




## ROLE OF TOP MANAGEMENT ADVOCACY IN SME'S BUSINESS SUSTAINABILITY: A MEDIATION THROUGH TECHNOLOGY OPPORTUNISM

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### ABSTRACT

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This study examines the role of top management advocacy of new technology and technology opportunism in advancing business sustainability (i.e. Environmental, economic and social). It also investigates the mediation effect of technology opportunism between top management advocacy and business sustainability. A survey based on emails and physical visits to the SME sector of Pakistan, to collect the data from the key informants and the owners of the SMEs. Random sampling technique is used to collect the data and for the analysis, we use Smart PLS version 3. The results demonstrated the strong impact of top management advocacy of new technology on business sustainability. The findings confirmed the significant and positive impact technology opportunism on business sustainability and it also shows a fully mediation between top management advocacy and business sustainability. The findings suggest several practical implications for managers in the SME sector.

**Contribution/Originality:** This study contributes to the existing literature by developing the link among top management, technology opportunism and business sustainability. This the first study in the case of Pakistan, and structural equation modelling (SEM) methodology applied on the primary data. The F square formula is applied to check the effect size of the constructs.

## 1. INTRODUCTION

Interest in the concept of business sustainability (BS) continues to grow. One key driver is economic system and the institutions are losing their confidence just because of industrial scandals and collapses, and that destroyed billions of dollars of market (Waldman and Siegel, 2008; Liran and Dolan, 2016). This has resulted increase in technological managerial advocacy activism. Moreover, the world facing economic, social and environmental challenges (George *et al.*, 2016) e.g. (poverty, hunger, climate change, education and insecurity). These problems collectively increase pressure for small and medium enterprises (SMEs) and corporate sectors to contribute to the creation of societal and economic progress in a sustainable way (Initiative, 2017). SMEs are an important agent for economic and social change, this sector is rapidly seen as a critical part of the solution to these challenges (Aguilera *et al.*, 2007).

Many of the SMEs are ardent to address these sustainability challenges and they have taken some strong actions through managerial advocacy to align their activities with the needs of stakeholders, as demonstrated that partnership between SMEs and government. Some of the SMEs have gone further and adopted the business model

“profit-with-purpose” Levillain *et al.* (2018) and Porter and Kramer (2011) through the goal of creating shared value and contributing to the triple bottom line i.e., people, planet and prosperity. The conventional top-down schemes used in management generally lead to unsustainable social states (Grafton *et al.*, 1996; Holling and Meffe, 1996). Therefore, it is not surprising that top management should be flexible and these kind of management strategies have gained momentum in the past decades (Gutiérrez *et al.*, 2011; Poon and Bonzon, 2013).

We propose that top management advocacy of technology, defined as “the adoption of technology based strategies and practices that enable the achievement of social, financial and environmental goals, with a long term impact of the organization” (Ehnert *et al.*, 2016), has the potential role to play in dealing with these challenges and the provision of sustainability activities is the most likely to go beyond just the public relations practices. Competent managers’ now recognize that there can be no long-term financial growth maintained by SMEs without consideration of environmental and social responsibility (Jang *et al.*, 2017). However, top managers, the central players to increase sustainability, often do not know how to improve sustainability performance.

All organizations are now ‘obliged’ to make great efforts in balancing their social, economic, and environmental performance, especially for those organizations who faces top management commitment, managers’ values, beliefs competitive advantage, community, regulatory pressures (Russo and Fouts, 1997; Chan and Wong, 2006; Tzschentke *et al.*, 2008; Park, 2009; Dolores López-Gamero *et al.*, 2011; Garay and Font, 2012; Ayuso *et al.*, 2014; Park *et al.*, 2014). Both the academic and practitioner literature Eccles *et al.* (2014), McKinsey (2014), Siegel and Vitaliano (2007) and Stahl *et al.* (2019) shows that SMEs may get advantage economically from incorporating responsibility and sustainability values into their management strategies and core business processes.

However, prior studies lacked a theoretical grounding and failed to investigate frameworks that would enhance the understanding of firms’ business sustainability. Previously, intensify the role of top managers in promoting firms business sustainability, the literature was very limited and based on the leadership qualities to promote business sustainability. This is the first time that we are highlighting that top managers advocacy is based on decisions related to the adoption, implementation and development of new technologies to enhance the business sustainability. This study fills the research gap by proposing a conceptual framework for understanding the relationship between top managers’ advocacy of new technology (TMA), technology opportunism (TO) and SMEs business sustainability. General objective of this study is to find the direct and indirect relations between top managers’ advocacy of new technology and SMEs business sustainability, specifically, in the context of Pakistan. The research questions, which will be answered in this study, are first, what is the relationship between top managers’ advocacy of new technology and business sustainability? Second, what is the mediating role of technology opportunism between top managers’ advocacy of new technology and business sustainability?

This study offers a conceptual model/framework by utilizing the resource-based-view (RBV) theory to debate whether the focus on top management advocacy of new technology and technology opportunism might work as support for business sustainability (Bolton and Hannon, 2016). The findings suggest that business sustainability of SMEs in developing countries should focus on managerial new technology advocacy; the study shows positive impact of management advocacy on business sustainability. Further, in indirect relation through the mediation of the technology opportunism, it also shows a positive relation. These findings are insightful and provide numerous contributions to the literature on the relationship between top management advocacy of new technology, technology opportunism and business sustainability, and the study offers managerial insights into the efficiency of technology applications.

The paper is divided into 6 sections, first introductory section is explained above, after that theoretical background, strong relevant literature and hypotheses development presented under section 2. In section, 3 of methodology, research framework, measurements and demographics information are explained. Following this, measurement model and structural model is being considered under section 4. Discussion is presented under section 5. Finally, conclusion, implication and suggestions are presented in section 6.

## 2. THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

### 2.1. Resource Based View

The RBV has become the dominant theoretical foundation in systematic management (Newbert, 2007; Stieglitz and Heine, 2007) and has been applied to sustainability management (Day, 1994; Morgan *et al.*, 2006; Zahay and Peltier, 2008; Voola and O'Cass, 2010). According to Barney *et al.* (2011) RBV originated in evolutionary economics, especially the work of the economist (Penrose and Sons, 1959) who argued that "resource-generated services are functions of the way they are used – when used for different purposes, the same resources are combined in different ways. Different types or quantities of other resources to provide different services or service sets" (p. 25). The arguments of Penrose and Sons (1959) show that the uniqueness of an organization is based on how the organization bundles its resources and capabilities. In essence, RBV attempts to answer the following questions: What types of organizational capabilities can lead to SMEs sustainability? When studying RBV, scholars used terms such as resources and capabilities, skills, and assets (Carmeli and Tishler, 2004). In this paper, the views of Makadok (2001) will be used as the theoretical basis for this research. Makadok (2001) argues that a resources are assets and it could be tangible (e.g., technical staff, new technologies, machinery, plants etc.) or intangible (e.g., patents, license, or a brands). On the contrary, capability is an unobservable asset and therefore intangible or valuable, trading only on its whole. Essentially, capabilities change resources through integration and reorganization (Eisenhardt and Martin, 2000). In order to gain a sustainable competitive advantage, it must be imperfect imitation (King *et al.*, 2001).

### 2.2. Hypothesis Development

Considering the objective of this study, the hypothesis development are given below based on the related literature and associated theories.

#### 2.2.1. Top Management Advocacy of New Technology and Business Sustainability

Top management support refers to providing the required support for operational processes and providing clear guidance for business operations (Rosenbloom, 2000; Swink, 2000; Rodríguez *et al.*, 2008). The support of top management also means that senior management will act as the executive sponsor of the project and remain committed (Yang, 2008). The importance of top management support refers to the degree to which top management creates favorable support, trust and help in the performance; this is a recognized phenomenon (Ernst, 2002). Resource allocation is the responsibility of top management (Yang, 2008). Top management arranges appropriate resources and support for the success of innovative projects (Rodríguez *et al.*, 2008). For example, top management provides clear direction and commitment to help companies eliminate uncertainty, rationalize technological resources and capabilities, encourage necessary innovation activities and clear goals, and ultimately shape innovation goals. Therefore, top management must be committed to providing companies with all the resources they need to drive service innovation. Innovation involves technologies that often require large amounts of resources (Hossain *et al.*, 2011). Based on the contingency theory, lack of managerial advocacy of new technology support, may it cause of failure to serious service innovation, and it lead to business unsustainability, and it happens, due to poor technology resources and external support does not exist. In contrast, the support of top management advocacy of new technology can force or influence more on the technology adoption orientation between organizations. Therefore, when such support is high, the intensity of openness that directly affects the adoption of technology increases. As mentioned above, we therefore hypothesize the following:

*H<sub>1</sub>: Support of top management advocacy of new technology increases business sustainability.*

### 2.2.2. Top Management Advocacy of New Technology, Technology Opportunism and Business Sustainability

The key role of top management in supporting the development of company-level capabilities is reflected in the various branches of literature. Advocacy by senior management is important to mobilize internal corporate risk (Burgelman, 1983) and resources for new product development (Howell and Higgins, 1990). The anticipation of technological opportunities, and their exploitation and execution, which have as their origin long-term changes in the technological environment should then be a component of the strategic planning process of top management, which makes use of long-term forecasts of technological development (Burgelman, 1983). Of course, the development of predictive technology is considered a possible opportunity, depending on how it might affect the company's ability to achieve its firms' strategic goals.

The adoption strategy is a major decision of the company that will reflect the expectations, beliefs and commitments of senior management. The primary responsibility of senior management who influences technology planning is to establish long-term goals that will determine the scope, extent and timing of the SMEs technological needs. The study of Gruber *et al.* (1973) found that companies reporting high-performance functions also reported that senior management is highly involved in setting long-term goals and identifying important areas of investigation. Where Frohman observes effective technical strategic management, senior managers not only believe that they are responsible for formulating and approving technical decisions, but also participate in the process of regularly reviewing the technical plan to ensure that consistently meets the company's short-term and long-term technical needs. If this was not so, it will be found that communication between other departments' e.g. manufacturing, sales and R&D, and senior management is weak, which hinders the integration of technical considerations into business strategy development.

Significant growth in the SME sector has caused serious environmental problems through excessive consumption of energy and water, as well as the production of large amounts of non-recyclable waste and wasted food etc. The Green SMEs Association seeks to improve the sustainability i.e. environmental, social and economic performance of SMEs by providing environmental guidelines that list have seven indicators of environmental sustainability: energy, water, waste, disposables, chemicals and pollution-reducing sustainable foods, furniture and building materials (Jang *et al.*, 2015). As environmental issues have become critical, the SMEs have recognized the important role of top management in addressing these issues, (Banerjee *et al.*, 2003; Orlitzky *et al.*, 2011; Strand, 2011; Metcalf and Benn, 2013; Rejc Buhovac and Epstein, 2014). Rejc Buhovac and Epstein (2014) emphasizing the importance of top management advocacy in developing and implementing sustainability strategies and in communicating business sustainability (i.e. environmental, social and economic) with other sections of the firms'. In the top management literature, responsible top management has been proposed to improve the firm's social or environmental performance (Voegtlin *et al.*, 2012). Furthermore, environmentally responsible top management advocacy of new technology should be able to convince employees that environmental sustainability is the core value of the business, communicate its importance so that they can recognize such issues as part of their daily work, and participate more actively in the environment action.

Consistent with the literature, our field interviews show that the support of top management is an important factor in promoting technological opportunism. We define top management's advocacy of new technologies as the highest management team's efforts to emphasize the importance of the organization's response to new technologies. The role of top management is important because new technologies can undermine existing assets that require management approval. If top management advocates new technologies, middle and junior managers will devote the necessary resources to sense and respond to new technologies.

*H<sub>2</sub>: Top management advocacy of new technology has a positive impact on technology opportunism.*

*H<sub>3</sub>: Technology opportunism plays a mediating role between top management advocacy of new technology and business sustainability.*

### 2.2.3. Technology Opportunism and Business Sustainability

Technology opportunism is technology-based opportunities for the organization to steer future development. Practically technology opportunism has been expressed in a set of technical opportunities recognized, exploit and then execute these opportunities and to be implemented by the firms. Therefore, the significant decisions in technology opportunism are the choice of individual technical projects that will support the firm's overall sustainable strategy. we develops a framework, which is shown in Figure 1 which specifies that the creation and implementation of a technology opportunism is clearly embedded in an organization where there is a clear vision and a strong management advocacy that sets overall sustainability (i.e. environmental, economic and social) context. A firm may create such a culture where creativity can flourish and innovation can be indorse. In the super-competitive market, every business needs to gain advantage through technological opportunities to compete against its competitor and leads to sustainable competitive advantage (Lynch and Kaplan, 2000). From the management point of view, competitive advantage is achieved through the creation technical opportunities that underpin business sustainability. Technology opportunism, based on current and developing application in the business sustainability, seems to have more opportunities to boost environmental, social and economic performance. There is also empirical evidence Chen and Lien (2013) and Teo and Pian (2003) that technology opportunism sensing and responding to new technologies is correlated positively to firm performance. According to Teo and Pian (2003) technology opportunism has positive impact on business sustainability, which is hypothesized as comprising innovation, differentiations, new technologies adoption, and changing technologies whereas (Shuja et al., 2016) found a positive relation between technology opportunism and three measures of business sustainability: environmental, economic and social performance. By following the literature, we hypothesize that:

*H<sub>1</sub>: Technology opportunism is positively related to business sustainability.*

## 3. METHODOLOGY

### 3.1. Research Framework

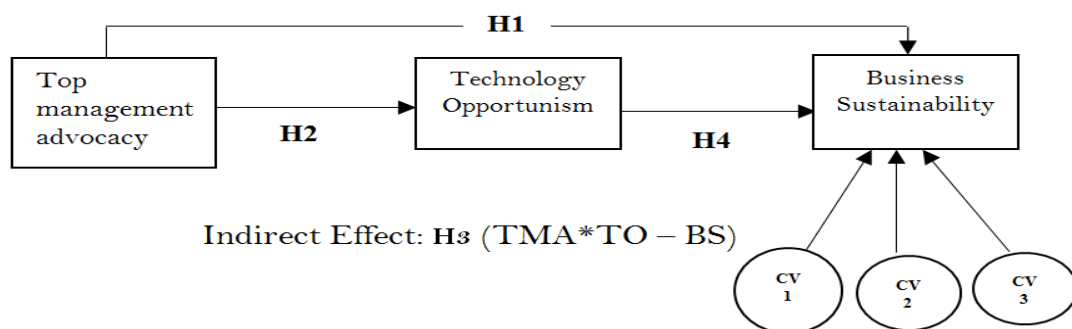


Figure-1. Research framework.

### 3.2. Sample and Data Collection

Simple random sampling technique was used for the data collection and we have targeted the Pakistani SME sector and focused on the big cities (Multan, Lahore, Karachi, Faisalabad, and Sialkot) which have their specified industrial areas. Moreover, sample size was selected based on previous studies (An and Noh, 2009; Ali et al., 2015). The questionnaire was developed and distributed physically and through emails. It intended that the sample population involved with working units. The survey was conducted from 750 key informants and owners, through random sampling technique and the confidentiality of respondents was assured. The unanswered and incomplete questionnaires were deleted and unconsidered. In total, we got total 480 considerable questionnaires after deleting unconsidered questionnaires.

### 3.3. Demographic Information

For the Latent constructs, here is the compacted demographic information with responses of 480, the target population was SMEs, and distributed questionnaires were (n=750), questionnaires with missing values and doubtful responses were deleted. In return, the total responses were (n=480) with 64% rate. The 139 respondent (29%) were between 18-25 years of age, 168 respondents (35%) were between 26-35 years of age, 91 respondents (19%) were between 36-45 years of age, 63 respondents (13%) were between 46-55 years of age and 19 respondents (4%) of the total sample population were over 55 years of age as mentioned in Table 1. Rate of respondents according to their firm's location includes 23% Karachi, Sialkot 26%, Lahore 18%, Multan 13%, and Faisalabad 20%.

Table-1. Demographic Information.

Variables	Items	Frequency	(%)
Gender	Male	413	86
	Female	67	14
Age of respondent	18-25 Years	139	29
	26-35 Years	168	35
	36-45 Years	91	19
	46-55 Years	63	13
	56 and above	19	4
Qualification	Matriculation	110	22.9
	Intermediate or equals	140	29.1
	Bachelors or equals	93	19.37
	Masters or equals	82	17.08
Respondents	Other technical educations	55	11.55
	Owners	348	72.5
Regions	Key informants	132	27.5
	Lahore	86	18
	Karachi	110	23
	Faisalabad	96	20
	Multan	63	13
No. of employees	Sialkot	125	26
	1-100	376	78.4
	101-250	104	21.6
Business age	1-10	190	39.58
	11-20	224	46.67
	Above 20	66	13.75

### 3.4. Measurements

All multi-item scales used within this research were developed and adapted from previous scales used in past survey research studies. Scales for the constructs were obtained from the following sources: Top management advocacy of new technology – changing technology and implement new technologies (Raderbauer, 2011); Technology opportunism – technological opportunities and which are recognize, exploited and executed (Srinivasan *et al.*, 2002; Voola *et al.*, 2012); (3) Business Sustainability – Environmental, social and economic perspective (Turker, 2009; Raderbauer, 2011). Seven-point Likert scales used for all of the measures. Items of all mentioned variables are given in Table 2.

### 3.5. Analytical Methods

Structural equation modeling (SEM) has been used to perform the analysis. SEM is a statistical procedure used to test functional assumptions, predictive hypotheses, and causal hypotheses. Mastering this multivariate statistical tool is essential if you need to understand many research institutions and conduct basic or applied research in the areas of management, health, behavior and social sciences (Bagozzi and Yi, 2012). The technique chosen in the SEM called partial least squares (PLS). PLS based on an iterative approach that maximizes the interpretation variance of the endogenous construct. The operation of PLS-SEM is very similar to multiple regression analysis (Hair *et al.*,

2011). This property makes PLS-SEM particularly valuable for exploratory research. PLS-SEM is more suitable for causal applications (exploratory analysis) (Henseler *et al.*, 2014). Finally, PLS can estimate models with reflective and formative indicators without identification problems (Esposito Vinzi *et al.*, 2010). Moreover, PLS can evaluate models with a small number of samples. In fact, even with small sample sizes (Rigdon, 2014) PLS modeling algorithms tend to achieve results with high levels of statistical power (Reinartz *et al.*, 2009). Therefore, according to Henseler *et al.* (2014) we use PLS as a statistical tool for management and organizational research.

Table-2. Measurements of latent variables.

Variables	Items	Factors	CL
Business sustainability	BSec1	Business plans to ensure long-term profitability and financial viability	0.588
	BSec2	Focus on buying local products	0.779
	BSec3	Business growth through product innovation and quality	0.733
	BSec4	Commitment to employees and encourage their personal	0.622
	BSec5	Staff pay levels, employment benefits and rewards	0.772
	BSev1	Reduce energy consumption	0.672
	BSev2	Recycling and composting programs	0.627
	BSev3	Introduced water-saving	0.737
	BSev4	Purchase environmentally friendly products	0.711
	BSSo1	Support at least one community action or group	0.827
Top management advocacy of new technology	BSSo2	Provide and promote authentically traditional	0.709
	BSSo3	Offers local resident to access	0.784
	Tma1	Telling managers firm must gear up now to meet changing technology trends.	0.706
	Tma2	Convince managers of the benefits of a new technology.	0.744
Technology opportunism	Tma3	Employees to develop and implement new technologies.	0.700
	Tma4	Most ardent champions of new technologies.	0.762
	Teop1	Detect technological developments	0.681
	Teop2	Intelligence on technological changes in the environment	0.755
	Teop3	Detect changes in technologies	0.778
	Teop4	Effect of changes in technology	0.627
	Teop5	Respond to technological changes in the environment	0.646
	Teop6	Lags behind the industry in responding to new technologies	0.762
Teop7	Respond to new technologies	0.809	
Teop8	Tend to resist new technologies	0.740	

#### 4. DATA ANALYSIS AND RESULTS

Structural equation modelling (PLS-SEM) using the partial least squares method of Smart PLS 3.0 software was applied to analyse the research data by evaluating the measurement model and testing the structural model.

Descriptive statistics of this study shows mean scores, standard deviations, kurtosis, and skewness values, and all items of these scales showed consistent reliability and satisfactory results, as shown in Table 3. It shows that it is a normal distribution of data.

##### 4.1. Measurement Model

Hair *et al.* (2014) pointed out that PLS-SEM was originally designed for prediction purposes, so it is more convenient than covariance-based SEM software (such as AMOS). PLS-SEM is also less sensitive to sample size, so multivariate normal sample data is not strictly required (Henseler *et al.*, 2014). In addition, the kurtosis and skewness values of the measured model are between  $\pm 1$ , indicating that there is no normality assumption that violates the sample data. The quality of the measurement model is also assessed by various measures. The standardized external factor loadings of latent constructed items in Table 4 are considered to be very satisfactory because they exceed the threshold of 0.70 ( $p < 0.001$ ), but two of the constructs are considered sufficient because they exceed 0.60 which is accepted threshold (Hair *et al.*, 2014).

Table-3. Mean (M), standard deviation (SD), skewness, and kurtosis values.

Items	Mean	Standard deviation	Skewness	Kurtosis
BSev1	5.5646	1.03991	-2.231	5.886
BSev2	5.4854	.93181	-1.916	4.806
BSev3	5.3104	1.28809	-1.265	1.836
BSev4	5.6854	1.17693	-1.453	3.242
BSec1	5.9750	.71328	-.796	1.206
BSec2	5.9083	1.04589	-1.927	6.345
BSec3	5.4021	1.37636	-1.223	1.177
BSec4	5.9417	1.01591	-.747	-.322
BSec5	5.7313	1.04824	-2.045	5.993
BSso1	5.7917	1.23887	-1.967	4.273
BSso2	5.7896	1.02957	-1.276	2.268
BSso3	5.5854	1.47101	-1.354	1.342
Teop1	5.8208	.85553	-.572	-.148
Teop2	5.9438	.63555	-.933	2.237
Teop3	5.9062	.76563	-.961	1.713
Teop4	6.0229	.85082	-1.351	3.558
Teop5	5.7458	1.17648	-1.582	2.916
Teop6	5.9375	.83769	-1.422	3.328
Teop7	5.8333	1.03253	-1.124	1.171
Teop8	5.7896	.96467	-.647	.219
Tma1	5.3167	1.25286	-1.051	.735
Tma2	4.9271	1.55380	-1.052	.262
Tma3	5.7896	.96467	-.647	.219
Tma4	5.7250	1.13191	-1.205	1.514

Table-4. Construct reliability and validity.

Constructs	Items	Outer loadings	Collinearity VIF	Mean	Std. deviation	Cronbach's alpha	rho_A	CR	AVE
BS	BSev1	0.588	1.712	5.6809	0.80779	0.913	0.918	0.926	0.514
	BSev2	0.779	2.736						
	BSev3	0.733	2.290						
	BSev4	0.622	1.752						
	BSec1	0.772	2.838						
	BSec2	0.672	2.652						
	BSec3	0.627	1.661						
	BSec4	0.737	2.464						
	BSec5	0.711	1.907						
	BSso1	0.827	3.835						
	BSso2	0.709	2.388						
BSso3	0.784	2.674							
TO	Teop1	0.681	1.690	5.8750	0.64471	0.872	0.881	0.899	0.529
	Teop2	0.755	2.692						
	Teop3	0.778	3.041						
	Teop4	0.627	1.618						
	Teop5	0.646	1.523						
	Teop6	0.762	2.153						
	Teop7	0.809	2.817						
	Teop8	0.740	1.818						
TMA	Tma1	0.706	2.072	5.4396	0.91096	0.715	0.736	0.819	0.531
	Tma2	0.744	1.965						
	Tma3	0.700	1.267						
	Tma4	0.762	1.358						

Notes: TMA= Top Management Advocacy of New Technology, TO =Technology Opportunism, BS = Business Sustainability.

Table 5 shows the values of Cronbach's alpha, with both composite reliability (Castro and Roldán, 2013) and rho\_A greater than 0.736, indicating that the internal reliability of all variables is acceptable (Boudreau et al., 2004). Moreover, the minimum average variance extraction (López-Gamero et al., 2008) value (0.514) exceeds the required



threshold of 0.5 (Henseler *et al.*, 2014) which indicates a sufficient level of convergence validity. In addition, we follow the criteria of Fornell and Larcker (1981) to assess discriminant validity. As shown in Table 5 the square root of AVE is higher than the inter construct correlation. Henseler *et al.* (2014) designed another measure of discriminant validity, using Monte Carlo simulation (i.e., Heterotrait Monotrait correlations) (HTMT) with a threshold of less than 0.85. Table 6 shows that 0.773 is the largest HTMT correlation ratio, which establishes an acceptable level of discriminant validity and reflects the satisfactory quality level of the measurement model. By using smart PLS each construct's item is being measured their reliability and validity as shown in Figure 2.

Table-5. Fornell-larcker criterion.

Constructs	BS	CV1	CV2	CV3	TO	TMA
BS	0.718					
CV1	-0.025	1.000				
CV2	-0.071	0.197	1.000			
CV3	-0.269	0.380	0.279	1.000		
TO	0.655	0.013	-0.019	-0.248	0.729	
TMA	0.648	0.026	-0.106	-0.050	0.563	0.740

Table-6. Heterotrait-Monotrait Ratio (HTMT)

Constructs	BS	CV1	CV2	CV3	TO	TMA
BS						
CV1	0.085					
CV2	0.134	0.197				
CV3	0.280	0.380	0.279			
TO	0.728	0.108	0.100	0.266		
TMA	0.773	0.090	0.194	0.096	0.703	

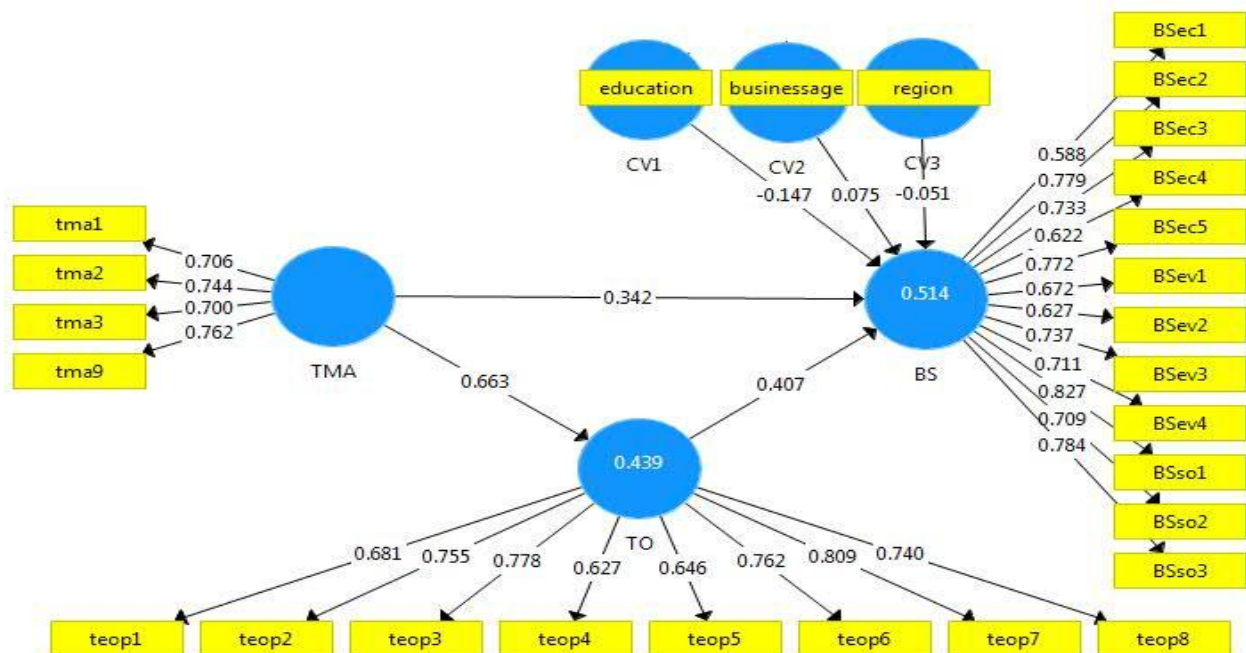


Figure-2. Structural factors influence.

#### 4.2. Inner Structural Model's Evaluation through Smart PLS

After the evaluation of measurement model, reliability and validity of the data the next step is to evaluate structural model and Table 7 presents a Multi collinearity assessment of business sustainability, top management advocacy of new technology and technology opportunism. According to Hair Jr *et al.* (2016) the variance influence factor must be less than 0.20, and it should not be higher than 0.5 (Henseler *et al.*, 2015; Hair Jr *et al.*, 2016).

Table-7. Multi collinearity assessment (inner values).

Constructs	BS	CV1	CV2	CV3	TMA	TO
BS						
CV1	1.346					
CV2	1.271					
CV3	1.261					
TMA	2.146					1.000
TO	2.050					

In Table 8 first hypothesis H1 stated that top management advocacy of new technology have a positive and significant impact on business sustainability ( $\beta = 0.434$ ;  $t = 7.232$ ;  $p = 0.000$ ). In the next hypothesis H2 top management advocacy of new technology have a positive and significant impact on technology opportunism, which is stated as, ( $\beta = 0.563$ ;  $t = 12.962$ ;  $p = 0.000$ ). In the hypothesis H4 indicates that technology opportunism have positive significant impact on business sustainability ( $\beta = 0.369$ ;  $t = 7.407$ ;  $p = 0.000$ ).

Table-8. Path coefficient direct effects.

Constructs	$\beta$ - value	Mean	(STDEV)	T value	P values	2.5%	97.5%	Decision
CV1 -> BS	-0.147	-0.148	0.040	3.682	0.000	-0.227	-0.071	Supported
CV2 -> BS	0.075	0.076	0.031	2.424	0.016	0.016	0.134	Supported
CV3 -> BS	-0.051	-0.050	0.033	1.557	0.120	-0.111	0.016	Not Supported
TMA -> BS	0.342	0.343	0.068	5.035	0.000	0.527	0.682	Supported
TMA-> TO	0.663	0.665	0.021	30.877	0.000	0.619	0.703	Supported
TO -> BS	0.407	0.404	0.058	6.970	0.000	0.287	0.511	Supported

Notes: TMA= Top Management Advocacy of New Technology, TO =Technology Opportunism, BS = Business Sustainability. \*\*\*p < 0.01.

4.3. Calculating (R<sup>2</sup>) Value

According to Hair et al. (2016) R<sup>2</sup> was considered to be substantial at a value of 0.75, moderate at 0.50, and weak at 0.26. As per Figure 3 this study model explained 0.567 percent of the variance in business sustainability and 0.317 percent of the variance in the technology opportunism.

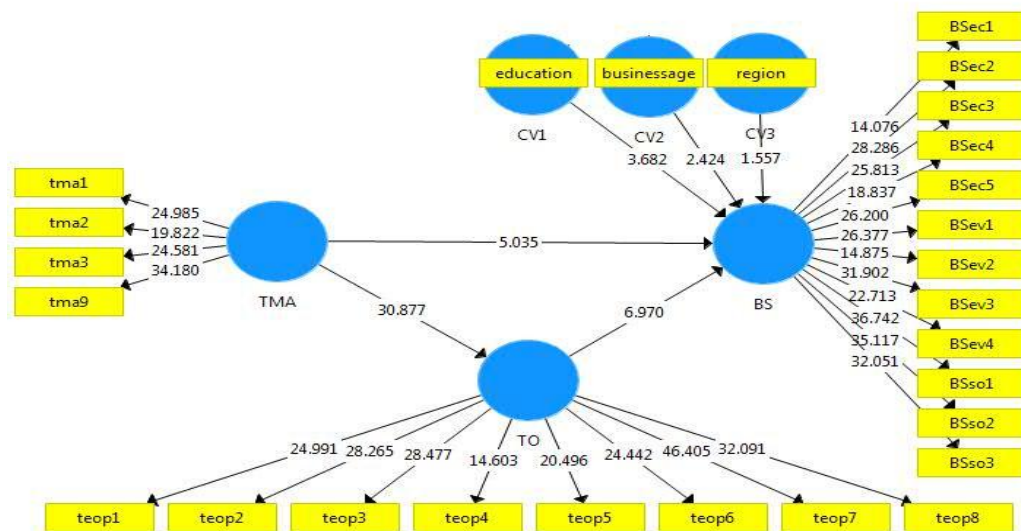


Figure-3. Model loadings with the t values of variables.

4.4. Effect Size (F Square)

As Cohen, explains the values for f square, value would be strong effect at (0.35), it would be moderating at (0.15), and it would be weak at (0.02) (Cohen, 2013). Table 9 shows the values of f square which are calculated through PLS-SEM technique (Aberson, 2019). Table 8 presents the results, which reveals the effect size and the

satisfactory relationship between top management advocacy of new technology, technology opportunism and business sustainability as perceived by the SME community.

Table-9. Effect size F square.

Constructs	F square	Effect size
TO -> BS	0.194	Moderating
TMA -> BS	0.286	Moderating
TMA -> TO	0.464	Strong

Note: TMA= Top Management Advocacy of New Technology, TO =Technology Opportunism, BS = Business Sustainability.

4.5. Indirect Effects

Table 10 presents the results of hypothesis (H6) testing for the indirect path. The findings in Table 10 concluded a significant indirect effect of technology opportunism on the relationship between complementary assets and business sustainability ( $\beta = -0.074$ ;  $t = 4.060$ ;  $p = 0.000$ ).

Table-10. Indirect effect.

Constructs	$\beta$ - value	Mean	(STDEV)	T value	P values	2.5%	97.5%	Decision
TMA -> BS	0.270	0.269	0.043	6.211	0.000	0.183	0.350	Supported

Notes: TMA= Top Management Advocacy of New Technology, TO =Technology Opportunism, BS = Business Sustainability. \*\*\*p < 0.01.

4.6. Model's Predictive Relevance ( $Q^2$ )

The predictive relevance ( $Q^2$ ) technique measure the path model's quality, and in smart PLS blindfolding procedure is used to estimate it Tenenhaus *et al.* (2005). This study contained to perform the cross-validated redundancy (C-V Red). The predictive compatible model ( $Q^2$ ) indicates that the proposed model may predict the study's endogenous latent construct. The value of ( $Q^2$ ) should be greater than zero ( $>0$ ) for the specific endogenous variable. Figure 4 shows that ( $Q^2$ ) for this study their values are 0.239 and 0.204, which are higher than their threshold limit. This is suitable for the endogenous variables and it support the path model.

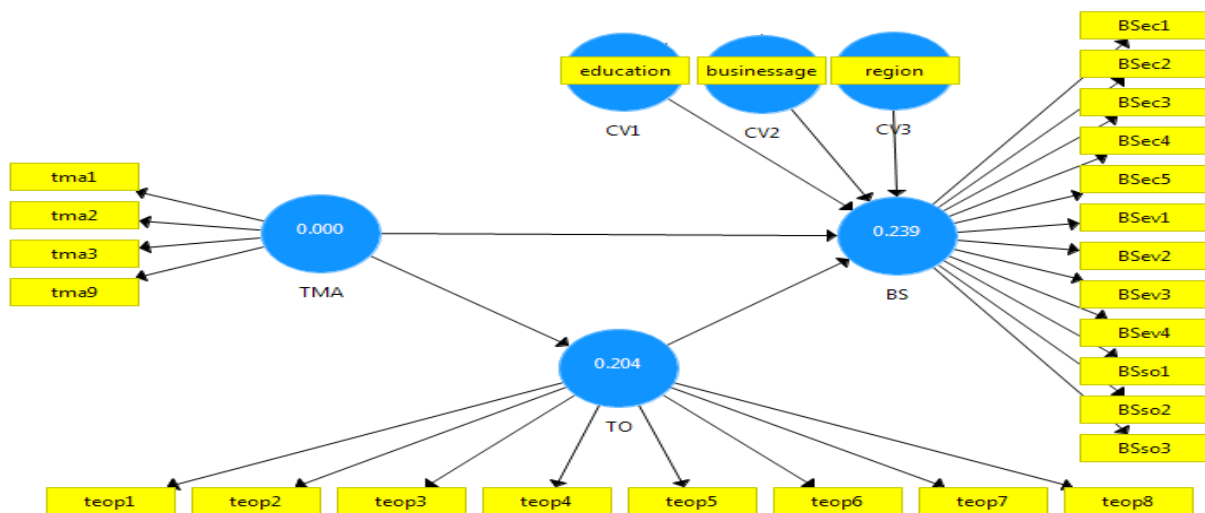


Figure-4. Predictive relevance ( $Q^2$ ).

4.7. Model Fit Statistics

Table 11 Shows cut off / thresh hold values of model fit and with the description of indices and it shows the model fit summary of the study.

Table-11. Model fit Summary.

Name	Measure	Description	Thresh hold for good fit	Fit summary
The Standardized Root Mean Square Residual (SRMR)	(S)RMR	The square root of the difference between the residuals of the sample covariance matrix and the hypothesized model. If items vary in range, (i.e. some items are 1-5, others 1-7) then RMR is hard to interpret, better to use SRMR	SRMR <0.08	0.07
Normed-Fit Index	NFI	Normed Fit Index Tucker Lewis index An NFI of .95, indicates the model of interest improves the fit by 95% relative to the null model. NNFI is preferable for smaller samples.	NFI $\geq$ 0.95	0.57
X <sup>2</sup>	Model Chi-square	Assess overall fit and the discrepancy between the sample and fitted covariance matrices.	p-value > 0.05	3,668.715

## 5. DISCUSSION

This study reflected a response to the RBV literature, address the need to test the combined impact of resources (management advocacy and technology opportunism practices) about sustainable performance and determine exactly what factors can lead to improve capability (Guerci *et al.*, 2016; Jabbour and De Sousa, 2016). Therefore, this study provides evidence that top management advocacy is effective mechanism directly or indirectly by technology opportunism, SMEs can use that mechanism to enhance implementation, in turn, it can have a positive impact on its sustainable business development.

Obviously, the results of this in-depth study give people a deeper understanding of how to successfully manage the advocacy of new technology to the natural environment, economy and social. This study explores in some detail the efficiency of senior management, including various technical functions in relation to components of business sustainability (i.e., Environmental, economic and social). The results reveal that positive relationship between top management advocacy of new technology and business sustainability, which supports H1, dissemination of business sustainability ideology promoted environment, economic and social with standards that are bundles through top management advocacy of new technology. Positive relation was also found between top management and technology opportunism (supports H2), where environmental, economic and social values are added to a company if it has an inspired and dedicated workforce. Moreover, a positive indirect relation is found, technology opportunism is positively fully mediates between top management advocacy of new technology and business sustainability which supports H3, while implementing decisions by top management to reduce costs, recognize technological opportunities to enhance the business sustainability of SMEs sector, resulting in enhancing the reputation of the SME sector and improving community, environment and economic (Jain *et al.*, 2016). HRM is the main success factor in firms' operations (Brío *et al.*, 2007; Haddock-Millar *et al.*, 2016). In this perception, Teixeira *et al.* (2012) emphasized the significance of growth, empowering staff and carrying out environmental training in supporting technology opportunism in the organization. Technological opportunities thereby recognized and execute by the top management for the lower management to properly participate in the development of business sustainability of their firms (Hofer *et al.*, 2012). Although the results of the current study shows, that technology opportunism have a positive and significant association with business sustainability, which supports last hypothesis of the study H4. Technology opportunism is the important factor for the firms' actions. In this perspective, authenticate opportunistic mechanism and carrying out sustainability in the SMEs. Therefore, this study is linked to a broad discussion of the development of cross-functional sustainability (i.e., environmental, social and economic) management systems. In fact, the results of the current study are consistent with the assumptions made in previous

important theoretical studies, and that cross-functional integration is a prerequisite for effective sustainability management (Boiral, 2003; Wong *et al.*, 2015). More specifically, the results of this study primarily support a hypothetical mediation model in which researchers confirm that cross-functional design and management of technology and sustainability practices is necessary. In fact, the association of top management practices is critical to SMEs as they reduce barriers to adoption of technological opportunities. In other words, technology opportunism needs more attention from SME sector (Kim and Huarng, 2011; Sarkis *et al.*, 2011), which can improve the business sustainability of SMEs.

## 6. CONCLUSION AND IMPLICATIONS

From a practical perspective, this research can guide SME sector in linking economic, environmental and social objectives to specific TMA and TO practices to help achieve their strong sustainability performance. This connection can motivate employees to participate deeply in the development of BS. First, an empirical evidence-based argument is outline for SMEs to invest in a sustainability management model that attracts TMA and TO because it can improve a SME's sustainability performance. Second, the findings provide guidance to managers to emphasize collaborative investments in advocacy of new technology, such as programs that increase employee motivation to develop and implement new technologies. Managers should then continue to make special investments in TO and thus create a cross-functional sustainability management approach. Third, the results of this study also provide recommendations for managers seeking to improve sustainability at the same time. Fourth, based on this research, specific improvements can be made to the employee-training program in the SME sector. For example, it is imperative that the training and education of some employees should include indicators of green technology training hours as suggested by Initiative (2017).

### 6.1. Limitation and Suggestions

This study have identify some limitations, which are based on the future research. First, the study is based on the SME sector of Pakistan, which actually restrict the study because data is only based on one country. Regulatory system, institutions and national cultural context may affect TMA and TO practices and their performance, this may limit their versatility of the result. However, this study can be applied in other countries in the future studies, which will give the space and welcome to new contributions. In future, scholars can take a specified type of technologies for the research considerations. Second, the measurement methods used in this study are limited. The application of TMA and TO practices is measured by evaluating the opinions of key informants (i.e., Owners and managers). Therefore, future research may examine the opinions of employees and the extent of exposure or complexity of such practices. To assess the application and outcome of TMA and TO practices in a fair manner, the opinions of the members of the organization can be triangulated even through an external review conducted by an appropriate rating agencies or NGOs. However, few theorists examine one or two aspects of the sustainability regarding supply chain management and human resource management (Huatuco *et al.*, 2013; Marshall *et al.*, 2015; Diaz-Carrion *et al.*, 2017; Jia *et al.*, 2018). It is therefore suggested that longitudinal studies can be conduct in the future, with the inclusion of all three (i.e., environmental, social and economic) or any combination of these three aspects in the concepts of human resource management or supply chain management. In addition, future qualitative research may emphasize mechanisms and processes that generate such relationships, such as cross-functional coordination and integration mechanisms to ensure improved sustainability performance results.

Moreover, other sides of the TMA and TO relation could be study by extending the current research. Future research could focus on the other types of the relationships, such as moderation. This empirical study is clearly designed to study the impact of TMA that covers the technology development, implement and technology trends for the application of TO practices. Future research could study whether specific TMA intervention that focus on technical staff who are in TO-related positions would be consistent with a moderation mechanism. The

implementation of qualitative or multi-layer research designs can expand the development of research. Therefore, it is recommended that quantitative studies with the support of exploratory research techniques (e.g., in-depth interviews) remain important in the study of this topic, as mixed methods (quantitative and qualitative) have not been performed in this area.

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