

A Moderation Analysis of Environmental Turbulence and Organizational Leadership between the Relationship of Intellectual Capital and Frugal Innovation in SMEs in Pakistan

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Abstract

Introduction:

*This study has examined the direct effect of intellectual capital on the frugal innovation in SMEs in Pakistan with the two moderating variables environmental turbulence and organizational leadership. Study has explained the role of organizational leadership between the intellectual capital and the frugal innovation as well as also the role of environmental turbulence between the same two variables of study. **Methodology:** study is descriptive and quantitative. Data is taken from the SMEs of Pakistan and according to the Abdullah, (2020) the total SMEs in Pakistan is 3.3 million on the basis of new figures. The population is large so the Roscoe has suggested selecting the sample from large population up to the five hundred. Selected sample size is 400 SMEs. **Analysis:** data analyzed through the very latest method of analysis, AMOS. For moderation analysis Preacher & Hayes data analysis techniques is used. **Results:** lastly, the results of study according to the suggested tests shows that intellectual capital has a positive & significant effect on the frugal innovation and environmental turbulence and organizational leadership moderates a positive as well as significant relationship between the frugal innovation and intellectual capital.*

Keywords: Environmental turbulence, Organizational Leadership, Intellectual capital, frugal innovation

Introduction

The Small & Medium Enterprises have a significant influence in district's financial development and is key supporter in nation's GDP. In rising economy, SMEs are significant supporter of the national financial turn of events and furthermore a significant wellspring of the work age, [1] [2]. In the building up country's cases, the job of SMEs is additionally amplified and supported in light of the fact that the improvement of the region isn't just based on shoulder of MNEs. Since in country's monetary development, significance of SMEs is broadly recognized and there is a considerable measure of writing creating models which portray the example of SME development [3]. The more writing is fixated on the areas like Latin America, Canada, Caribbean, South Africa, the Pacific and the Europe [4]. In the end, hardly any examinations have concentrated on SMEs, which incorporate the nations like Pakistan, India, and China [5]

Information based economy; intellectual capital is appeared as, basic achievement factor for organizations [6]. Intellectual Capital is principle asset for effective execution of firm; anyway still less consideration is certain to this construct in contemplate identified with the creating nations setting and all more precisely

for SMEs. There are; in Pakistan hardly any examinations to recognize effect of Intellectual capital-firm execution [7]. Pakistan's SMEs are confronting absence of gifted and experienced laborers. It is the primary explanation behind their failed to meet expectations and business disappointments. SMEs in Pakistan likewise need to develop idea and viable ramifications of intellectual funding to their associations as they can achieve market-based serious periphery. In Pakistan tempestuous condition is the primary obstacle that thwarting the presentation of organizations and keep them from making the most of chances [8]. Because of this, SMEs of Pakistan are not performing admirably and faces numerous difficulties. Which bring about ceaseless changeability in cost/value, clients' requests/inclinations and structure of contenders? Thus the target of this exploration paper is to recognize the impact of intellectual capital and ecological choppiness on SMEs execution with regards to Pakistan and furthermore look at the directing impact of natural disturbance between Intellectual capital and SMEs execution. Littler firms in the Western nations have issues utilizing Frugal Innovation for creating 'Thrifty' items. "Frugal" is characterized as "straightforward, plain and costing nearly nothing", [9]. Parsimonious advancement (FI) alludes to inventive items and administrations that try to limit the utilization of material and money related assets in the total worth chain with the goal of lessening the expense of possession while satisfying or in any event, surpassing certain pre-characterized rules of satisfactory quality guidelines [10]. Littler firm's imaginative ability is an urgent driver of supportable upper hand in the present quickly evolving markets, where the ceaseless improvement of new items and procedures is the way to endurance, development, and benefit [11]. Western organizations that need to participate in economical advancement must form hierarchical structures and capacities to empower the improvement of parsimonious items [12]. Anyway the issue exists more with the western littler firms as they don't be able to construct such hierarchical structures in rising nations to sustain ability and later create parsimonious arrangements. While going to the greater associations or Multi-national companies (MNC's) in the West they anyway have auxiliaries everywhere throughout the World and particularly in the developing markets where this parsimonious advancement began and is currently developing a long ways. They were likewise effectively ready to arrangement R&D labs and addition the necessary information on the nearby markets and outlook to thoroughly consider cheaply information moves from developing markets assets to create and plan items utilizing the hidden idea. It is to be sure hard for the littler firms having asset imperatives and restricted foundation to make this conceivable as like the greater firms. Rather than huge consumptions out in the open and private R&D as fundamental forerunners to development, the idea of economical advancement thus empowers acknowledgment of another kind of development which exposes such substantial venture claims [13], along these lines bringing up that this advancement don't require higher speculations though information [14] and attitude are pre-imperatives for littler firms. This examination would be useful to comprehend the different issues littler firms face and perceive how they beat these issues, to accomplish what they would look for utilizing the very idea of 'Parsimonious Innovation', an idea which the remainder of the world is gaining from the developing markets lastly build up a hypothetical model dependent on the encounters of this exploration. Before diving profound into the issues they face, it is likewise imperative to get why and how FI helps the littler firms in the Western world to think and act cheaply [15]. Rattling off these things is important to comprehend why the West is going for Frugal Engineering or Frugal Innovation which previously picked up ubiquity in the developing markets for its moderateness factor, gives fulfillment and a general comprehension of the need of FI in the western market setting. In spite of the fact that we focus for the most part on how these western firms utilize this methodology in their remote market section and to create items for the clients in the developing markets to serve the BoP (Bottom of the Pyramid) clients [16]. Worldwide enterprise supervisors were the ones who trusted in this idea and were in a route fruitful in utilizing it for

their potential benefit either to offer more an incentive to its clients, or being mindful to nature or to investigate the undiscovered market potential which existed both in Emerging markets just as in the West utilizing Frugal Innovation. A few significant financial changes represent the ascent of cheap advancement in the created world [17]. All the more explicitly the exploration on FI is very new and very little had been done as such far which clearly gives us a great deal of holes to fill and parcel more to investigate in detail. In this journey we have decided to investigate a greater amount of how could littler firms in the west utilize this advancement system which is right now been utilized either enormous combinations or the recently come up new businesses. What of the littler firms which have developed as far as both their plans of action and product offerings. So as to stay serious and fulfill the neglected need in developing markets, firms need to reexamine their way to deal with advancement and item improvement [18]. Change is the need of great importance particularly for those organizations to utilize this Innovation model to investigate further in the developing markets which is for the most part kept to the greater organizations. It is accordingly a difficult assignment for the littler firms, and to do so they need the correct arrangement and the capacity to fulfill the necessities of the base of the pyramid which would be additionally comprehended utilizing this exploration study.

Study Objectives

1. To investigate the direct effect of intellectual capital on the frugal innovation
2. To investigate the relationship among the intellectual capital, organizational leadership and the environmental turbulence
3. To check the moderation of organizational leadership and environmental turbulence between the intellectual capital and frugal innovation

Study importance

Study importance is cleared from its unique combination of variables. In literature it was a big gap since decades and it was the need to test these variables in a single study. It is found from literature that intellectual capital is the main asset of the organization and it can play a very significant role in the frugal innovation through the help of organizational leadership and the environmental turbulence also can be a cause and can support human capital to work on the frugal innovation. This investigation contributes altogether to the experts as the discoveries of this examination give them an unmistakable comprehension on the variables influencing the frugal innovation in SMEs execution in accordance with nation's vision 2025 in Pakistan. With certain proof on variables impacting SMEs execution, the professionals understand the significance of drivers for superior exhibitions. This investigation likewise would like to help strategy producers, legislative organizations and SMEs to increase better understanding identified with SMEs' issues in their undertaking to contend and get by in a serious domain.

Literature Review

Intellectual Capital

In 1969 has been first conceptualized the wording "Intellectual Capital" [20]. He guessed that scholarly capital is past genuine astuteness however to some degree consolidated in scholarly activity. From that point onward, intelligent capital has come to be a more extensive examination topic in light of development of the new economy which is fixated on information and data [21]. "A lot of intangibles resources including abilities, assets and capacities that flood firm execution and create organization's worth is seen as scholarly

capital" [22], expressed that "the utilization, advancement and execution impact of scholarly capital have enlarged essentially throughout the years [22], focused on that Intellectual capital is the significant component for firm reasonable adequacy, and a basic asset. [23] Expressed that now a days the world is changing from a creation based economy to information based economy, so savvy capital is a urgent component for the authoritative achievement. [24] Conclusion out that the "thoughts are changing into ultimate result (items and administrations) in information based economy [25], discussed that scholarly capital be known to add to the movement of SMEs.

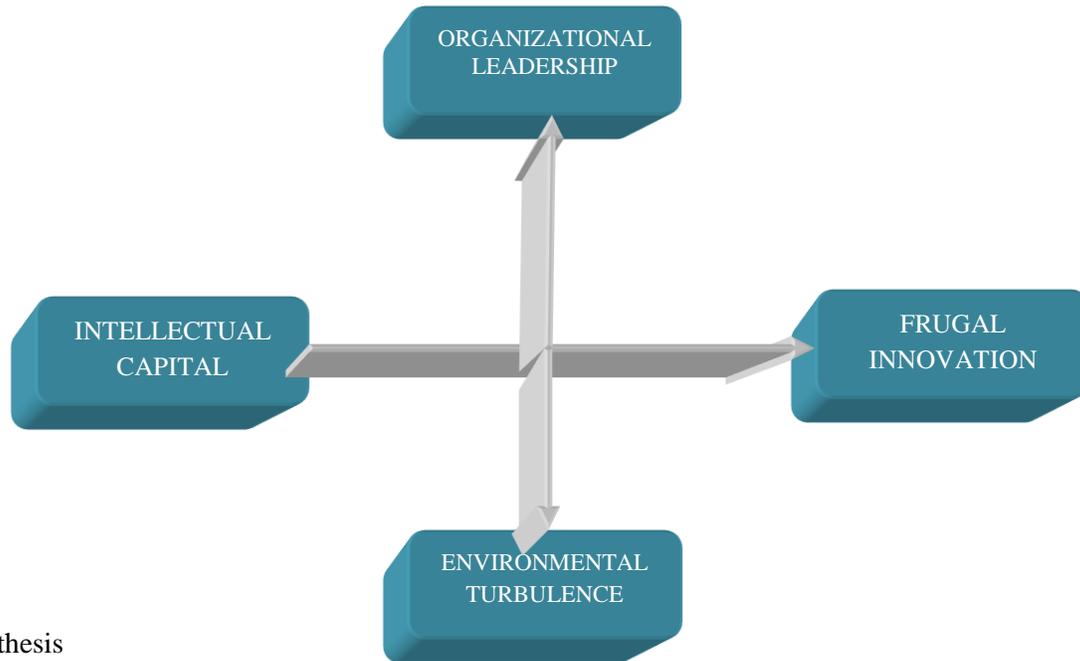
Environmental Turbulence

Numerous analysts conceptualized the ecological choppiness and researched its impact on hierarchical [25]. The primary individual is Ansoff in 1987 conceptualized ecological disturbance top to bottom, which was hitherto named as Ansoffian vital achievement worldview. The effect of natural disturbance on business execution is first distinguishing by An off, so he is one of the pioneer scientist who led examination with respect to ecological choppiness. The general view in this examination stream is that organizations must assess the disturbance of the earth wherein they are working and partner their capacities, forcefulness and responsiveness to the natural choppiness [26]. [26], term ecological choppiness "as a capricious change in the generosity, (for example, accessible monetary assets) and multifaceted nature, (for example, qualities of association's customers) of an association's situation". These violent varieties challenge the association's basic security, and in this manner will adversely influence hierarchical execution [26]. The components of the earth are indispensably powerful, which may turn nature precarious. Natural dependability prompts associations to progress fixed schedules' sets for making do with ecological components [27].

Intellectual Capital and frugal Innovation

Focused on that for presence of a firm, the primary determinants are information [28]. This factor drives the enthusiasm of researchers to consider scholarly capital and firm execution [29]. Past examinations led by [30], uncovered a positive noteworthy connection between information on business person and firm execution. Anyway preceding authentic proof, a few irregularities identified with scholarly capital on firm execution relationship additionally exist. The irregularity alludes to the clashing outcomes in the connection between the two develops [31]. A few investigations discussed that there is unimportance connection between scholarly capital and firm execution [31]. Through the audit of previously mentioned writing it is cleared that relationship exists between scholarly capital and firm execution yet for the most part with regards to huge firm. So there is hole on study identified with little firm the same number of analyst and researcher overlooked this specific situation. So there is shortage of studies identified with the SMEs all the more uniquely in creating economies like Pakistan. RBV structure the elusive perspective, the basic focal point of impalpability is toward assets, for example, development ability and scholarly capital utilized so has an upper hand in the earth [32]. Associations utilizing such assets are at favorable position of utilizing inner ability with a perspective on obtaining the essential quality and capacities in executing the defined system for them to accomplish their major objectives. The effect of such methodologies is seen through hierarchical capacity in increasing upper hand and then staying applicable in the dynamic condition. Numerous creators connect at least one of the scholarly capital segments to an economical upper hand [33], contended that in the present worldwide and ever-evolving condition, scholarly capital is progressively filling in for substantial assets as a significant wellspring of company's serious edge. As previously mentioned, because of the irregularities and blended discoveries, past investigations state that the relationship among scholarly capital and execution ought to be directed [33], Past examinations demonstrate that various elements can direct and encourage the scholarly capital-execution linkage [33]. A few specialists accentuated the significance of natural choppiness to encourage scholarly capital-execution relationship in SMEs [33].

Research Framework



Hypothesis

1. There is a direct effect of intellectual capital on the frugal innovation
2. There is a positive and significant relationship among the intellectual capital, organizational leadership and the environmental turbulence
3. Organizational leadership and environmental turbulence moderates between the relationship of intellectual capital and frugal innovation

Methodology

In this examination study poll was utilized to gather the information among material SMEs. The number of inhabitants in participants included proprietors, CEO/overseeing chief and ranking director. Basic irregular examining method was utilized in this examination. In light of [33], there were 400 example required to speak to the populace. Along these lines 400 surveys were appropriated in Textile SMEs out of which 350 were returned and usable. There are three factors engaged with this examination concentrate to be specific; firm execution, intellectual capital and frugal innovation. Firm execution measure is received from [33] which comprise of 10 things. The intellectual capital was estimated by 14 things: human capital (5 things), authoritative capital (4 things) and social capital (5 things) which were embraced from [33]. The ecological disturbance scale is received by [33], which were estimated by 15 things: frugal innovation (5 things), mechanical disturbance (4 things), and serious force (6 things). Answers were evoked on Likert scale. Prior to going before the assortment of complete information, a pilot study was led.

The study utilized (SEM) to survey the Measurement model and basic model. The initial phase in this examination centers around develop unwavering quality and legitimacy (Measurement Model), while the subsequent advance tests basic connections among idle builds (Structural Model). There were 400 (100%)

respondents, out of them, respondents who at long last made it to investigation, are CEOs/overseeing chiefs in their regarded associations were 350. while 50 (12.5%) of them were ranking directors. Albeit 350 (87.5%) of respondents were male, 50 (12.5%) of them were female.

Analysis and Interpretation

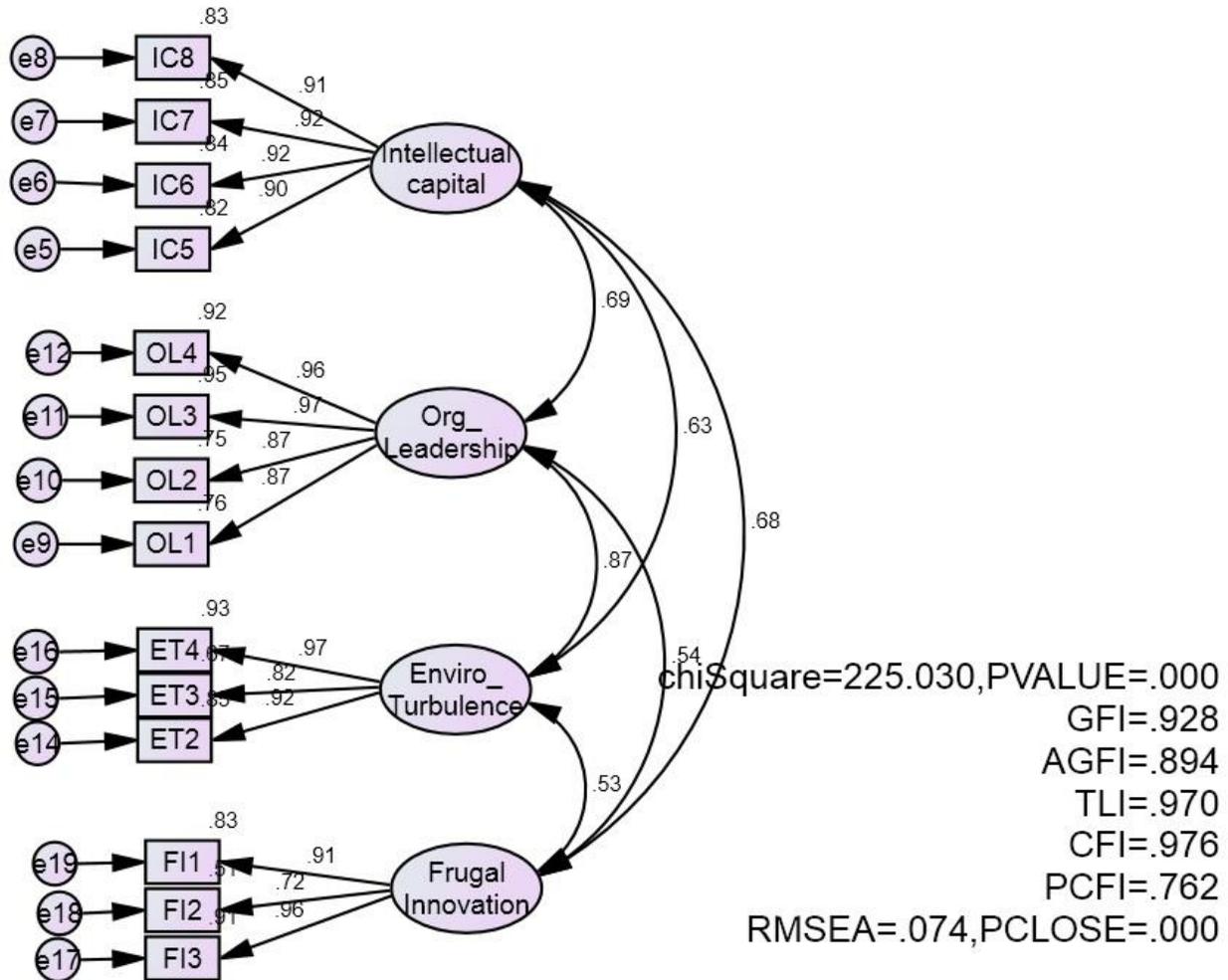


Figure.1-Measurement Model

The figure.1, measurement model indicates the four measured constructs which were the main focus of study. Two constructs are moderating, one is exogenous and one is endogenous. The measured moderating constructs have excellent factor loadings for their items OL1=.76, OL2=.87, OL3=.97, OL4=.96 and these are the predictors of the instrument reliability and the responses validity that obtained responses are reliable and valid for the construct Organizational Leadership. Same as environmental turbulence has good loading which are as ET2=.92, ET3=.82, ET4=.97. the number of items were 8 for the intellectual capital and items 1, 2, 3 and 4 have been eliminated due to the low factor loadings and remained items have good factor loadings and same is with the frugal innovation and remained number for this construct's items is 3

and have high factor loading. All constructs have positive and significant covariance level with each other as can be seen in the measurement model. The model fitness indices are also in the normal level of model fitness, and suggests; that model for research is perfect to be tested.

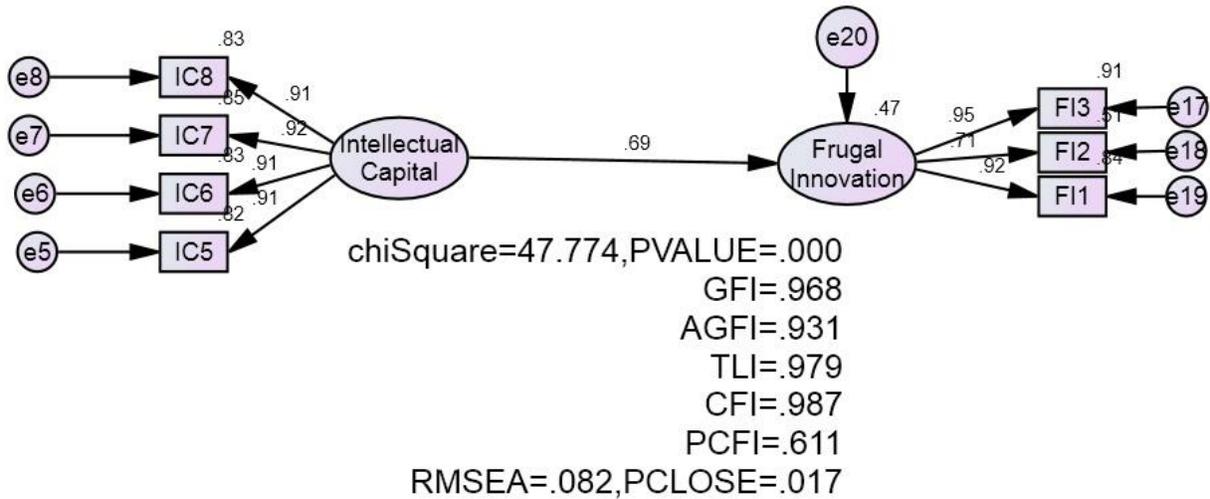


Figure 2. Path Analysis

In figure.2- path analysis has been tested by using SEM. The Path from Intellectual capital to frugal innovative has positive as well as significant value. The value upon the path arrow is the beta value which shows that intellectual capital has 69% impact on the frugal innovation. Beta value shows that still 31% impact can be achieved by exploration of other dimensions of intellectual capital on the frugal innovation. The factors loadings for intellectual capital are quite good as well frugal innovation has also good loadings. While the model fitness parameters suggest that the GFI is .968 which clearly depicts a true picture of model fitness.

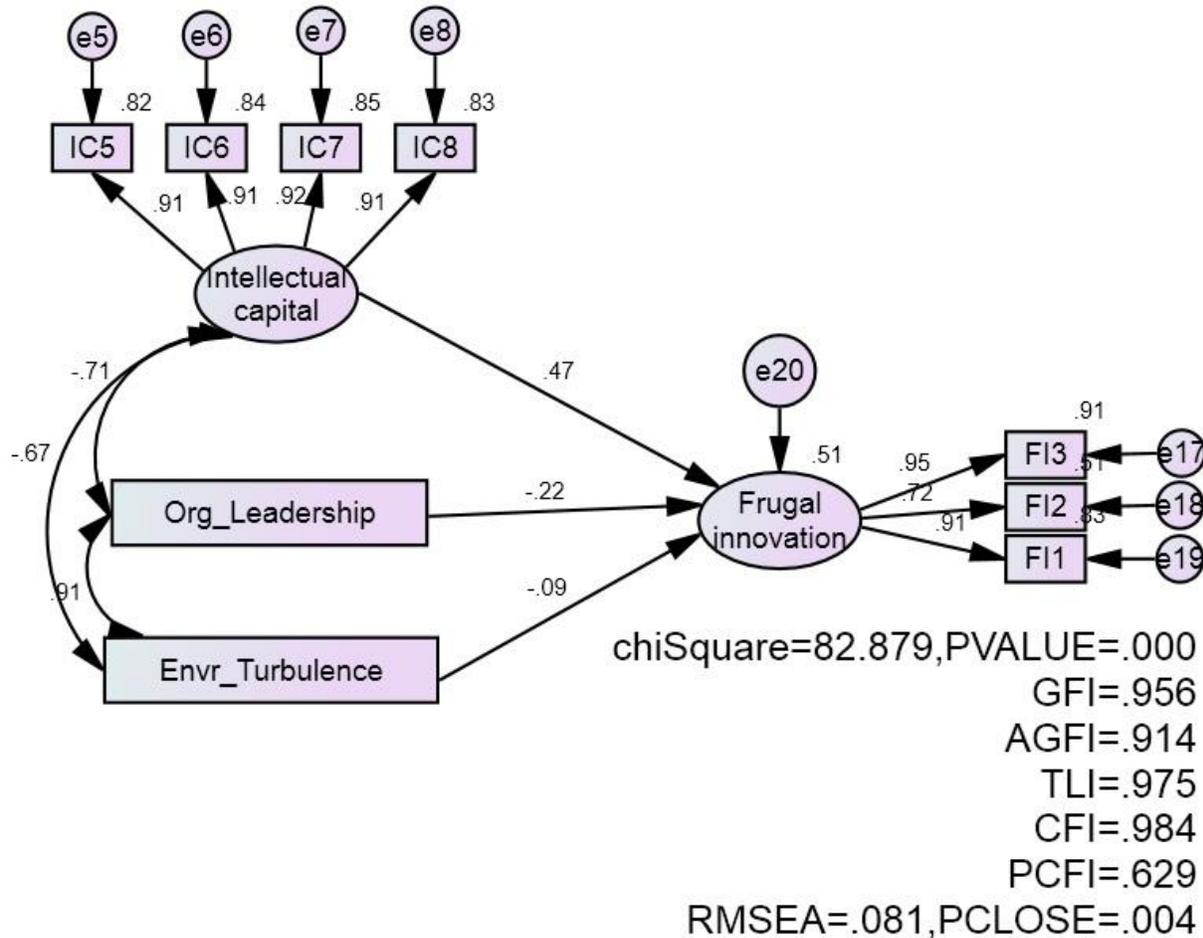


Figure 3- Moderating effect test

Figure 3- moderating effect test have been performed. the two moderating constructs were hypothesized earlier in the study that organizational leadership the first moderating construct and the environmental turbulence the second moderating construct fully moderates the relationship between the exogenous construct intellectual capital and the endogenous construct frugal innovation. According to tested values before moderation variables insertion the two constructs exerting the 69% impact and now it is 47% and the relationship between the org_Leadership and frugal innovation is insignificant and envr_turbulence also have the insignificant value that is the confirmation of the moderation according to Hair et al. (2013). Though all the figures in the model fitness values, suggests that; the model tested is fit.

Results Discussed

All the tests are performed in AMOS. The number of SMEs considered for study is 400 in number. According to Mansoor (2020), the total number of SMEs in Pakistan is 3.3 million. Two constructs are moderating, one is exogenous and one is endogenous. The measured moderating constructs have excellent factor loadings and these are the predictors of the instrument reliability and the responses validity that obtained responses are reliable and valid for the construct Organizational Leadership. Same as environmental turbulence has good loading and the number of items were 8 for the intellectual capital and items 1, 2, 3 and 4 have been eliminated due to the low factor loadings and remained items have good factor

loadings and same is with the frugal innovation and remained number for this construct's items is 3 and have high factor loading. All constructs have positive and significant covariance level with each other as can be seen in the measurement model. The model fitness indices are also in the normal level of model fitness, and suggests; that model for research is perfect to be tested. Beta value which shows that intellectual capital has 69% impact on the frugal innovation. Beta value shows that still 31% impact can be achieved by exploration of other dimensions of intellectual capital on the frugal innovation. The factors loadings for intellectual capital are quite good as well frugal innovation has also good loadings. While the model fitness parameters suggest that the GFI is .968 which clearly depicts a true picture of model fitness. the two moderating constructs were hypothesized earlier in the study that organizational leadership the first moderating construct and the environmental turbulence the second moderating construct fully moderates the relationship between the exogenous construct intellectual capital and the endogenous construct frugal innovation. According to tested values before moderation variables insertion the two constructs exerting the 69% impact and now it is 47% and the relationship between the org_Leadership and frugal innovation is insignificant and envr_turbulence also have the insignificant value that is the confirmation of the moderation according to Hair et al. (2013).

Conclusion

Study has investigated the relationship among the four constructs namely; Intellectual capital, frugal innovation, organizational leadership and the environmental turbulence and it is found that these constructs have positive and significant relationship with each other. the tested hypothesis; Intellectual capital has direct effect on the frugal innovation hence proved from the path analysis by using the SEM analysis, in which the beta value was .69 and also the value was positive. According to results this hypothesis of study treated as accepted. The other domain of study was the moderation analysis of two constructs between the intellectual capital and frugal innovation and hence it is regarded that these two constructs namely; organizational leadership and environmental turbulence successfully moderates the relationship in between the intellectual capital and the frugal innovation.

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