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An Examination of the Effects of Frugal (simple) Innovation Environmental and Economic Performance of SMEs

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ABSTRACT

In this research, simple innovation and small and medium-sized enterprises (SME)s' environmental and financial performance are under analysis. Simple innovation, characterized by resource-efficient and cost-effective approaches, is examined for its role in fostering sustainable solutions and enhancing business outcomes. The research highlights how SMEs adopting simple innovation minimize ecological footprints through optimized resource use and waste reduction while achieving cost savings and increased market competitiveness. The findings reveal a dual effect: simple innovation significantly benefits environmental performance but presents complexities in its financial outcomes, moderated by organizational proactivity. The results underline the strategic importance of simple innovation for addressing global challenges such as resource scarcity and economic inequality, offering a pathway for sustainable growth in both emerging and developed markets. This study provides actionable insights for SMEs and policymakers, emphasizing the need to integrate simple innovation into business strategies. Future research should explore sector-specific applications and long-term implications to maximize its potential.

Introduction

Economical Innovation (EI) is the process of transforming goods or services that require the least amount of product cost while still offering satisfactory functionality and workability for sustainability in use (Dost et al., 2024). The conception is decreasingly significant as resource failure distils social and environmental impacts. These problems are solved through proper management of the coffers within various companies. Economic inventions, especially, allow firms to deliver valuable benefits to the society and support sustainability (Berm and Iven's, 2013)

While the prior research on invention has located emphasis on knowledge driving invention, the effect of the knowledge sources and their opportunities is yet unexplored. Emerging calls are experiencing increasing attention to economic goods a Simple innovation, also referred to as FI, embraces the modification of services or products in order to retain cheap product prices while making certain that they are still usable and sustainable for the consumers (Dost et al., 2024). This idea is getting decreasingly applicable as limited coffers impact on social and environmental concerns. Organizations are managing these challenges by finding ways to optimize use of resources in the industries. Namely, economical inventions enable organizations to provide considerable value to the society and foster sustainable development (Berm and Iven's, 2013; Hanif et al., 2024). Despite the existence of the part identified in prior works involving knowledge in invention, the role of colorful knowledge sources and their eventuality are still yet to be thoroughly explored. Among the following requests, there is an increasing need for affordable products and services in developing throughout. They have argued that this demand results from large request sizes, increasing specifications, and increased stock of R&D talent (Agarwal and Berm, 2012).

Economical immolations are easy and appealing, which offer basic utility, relatively improved performance, and fall into the triadic nethermost line that integrate profitable, societal, and environmental benefits (Weyrauch and Herstatt, 2017; Pan sera, 2018). For instance, some exploration considers cognition as a viable way to invention, while others see invention as the key to the advancement of cognition (Dost et al., 2016; Subramaniam and Venkatraman, 2001 Subramaniam and Youndt, 2005; Tsai and Ghoshal, 1998). furthermore, invention is becoming open as new complements ideas for goods and services emerge from unique apparatus other than China and India have transformed into innovative threshold , sweeping from copying being gross to generating new outcomes for new requirements and constraints (Jiatao and Rajiv, 2009). This transition has led to the emergence of new invention fabrics such as; this transition has emerged some invention fabrics such as; these methodologies focus on utilizing the coffer efficiently and the inability to bend and propagate to indigenous conditions. Economical invention as the direction of development and is becoming evident on request of the global level of, both developing and developed. Etc the result is that companies in the West have now started experiencing the value of economically efficient products. A study by Roland Berger Strategy Advisors in 2013 establish that economical points comprise 12 of transactions of companies involved, and it was estimated these could escalate to almost double the number by 2018. With regard this trend it means that when firms move from a new ask to another, they must reconsider their invention strategies. Today, transnational enterprises are focusing on original product development in order to sustain competitive advantage The new concepts such as 'radical innovation', 'disruptive innovation', 'cost innovation,' and 'jugaad' have appeared to describe this trend (Immelt et al., 2009).

This paper defines economical inventions as cheap, easy inventions that can meet the demands of frugal consumers who have little purchasing power (Zeschky, Widenmayer, and Oliver, 2011). Originally they have been developed for original requests, however economical products are becoming gradually take less popular in A countries with increasing consumer concern with the costs. From a profitable viewpoint, economical invention is cent red on redesign of merchandise or service line or procedures to do away with unnecessary costs. In earlier parlance, economy had been synonymous with smart practices and the appropriate management of thereby coffer. This concept that is rooted in philosophical, spiritual and practical fields is still popular among the consumers across the globe who aspire to" leverage more with less".

Research Problem

The implementation of economical invention, therefore, becomes a challenge for SMEs especially where the invention has to be affordable to users for SMEs, therefore, faces the challenge of how to invent in a way that can be economical and remains affordable for users to adopt and thus economical invention has to be driven purposefully by the development of a model whose heart is affordability. The price remained relatively low while the presence of the various features improved the basic suitability of the product for the guests residing in the small municipalities and town lets. In advanced countries sustainability where furnishing of introductory services to all citizens is increasingly becoming less challenging. Spare invention is emerging encyclopedically, equally in nascent husbandry as in the rural district. It still remains unclear how the emergence of economy as one of the societal values may be still rooted in specific specifics of social context referring to the developing world and the world of the high economy rates. Sustainable development poses a macro test for profitable endeavor, climate change, management of association and society. Hence, the motorists and impact of economical inventions (FI) should be analyzed with reference to sustainability as a new socio- commercial paradigm. However, business model is becoming obsolete for three reasons. First, a big portion of guests can no longer go precious products, because the copping reduces Second, there are concerns diminishing natural coffers, that is water and oil painting. But third and most terrible, the expanding income gap between those fat and everyone differentially has resulted in a great divorce between product and service and guest necessities and niceties. The things created do not aim at delivering effective impressions that woo the guests; but rather provide practical solutions that are easily accessible. This means that product inventors must set aside excessive and ivory tower sectarian R&D approaches, and instead monitors guests in the real world to discover their needs and struggles.

Research Objectives

- In this case the methodology used is to examine the effects of simple innovation on environment.
- To establish a relationship between simple innovation and financial performance of SMEs.

Research Questions

- Which area of concern simple innovation covers?
- How does simple innovation affect the financial performance of SMES?

Scope of the Research

There is a difference between making things cheaper and making profits. In the recent past, we have begun to notice an increase in startup, in Pakistan of over the past couple of years. But if one looks closely, only a handful of these companies are coming up with innovative ideas that address a need in the country. Many of the other start-up are similar concepts with slight modification and are related to either on-line space or an application. Hence, this method is not assuaging the simple crises of Pakistan. like for instance electricity, petroleum, gas shortage, education and security and poverty Now, where is our current method we are using to control economical innovation in our entrepreneurial efforts? First of all, there is excessive focus on backing. Any incipiency competition staged within our country focuses pressure on the tempting incentives to ignite the winning incipiency. The system is good for selling the competition but once you put a price on idea generation, actors start permitting on a business rather than on a solution mode. I’m not

saying that backing is not important but gives over importance to it and imagination can be restricted.

Secondly, most of the activities being done by these entrepreneurs are based on IT services, online platforms and apps but our issues do not stem from any of these services. These digital startups are generating employment but employment only for those people who have certain skill set. There are other fields which need the entrepreneurial focus to have startups operating focusing on a certain problem besides founding other e-commerce, digital services, or applications startups. For example, Popinjay, a web platform that supports local art, savored which provides transport facilities, Tent School System bringing innovation in education to slum and rural areas interview solving the issue of how to hire programmers. Thirdly, they are led to understand that Pakistan youths do not necessarily have to searched a new being idea which they can incubate, they can work with a being idea and introduce.

Literature Review and Theoretical Background

Innovation

Innovation is the complex series of steps taken by association to transform ideas into improved new advanced products services or processes in other to progress, compete and gain competitive advantage in business. Innovation has remained a fundamental area recognized but seldom explored adequately in operation literature for once many times (Christensen, 2003). This applies equally for generating profits and for market or industry and country level competition (Berm, 2011, Drain and Schoonhoven, 1996, Christensen, 1997).

Sustaining Innovation

It is a process in which the improvement of a product or service based and predicted requirements of the existing client. According to the work by Ketata et al. (2014), several useful knowledge inputs for a better understanding of invention of this kind are provided “Sustainable invention takes into account social factors and the needs of future generations which most explicitly of course bear many similarities to the environmental perspective”. In other words, it is social invention time’s environmental invention or simply said, times environmental invention. The ultimate is described as any product (good or service), process, organizational system or marketing system that is innovative or significantly improved and that yields better environment outcomes over existing choices or what is referred to as ‘druthers. It is useful to understand what an invention can do during product of a good or service, or during the aftersales use of a good or service by the end stoner , as defined by Kemp (Kemp, 2010).The description given by Yoon and Tello proposed (2009 ‘Sustainable invention’), seems more comprehensive “By sustainable invention we particularly refer to invention conditioning that fosters the triadic top tier of sustainable development that is profitable, ecological and social benefits. Therefore, sustainable invention might be neatly defined as the generation of new goods, processes/ services and technologies that support the creation and welfare of citizens’ needs and institutions without over stressing the world As a result, it is argued that SI co-intuitively aligns with Sustainable Economics in elucidated by Ayres (2008). In other words, Sustainability Economics entails the challenge of sustaining profitable growth and reduced pollution effects as well as attention to energy force, climate change and reactionary energy issues. Product-peninsula chase for sustainability is at last beginning to transform the competitive geography-which will require firms to shift the way they think about products, technologies, processes, and business models

Simple Innovation

The concept of economical invention could be explained as approach to cognition and behavior in terms of the problem solving. As it can efficiently identify the openings indeed in the worst of scenarios and clap the results creatively in the least complicated manner (Radjou et al., 2012) May have in this regard is to align the company's business and products with the fact that made the price of its products and services to be in a position within the reach of even the economically sensitive group Informative. The first-time economical invention was taken globally was in a special report done in the Economist magazine. Both social invention and economical invention were described by the journal Where is Japan's next Sylmar Microsoft? Woolridge defined economical invention as "not just a matter of exploiting cheap labor (though cheap labor helps), it's a matter of redesigning products and processes to cut out gratuitous costs" (Woolridge 2010; online). Occasionally economical invention is also appertained to as rear, jugaad, or shanzhai invention (Wo FUE can define economical inventions as including manufacturing and service delivery as well as products and services (Bhatti et al, 2013).

However, as a relatively recent concept, consensus about how economical invention is defined and differentiated from other types of invention has not been reached yet. In fact, broader concepts that have been circulating in the literature for much longer as social entrepreneurship (Zahra et al 2009) and business models (George and Bock 2011). Economical invention or economical engineering is the process of the elimination of unnecessary aspects of both goods and products, essentially this means simplifying and cheapening a durable good like a car or phone in order to sell it in developing countries. Designing products for such countries may also require enhancing continuity and, as to the handling of the products, relying on the non-standard distribution networks. When struggling to sell to what is referred to as 'invisibles' or 'irrelevant' consumers, enterprises expect to offset low profit margins by gains in quantity. Otherwise, economical invention may also be provoked by globalization and increasing Provident invention inflows in the development countries as similar services and products require offering cheap quality. In the course of economical invention, it has been established that good enough performance is enough for many sectors of the economy while in some sectors like the health sector economical invention has to provide best or maximum performance without compromising on quality. Siemens also has colorful economical product, which formally existed in the request as SMART (Simple, Maintainable, Affordable, Reliable, Timely to request) product and is also passing rear invention through them. It is for this reason that we wish to argue that the conception isn't new. Yet, how individualities and enterprises conceive its practice and consequences has expanded. Before, nations, enterprises, and 'individualities' have in fact already rehearsed some kind of economical invention in the historical/ literal perspective but the current expanded context in arising requests, moment's delivering ground of higher global stringency, new bent of global contest from arising request enterprises, and advances in enabling technologies similar as mobile, pall, and digital means there's a renewed global interest and viability in economical invention. Therefore, from the profitable point of view the above statement proves right from the words of Adam smith declared on a proposition of capital based on economy.

On the same note Mill postulated that the economical many seek a lower future return as a cost of present temperance and as such are the providers of funds. In addition, demographic shift accompanied by increase in populations as well as addition between the haves and have- nots, means the emerging demands governments, enterprises, entrepreneurs and society are under more pressure about to pay for the needs and calls of the millions. The arising requests regard for about 20% of the world's GDP, but contain half the world's population (US Global Research, 2009).

Still, they are rapidly developing economically in tandem with their populations. According to Ernst and Young, some 70 percent of world growth in the coming many times will stem from arising requests, 40 of which will be from China and India. The International Monetary Fund (IMF) expect that the sum total of combined GDP of arising requests, as measured in copping that parity of power, would catch that of the developed husbandry as early as 2014 (Ernst & Young, 2011).

This is all good but the reality is that it is not easy to achieve all these. The larger of these requests such as India for instance are denied water, food, energy, skills and knowledge needed to provide even rudimentary services let alone primary to over one billion people. Simple innovation Problems As indicated due to the resource-scarce environment characteristic of emerging requests, consumers in these requests are indeed very price sensitive; many have only recently upgraded from the status of non-consumers to consumers (Christensen 1997).One of these requests is an adding member of an arising middle class whose members survive on$ 2-$13 per day at 2005 copping power and these new consumer homes will still have little redundant income and consequently will have to beware to operate value for their plutocrat. Consumers in Western requests are also checking value with increasing dexterity. Related, especially when they met as in the recent profitable extremity. During the period of recession, US particular consumption expenditure has fall further than 3 chancing points according to Lee, Rabanal and Sandri (2010), and western consumers are now in quest of simpler frill that provide maximum utility, as stated by Flatters and Willmott (2009). The increasing urge towards economical invention poses two main issues for western pots. First, for sustained competitive advantage in economical invention, Western pots have to rethink their extant business models. In general, the extant business models of Western firms operating in emergent countries have failed to address the resource-scarce consumer but rather have focused on the materialist few at the top of the population pyramid who possess the purchasing power to go for Western goods (Arnold and Quelch 1998) Nevertheless, this strategy of achieving high On the one hand, economical inventions will also in the long run appeal to the affluent clientele who may opt for cheaper articles nonetheless necessary for them. On the other hand, middle class in the western requests are receiving a decreasingly intriguing request that has a great business prospects, on the other hand if the western companies fail to note the emerging middle class in the emerging requests they stand the risk of being overtaken in the request share by the emergent players. These trends will serve to cause western firms to acquire new working conditions, thus ultimately distorting how the distinction and coupling of products and requests occurs.

However, the developing world also must be replete with optimists, if an optimist finds occasion in every difficulty. There people have realized how much more they can get out of ‘empty’ coffers and how they can get more out of what they used to have in terms of exercising. For example, Indian potter Mansukh Prajapati has made fridge out of complexion that requires no electricity and keeps fruits and vegetables fresh for many days; it is, quite literally, a cool invention. In Africa, you can often see that if a man’s cell-phone battery discharges, he can ask a smart businessman to recharge it on his bike. But again, in Peru, the area around Lima is exceedingly muggy but almost utterly arid; it gets only one inch of rainfall at a time. An engineering council in the megacity has realized how to pull water from the air they have put up a massive advertising hoarding that sucks thick air and churning out clean water more than 90 liters per day.

Financial performance of SMEs

OECD (2010) has noted that SMEs are vital players in the renewal and growth of the frugality since they are small in size, they normally struggle to raise adequate capital to support their product, finance, operation and research and development (R & D); which are key barriers to enter. Secondly, invention is increasingly seen as not a distributed/von Hippel 1988 or open/Chesbrough, 2003 process as it is no longer associated with technical suppliers, universities and exploration institutions or product request mates including guests and challengers/von Hippel 1988.Distributed invention also creates opportunities and threats for SMEs and for invention conditioning, questions are posed that consider invention conditioning a feasible activity and employment of collaboration to overcome restrictions in coffers to carry on invention conditioning and participate in invention performance. Control over important sunk costs and resources which may be difficult for competitors to imitate is a critical component of the competitive advantage of an establishment (Peng and Meyer 2011). For instance, in their literature review, De Man and Duysters (2005) found that alliance has a positive impact on invention in slightly below three folds of the studies That however, not all alliances that are successful when related to firm performance, particularly where alliance lacks compatibility with internal resources (Bougrain and Haudeville 2002; Frenz and Ietto- Gillies 2009). Amongst them are the threat of failing collaboration, doubt in cross-border request opening and the cost of managing alliances (Lhuillery et al. 2009; Narula 2004; Nielsen 2003). The two confines as the starting frame of this paper are knowledge sourcing view proposed by Boschma (2005); cognitive function and geographical propinquity. The cognitive functional dimension asserts that invention calls for differential, bidirectional understanding which is grounded in miscellaneous network capabilities. On the other hand, geographical aspect presupposes that openness to new ideas or knowledge geographically provides the inertia to apply and develop invention which in turn offers the opportunity to escape cognitive rigidity – cinch- heft. Köhler et al. (2012) study picky hunt referring to specific source of know-how in operation opinions. They validate the specification origins in order to foster invention new to the company, and consciousness mate that grounded specification is benevolent to invention new- to- the- request. This paper extends this theoretical framework and uses it on the part of different types of mates to translate ideas generated internally or externally into invention. In fact, cooperation can be better seen as a form of application of invention, and is virtually isomorphic with problem- working conditioning (Katila and Ahuja 2002). According to the objects of the hunt process, we begin from the demesne that the targeted types of knowledge relate in terms of whether they are towards the request- innovative or establishment- innovative. The difference between both the kinds of invention is based on how novel the invention is the former is related to carbons to a considerable extent and also, concerning technology circles (Gatignon et al. 2002). The final relating to invention without directly competitive inventions (Köhler et al., 2012).

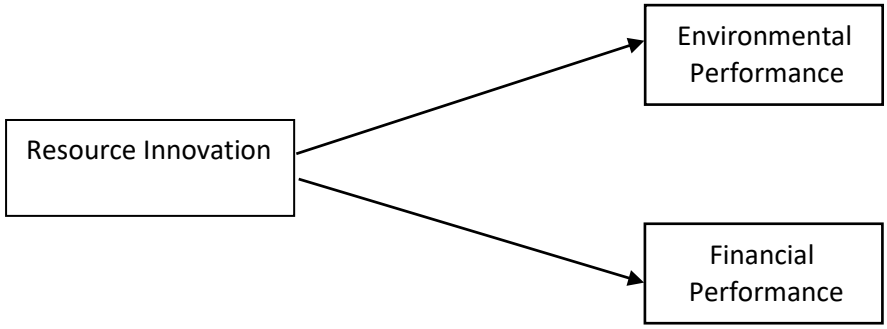
Environmental Performance

The simplest and most measurable environmental impact is the desolate reduction kind. Economical inventions cost businesses less plutocrat by cutting coffers used and wastes labors. The manufacturers in the last decade have developed their packaging, products and shipping methods in a way that they use less of the coffers and there are minimized wastes. The most protruding and the largest of all economical modifications was the transition from the Expedite shelves to the Kallax. The framing of Expedite was thick-set and its shelves were square. But that required many woods for the veneers and chipboard construction works. It also required using as much cardboard as possible in packaging, which in turn produced high consumer usage wastage. It is exactly what Ikea contrivers did – they cut out a many centimeter from the chunky frame and

produced, as far as I understand, the same piece of furniture but slightly smaller and thinner. It also made it possible for them use low wood on the thinner shelves which helped reduce on material used (trees that were smaller were cut down for the wood and to make the cardboard). But there was still further cost saving (and environmental impacts) to be had. Kea was easier to reduce its shipping carbon footmark since the lower design meant more Kallax shelves could fit into one shipment. I was fascinated how much of a difference one, two centimeters could make to the savings – financial as well as environmental. indirect husbandry are economic innovation and waste minimization. It can save minute pockets fixing commodity instead of designing and transmitting a brand-new line. Consumers get to enjoy form rather than copping new, and also get to have a product they like and save plutocrat at the same time. Ideologically it can be sensitive when it comes to introduction of apparel. Everyone knows it is a t- shirt but the design itself has been the same since the turn of the century, 1898. Well, occasionally it's about applying cheap inventions to produce new consumer services. therefore, minimizing consumer waste by keeping the product's continuity longer. Again, not a rambler but your company is erecting team on a trail? Also provides establishment of some of its clothes it stocks in the market. The case of this circular economy is a good illustration of how provident invention can be used to popularize a business model. The service frees the consumer capitalist, and prevents apparels from contributing to a tip In Childe (2009) Sustainability is a massive and rising motorist of the business change, Seebode et al. (2012), Prahlad (2012), Bendul et al. (2017), Rosca et al. (2017), Zhang et al. (2017). Their implications to Innovation are still unequivocal – to live and work in the various world of missing (coffee pots). A primary factor for enhancing adding amenities in the field of invention and sustainability has been realized among the academia and practitioners (Hopkins 2009). Brem and Ivens (2013) posit that numerous associations give substantiation that demonstrate that invention is nearly related to sustainability.

For illustration, there are several global marketable titans who are seeking business openings are furnishing further significance to expand their business to arising demands similar as India, China, and Brazil. Sustainability can be defined as a quality that can help to save, save and keep-sustainability has three extensively accepted factors that are veritably analogous similar as; terrain, society, and economy (Ciceri, 2010; Garbie, 2014; Carter and Easton, 2011). On this base it can be stated, that sustainability can help associations in achieving competitive advantage (Luthra et al., 2015; Preuss, 2007). Kleindorfer et al. (2005) considering the effectiveness of SOM mentioned that sustainable operation practices are significant to enhance the profitability of associations and helpful in order to reduce the negative goods for society and terrain. Gotschol et al. (2014) it is Specific internal environmental programs in associations suggest that environmental operation programs for associations have a significant and positive effect on the profitable, on environment and social business performance of an association because every investment in environmental operations helps to gain profitable benefits for companies far into the future. The organizations have to understand the guests with anxiety refractor-friendly products (Deif, 2011; Houe and Grabot, 2009).This research established that social sustainable practices enable associations to realize low gross social personality (Marshall et al., 2015).For case, though from an profitable angles of sustainability, Woolworths Company has been successful to cut down 9.3 million US Bones chiefly after fixing on ecological, social and profitable bad schemes founded on triadic nethermost line acting on sustainability(Santos et al., 2014).-stage that sustainability is necessary for the operations of an association, achieved through SOM ways.

Figure 1: Conceptual Framework



Research Design

The exploration designs we've chosen is Quantitative. As distinguished by Krishnaswami (2001), however, it was before known as a fact chose study which entails gathering information right from a population thereof at a specific point in time. This design is suitable for this study in a way that the study was carried out in a setting that demands direct response from the repliers while probing being miracle without controlling the variables. The design also enables the actors to explain as well as express their views about the variables under considerations in detail.

Research Instrument

In this study the data have been collected through the administration of questionnaires. Mugenda and Mugenda (2003) noted that questionnaire is one of the most preferred system of data collection due to some reasons such as the ability to find the cost effectively easily.

Target Population & Sample size

District Lasbela especially Uthal SMEs are chosen as target population and the number of samples from the selected population was 10%. Mugenda and Mugenda (1999) proposed that, it is better to use sample size of at least 10% for improved outcome.

Data Collection

The data has been collected by using questionnaire through physically visiting SMEs in Lasbela quarter. Lasbela SMEs are in domain maturity phase and being from Balochistan province it will benefit to generalize the results for entire country. It is also crucial in the identification of the study population is also central in the explorations best captured in the following; The rationale for choosing the SMEs of Pakistan and FI is because the majority of Pakistan's assiduity sector emanates from SMEs. It is also playing a very significant role in job creation, poverty eradication, fulfilling the initial demand and sustainable business opportunity.; Small and Medium Enterprises Development Authority said that SMEs accounted 88% of the working enterprises in the country, total employment by SMEs covered 80% for nonagricultural workforce and average SMEs' contribution to the period GDP was 40%. Most significantly manually products have reached large demand volume. Moreover, the maturity of these enterprises fulfills the demand of the initial population, providing the deniable economical standards' good, and, thus, meets the needs in the further development of SMEs and the environment of Pakistan. It is so because similar products

have captured similar pie of guests for such products are inexpensive, parsimonious with features, and operational (Christensen & Raynor, 2013; Zeschky et al., 2011).

Analyze tool

The data has been entered into computer then it has been checked and removed all the outlier, through the data error free. Moreover, data has been compiled using software Special Package for Social Science (SPSS). The data has been analyzed by applying ANOVA test.

Data Analysis and Discussion

Table 1: Reliability Statistics

Cronbach's Alpha	N of Items
0.750	28

This is the table of reliability statistics; Cronbach's alpha results should give you a number from 0 to 1, but numbers can be negative. If you get a negative number, then you should know there is something wrong with your data perhaps you forgot to reverse score some items. It is the practice that for any set of questions, the alpha coefficient of .70 is acceptable, while .80 is desirable and .90 is ideal. Therefore, in this test, the value above .7 is good sign that portray an acceptable level of reliability of the chosen indicator.

Table 2: Control variables, mean, standard deviations, and Pearson's correlation coefficients

SNo.	Variable	Mean	SD	1	2	3	4	5	6	7	8
1	Enterprise size	1.333	.893	1							
2	Firm Age	3.05	1.368	-.234	1						
3	Industry Type	3.947	1.715	-.093	-.204	1					
4	Number of Innovations	1.807	1.076	.458**	-.078	-.083	1				
5	Frugal Innovation	2.169	.504	.165	.239	-.085	.286*	1			
6	Proactivity	2.655	.912	-.061	.029	.011	-.166	-.072	1		
7	Financial Performance	2.375	.553	-.113	.381**	-.143	.085	.376**	.253	1	
8	Environmental Performance	2.543	.689	.201	.191	-.021	.258	.312*	.067	.203	1

Notes: n= 580. *, ** For correlation coefficients, statistical significance is computed at the two-tailed 0.05 and 0.01 levels.

The Table 2 represents the means and Standard Deviations of research variables to find out the nature and extent of the relationship between two variables using Pearson's correlation coefficient. Mean value for size of the firm is 1.33. It also reveals the standard deviation of 0.893 which is very good because when the standard deviation tends low then it means the variable has high performance in that section. The analysis of collected data proved that there is a direct relationship between firm size and firm size: the results are also highlighted that if one factor in the equation increases, the other factor also increases; on the other hand, if one factor decreases the other factor will also decrease. Mean value of firm age is 3.05 and the standard deviation is 1.368 that is very

well, correlation between firm age and firm size is negligible relationship because it is less than +_0.3 firm age has one to one relationship with firm age.

Industry type has mean value of 3.9 and standard deviation is 1.71 that means it is very well and the coefficient of inter- industrial mobility is also negligible relationship because it is less than +_0.3, and inter industrial mobility with firm size also showed negligible relationship with firm age and the inter- industrial type has perfect positive relationship with industry type. Many of them have large standard deviation to its mean which imply that it has the capacity to more away from its mean position or reference point, so the number of innovations in the sector has a worse position. The association with firm size is moderate because it is less than +-0.5 and above then +-0.3, the relation with firm age and industry type is weak because it is less than +-0.3 and the association between innovation and innovation is, one to one. The results for simple innovation have a lesser standard deviation, which shows very well performance in the sector, have a correlation with other variables, which is negligible because their values are less than ±0.3, and there is a one to one relation between simple innovation and simple innovation.

It also has less standard deviation & correlation of proactivity with other variables is also least because the value itself is least more than +-0.3 & relation of proactivity with proactivity is one to one relation. On a mean scale, the financial performance has a mean value of 2.37 and less Standard deviation value, and financial performance has a very poor correlation with other variables expect for firm age and simple innovation, where they show a moderate correlation and a perfect or straight line, correlation with the financial performance with the financial performance. A least amount of variability: environmental performance has a mean value of 2.5 and less standard deviation that is desirable for the performance of the variable. It has right direction with other variables but in a very low degree with simple innovation has low positive correlation because the value of cross product is less then +-0.5 and more than +-0.3. For environmental performance it has direct or one to one correlation.

Table 3: Regression analysis

Variables	**Financial Performance**						**Environmental Performance**					
	prototype I		**prototype II**		**prototype III**		**prototype I**		**prototype II**		**prototype III**	
	Coef	**SE**	**Coef**	**SE**	**Coef**	**SE**	**Coef**	**SE**	**Coef**	**SE**	**Coef**	**SE**
Enterprise size	-.068	[.091]	-.095	[.08]4	-.105	[.084]	.135	[.11]6	.114	[.115]	.120	[.117]
Firm Age	.143	[.054]	.104	[.052]	.084	[.054]	.132	[.069]	.101	[.071]	.113	[.075]
Industry Type	-.022	[.042]	-.023	[.039]	-.025	[.039]	.027	[.054]	.026	[.053]	.028	[.054]
Number of Innovations	.081	[.073]	.064	[.070]	.084	[.072]	.131	[.093]	.110	[.096]	.099	[.099]
Frugal Innovation			.350	[.139]	.799	[.405]			.280	[.191]	.013	[.563]
Proactivity			.170	[.071]	.543	[.324]			.085	[.098]	-.136	[.450]
Frugal Innovation × Proactivity					-.194	[.165]					.216	[.229]
R^2	17.0		32.7		34.5		13.6		18.2		18.7	
F-Value	12.666		24.041		27.688		12.053		11.869		13.606	

ΔR^2		17.7	2.3		4.6	0.5

Notes: Financial performance and environmental performance are dependent variables the values represent unstandardized regression coefficients accompanied by their standard errors. *p<0.05, **p<0.01, ***p<0.001 (all two-tailed tests).

Regression analysis is used when we test the connection between two or more than two aspects.

In regression analysis we see how Independent variable impacts on the dependent variable. In regression analysis we calculate the R2 to check the goodness of fit (0<=1) when the amount is going downward means in zero side that is not good, fitted model when the amount is less equal than 1 that is called best fitted model so here is a good, fitted model for both dependent variables. In adjusted r square or 2 we see the degree of freedom here our numbers of observations are greater than variables so we can run the model and get the solution (n<k). Standard errors simply mean how much further you stand from your regression line or trended line. F-value indicate how much the models are significant or not, for these two dependent variables F-value is greater than 0.05

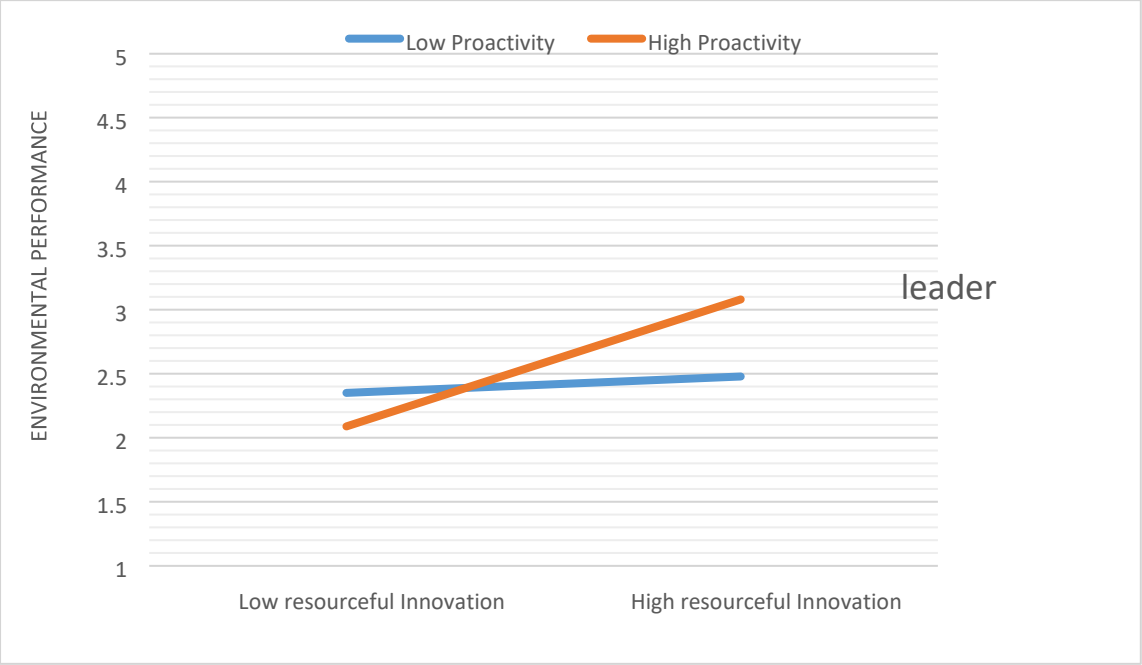


Figure 2: the moderating role of proactivity strengthens the positive relationship between simple innovation and firm environmental performance

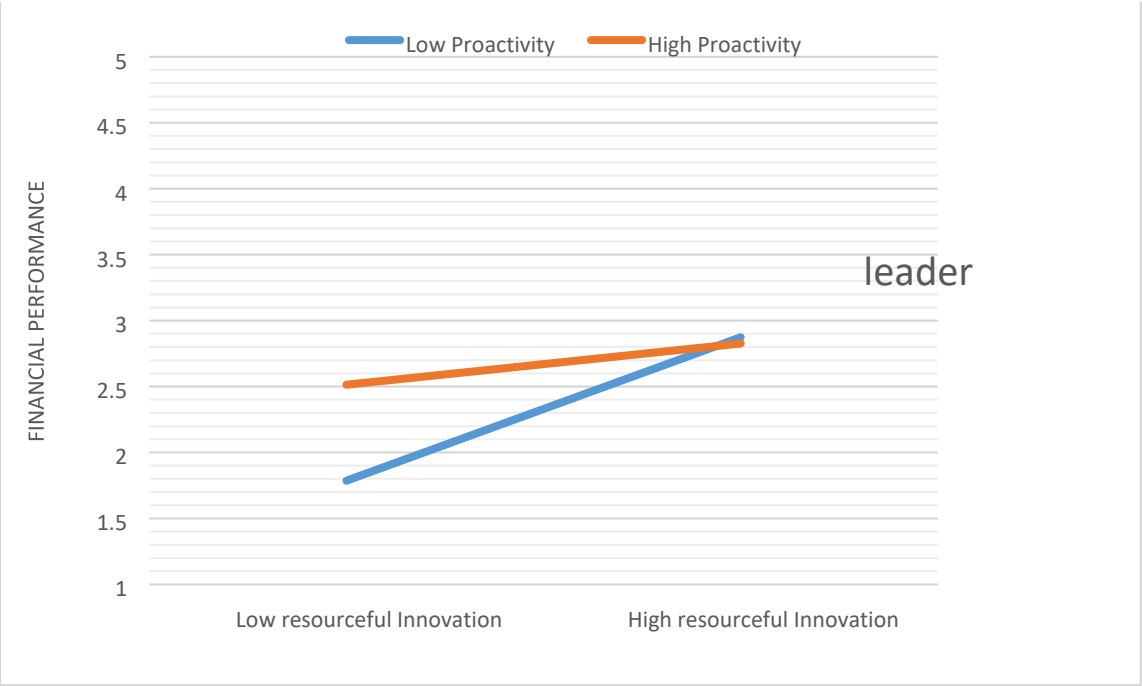


Figure 3: It was further found that proactivity philosophically the link between simple innovation and firm financial performance

Conclusion and Recommendations

This study explores the dual impact of simple innovation on the environmental and financial performance of SMEs. The findings demonstrate that simple innovation fosters cost-effective and sustainable solutions, enabling resource optimization and waste reduction. Environmentally, SMEs adopting frugal practices significantly minimize ecological footprints through efficient use of materials and energy. Financially, these innovations contribute to cost savings, enhanced market competitiveness, and improved profitability, particularly in resource-constrained markets.

The results underline the necessity for SMEs to embrace simple innovation as a strategic approach to address pressing global challenges, such as resource scarcity and economic inequality, while simultaneously achieving business growth. Moreover, the study highlights the moderating role of proactivity, which strengthens the environmental benefits but reveals complexities in financial outcomes.

In conclusion, simple innovation emerges as a pivotal strategy for SMEs, bridging sustainability with financial viability and offering a roadmap for scalable impact in both emerging and developed markets. Further research should explore its sector-specific applications and long-term implications to harness its full potential

Limitations and Future Research

This study is based on primary data collected from SMEs in Karachi and the Lasbela district of Balochistan, including Hub, Uthal, and Bela. The main data sources were employees from various SME categories. We limited our data collection to these areas due to time constraints and the high concentration of SMEs in these regions. Data was gathered through questionnaire surveys,

targeting small businesses, particularly shopkeepers, and some medium-sized enterprises. This approach enabled us to analyze and compare the results with other SMEs across the country.

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