measures and validation

A questionnaire was designed to collect the primary data from the companies under study. The instrument is comprised of three sections. The first section included the demographic information of the respondents.

The second section covered the items for independent variables of Knowledge-based Dynamic Capabilities (KDC) and Knowledge Absorptive Capacity (KAC). Both variables were measured through 14 items in each. KDC were measured through acquisition, generation and combination capability of knowledge as studied by (Zheng et al., 2011) and (Khaksar et al., 2023). KAC was measured by using the scale as used by (Zahra & George, 2002) and (Flatten et al., 2011) covering four dimensions of knowledge acquisition, exploitation, transformation and assimilation.

Third section included the moderating variable of Organizational Culture showing five functions of organization. The scale was developed by (Sashkin & Rosenbach, 1990) who argued these functions as crucial for significant sustainable life of an organization. It was measured with 17 items showing five dimensions of change management, goal achievement, teamwork coordination, strong culture build-up and customer orientation.

The fourth section included dependent variables of Innovative Performance (IP) and Organizational Resilience (OR). IP with 13 items and 7-point Likert scale was measured through the scale used by (Pai & Hung-Fan, 2013; Prajogo & Ahmed, 2006) and (Škerlavaj et al., 2010) covering four dimensions of product, process, marketing and management. OR was measured through 19 items using the scale developed by (Kantur & Say, 2015). This variable was measured through three dimensions of integrity, agility and robustness.

All variables were measured on a 7-point Likert scale as per the recommendations of (Finstad, 2010) to get optimal, precise and user-friendly answers.

4. Data Analysis and Results:

Smart PLS was used by researchers to investigate the hypothesized relationship among variables. Version 3.3.9 was used to run the Structured Equation Modeling for estimating multivariate causal direct or indirect associations. Common Method Bias (CMB) shows

random and systematic measurement errors when the data is collected from the same measurement tool and method and hence leads to counterfeit effects. It shows the degree to which association among constructs are altered and generally inflated due to common method effect. (Schwarz et al., 2017) depict it as a major concern when data is collected through questionnaires. CMB occurs when the collected data represents more than 50% variance (Podsakoff et al., 2003). Analysis showed that each factor presented the variance less than 50%, where the first factor came up with the total variance of 33.13%. The results went in compliance within the recommended benchmarks of (Podsakoff et al., 2003). Multiple Collinearity Assessment test was also run which showed all the VIF values which were less than the recommended 3.3 value as suggested by (Kock, 2015) and confirmed that CMB was avoided as a first validation process. The findings also went exactly as per suggestions of (Hair et al., 2014) and (Kamakura, 2010) and showed non-existence of MC where they declared the cut-off value must be less than 5.0.

Outer model was evaluated with the benchmark developed by (Hair et al., 2014). Critical value was demonstrated by applying Composite Reliability test and Cronbach's Alpha and showed the values higher than 0.70 thresholds. Standardized Factor Loading for each item represented the value of more than 0.70 whereas Average Variance Extracted (AVE) by each construct displayed values more than 0.50. Detailed results of reliability and validity are presented in Table 2.

Table 2

Results of reliability and validity			
Constructs	AVE	CR	Cronbach's alpha
OFs	0.512	0.949	0.918
EFs	0.502	0.947	0.941
GI	0.502	0.945	0.943
SD	0.511	0.964	0.913
KAC	0.566	0.953	0.964

Second-order formative construct judgments are presented in Table 3.

Table 3

Second-order formative construct				
Variable	Outer weights	t value	p-value	VIF
OFs	0.394	44.373	0.000	1.271
EFs	0.434	38.744	0.000	1.535
GI	0.258	35.757	0.000	2.137
SD	0.338	31.659	0.000	2.925
KAC	0.259	30.721	0.000	2.225

To further check the distinction among each construct in the model, Discriminant Validity Test was performed. Heteotriat-Monotrait (HTMT) approach along with the method recommended by (Fornell & Larcker, 1981) were also applied for the measurement of ratio of correlation among constructs where they argue that discriminant validity of constructs can be achieved

when AVE2 value of individual constructs is higher than the correlation values of these construct. The results are summarized and presented in Table 4.

Table 4

Discriminant validity (Fornell-Larcker criterion).					
Constructs	OFs	EFs	GI	SD	KAC
OFs	0.811				
EFs	0.453	0.881			
GI	0.463	0.623	0.838		
SD	0.355	0.394	0.282	0.819	
KAC	0.431	0.308	0.266	0.604	0.846

Table 5. is presented with the results of HTMT test which considers the maximum value of 0.85 for discriminant validity test as suggested by (Hair et al., 2014).

Table 5

Discriminant validity (HTMT).					
Constructs	OFs	EFs	GI	SD	KAC
OFs	0.811				
EFs	0.453	0.881			
GI	0.463	0.623	0.838		
SD	0.355	0.394	0.282	0.819	
KAC	0.431	0.308	0.266	0.604	0.846

In the next phase, Inner Model (also known as Structural Model) was analyzed by calculating the casual acquaintances among hypothesized associations (Hult et al., 2018). First, predictive accuracy of the model was analyzed through Coefficient of Determination (R2). Analysis showed that Organizational Resilience and Innovative Performance depicted R2 values of 0.331 & 0.285 respectively. Further the Stone-Geisser (Q2) technique was applied and showed the blindfolded procedural result of Organizational Resilience and Innovative Performance with having the values of 0.163 & 0.130 correspondingly. Eventually the model showed that endogenous constructs were having high predictive relevance(Hult et al., 2018). After this confirmation, 'Effect Size' of the results (F2) was computed by the researchers to quantify the effect of latent constructs on endogenous constructs. The F2 statistics showed the value for Organizational Dynamic Capability as 0.163, Organizational Absorptive Capacity as 0.130, Organizational Resilience as 0.233, Innovative Performance as 0.232 and Organizational Culture as ….. The Standardized Root Mean Square Residual (SRMR) was also applied to show the good fit and prominence of the model and went exactly with the threshold of the value as 0.08 as recommended by (Henseler et al., 2016) and portrayed the values of 0.041 and 0.044. Large model fit was also depicted through RMSEA= 0.0570 and $\chi 2$ /df = 1.895 whereas high quality of model was checked through GOF index = 0.921, Adjusted GOF index = 0.912 and NFI = 0.916.

Significance level of hypothesized model was checked through 5000 bootstrapping approach as proposed by(Hair et al., 2014). To check the significance level of beta coefficients (β), t-value was checked to be greater than 1.96 whereas p-value was checked if it was less than 0.05.

Analysis of fit structure showed that the relationship between Organizational Absorptive Capacity (IV) and Organizational Resilience (DV) was strong and significant showing β-value of 0.212, t-value of 3.921 and p-value of 0.004. Similarly, the relationship between Organizational Absorptive Capacity (IV) and Innovative Performance (DV) was shown with β= 0.254, t-value= 5.574, and p-value= 0.000.

On the other side, the relationship of Organizational Dynamic Capability (IV) with Organizational Resilience (DV) and Innovative Performance (DV) was also found to be statistically significant with β= 0.352, t-value = 6.723, p-value= 0.000; and β = 0.374, t value = 7.732, and p = 0.000, respectively.

Likewise, Organizational Resilience (DV) and Innovative Performance (DV) with the values of β = 0.286, t value = 3.749, and p = 0.007 can be seen as positively related to each other in Fig. 1.

Following the relationship of the variables in the model, researchers checked how Organizational Culture moderates the relationship between all principal variables. The examination of the role of OC between ODC and OR indicated the β value of 0.219 and p value as 0.019.

In the same way, OC showed the significant moderation between ODC and IP with β value of 0.179 and p value as 0.024. Finally, the moderation of OC between KAC to OR and KAC to IP showed 0.220 β value, 0.011 p-value and 0.109 β value with 0.069 p-values (Fig. 2; Table 6).

5. Conclusion: discussion, implications, and limitations

5.1. Discussing the results

Due to increasing competition and technological advancements, manufacturing and service industry has seen enormous growth to fulfill the overall requirements of the concerned population as well as maximized lucrativeness(W. Fan et al., 2023).

Discriminant validity (HTMT).							
Hypothesis	Constructs	Coefficient	Sample Mean	Standard Deviation	t-value ratio	p-value	Decision
OFs	EFs → GI	0.212	0.214	0.041	3.921	0.004	Accepted
EFs	EFs→ SD	0.254	0.259	0.061	5.574	0.000	Accepted
GI	OFs→ GI	0.352	0.356	0.049	6.723	0.000	Accepted
SD	OFs→ SD	0.374	0.377	0.072	7.732	0.000	Accepted
KAC	GI → SD	0.286	0.287	0.052	3.749	0.007	Accepted

However; organizations were seem to be less alert towards waste management, natural environment protection and knowledge sharing capacity (Tong et al., 2022). Conclusively national and international stakeholders like UN, ecologists and different NGOs raised their voices against these issues and asked for ecofriendly accomplishments in service and manufacturing industry (Abbas & Dogan, 2022). In recent years, different studies have shown the association between drastic or positive impacts of different companies' performance with specialized environments and indicated different curvilinear and straight relationship among

these (Presutti et al., 2019). (Molina-Morales & Martínez-Fernández, 2009) argued that where it is beneficial to work in collaboration, excessive knowledge absorption and mutual trust can have negative impacts on the organizational performance which ultimately can compromise their individual efficiency.

In this regard, this study focuses on finding how the organizational dynamic capability and knowledge absorption capacity impacts on its overall resilience and innovative performance. The analysis of the study showed that if organizations are dynamically capable of achieving the goals like environmental sustainability, good quality production with customers in focus and value addition through absorbing new required knowledge, it can drive the firms towards capitalization on innovative processes and ensure innovation in their processes, production and in overall culture. This thing requires extra ordinary resilience which is the upshot of this gigantic proactive behavior.

Some prominent items of both independent variables like search of relevant information, employee capacity of knowledge absorption, cross departmental support and technological, marketing & managerial knowledge were directly associated with the dependent variables. Some items in both cause and effect variables could generate tautology problems due to repetition of likewise questions causing response bias, however the researchers ensured the avoidance of repetition in outcomes through CMB test.

The findings of the study suggest that an organization can create resilience through the capability of adopting new technology, clear objective, preservation, having diverse solutions and taking rapid action on these solutions. All this can only be achieved if the organization is capable of absorbing advanced knowledge of their domain. It is not a direct process, but rather the habits are inculcated when organization generates a culture where all employees and stakeholders are supposed to act in a direct manner and tend to adopt the required trends. Hence H1 is supported with this argument that knowledge absorptive capacity impacts directly on resilience of the organization and makes it more flexible towards innovation.

While checking the impact of Organizational absorptive capacity on Innovative process as in H2, 66% response rate was shown about use of novel products during the business process whereas 80% organizations claimed they had superiority in latest technological innovation than their competitors whereas speed of new product development and novel idea's introduction in market was slow. 67% responses showed that the speed of innovative knowledge adoption and absorption in processes was higher than competitors. It clearly shows that organizations are absorbing knowledge and trying to adopt it in their processes, however financial constraints are hindering the way of new product or service development. It is because of the limited capacity of the organizations and very low funding and subsidies provided by the government due to the current economic crises situation. Anyways, it can be seen that absorption capacity of the organization significantly impacts on its innovative performance keeping other factors constant. It supports our second hypothesis. The findings support the view of Stakeholders Theory according to which stakeholders not only were impacted by the organization, but also directly or indirectly impact their operations. The findings are similar to the studies of (Q. Fan et al., 2023)and (Sánchez-García et al., 2023). (Wang et al., 2022) added to this concept by stating that green knowledge management can lead to green innovation and sustainability through government regulations and environmental push and it can never be achieved if the firm itself is resistant. To break the resistance, organizations need to articulate change in their culture and have clear cut strategic plans intact with which all members are supposed to be aware. This mutual collaboration will lead to the ultimate understanding of the new trends in the market, customer demands and foreign exchange programs to learn the new knowledge.

The analysis of organizational dynamic capability on its resilience showed the second firmest association showing the beta value of 0.352 and the strongest connection with Innovative performance showing beta value of 0.374. In other words, 1% increase in organizational dynamic capability of the organization can make positive changes of 0.352% in its innovative performance and can boost 0.374% resilience.

Dynamic capabilities include the capability of an organization in acquiring, generating and combining new knowledge. It can be done through the introduction process through workshops, conferences and sharing of learned lessons, changing management approach, top-down directions and acquiring and introducing marketing, managerial and management knowledge to its employees. Further steps include combining internal and external knowledge, its integration in different segments like teams, individuals etc. and through coordination and external networking. When organization achieves all these steps effectively, it automatically changes the internal and external environment and pushes the organization to come up with innovation as compared to less adoptive competitors.

(Q. Fan et al., 2023) argued that proficient internal resources help organizations in complying with varying market and stakeholders' desires, their prospects and overall internal regulations which are necessary for smooth organizational culture. Analysis goes exactly with their findings and clears the vision that internal and external changes are the other name of dynamic capability hence proves our third and fourth hypothesis. These hypotheses have proved that dynamic capability bolsters organizational resilience and its innovative performance to achieve the ISO certifications. Findings are in accordance with (Ali et al., 2021; Sánchez-García et al., 2023; Ullah et al., 2022) where they showed the significant impact of dynamic capability on intellectual capital and innovation performance.

Similarly, the analysis of organizational resilience and innovative performance indicated that the more resilience the organization shows, the better its innovative performance is. It happens due to the more flexible, adaptive nature of the organization which expels it to the new innovative change. Findings are similar to the studies of (Abourokbah et al., 2023; De Carvalho et al., 2016; Khan et al., 2021; Totschnig et al., 2017). The analysis showed p-value of 0.007 with beta value of 0.286, signifying the strong association and proving our fifth hypothesis i.e. organizational resilience strengthens organizational KBD capabilities to achieve innovative performance.

It is understood that organizations must change their entire culture to different levels to achieve internal and external innovation. So, we hypothesized that OC moderates the impact of IVs on DVs as hypothesized in H6, H7, H8 and H9. H6 and H7 state that Organizational Culture strengthens the association between Knowledge-based Dynamic Capabilities and Organizational Resilience; and Knowledge-based Dynamic Capabilities and Innovative Performance. Findings showed that H6 was proved with a beta value of 0.219 and p-value of 0.019 whereas H7 was proved with p-value of 0.024 and beta value of 0.179. Findings were supported from the studies of (Huey Yiing & Zaman Bin Ahmad, 2009; Rousseau, 1990) where they argued that OC has many layers including behavioral norms and organizational values indicating how people should behave and the things which must be valued. A sophisticatedly designed culture can groom the organization and bring fruitful results with utilitarianism. Hence both our hypotheses are proved and supported.

Conclusively H8 and H9 presupposed that Organizational Culture strengthens the association between Knowledge Absorptive Capacity and Organizational Resilience, and Knowledge Absorptive Capacity and Innovative Performance. These hypotheses were checked and

analysis showed significant results for H8 with beta-value of 0.220 whereas H9 was rejected showing insignificant relationship between Knowledge Absorptive Capacity and Innovative Performance with beta-value of 0.109. It might be since organizations in Pakistan are not utilizing their absorbed knowledge in innovation of the product and process. As discussed earlier that current economic conditions of Pakistan and not permitting the organizations to invest in novel and innovative ideas and upbringing of their culture. Instable market conditions, lack of foreign funding, unstable government regulations and scarcity in government treasures are dragging the organizations to go on hibernate and just focus on sustainability in the hope of future better conditions after IMF and UN financial aids. International laws and national policies are directly affecting organizational culture and despite having new knowledge, they are unable to implement it in their production and processes.

5.2. Theoretical and practical contributions

This study has shown multiple contributions, theoretically and practically. Primarily this study showed how dynamic capabilities are playing their role in shaping the overall structure of the organization. It is the employees who decide the direction of the company through their competence and absorption capacity. Therefore, organizations are more focused on hiring competent employees with diverse experiences. It not only boosts the productive capacity, but the dynamic part of combination can be achieved when these employees provide in-house on-the-job training and sessions. It causes cutting costs as well as increasing old employees' efficiency. Further the organization becomes more capable of handling diversity through shared experiences.

On the other hand, when organizations start to absorb and integrate knowledge, they bring about change in their innovation process through learning and accepting the required change. Literature shows that those organizations who showed resistance to change and technology tend to either flop or sell out as happened with Nokia.

The findings contribute to the stakeholders' theory and Absorptive capacity theory by stating how OC and OR play an important role in innovation process. Innovation can never be achieved theoretically; rather practical steps are required for visible changes _ be it tangible or intangible.

Moderation role indicates how culture defines the values, strategic plans and even small tasks in ultimate performance of the organization. It is the core cultural value and norms which decide how much organization is willing to adopt and transfer change as argued by (Rousseau, 1990). This study provides eye opening hints to the aging organizations who are still resistant to change and lack in adopting, acquiring, implementing and combining knowledge. Researchers conclude that to reap the benefits of new trends of competing organizations and their technological advancements, Pakistani organizations should step forward and should leave the outdated knowledge and should opt the cutting-edge advanced culture which has the capacity to fulfill virtue and deontological ethics while playing their role in standard maintenance.

Practically, organizational executives should highlight the whole process of acquisition to dissemination of knowledge among all levels of workers and must ensure that knowledge and value is being extracted in its true essence. (Teece, 1998) stated that knowledge building is based upon management, true incentive distribution and proper configurations utilized for innovative generation. He further argues that the focus of organization should not be only on knowledge creation but rather its proper deployment. This study indicates the track in accordance with the study of (Teece, 1998) and highlights that resource and knowledge based dynamic capabilities are grounded in the true expertise of individuals, teams and organizations

who can work when proper structures are built and physical and social resources are distributed evenly. It clearly highlights the importance of organizational culture and stakeholders. So, organizations must carefully design its value structure and sensibly choose stakeholders and investors along with conscious customers more swiftly than their competitors.

Findings also suggest that other external factors such as legalities, common country norms and culture, value systems and environment also play their role in shaping the knowledge adoption and absorption methods. To face this challenge, organizations must keep an eye on legalities and underlying norms of handling the legalities and customer complaints.

This study has some certain limitations as well. The first limitation on generalization of results is that the data was gathered from only one country with specific organizations in it. Generalization can be achieved even if the data from other regional countries could be gathered like India, Bangladesh, Iran, Iraq and Afghanistan which share common region and similar environment with almost same international competitors.

External validity of the model would serve the purpose of its applicability in organizational reforms as well as extend the body of the literature. Manufacturing and service industries following (ISO:9OO1:2015) were targeted for data collection. Further research can include the firms following other standards such as for environmental betterment, it would expand the scope of studies through comparison between two groups. The size and tenure of the organizations could be taken as control variables in future research.

Although not a single factor caused an existence of CMB and no variance was retrieved with more than half of the total, it served as a limitation in this study as the data for independent and dependent variables was collected through same method (Podsakoff & Organ, 1986). Limitation could be improved if the researchers could focus on variation in the tendencies for response and social desirability, dispositional mood eminences and respondent leniency.

Data was collected through accepted instruments but more deviated results can change the scenario if future research could change the structure and wording of the questionnaires; keeping in view their regional organizational requirements (Podsakoff et al., 2012; Spector, 2006). More focus in future research can be given on time, location, medium and proximity of items (Edwards, 2008; Jordan & Troth, 2020).

Finally, it was observed that some items in independent variables were related to the variables of Organizational Resilience and Innovative performance (DVs) which could cause tautology issue and generate biased results. As mentioned before, this kind of problem can be avoided in future research through deliberate change in the questionnaire structure before data collection as per recommendation of (Jordan & Troth, 2020).

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