

# THE EFFECTS OF OPEN INNOVATION ON STRATEGIC PRODUCT DEVELOPMENT IN CORPORATE SECTOR OF PAKISTAN

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## Abstract

*In the modern business environment, open innovation has been reviewed as one of the major strategies that an organization uses to be competitive and achieve growth. The present paper studies how open innovation has transformed the strategic product development in the corporate sector of Pakistan. The study reveals how the external knowledge integration, collaboration, and networks of partnerships contribute to the effectiveness of the process of product development through the incorporation of new ideas, cut in time-to-market and responsiveness to the consumer demands. The paper examines inbound and outbound aspect of open innovation, which entails how companies utilize external sources of knowledge to include customers, suppliers, universities and research institutes and at the same time sharing internal sources. The work has added knowledge to the discussion of the role of open innovation in changing the way strategic product development is performed and can provide practical information to the top management of firms and policy makers on the benefits of the encouragement of the collaborative networks. Finally, through open innovation, the corporate community in Pakistan can be enhanced because development of sustainable competitiveness, advancement in technology and resilient economy will be facilitated.*

**Keywords:** Open Innovation, Strategic Product Development, Corporate Sector, Pakistan, Collaboration, Competitiveness, Knowledge Sharing

## INTRODUCTION

In the current fast changing world of business, the idea of open innovation or in other words using external ideas and internal strengths has gained great value in maintaining competitive nature and rapid development of products (Chesbrough, 2006; Nawaz et al., 2022). Although a vast body of literature is available on the open innovation concept in developed economies, there has been little focus on that concept within the corporate sector in Pakistan. Pakistan operates in an uncommon business environment where one has to survive in disruptive power conditions, erratic regulations and brain drain, three key factors that inhibit innovation potential (Wikipedia, 2025). These limitations give testimony as to why open innovation is increasingly becoming an important strategy as a means of enhancing product development performance through supplementation of internal material mine with external knowledge and partnerships (Iqbal & Omercic, 2024).

Novel empirical data available with reference to the Pakistani situation alludes to the relevance of open innovation in a range of industries (Usman et al., 2024). Similarly, studies in the area of hospitality industry have shown that open innovation contributes to the development of dynamic organization capabilities and sustainable performance; especially through an innovative culture (Sohail et al., 2025). The results emphasize the fact that open innovation is not only an innovation process but also a strengthening aspect of strategic adaptation in the Pakistani business environment (Rizvi et al., 2022). Although these developments are commendable, there is still a gap in knowledge as regards the role open innovation plays in strategic product development in the context of Pakistani corporate culture. The study fills this gap by examining the processes by which joint efforts with external parties, knowledge transfer

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and internal absorptive capacity can be used to achieve superior product results including a decrease in the developmental process, improved market responsiveness and product innovation sustenance (Kashif & Iqbal, 2022). By linking the theoretical contributions on open innovation with sector-specific empirical knowledge, especially in the context of Pakistan corporate limited resources setting, this study is able to give contribution in terms of scholarly discourse as well as to practice on transformation of the strategic product development in Pakistan.

### ***Problem Statement***

Macroeconomic volatility, limited financing, and disrupted supply chains continue to adversely impact the corporate sector of Pakistan because they stagnate firms internal research and development capabilities as well as their ability to develop new strategic products. Recent assessments record import constraints and constraints due to lack of liquidity that slowed innovation and undermined the capacity of firms to bring new products into the market efficiently.

### ***Research Rationale***

Theoretically, illuminating the relationship between OI practices (inbound, outbound, and coupled) and absorptive capacity of firms to determine time-to-market, novelty of products, and market fit can be capable of advancing OI theory in emerging economies. Recent findings in this area support the role of absorptive capacity as a precursor of OI and innovative performance, and this aspect seems to have some boundaries that should be tested in the resource-constrained setting of Pakistan (Zahoor et al., 2023). The remaining dimensions of gaps in university university-industry connections and cluster depth that are formally documented in Pakistan are indicative of the potential of OI strategies (e.g., supplier co-creation, university partnerships) to transform product outcomes, should firms manage to eliminate barriers to collaboration (Kanwal et al., 2023). This will allow mapping out which OI configurations and capabilities are most important to product development in times of macro stress and therefore provide actionable advice to corporate leaders and policy makers (Zubair et al., 2023; Zhou & Zhang, 2025; Iqbal & Ali, 2024 ).

### ***Research Questions***

The following are the research questions:

1. How and to what extent do open innovation practices between incoming and outgoing enhance strategic product development performances?
2. What is the interaction between firms' absorptive capacity and the connection between open innovation practices and product development outcomes?
3. Which external sources of collaboration (vendors, suppliers, university centers, spinoffs) best foretells high levels of product development performance in the face of existing macro-economic and financing pressures?
4. Which organizational and eco system obstacles (IP concerns, weak U-I linkage, coordination costs), hinder the effective OI in product development and how can the firms overcome them?

## **LITERATURE REVIEW**

Open innovation (OI) has been cited as a paradigm change over closed innovation to focus on purposeful inflows and outflows of knowledge to speed up the internal innovation process and market expansion (Chesbrough, 2006; Wikipedia, 2025). Applied OI has actual strategic advantages which include

decreasing the R&D expenses, time-to-market, product-market fitment, and chances of innovating business models (Wikipedia, 2025). In spite of having the above-drawn global benefits, there is still limited empirical research into the role of OI in strategic product development of the business community in Pakistan (Zaheer et al., 2023, 2024).

Absorptive capacity (ACAP) organization capacity to source, learn, and share external knowledge, which subsequently leads to a new stream of value creation, is repeatedly noted in the innovation literature as being particularly relevant in harnessing the potential of OI practices. Zahoor et al. (2024) conclude alliance learning and ACAP prove to have a major impact on responsible innovation among SMEs in emerging markets, which includes Pakistan (Arif et al., 2023). Mirza, Mahmood, and Waqar (2022) conducted an empirical study on the town of Lahore and Karachi and tested both inbound and outbound OI in pharmaceutical Companies, concluding that both of them have a direct impact on strategic innovation. They also show that organizational learning skills mediated relationship between OI and innovation, with ACAP stimulating this process (Mirza et al., 2022).

Hafeez, Shamsuddin and Saeed (2023) study on the ICT sector solely tested the influence of ACAP and OI on technology transfer effectiveness (TTE) in Pakistan. The findings of their study support the idea that OI is one of the mechanisms through which a positive association exists between ACAP and TTE: successful strategies of technological transfer are supported by stronger ACAP, which promotes strategic development at the level of the industry (Hafeez et al., 2023). A conceptualization of innovation capability and ACAP within Pakistan SMEs has been proposed by Arshad and Arshad (2021) following which ACAP and innovation capability were postulated to have an influence on performance that is moderated by business strategy (Iqbal & Omercic, 2024; Fareed et al., 2023). Although this is a conceptual study, it points out that those firms that have a stronger innovation capability and the ACAP can leverage on the open innovation more tactically- especially where it is linked to a consistent set of business strategies.

Besides Pakistan, as Zahoor et al. (2024) also point out, in developing markets, considered forms of learning, whereby SMEs learn new strategies through the contribution of external partners, can become a form of responsible innovation facilitated by ACAP. Its results, although not specific to Pakistan, further support the validity of OI- ACAP synergies as well as the potential usefulness of its practical applications in Pakistani firms that are short on domestic capabilities. According to the model of the triple helix tripartite cooperation (universities, industry and government), the performance of innovation should increase when there is more collaboration among various institutional parties (Leydesdorff & Ivanova, 2016). Although much has been written about the triple helix, weak university-industry relations and absence of innovation clusters in Pakistan limit the way the firms can utilize external sources of knowledge in their product development. It is therefore important to intensify these ecosystem aspects to optimal OI induced strategic products.

Empirical research in the SME sector in Pakistan brings out considerable effects of the application of open innovation in order to improve competitive advantage. Khan, Usman, and Khattak (2024) obtained that the combination of inbound OI and coupling knowledge facilitates product differentiation and responsiveness towards the market. Their research of SME clusters in Gujranwala provides a good example of how firms with weak R&D capacity can use suppliers, customers and informal networks to fast track product innovation. This further supports the conclusion that SMEs- which are usually resource-strapped- benefit particularly well with OI, a broader view in support that the integration of external knowledge helps overcome internal shortcomings (Usman et al., 2024). The study is in line with the general OI theories which emphasize the place of SMEs in the innovation ecosystems.

In the case of Pakistan, Sohail, Nasir, and Sabir (2025) examined OI within the hospitality industry, and the authors established that dynamic organizational capabilities, notably innovative culture and absorptive capacity, intervene to affect the connection between OI and sustainable firm performance. Their research indicates that product and service innovation does not just mean acceptance of ideas outside an organisation but integration into internal processes so that there is strategic harmony. This further confirms the dimension of OI as strategic development: those firms who integrate external collaborations along with internal responsive routines will be able to have competitive positions sustained. Their results also show the salience of OI in service sectors, which have received little attention in the context of innovation research in Pakistan that is concentrated on the industrial sector.

Poor systemic support of university-industrial collaboration was the cause of other weaknesses that were reported by Zubair et al. (2023) and included a lack of trust, unstable support in the institution, and poor enforcement of IP rights. These obstructions inhibit the desire of firms to approach outside players, which limits product development. By the same token, cultural impediments to knowledge sharing along with hierarchical company culture also act as a hindrance to the adoption of OI (Zubair et al., 2023). An inference of such findings is that unless structural barriers are overcome, OI in Pakistan might end up becoming underutilized, particularly in instances related to the product development involving products that require strategic collaboration.

Recent figures show that the venture capital in Pakistan is already suffering with Q1 2024 recording the lowest deal dynamics in startup funding in history (Invest2Innovate, 2024; Fahim et al., 2020). This funding crisis greatly limits the capacity of the firms to continue to apply closed innovation systems that are largely resource intensive. It is in this regard that OI is not an option but a necessity to maintain pipelines of product development. Incorporating external partners and risk streaming innovations help the firms to partially compensate capital constraints. Nevertheless, this transition will necessitate enabling institutional structures and policies that will favor cooperation within the innovation ecosystem (Invest2Innovate, 2024).

The Global Innovation Index (WIPO, 2023) placed Pakistan lower on innovation performance given their issues with knowledge absorption and linkages that prevents them reaching their potential in their OI readiness. The poor university-industry research and development partnership and non-developed industrial clusters limit inflow of knowledge into product development processes of firms. However, successive gains in the ICT use and business start-up enable upsizing of OI initiatives. This report highlights how it is possible to mitigate weaknesses associated with systemic innovations by using digital platforms and collaborative networks. Ensuring national policies towards innovation are in line with OI strategies at the firm-level could therefore play a pivotal role in enabling firms in Pakistan when it comes to strategic product development (WIPO, 2023).

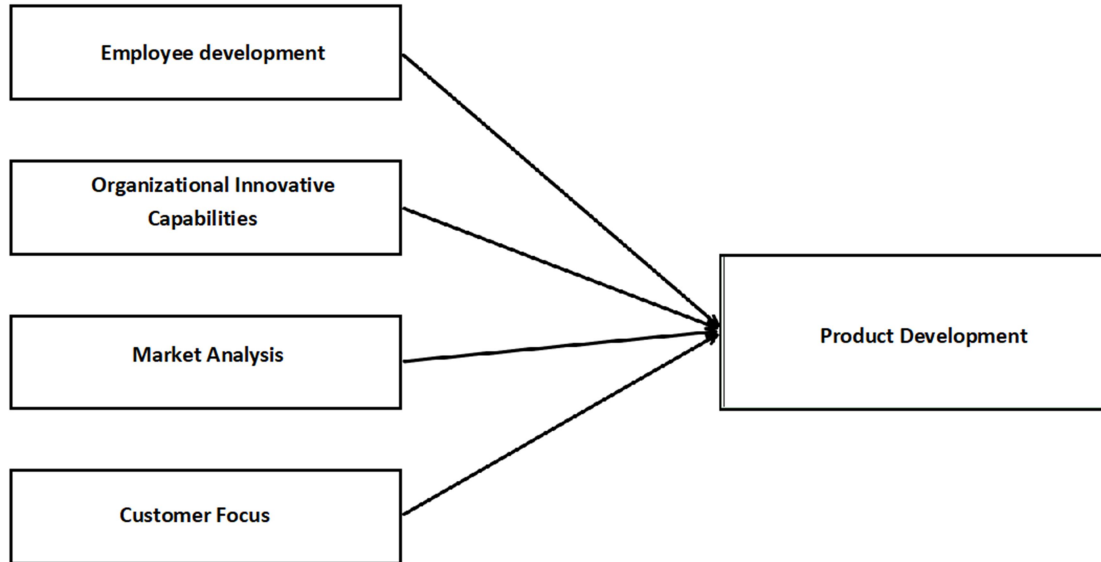


Figure 1: Conceptual framework

## METHODOLOGY

### *Research Design*

This research uses a quantitative survey design that is cross-sectional, and allows the gathering of uniform information with little time consumption to a large number of people. The use of a quantitative research methodology is possible since it allows quantifying the relationship between independent variables (training and development, work environment, leadership style, and compensation and benefits) and a dependent one (performance of employees). The approach makes the study objective and statistic-sound in pursuit of the hypothesized relationships.

### *Population and Sample*

The focus of this research is the full-time employees of medium to large firms in the service industry (such as banking, insurance, telecom). A basic random sampling method will be used to make sure that there is a proportionate representation among the various levels of the organization. On the basis of suggestions by Hair et al. (2022), the minimum sample size required would be 10 times the number of observed variables; therefore, a figure of 350 respondents will be targeted in view of generalizability and statistical power.

### *Data Collection*

The data will be provided by means of a structured questionnaire issued by email of the organization and professional websites such as LinkedIn. The questionnaire will contain closed-ended questions whose items will be measured on a 5 point Likert scale rating strong disagree (1) to strongly agree (5). The approach is beneficial because it makes responses consistent and reliable (Saunders et al., 2019). The survey will allow the respondents a two-week period to fill and reminders sent to encourage maximum participation.

## RESULTS

Table 1

*Reliability Statistics*

Constructs	Cronbach's Alpha	Cronbach's Alpha on standardized item	No of items	Mean	S.D
Emp. Dev	0.66	0.66	5	3.71	0.76
Org. Inn. Capa	0.73	0.73	5	3.83	0.84
Mkt Analysis	0.64	0.64	5	3.64	0.72
Customer Focus	0.62	0.62	5	3.79	0.79
Product Dev	0.77	0.77	5	3.88	0.73

The highest reliability shown in the above table 5 is Product Development ( $\alpha = 0.77$ , Mean= 3.88, SD= 0.73) while the lowest reliability is shown for Customer Focus ( $\alpha = 0.62$ , Mean= 3.79, SD= 0.79). For all the other constructs, the reliability is greater than 0.6 which is the acceptable and explained that all the items have a reliability and reasonable internal consistency

Table 2

*Descriptive Statistics*

Construct	ED	OIC	MA	CF	PD
Mean	3.71	3.83	3.64	3.79	3.88
Maximum	5.00	5.00	5.00	5.00	5.00
Minimum	1.23	1.00	1.55	1.52	1.00
Std Deviation	0.76	0.84	0.72	0.79	0.73
Variance	0.57	0.64	0.57	0.58	0.58
Skewness	-0.47	-0.92	-0.43	-0.21	-0.87
Kurtosis	-0.02	-0.95	-0.23	-0.27	0.76

In Table 2, Customer Focus (Mean= 3.79, SD= 0.79) has the lowest skewness (-0.21), and Organizational Innovative Capabilities (Mean = 3.83, SD=0.81) has the highest skewness (-0.92). For three items, the kurtosis shown positive while the other three items have a negative kurtosis, the highest kurtosis is for Organizational Innovative Capabilities (Mean = 3.83, SD=0.84) is -0.95 and the lowest kurtosis is for Employee Development which is (Mean=3.71, SD= 0.76) is -0.02.

Table 3

*Discriminant Validity*

	CP	TD	GET	IT	MM
Emp. Dev	0.73				
Org. Inn. Capa	0.02	0.77			
Mkt Analysis	0.07	0.09	0.65		
Customer Focus	0.05	0.02	0.07	0.62	
Product Dev	0.05	0.78	0.25	0.03	0.73

Discriminant validity refers to the extent to which a test is not related to other tests that measure different constructs. The expectation is that two tests that reflect different constructs should not be highly related to

each other. If they are, then you cannot say with certainty that they are not measuring the same construct. Thus, discriminant validity is an indication of the extent of the difference between constructs (Westen, & Rosenthal, 2003).

### DISCUSSION

This study reveals that open innovation is having significant impact on strategic product development carried out in the corporate sector of Pakistan by enhancing the collaborative process, lowering the development costs and increasing its speed in terms of creation. Organizations that pro-actively involve third parties like customers, suppliers, research institutions and technology partners get diversity of ideas and solutions that organizations that use only internal resources do not. This change is indicative of the ways in which open innovation undermines the traditional rigid institutional organization silos within which the introvert organization was traditionally perceived to be the world of innovation. By broadening their innovation horizons Pakistani firms are increasingly in a position to deploy international knowledge networks, which not only enables efficient product development, but ensures that products remain relevant in the market.

Another finding worth noting is that, companies using open innovation are in a vantage position to model their product development strategies to consumer requirements and emergent market trends. The involvement of customers on a real time basis to the ideation and prototyping stages has assisted in minimizing differences between the developed products and consumer anticipation. This congruence has helped to achieve better success rate in launching products and positioning its brands in highly competitive market. It is further seen that, the co-creation process has offered companies the privilege to get insights about niche markets and have been able to introduce various rated products which meet specific customer preferences (Iqbal, 2023).

The research also holds that open innovation helps share risk as well as diffusion of knowledge. Teaming up with technology partners will help corporations to lower down the cost of conducting research and development activities since such expenses are very high especially in a developing country like Pakistan where finance is often a factor that lowers the rate of innovation. Additionally, joint ventures with universities and research centers have opened up access by the firms to the technical expertise, as well as new and innovative research which they would have been unable to access on their own. The result of this exchange of knowledge is that not only does product development occur quicker but it is more technologically ahead of the game.

The other important consideration pointed out is cultural and organizational change by open innovation. Organizations that have implemented this approach have been demonstrated to be more flexible in decision making, open to experimentation and cross-functional communication improved. Such developments have cultivated a spirit of innovation in the bodies in the context that the employees are not afraid of submitting their ideas without fear of rejection. This has in turn enhanced employee engagement and stronger pipelines of innovation. The use of digital spaces has also enhanced such advantages further by facilitating teamwork and allowing the free flow of information among various stakeholders.

Along with the discussed advantages, the talk also has some issues on the adoption of open innovation in the corporate sector of Pakistan. Such concerns as the protection of intellectual property, the absence of trust between the cooperating organizations, and having a limited absorptive capacity in firms act as formidable obstacles. Most companies are still struggling in the process of complete incorporation of outside information because they do not have sound internal procedures as well as lack adequate technology support. Moreover, traditional organizations have a cultural resistance to the relationship with

outsiders and therefore, the process towards open innovation is slow and uneven. The general drift however shows that open innovation is becoming a more practical strategy being adoptable by corporate organizations aiming at achieving sustainable competitive advantage by adopting strategic product-development measures. The rewards-considering that include improved adaptability, greater efficiency in innovation, and competitive inclination in the market- are much more than the challenges. In the long term, the impact of open innovation will become even stronger, and greater transformations in the realm of product developing in the corporate sector will take place as Pakistani companies will advance their skills in cooperative efforts and the development of effective external partnership management framework.

### CONCLUSION

The paper summarizes that open innovation has proven to be an important source of strategic product development in Pakistan corporate. The process of integration with external knowledge sources enables the companies to have increased capacity of innovations, speed of product development and customer aligned alignment. The implications of this are startling; organizations that have been able to utilize collaborative networks with their customers, suppliers, research institutions and technology partners have swung a massive competitive lead in terms of producing the market relevant products as well as in mitigating the risks and costs that are normally incurred in innovation in addition to reducing them. It is clear that open innovation is also able to change the organizational culture, as well as strategic thought. The companies using this model prove to be more adaptable, flexible, and open to experiment which results in an ongoing culture of innovation. Despite lingering problems including intellectual property concerns, trust issues and the limited infrastructure, there is an upwards adoption curve indicating that more are starting to realize the potential benefits external collaboration has in the development of a product. These challenges although great can be handled with the help of better governance, capacity building, and digitization. On the whole, open innovation as an influencing factor in shaping product development in Pakistan can be described as an increasing tendency to move away the closed model of the approach toward the open and broader concept of innovation. Continued adoption of this paradigm by corporations is bound to ensure that they attain sustainable competitive advantages in local and international markets. The effectiveness of open innovation in the Pakistani corporate world hence highlights its potential to become a disruptive strategy to the outputs of innovation and the long term organizational development.

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