

Structure Equation Modeling of Factors Affecting Export Performance of Weaving Sector of Pakistan

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Abstract

The Textile Industry of Pakistan is considered as the lifeline of the country's economy. It accounts for the nearly 55% share of the total economy. Major exports from textiles are yarns, raw and finished fabrics and also a limited quantity of value-added textile items. However, from the last one-decade, the textile industry is facing a lot of problems in terms of getting and maintaining export orders. Due to this Pakistani Textile Industry losing its competitiveness day by day resulting loss in millions of US Dollars per years. The raw woven fabric manufacturing sector lies almost in the middle of the supply line having a share of 8% in world exports. Its performance is significant for next value chain. This sector is also facing challenges in maintaining and improving its export rate which reduced from around 2.9 to 1.9 Billion US\$ in 2017 whereas world market demand is increasing. Hence deprived performance ultimately losing its competitiveness. For this internal, external factors considered as independent variables and textile Business policy as a mediator variable together taken in order to know the impact on dependent variable export performance measured in percentage. Their relationship was analyzed by using Structural equation model and found eight factors are significant at confidence internal level of 90%. The government policy showed a significant mediation effect on export performance against eight independent variables which indicated its positive role in export activities. The recommendations in terms of new product development such as tri-axial woven, multilayer innovative fabrics, new markets, fulfillment of government promises thru policy are suggested for improving export rate and remains valid for long time.

Keywords: export rate, Pakistani textile, textile industry, competitiveness.

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Introduction:

The textile industry has a noteworthy position in the business arrangement of Pakistan, as it caters an important need of human beings, namely, clothing. The total worth of textile goods around the globe stood \$667.5 billion in 2015 (about 83.1% were fabrics and 16.9% were yarns), higher 1.5% as compared to the previous year (World Bank Report 2016). Therefore it has been estimated that in the year 2020 the worldwide market worth of textile organization will be

\$842.6 billion which is an enormous increase of 26.2% since 2015 (Sheng Lu 2017, WTO Statistics 2017). The composite yearly development amount of the market was 4.4% amongst 2011–15. Whereas the market place of Textile factories from Asia-Pacific Land considered for 54.6% of the worldwide worth in 2015 and Europe considered aimed at an additional 20.6% of the marketplace. The composite yearly growing amount of the market in the period 2015–20 is projected to be 4.8%. The demand to remain in textile business always been important due to

expansion every year. Depletion of apparel is more income and price reactive than food, for instance, the Worldwide cross-sectional investigation has shown apparel spending has an earnings springiness of about 0.9 while food has an earnings springiness of 0.1 to 0.3 in strong economic countries (Seale, et al, 2003).

Export is considered as an activity in which country produced products domestically and sent to other foreign countries for earning revenues (Griffin & Ebert, 1995). This activity is done when any country cost of production is high and not enough to produce in large quantity as any country needs than such products are sent to other countries on their demands and the item for consumption might not take sufficient lifespan to defend vast undeviating savings and the party-political features are not favorable (Cherunilam, 2005).

The export competitiveness or export performance typically can be judged through many issues, for example, real exchange rate, comparative advantage, export share %, terms of trade, topographical attentiveness, trade policies, world income, etc. According to the economic survey of Pakistan (2015) by Ministry of finance, Pakistan considered as the fourth grower of raw cotton in the world and now at the 6th point from 5th exporters of raw textile goods in the world. In the year 2015 it was found china, European Union and India were at the top three positions in terms of textile exports. In total, they considered for nearly two-thirds of total exports.

The exporters of 1st ten positions in terms of raw material/semi-finished goods, altogether practiced a drop in the worth of their exports in 2015, with the uppermost deteriorations realized in the European Union (-14 percent) and Turkey (-13 percent) and Pakistan of -8%. The least drop was logged in China (-2 percent). Amongst the top ten exporters of clothing, upsurges in export prices were logged by Viet Nam (+10 percent),

Cambodia (+8 percent), Bangladesh (+6 percent) and India (+2 percent). The additional foremost exporter's maxim inactivity in their export tenets (United States) or logged a drop including Pakistan (WTO Statistics 2016). In terms of Revealed comparative advantage, Pakistan has 1st rank, in raw cotton textile manufacturing whereas India has 3rd rank, China 4th and Japan 12th in 2016 which was calculated using Bella Balassa Revealed comparative advantage index of 1965 (Grish Kumar, 2017).

The mill sector and power loom sector is the dominant sector in terms of investment, output, exports, and technology. The weaving mill sector and the power loom sector considered as major responsible for export and high level of ability to develop millions of meter fabrics per year (Annual report of APTMA 2015), while hand loom weaving sector is considered the decentralized sector and not contributes in any significant role of export activity. The sector product called raw because it develops without any chemical finishes applied onto the fabric such as dyeing, printing or any other functional finish. This sector mainly produced cotton fabrics and also with their blends of polyester and viscose. But more than 80 % of exports of this sectors comprises of cotton base raw fabrics. The companies who entered into the exports activities found prolific and proficient in performance as compared to other non-exporting companies (Wagner 2005).

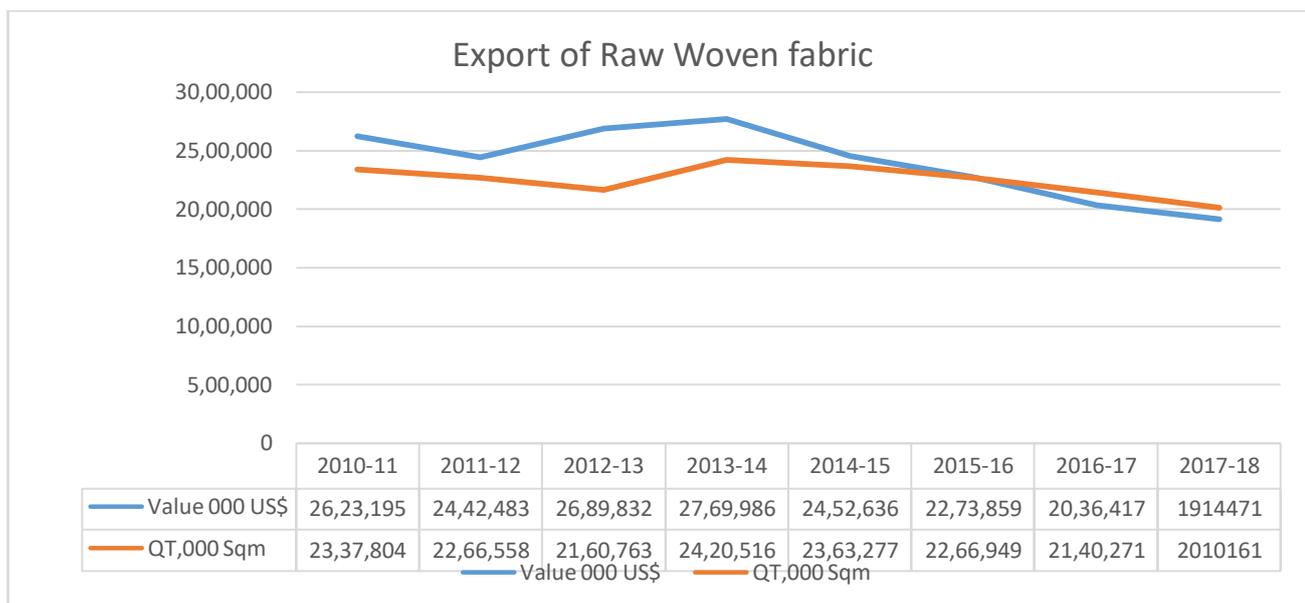
Pakistan has edge in exporting raw woven fabrics due to availability of cheap raw material as like in China and India , more investment and expertise in raw woven fabric of cotton and its blends of coarser quality manufacturing than India and Bangladesh and Sri Lanka (Robbani (2004) and Soan Roy, 2013) and also having cheap labor cost of 0.58 to 0.9 US \$ per operating hour as equaled to additional regional opponents, China and India of 1.12 to 3 US\$ (Werner International, Inc. 2014 USA and Gereffi, 2003) the geographical position of Pakistan also in terms of trade efficiency

through seaport like Karachi and Gwadar seaport which is also the adjacent warm-water harbor to the surrounded by land Central Asian Republics and Afghanistan via Indian Ocean.

But from the last few years' raw woven fabric manufacturing sector losing its share in exports, losing its competitiveness in making raw woven fabric which resulted from sector unable to get more orders. Due to this it is losing its export rate which is evident by the Trade Development Authority of Pakistan, Ministry of Textile Industry and commerce Pakistan that in the previous years from 2012 to 2017 the overall output and exports of raw woven fabric reduces around 10.1% to 20% which is actually losing value in millions of US dollars (Textile Brief, Pakistan textile Journal 2016, APTMA 2016, Ministry of Textile, 2016). Also having fewer orders from the customers and

even unable to complete the orders on given prescribed time due to such things importers giving preferences to other regional countries.

There is a big opportunity in rising the textile exports as their demand is increasing day by day but Pakistan instead of increasing export level especially in raw fabrics is showing stagnant or decreasing level. The increasing trend of global Textile export was observed from 1.09% in 2006 to 3.3% in 2013 from one of the competitors known as from Bangladesh. Likewise, India enlarged from 3.4 percent to 4.7 percent, China from 27 percent to 37 percent though Pakistan has plunged from 3.1 percent to 2.1percent (Business Recorder, Pakistan July 31, 2015). The export and fabrication of raw woven fabric's sector trend are not satisfactorily, instead of increasing it is decreasing which is shown below:



Source: Trade Development of Pakistan (2017). Statistics. Ministry of Commerce and textile.

Pakistan has lost some of its competitive edge in international textile and clothing export market on account of high business costs and lower labor productivity. The total textile and clothing global share of Pakistan was recorded 1.52% last year in 2016 from 2.1%. Also In the recent time of the year 2017, the performance of the textile sector in

terms of exports observed less by more than 2% throughout Jul-Mar FY17, afterward deteriorating by 8.2 % in the similar epoch last year. The descent is primarily clarified by inferior substantial ships of lesser value-added goods like cotton and fabric, as worldwide cotton values recovered in the epoch underneath appraisal. Exports of more or less high value-added items, like bed wear and readymade garments, enlarged through Jul-Mar FY17; hearteningly, their

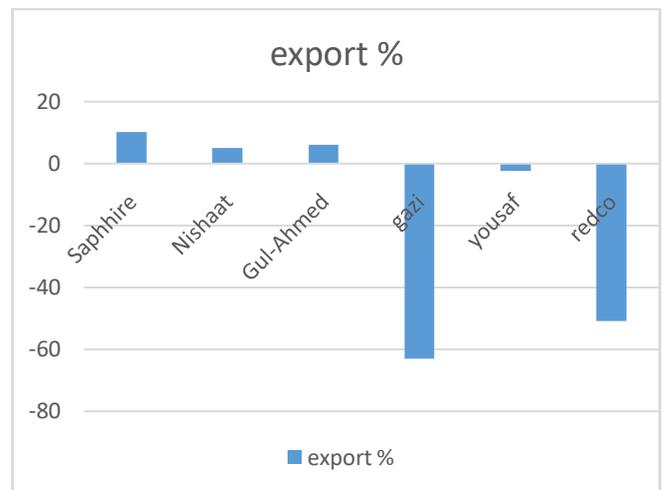
improved performance was principally an end result of greater substantial, mostly owing to recapture in mandate commencing from the key EU markets. This reflects the poor performance of the country's textile sector.

Meanwhile in the raw woven sector due to such export performance issue weaving capacity of the export mill sector shrunk from 11000 in 1999-2009 to only 5,000 in 2015-16, and the working looms were reported to be only 4,000 in recent 2017(Dr. Noor,2018). It reflects almost more than 50% loss in working capacity due to losing competitiveness. It indicates also there are some factories from the sector which are still performing as compared to many others either belongs to any size, capacity, and type. Their Best practices could be road map for other by analyzing in terms of factor comparison. The country must develop a focused approach to boost textile exports as they significantly contribute to the country's GDP. The grey areas, if any, must be addressed to further enhance exports. All shareholders must put in their best to boost textile exports in fabric sector for the economic survival of Pakistan.

Whereas the export performance of some factories such as Sapphire textile mills, Nishaat Weaving mills, Samin Weaving Mills and Gul Ahmed Textile mills increased and proved better in recent years which is averagely calculated i-e +10 %, 2%+5% and +6 % respectively(Annual Reports 2012-17).These all above factories belongs to both Large scale organized sector and power loom independent units having more fabric development capability in terms of research and development and operational strategies as compared to other many other factories like Ghazi textile, Yousef weaving and Redco weaving with average loss in their export percentages of -63%, -51% and -2.54% respectively (Annual Report 2012-17). These factories also belong to both organized large scale and power loom medium size independent sector. The increasing trend

observed in both sector either belongs to large scale and medium scale set-ups but in a part of this the remaining sector which is large in number needed to be compared with respect to their export performance factors for rectifying the issue of poor export performance and losing competitiveness of raw woven sector. The export trend of different factories shown in table 3 below.

Export Trend of Weaving Factories



Source: Annual Reports Export data 2012-17

The decreasing export trend of companies is large in percentages as compared to increasing trend which resulted loss in millions of US\$ and jobs etc.

A current exploration through Siddiqui et al. (2011) deliberated entire manufacturing production loss by captivating hooked on entirely foremost businesses together with textile and stated that production forfeiture drops in the assortment of 12 percent to 37 % because of power outages. This reading doesn't receipt into the explanation of fabrication postponements by other sectors of the textile industry. Also not discussed other social, economic or technological factors in the above study. This restrictive assumption opens more ways for discussion in identifying more reasons for fabrication loss rather than concentrates only on energy shortage and its impact. Sideways this another research grounded on a review led in the 2nd quarter of

2008 despite the fact captivating 2007 as the reference year (Pasha 2012) It again only justify influence of power shortage such i.e., rigorousness of power outages, capital flight, improved use of substitute energy resources on production that shows loss in total output rate. Bestowing to studies (Goldstein and Khan (1978), Muscatelli, et al. (1992), and Zada and Ahmed (2007), it has been established that the demand and supply sides considered the foremost factors of exports but other factors affecting the exports of the textile sector take usual slight consideration.

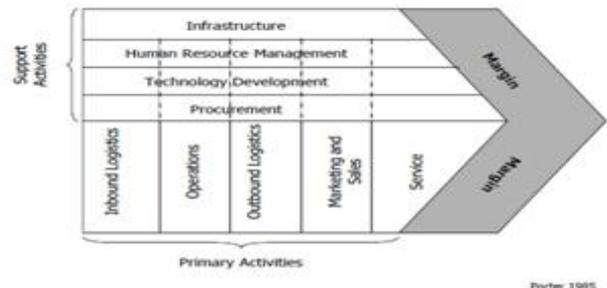
A later study on the factors of exports performance evaluated and model of supply and demand were developed by the study of Attya and Rabbya Latif (2013) on whole textile sector related to supply and demand side only. The national and regional competition is significant: though, states still requisite to progress the competitiveness of their firms in direction to contest with the worldwide marketplace (Porter 1998). The performance actions are observed to assess and regulate the general occupational processes, they also observed to the quantity and equate the performance of the unlike group in the industry, plants, departments, team and individuals (Ghalaini and Nobel 1996; Mapes 1997). Against this backdrop, being a researcher, and having experience as a textile student also worked as a textile consultant in various factories. And having the chance to research on the performance issues of one specific sector that is raw woven fabric manufacturing sector which is also called the weaving sector. The researcher will graft on the factors which affect the performance of the export of this sector. The study finds out shortcomings which are responsible for losing export share and gives a detailed comparative analysis of their factors related to export-oriented raw woven fabric manufacturing factories of Pakistan.

Theoretical Framework:

This study based on two theories:

- 1) The term 'Value Chain' was used by Michael Porter in his book "Competitive Advantage: Creating and Sustaining Superior Performance" (1985). The analysis of value chain indicates the performance of the business and its modest place. It assesses which importance in apiece specific action enhances to the organizations goods or amenities. This notion was constructed upon the understanding that a business is important more than an arbitrary assembling of equipment, apparatus, persons and cash. Solitary condition that these belongings are organized into systems and efficient stimulates it will have converted probably to harvest somewhat for which customers are agreeable to pay a price.

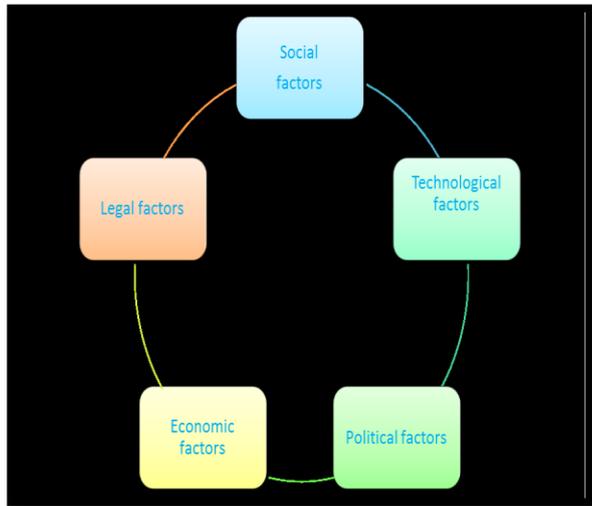
The basic model of Porters Value Chain is as follows:



Source: Porter, M. (1985). Competitive advantage: Creating and sustaining superior performance. New York, New York: Macmillan.

- 2) SLEPT is the shortening of social, legal, economic, political and technological factors. Thoughtful of costumer's necessities and requirements for a firm is very significant. To do this, environmental analysis is essential meant for all types of organization for performance measurement. A SLEPT investigation is a device that aids to examine the environment originated by Harvard Professor Francis Aguilar is the creator of PEST Analysis through his book "Scanning the Business Environment." A SLEPT

analysis is grounded on external factors that effects on the company's tasks and total performance. Social, legal, economic, political and technological factors are external factors apply in many researches (Rob Kelly 2009)

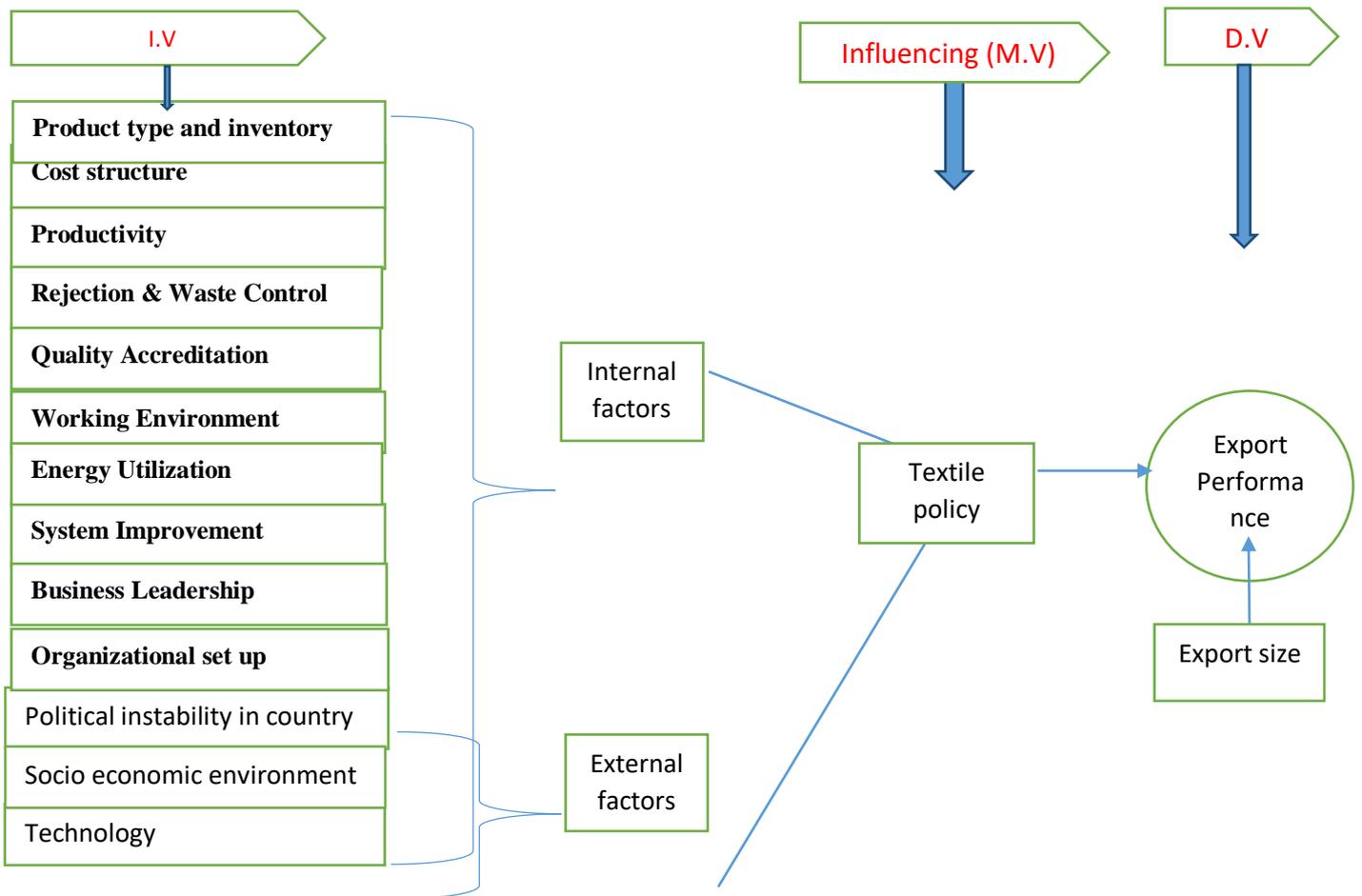


Conceptual frame work

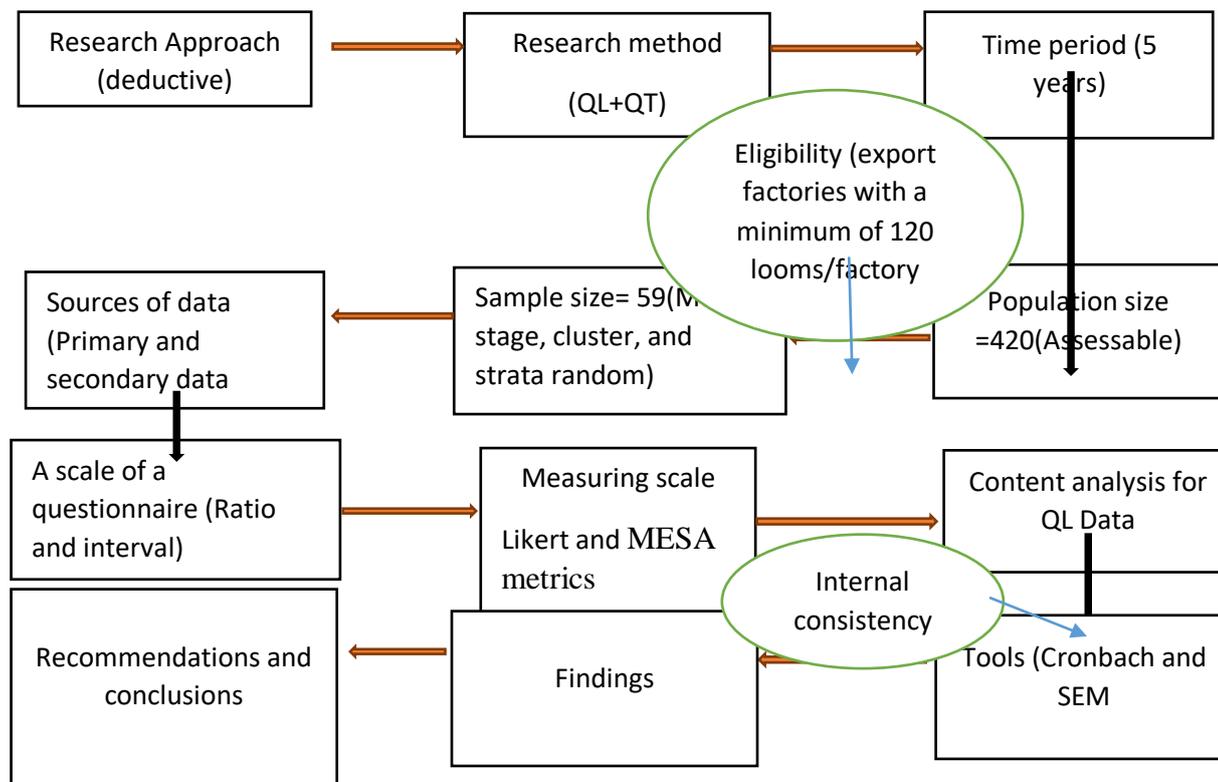
In this study, researcher formulated conceptual framework for studying different factors in export performance phenomena based or delineated with respect to factors already taken or used in theoretical framework.

On the basis of literature review, and theoretical framework study. The following factors will be evaluated as internal, external and influencing mediator factors for Conceptual Framework.

Conceptual Framework /Model



Flow Chart of Research Methodology



Results

The questionnaire was sent to sampled factories in order to know their responses and the results which came out are needed to be analyzed. Such persons are selected carefully because they were handling the whole factory in terms of production and managing export order with respect to customer requirements. The behavior and attitude of such peoples were very kind and supportive and all of them supported in terms of data sharing. The questions of questionnaire contain two sets one construct of Likert scale and other actual definite data in terms of percentages i-e how much production in % is based on innovative textile? How much % technology adaptation from the last five years? Do you consider volume flexibility is an important factor in export performance? Etc. which is based on MESA Metrics.

Reliability Test

The Cronbach Test was applied to all independent variables in order to evaluate their internal consistency amongst variables such as Product Type (PT) Product Innovation Capability (PI), Product Technical Innovation (PTI), Product modification (PMF), Research and Development (RD), System Improvement (SII), Quality Assurance(QA),Energy Utilization(EU)Worker training expertise (WTE). Product execution (PE). Product Manufacturing Capacity (PMC), Political Instability (PLI), Socio Economic Environment (SE) and Technology Adaptation (TA). The result found under satisfactorily range on SPSS software less than 1 which means all variables are taken for study were reliable. Similarly, the data obtained were analyzed using SPSS software. According to the result, the questions which were asked related to factors are reliable at a value of 0.741 of Cronbach alpha which indicated that all such

variables are important and reliable for export performance of raw woven sector of Pakistan

Reliability Test: Cronbach

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RELIABILITY /VARIABLES=Obs1 Obs2 Obs3
Obs4 Obs5 Obs6 Obs7 Obs8 Obs9 Obs10 Obs11
Obs12 Obs13 Obs14 Obs15 Obs16 Obs17 Obs18
Obs19 Obs20 /SCALE ('ALL VARIABLES')
ALL /MODEL=ALPHA
/SUMMARY=TOTAL.
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Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	59	100.0
	Excluded	0	.0
	Total	59	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.741	20

USE OF SEM

In order to know the relationship of all independent variables including internal and external with Dependent variable Export Performance in relation to influencing variable Textile Policy in one go .Structure Equation Model is a tool which help to provide by taking all variables together and provides the true picture about their relationship in the context of significant and non-significant. Now a days this technique/Model is using by many statisticians in order to handle the complex data with one or more dependent variables including mediator in one go. In this research this model helps in evaluating the relationship of variables which is also considered new extension form or advance version of Linear Regression.

Structure Equation Model Fit

After deleting the nonsignificant paths the measures of final model fit are reported in the table below. The value of Chi-square/DF is now 1.347 that is within the threshold of 1 and 3. Now the chi-square is not significant (P = .164) with the value of 20.209 and degree of freedom 15 for the structural model. The Value of CFI is .983 i.e. excellent for model fit. The values of NFI and GFI are also now .941 and .936 that shows excellent model fit. The value of RMSEA is .077 and acceptable as it is below .08 ((Browne & Cudeck, 1993).

Table.10 Structural Model Fit

Model Category	Fit Measure	Structural Model Fit	Status
Parsimonious Fit	DF	15	Acceptable
	Chi-square/DF	1.347	
	Chi-square	20.209	
Absolute Fit	RMSEA	.077	Acceptable Not ideal but
	GFI	.936	
	CFI	.983	
Incremental Fit	NFI	.941	Acceptable

Thus the final structural model well fulfills all three types of model fit that are parsimonious fit absolute fit and incremental fit as well.

After the model fit, we will look at the R² of the structural models. The figure below shows that the R² for TBL and DV is .95 and .40 which shows the percentage of explained variation. Refer to objective no 2 page 47.

Figure: Final Structural Model

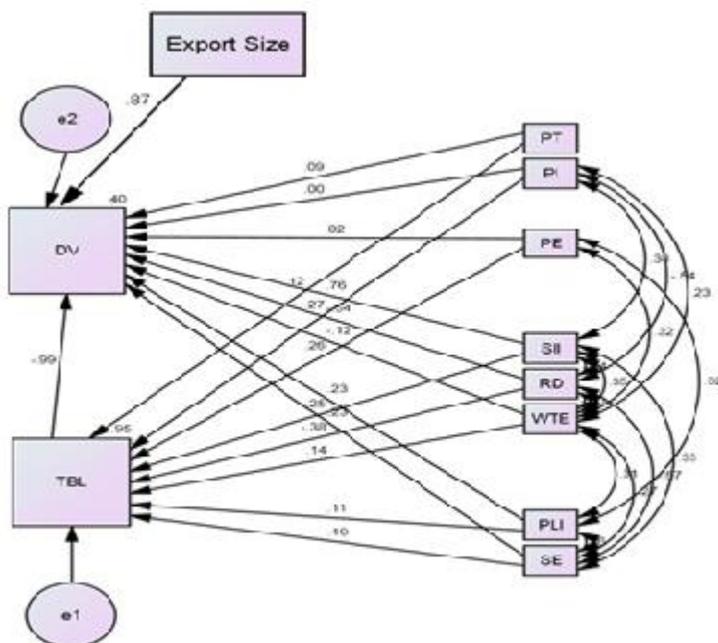


Figure shows the standardized indirect effects of independent variables upon the dependent variable and as well as direct impacts on Export.

Indirect effects were computed in AMOS through bootstrapping method and summary of results is given in the table below which is according to Research objective one and two page 46 and 47.

Results

Mediation	Evidence		supported	Significance level
	Direct	Indirect		
(Textile Business Policy) mediates the positive effect/relationship of Policy (Product type) on Export (DV).	P = .457	P = .024	Yes: Full Mediation	.10
(Textile Business Policy) mediates the positive effect/relationship of Policy (Product innovation) on Export (DV).	P = .917	P = .020	Yes: Full Mediation	.10
(Textile Business Policy) mediates the positive effect/relationship of Policy (Product execution) on Export (DV).	P = .798	P = .015	Full Mediation	.10

(Textile Business Policy) mediates the positive effect/relationship of Policy (System improvement and innovation) on Export (DV).	P = .000	P = .015	Yes: Partial mediation	.10
(Textile Business Policy) mediates the positive effect/relationship of Policy (R&D) on Export (DV).	P = .058	P = .016	Yes: Partial Mediation	.10
(Textile Business Policy) mediates the positive effect/relationship of Policy (Worker training and expertise) on Export (DV).	P = .542	P = .014	Yes: Full Mediation	.10
(Textile Business Policy) mediates the positive effect/relationship of Policy (Political instability) on Export (DV).	P = .150	P = .040	Yes: Full Mediation	.10
(Textile Business Policy) mediates the positive effect/relationship of Policy (socio-economic environment) on Export (DV).	P = .322	P = .018	Yes: Full Mediation	.05

Interpretation of Model Results

Textile business Policy as influencing variable mediates and gives a positive impact on various factors. While applying directly as IV to DV it gives a significant impact on two factors only. Hence the government policy played a vital role in still retaining a certain level of exports. The implementation of the policy was not done completely which triggers the need of its enactment fully. And there is positive significant relationship exist between export sizes in terms of two categories such as below 50%, and above +1 increase in exports with the dependent variable of export performance having positive beta coefficient 0.87.

In statistics, standardized (regression) coefficients, also called beta coefficients or beta weights, are

the estimates resulting from a regression analysis that have been standardized so that the variances of dependent and independent variables are 1. If the beta coefficient is positive, the interpretation is that for every 1-unit increase in the predictor variable, the outcome variable will increase by the beta coefficient value. If the beta coefficient is negative, the interpretation is that for every 1-unit increase in the predictor variable, the outcome variable will decrease by the beta coefficient value. For example, if the beta coefficient is .09 of product type and statistically significant, then for each 1-unit increase in the predictor variable, the outcome variable will increase by .09 units. The R² can be interpreted as the percent of the variance in the outcome variable that is explained by the set of predictor variables. Whereas R squared value showed on TBL and DV

performance section gives the value of .40 and .90 variance respectively.

The above result indicating from last five years 2012 -2017 that the impact of government policy was significant on export performance. The impact of policies gives its impact positively significant on Independent as internal and external variables which ultimately responsible for export performance.

The given government policy was given in order to improve or facilitate the export. Thus all eight variables which include product type(percentages in cotton based, synthetic blends etc) product innovation(percentage of new product development such as fashion, home and technical textile percentage with ultimate new concept and percentage of innovation with fibers and yarns from)research and development(percentage of research and development share in revenues, equipment's etc.) system improvement(percentage addition of new machine and technology which improve overall productivity and development etc ,product execution(include percentage of time taken in preparatory to final products from total time, percentage of stock inventory etc), socioeconomic (percentage of change in currency values, percentage of ethic manufacturing etc) political instability(percentages of strikes, shutdowns etc) and working training and expertise in percentages has positive significant at 0.1% when all these follow their path government policy.

From the result, it is also evident that two variables Research and development and System Improvement and innovation have a direct significant impact on exports. While others are partial significant through mediation.

The variables product manufacturing cost, product modification flexibility, working environment, energy utilization, and technology adaptation shows a non-significant impact on exports at 0.05 and at 0.1. There is a positive impact exist but all

these variables are under controlled. The technology adaptation has been adopted by companies from the last five years and due to which system improvement and innovation improved which gives a significant impact on export performance. Similarly, all export-oriented factories are certified by ISO and other quality accredited councils hence all have 100 % certification and have no relation with export performance over a period of last five years, without having certification they cannot take participate in exports. According to it, all units are bound to follow strict working environments condition such as labor laws, etc. and duty hours. Similarly, product manufacturing and modification flexibility also exists in all companies mostly and have been utilized significantly in product innovation factor. Product manufacturing cost has no link with textile business legislation all have to be controlled by the company itself.

Recommendations

The textile sectors actually the lifeline of Pakistan's Economy and betterment in this sector is very substantial. A country at the present time of the year 2018-19 cannot afford its worsening because it's sharing is about 55% of the total economy via foreign exchange in US Dollars. This industrial sector also accommodated a huge amount of workforce in forms of employment. The weaving sector lies in the middle of production supply /value chain of textiles which is responsible to make fabrics which will be ended up into the final finished article in the form of a garment or made up. The country's competitiveness in this sector is losing day by day. The decline observed in their exports which able to shift the production line for locals with fewer margins. The competitiveness can be improved 1st by a look into their operation sides along externally changes. The following Recommendations are given by keeping in view

the importance of the sector and needed to be competitive again.

The global economy is once again going through a crisis and as a result, Pakistan's exports are also expected to take a hit because the USA and the EU are its largest trading partners. It can be expected that these economies will remain in recession for the next 2-3 years and Pakistan needs to diversify its export destinations in order to minimize the effects of the recession in the EU and USA. While, demand is expected to go down considerably it is also expected that protectionist policies will be implemented, especially in the US to stem their unemployment rate.

Policy substances

- DLTL on incremental exports
- Technology Up gradation Fund (TUF)
- Markup rate support
- Unaccounted for Gas (UFG) charges

Issues related to FBR (Federal Board of Revenue)

One window operation must be introduced in order to get benefited from all the benefits which are given in textile policies. Govt. should deal on equality basis not due to this many companies got not any benefits due to fewer resources.

Factories also needed to look into their operations and not only relying on Government subsidies. In fact, Subsidies must be finished and try to focus on the competencies of companies and able to be competitive without any kind of financial subsidy.

Companies hire competent staff relevant to work by the involvement of experts for better quality products.

- Transparency and stability of regulatory, tax and economy
- Energy cost (amount of investment in improvement and modernization of energy infrastructure) Companies should change their old machines and eliminate gas/air leakages in

order to save energy. Install heat to steam covert systems, solar panels for clean and cheap ways of energy. Offices/ colonies tried to convert onto solar and other means of electricity in order to tackle energy cost and load shedding.

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