



Organizers



Small and Medium Enterprises
Development Authority,
Government of Pakistan



School of Business and
Economics (SBE), UMT

Gold Partner



Partner



Determinants of Adoption of Green Technology: A Case of Small Medium Enterprises In Lahore

Presenter

Mahwish Zafar

Assistant Professor, Superior
University

Co-Authors

Shazia Kousar & Nadia Nasir

Introduction & Background of the Study

- GLOBALIZATION considered as the main source of increasing demand of goods and services and, for this reason small scale enterprises produced so many products without consideration of its after effect on environment. Here the role of SMEs arises, as they start to work according to the requirement of the customers ([Bø, Hammervoll, & Tvedt, 2013](#)).

Introduction & Background of the Study

- Small scale and medium scale business are diverting their production style from traditional method to green technology methods, which will help customers and people living in the healthy environment. Companies are trying to create demand for green products to improve the quality of atmosphere. The purpose of this research is to evaluate the constraint and challenges faces by SME`s about converting themselves from old methods to green policies for production. Here is the point of discussion, what are the source of motivation and hurdles of adopting green practices in the companies ([Obwona, 2006](#)).

Research Questions

- Does Government intervention play moderating role between complexity and adoption of green production in small and medium enterprises of Lahore?
- Does Government intervention play moderating role between compatibility and adoption of green production in small and medium enterprises of Lahore?
- Does Government intervention play moderating role between relative advantages and adoption of green production in small and medium enterprises of Lahore?
- Does Government intervention play moderating role between cost of technology and adoption of green production in small and medium enterprises of Lahore?

Literature Review

- SMEs are considered as the backbone of any economy. As industrial development is playing crucial role for the growing economy of any country, here the question arises that if they are playing their role in positive manner then it's create healthy environment whereas they can play negative role by adding pollution and noise in the atmosphere. In many countries e.g. Malaysia`s almost 97% economy is build on industrial sector, so majorly contribution in GDP is from SMEs ([Lee, 2008](#)).

Cont.....

- research focus is on how different aspects effects to implement green practices in the existing life style. There are many aspects which are influencing to adopt green policies in the market but most of the policies and technology are beneficial for the growth ([DeBerry-Spence, Dadzie, Saffu, Walker, & Hinson, 2008](#)). It has been observed that all the points related to innovation are interlinked if one point is missing then it may be difficult to implement e.g. their complexity, compatibility and innovation of green practices.

Frame Work

- **Conceptual Frame work of Study:**
- Complexity of Tech.
- Compatibility of Tech.
- Relative Advantage
- Green Technology
- Government Intervention

Research Methodology

- The objective of my study is to propose a model that test how government intervention play moderating role between complexity, compatibility, cost, relative advantage of technology and adoption of green technology in small medium enterprise Lahore. Thus the quantitative approach under positivism paradigm is appropriate for the fulfillment the objective of this study. The Self administrative survey approach was used to collect the data through questionnaire.

Cont....

- Lahore has been chosen because it is influential city and has greater trend to adopt green. While on the other hand, chemical and petrochemical manufacturing companies have been chosen because of the industry contributions towards the environmental problems [37]. From the population of 104, total sample adequate is 40 [38]. The data will be analyzed by using PCA. According to [42], sample size should be above 200 for reliable results obtained in principle component analysis.

Validity of Scale and Reliability of Data

items	components	Crobach,s alpha
Green technology		
negative impact of packaging	.904	.778
negative of finish goods	.919	
negative impact of use phase	.891	
can be recycle	.668	
Complexity of technology		
learning green practice is difficult	.774	.772
understanding is difficult	.862	
sharing the knolodge is difficult	.832	
many expeiences	.627	
Compatibility of technology		
green practice is compatible	.832	.651
integrating pracice is company existing system	.818	
green practice is consistant with our compan value	.653	
Relative advantage of technology		
green practice is better enviromental performance	.821	.762
green practice can provide heigher economic benefits	.822	
green practice can enhance our reputation	.830	
Cost of green technology		
cost is compatible with budget	.656	.764
cost is not compatible with company budget	.751	
cost is higher while benefits are low	.659	
Government intervention		
Government provide ccess to ecolabeling productin emerging markets	.755	.732
Govt. remove barriers to participate in global green market	.851	
Gvot.setenviromental regulation for business operations	.814	

Factor Analysis

construct	No. of items	KMO	Bartlett's test of sphericity	Bartlett's test of sphericity Sig.
Green tech	4	.735	394.503	.000
Complex tech	4	.702	252.560	.000
Compatibility tech	3	.613	94.931	.000
Relative advantage	3	.697	148.193	.000
Cost of green	3	.778	26.153	.000
Access to market	3	.662	130.051	.000

Eigenvalues and Total Variance Explained

construct	components	Initial eigenvalues		
		Total	% of variance explained	Cumulative % of variance explained
Green tech	1	2.590	64.761	64.761
Complex tech	1	2.426	60.649	60.649
Compatibility tech	1	2.787	69.567	69.567
Relative advantage	1	2.038	67.918	67.918
Cost of green	1	2.428	67.616	67.616
Govt. intervention	1	2.957	75.239	75.239

Correlation Matrix

	green technology	complexity	compatibility	relative advantage	cost of technology	access to market
green technology	1					
complexity	-.163*	1				
compatibility	.296*	.070*	1			
relative advantage	.274**	-.227*	.317**	1		
cost of technology	-.253*	.356*	.283*	.354*	1	
access to market	.201*	.337*	.304**	.357**	.263**	1

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Dependent variable is adoption of green technology

Model	Equation 1		Equation 2		Equation 3	
	β	Sig.	β	Sig.	β	Sig.
(Constant)	-.001	.994	.000	.999	.002	.979
complexity	-.164	.002	-.168	.019	-.149	.006
Govt. intervention			.108	.001	.107	.133
int_complex_gi					-.265	.001
R square	.26		.32		.43	
Significance level of F	.001		.001		.001	

Regression Analysis

Model	Model 1		Model 2		Model 3	
	β	Sig.	β	Sig.	β	Sig.
(Constant)	-.001	.994	.000	.999	.002	.979
complexity	-.164	.002	-.168	.019	-.149	.006
Govt. intervention			.108	.001	.107	.133
int_complex_gi					-.265	.001
R square	.26		.32		.43	
Significance level of F	.001		.001		.001	

Dependent variable is adoption of green technology

Model	Equation 1		Equation 2		Equation 3	
	β	Sig.	β	Sig.	β	Sig.
(Constant)	-.051	.006	-.071	.001	-.012	.005
compatibility	.241	.001	.364	.007	.152	.004
Govt. intervention			.180	.122	.090	.031
int_compatibility_gi					.0371	.028
R square	.002		.016		.041	
Significance level of F	.231		.451		.215	

Dependent variable is adoption of green technology

Model	Equation 1		Equation 2		Equation 3	
	β	Sig.	β	Sig.	β	Sig.
(Constant)	-.004	.959	-.004	.959	-.034	.638
Relative adva.	.281	.000	.280	.000	.300	.000
access to market			.023	.025	.185	.001
int_relative_gi					.087	.002
R square	.045		.062		.071	
Significance level of F	.001		.002		.001	

Conclusion

- This study found that there are some certain factors like complexity, compatibility of technology, relative advantages and cost of technology that affect practices of adoption of green technology. Study found that complexity of technology is negatively and significantly related with adoption of green technology while compatibility has positive and significant association with adoption of green technology.

Cont...

- Similarly relative advantage has positive and significant relationship with adoption of green technology while cost of technology negatively and significantly affect green practices. Moreover, government intervention plays significantly moderating role between complexity, relative advantages and cost of technology and green technology adoption. In contrast government intervention does not have significant moderating role between compatibility and adoption of green technology.