

Entrepreneurial Technology Opportunism and Its Impact on Business Sustainability with the Moderation of Government Regulations

Shoaib Asim, Cai Li, Habib Ur Rahman Makhdoom, Zuhaib Zafar

ABSTRACT

Objective: This article aims to examine the direct relationship between technological opportunism (TO) and business sustainability (BS). The study examines the relation through the moderation of government regulations (GR) between TO and BS. The objectives of this research were to establish TO as an important antecedent for the sustainability of small and medium-sized enterprises (SMEs), assess the interaction of TO with GR and establish relations with regard to how Pakistani SMEs focus on their business sustainability through government regulations.

Research Design & Methods: This empirical study is based on 480 key informants which belong to the SME sector of Pakistan. Structural Equation Modelling analysis was applied to analyse the research hypothesis by using Smart PLS.

Findings: Our analysis shows that TO and GR have a significant positive impact on BS of Pakistani SMEs. However, the interaction of TO and GR is also found to have a significant impact on BS but it is negative.

Implications & Recommendations: Furthermore, the study offers insights and implications for policy makers, regulators and academics that TO is the most important factor for business sustainability of SMEs.

Contribution & Value Added: The findings of this study bridge the gap between the entrepreneurial technological opportunism and business sustainability literature by establishing TO as an important antecedent of BS.

Article type: research article

Keywords: technology opportunism; government regulations; business sustainability; SMEs; Pakistan

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INTRODUCTION

Firm's sustainability has been established through innovations, in particular technological innovations, and these are major drivers of the firm to sustain its business (Cefis & Ciccarelli, 2005; Geroski, Machin, & Van Reenen, 1993; Roberts, 1999). The importance of sustainable business practices is already recognized around the business world. (Patzelt & Shepherd, 2011b). Environmental, economic and social factors are the three important aspects which prop up sustainability (Agu Igwe, Ituma, & Madichie, 2018; Gimenez, Sierra, & Rodon, 2012). The sustainability concept is actually of versatile nature and has been studied in engineering, environmental sciences and particularly in business and management fields (Gimenez *et al.*, 2012). Government policies and regulatory implementations are one of the key drivers of the industry's environmentally responsible performance (Battisti, 2008; Clayton, Spinardi, & Williams, 1999; Vollebergh & Van der Werf, 2014). According to (Luken & Van Rompaey, 2008), high production costs, current environmental legislations and expected future environmental rules are the three important drivers of sustainable development in developing countries.

As developing countries such as India, China, and Africa are rapidly industrialising, it is important for them to develop and adopt technologies right from the design stage of new projects. However, developing countries like Pakistan and most of the other South Asian countries have been moving towards industrialisation since the announcement of China Pakistan Economic Corridor (CPEC). Moreover, there is a lot of industrial development taking place in Pakistan and therefore it is important that the government of Pakistan should design policies for business sustainability and adopt technological opportunities which should be economical and eco-friendly as well. Industries of developing countries are improving their major achievements in the environmental performances since the Rio Conference of 1992.¹ Developing countries are the ones to get most affected by the climate change; in particular, the below poverty line population will suffer most because of their inability to sufficiently adapt to the change (World Bank Report, 2013).² Pakistan's first comprehensive piece of legislation on the environment came out in 1983 as Pakistan Environmental Protection Ordinance (PEPO). Therefore, the climate change opens new opportunities for developing countries so that they could formulate their own strategy to promote cleaner local industries that can lead to economic, social and environmental benefits.

In the past, much of the research observed the impact of innovative technologies on the firm's ability to get perfection in sustainability. However, this article demonstrates the concepts of entrepreneurial technology opportunism in the context of Pakistan, particularly and in general the role of technological opportunism in the sustainability of small and medium-sized enterprises (SMEs) by using the structure equation modelling (SEM) methodology which can define the general aspect of this article with a randomly selected sample of 480 SMEs in Pakistan. Technological opportunism makes an impact on business sustainability, and the interactions between government regulations and entrepreneurial technology opportunism foster the SME's sustainability. Therefore, the objective of this study is to assess the impact of entrepreneurial technological opportunism on business

¹ Available at: <https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf>

² Accessed from: <http://projects-beta.worldbank.org/en/results/2013/04/13/climate-change-results-profile>

sustainability of Pakistani SMEs with the moderation role of government regulations. This leads us to formulate a key research question. How can SMEs improve their sustainability by using entrepreneurial technology opportunism with the interaction of government regulations? This research question is answered in this empirical study. However, in the past, only few researchers studied the sustainability of Pakistani SMEs but in a different way e.g., supply chain, SME financing, CSR practices, etc. (Awan, Kraslawski, & Huiskonen, 2017; Dasanayaka, 2008; Jamali & Mirshak, 2007; Jamshed Raza, 2016; Qureshi, 2012).

In this article, both commercial and technical sides of technological innovation are considered and mainly focus on the entrepreneurial mechanism. Through technological senses and response capability, recognition and exploitation of technological opportunities concern the identification of technological opportunism. Drawing upon previous studies (Assessment, 1969; Casson, 1982; Kirzner, 1997; Srinivasan, Lilien, & Rangaswamy, 2002; Venkataraman & Sarasvathy, 2001; Yoon & Magee, 2018; Žur, 2015), this study defines technology-based entrepreneurial opportunities or technological opportunities as one of the prospects to design new products, which are originated from the divergence of beliefs towards the future value of previously unexploited technologies. The opportunities which are based on technological entrepreneurship plan to produce new products. Business sustainability, in the context of this article, can be described as the combination of social performance, environmental performance, and economic performance (Drexhage & Murphy, 2010; Kwarteng, Dadzie, & Famiyeh, 2016). In the past, there was abundant literature that considered the relationship between business sustainability and entrepreneurial technology opportunism which captured more difference in Pakistan than in other countries (Agyemang & Ansong, 2017; Kraus & Britzelmaier, 2012; Kwarteng *et al.*, 2016; Velte & Stawinoga, 2017; Venkatraman & Nayak, 2015). However, the predecessors poorly developed and understood sustainability (Hahn, Pinkse, Preuss, & Figge, 2015). A firm can sustain only by considering all three factors i.e., social, environmental and economic, rather than focusing on only one factor. A firm may sustain its economic goals through assuming environmental and social responsibilities.

As per (Shane & Venkataraman, 2000), entrepreneurial opportunities are defined as “situations in which new goods, services, raw materials, and organizing methods can be introduced and sold at more than their cost of production.” However, entrepreneurial ability is basically to recognize and exploit the technological opportunity to initiate a new business or set up a new product because novel products and services are produced to fill the gap in the market needs and make the efficient use of available resources. Therefore, entrepreneurs develop plans for the development of a new product by considering the needs of the market in order to sustain their business growth.

This rest of the article is divided into 4 sections. The hypothesis development and relevant literature with some strong theoretical background are considered under Section 2. Following this, the research framework and methodology are presented in Section 3. Section 4 contains results concerning the measurement model, structural measures and discussion. Finally, conclusions, implications and limitations are presented in Section 5.

LITERATURE REVIEW

This study examines the direct relation between entrepreneurial technology opportunism, technological opportunities recognition, and execution to business sustainability that emphasizes eco-systematic thinking. Also, it examines the same effect with the interaction of

government regulations. To explore this relation, this study is based on Stevenson's conceptualisation of entrepreneurship in an opportunity context and on Resource-Based View (RBV) theory. The chosen framework is suitable to highlight the relation of entrepreneurial technology opportunism and business sustainability in the context of Pakistani SMEs.

Stevenson's conceptualisation of entrepreneurship, based on the initial concept defined in 1983, provides a valuable foundation in this regard (Brown, Davidsson, & Wiklund, 2001; Fellnhöfer, 2017; Stevenson & Carlos Jarrillo-Mossi, 1986; Stevenson & Jarillo, 2007). Nowadays, it is easier for entrepreneurs to consider all the critical aspects of entrepreneurship to promote the behaviour which is needed to recognize innovative opportunities and exploit them to sustain their business (Todeschini, Cortimiglia, Callegaro-de-Menezes, & Ghezzi, 2017). As defined by the World Commission on Environment and Development (WCED), 'sustainability' is the ability to fulfill your current demands but without restraining the ability to meet the future needs defined by WCED (1987). Normally, business contemplates economic benefits but business sustainability in addition to economic benefits is concerned with social values and measurable ecological values (Boons & Lüdeke-Freund, 2013).

Stevenson defines entrepreneurship as a managerial approach with a focus on the exploitation of opportunities (Stevenson, 1983). Based on his statement, entrepreneurial management is an opportunity-based behaviour (Brown *et al.*, 2001; Gonzalez-Perez, Velez-Ocampo, & Herrera-Cano, 2018) which is critical to the long term vitality of the economy (Stevenson, 1983). Therefore, this study investigates the impact of technological entrepreneurial opportunity-based behaviour with the focus on business sustainability.

The exploitation of opportunities is an important aspect to boost up innovation which actually drives sustainable businesses. In the past, Stevenson's explained the features of the conception of sustainability (Kamaludin, Saad, & Aziz). Stevenson's mechanism on more than 1,200 cases of diversified firms for examining the entrepreneurial theme has been pragmatically indorsed (Brown *et al.*, 2001) and therefore, the reliability of the current study is supported by Stevenson's mechanism.

RBV was initially introduced by Wernerfelt (1984). In his study he examines organisational resources and submits those resources and capabilities to generate a competent business. Innovation is a key driver to unite all resources and capabilities, and together these forces generate a more competent business (Bakar & Ahmad, 2010; Ndubisi, Dayan, Yeniaras, & Al-hawari, 2019). However, research on the role of normative or moral values is still in its early stages, and their actual relation to entrepreneurial technological opportunism for sustainable development is slurred. Therefore, new explorative empirical research could provide valuable insights into two questions. According to Dean and McMullen (2007), Muñoz and Dimov (2015), and Patzelt and Shepherd (2011b), the first question deals with the key elements of entrepreneurial technological opportunism, which are technological sense and response capabilities. Both elements are further divided into sub-elements, such as technological opportunities, threats, exploitation and execution of new technologies and what their impact on business sustainability is, while the second question is: what differences could be made on SMEs sustainability with the moderation of government regulations? It is evident that technological opportunities are essential for business sustainability. On a firm level, there is an enormous deficiency of capacity enhancement, designs models and experts, which are effective for sustainability

(Koefoed & Buckley, 2008; Tukker, 2000). However, the shortage of funds, lack of technical expertise, low research & development (R&D), expenditure and stringent government regulations – these are all barriers for SMEs as compared to large firms to achieving technological innovations (Freel, 2000; Hadjimanolis, 1999).

In other words, developing countries face more obstacles with low infrastructure facilities. Insufficient government support, lack of formal bank credits, lack of information regarding technology and low human capital are major hurdles to SMEs' performance (Al-Maskari, Al-Maskari, Alqanoobi, & Kunjumammed, 2019; Dar, Ahmed, & Raziq, 2017; Hadjimanolis, 1999; Radas & Božić, 2009; Rehman, 2016). This previous literature is related to testing and adjustment of the scale, supported reliability and feasibility of application concepts with a focus on business sustainability (Brown *et al.*, 2001). Outcomes point out the sustainability dimensions, emphasize a high discriminating efficiency and moderate to high reliability. Also, aspects dedicated to entrepreneurship have been researched (Kamaludin *et al.*, 2012).

Ecology is a necessary component (El-Kassar & Singh, 2018), it is an essential factor that makes the environment sound. Those countries which keep their environment clean and sound are greener than those which do not (Song & Wang, 2018). During the last four decades, regulations have been the most important policy instrument related to the environmental behaviours of the entire sector of economy (Montalvo & Moghayer, 2011). Despite the fact that eco-innovation can leverage service innovation capability and business sustainability, successful implementation of ecology is closely related to government regulations (Song & Wang, 2018; Vazquez-Brust, Smith, & Sarkis, 2014).

Currently, the majority of empirical research shows that the role of regulations concerning innovation and competitiveness at the firm level is positive (Montalvo, 2012; Wagner & Llerena, 2011). Regulations have been created to encourage firms to adopt sustainability strategies and thus improve their sustainable business performance, which includes economic, social, and environmental performance (Pusavec, Krajnik, & Kopac, 2010). Increasing institutional pressures are being faced by SMEs to adopt sustainable business practices and reduce environmental pollution (Hillary, 2017; Melville, 2010). For this challenge, SMEs are trying to measure, with the help of a variety of green tools, to achieve sustainable business practice, such as environmental management systems (Singh, Brueckner, & Padhy, 2015). The innovation is an important driver of business sustainability (Cai & Li, 2018; Katila & Shane, 2005; Leskovar-Spacapan & Bastic, 2007). Not every stakeholder puts pressure on firms to implement practices related to the environment because their influences are not always equal. However, primary stakeholders, customers, clients and authorities have the ability to put their influence on environmental pressure. To adopt sustaining initiatives into their operations, government regulations are considered to be the most important driving force (Liu, Kasturiratne, & Moizer, 2012). Moreover, Awan (2017) highlighted that for achieving high effectiveness of sustainability initiatives, the regulatory governance may be an important external pressure. Local environmental regulatory agencies face lack of issues to enforce and monitor the true implementation of Pakistan national environmental standards. They also have challenges related to the capacity and monitoring equipment (Afzal, 2006). Non-governmental organizations' pressure is also a substantial factor to sustain the firm. In developing countries, most of the studies are being conducted to investigate the sway of regulatory pressure on the empathy of environmental norms and to adopt technologies for

the sustainability of business. The innovation-based strategies and opportunity-based strategies are assumed to facilitate firms which are sustainability-oriented (Anthony, Eyring, & Gibson, 2006; Govindarajan & Ramamurti, 2011; Huizingh, 2011). Entrepreneurial firms have enhanced innovative and sustainable ideas (Larson, 2000; Zhao, 2005), hence innovative and sustainability-focused firms take benefit from value creation by exploiting opportunities.

Technology Opportunism and Business Sustainability

Entrepreneurial technology opportunism has been described as a system, a process, a capability, a strategy, and an individual attribute which is related to the discovery, threats, recognition, and creation of new technologies and their exploitation (Abetti, 1992; Badzińska, 2016; Dorf, 2011; Gans & Stern, 2003; Hindle & Yencken, 2004; Shane & Venkataraman, 2003; Srinivasan *et al.*, 2002). Considering previous studies (Casson, 1982; Kirzner, 1997; Petti & Zhang, 2013; Sarasvathy & Venkataraman, 2011; Schmidt, Müller, Ibert, & Brinks, 2018; Shane & Venkataraman, 2000), technological opportunities can be defined as the possibilities to create new products. Introducing these products into the market and selling them at a price higher than the cost of their production. Business sustainability refers to social, economic, and environmental performance. Sustainable competitiveness as an integrating concept bridging current understanding of sustainable development and encompassing the aspects of economic, social and environmental sustainability (Doyle & Perez-Alaniz, 2017). Distinctly, for this research, sustainability is “meeting the necessities of present without compromising the aptitude of future generations to meet their own needs” (Brundtland, Khalid, & Agnelli, 1987; Hale, Legun, Campbell, & Carolan, 2019). Sustainable development of long-term market commitment focuses on those technologies and products which are constructive for the environment (Hart & Milstein, 2003). SMEs have the responsibility to do things for the betterment of environment and society with their keen objective of retaining their profit (Bos-Brouwers, 2010; Radziwon & Bogers, 2018; Walker & Preuss, 2008).

In fact, Schumpeter (1942) argued that the external constituencies make the markets disappointed whenever the sustainable developments put strain on the adoption of sustainable practices, and it actually provides chances to entrepreneurs to make markets normal and resolve the market disappointments (Cohen & Winn, 2007; Hockerts & Wüstenhagen, 2010). Entrepreneurship is highlighted by academics and therefore the literature as a decisive strategy for businesses in the emerging economy, and it is likely to boost businesses above the threshold of sustainability (Hull, Caisy Hung, Hair, Perotti, & DeMartino, 2007; Scheepers, Hough, & Bloom, 2007; White, 2009; Zahra, 2015). The process is disrupted and made obsolete for those organisations which fail to innovate risk, and that is famously described by (Schumpeter, 1942) as “the perennial gale of creative destruction.” However, the need for entrepreneurship has always been real and it has been emphasized in recent years due to the engagement of economic changes and worldwide growing competition. The literature discloses that the innovative sustainability strategy is closely linked to the entrepreneurial business strategy for improvement in extremely competitive situations (Hull *et al.*, 2007; Ligthelm, 2010; Raymond, Bergeron, Croteau, & St-Pierre, 2015; Singh, Bhowmick, Eesley, & Sindhav, 2019; White, 2009; Zhang & Dhaliwal, 2009).

In the current era of rapidly increasing state of the business environment, innovativeness is a crucial element for the success of entrepreneurial firms. Although recognition and exploitation of technological innovativeness are not the same, for the entrepreneurial

firm the detection of both recognition and exploitation of technological opportunities is required (Schumpeter & Fels, 1939; Short, Ketchen Jr, Shook, & Ireland, 2010). In the same context, it is closely related to the fact that innovative new ventures are based on the design of technological opportunities, more precisely on whether they are discovered or created (Alvarez & Barney, 2010; 2012). Following these two diverse academic assumptions, the opportunity process is executed and exploited under different contexts which are dynamic to the innovation and entrepreneurial processes (Alvarez, Audretsch, & Link, 2016; Baron, 2008; Shane & Venkataraman, 2000) and to our understanding of how nascent ideas and businesses are formed and developed (Hmieleski, Carr, & Baron, 2015).

In the context of the global marketplace, the need for greater sustainability is a topic which presents opportunities for innovators by rewarding a competitive edge to those adopting more sustainable practices (Konar & Cohen, 2001; Lee *et al.*, 2018) and those offering more sustainable products to their customers (Kiron, Kruschwitz, Reeves, & Goh, 2013; Nicholls & Opal, 2005). A business could sustain from the surprising low or high level economic, social and environmental challenges through innovative decisions (Kuratko, Hornsby, & Covin, 2014). Previously, Patzelt and Shepherd (2011a) described a model for sustainability developments in business which is actually based on the combination of prior knowledge of entrepreneurship and the environment that can create technological opportunities for firms to sustain on the market. Thus, we pose our first hypothesis.

H1: Entrepreneurial technology opportunism has a significant impact on business sustainability.

Government Regulations and Business Sustainability

Sustainability does not deal with right policies, decisions and methods to get more current capital, it is a responsibility to take for the distribution of risks and sacrifices equally between poor and rich, non-human and human, and present and future generations (Blok, Gremmen, & Wesselink, 2016). We are describing the model for sustainability developments in business which is based on the combination of prior knowledge of entrepreneurship and the environment that can create technological opportunities for firms to sustain on the market. Thus, we pose our first hypothesis.

In Pakistan, the regulatory authority, Securities Exchange Commission of Pakistan (SECP), issued guidelines on voluntary social responsibilities. Similarly, other institutes, for example Corporate Social Responsibility Association of Pakistan (CSRAP), Responsible Business Initiative Pakistan (RBIP), National Forum for Environment and Health (NFEH), Corporate Social Responsibility Centre Pakistan (CSRCP), Triple Bottom Line Pakistan (TBLP), Sustainable Development Policy Institute (SDPI), Non-government Organisations (NGOs) and other supporting groups etc., are endorsing the need for business and the government to promote social responsibility awareness and cultural practices among Pakistan.

Previously it was described that governmental acts as a driver to adopt that kind of technologies which are efficient sustain the business. In Carlos Montalvo (2008) survey one key finding was that the government policies are one of the key elements leading to business sustainability. The framework by Sangle (2011) fetches together the stakeholder, technology, and the firm for proactive business sustainability for cleaner technology adoption. The role of SMEs played in the region's sustainable development cannot be ignored. For poverty mitigation, economic development and employment generation, SMEs are the

main sources (Raza & Majid, 2016). On the one hand, many studies reported a significant role of appropriate policies for sustainability in business (Agan, Acar, & Borodin, 2013; Carroll & Buchholtz, 2014; Epstein, 2018) while on the other hand, some studies from different markets show that there is an insignificant impact of environmental policies or government regulations and their interaction with technology on business sustainability (Adeoti, 2002; Satapathy, Sangle, & Unnikrishnan, 2017). However, based on the above arguments, we pose our second and third hypotheses.

- H1:** Government regulations have a significant positive impact on business sustainability.
- H2:** Government regulations are the moderation between technological entrepreneurship and business sustainability.

MATERIAL AND METHODS

Research Framework

Based on the literature and the hypothesis development, our framework for this study is given below:

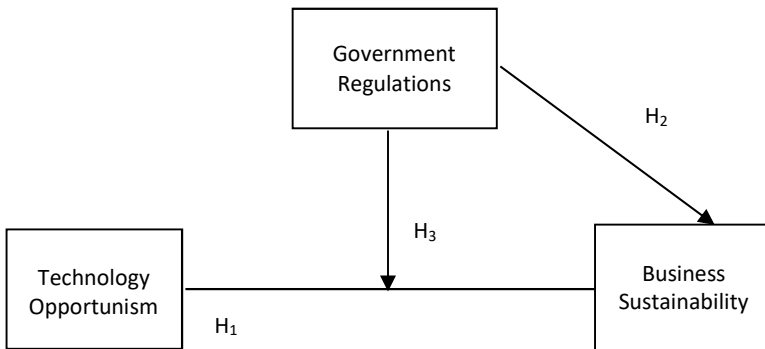


Figure 1. Research framework

Source: own elaboration.

Sample and Data Collection

The SME sector is generally considered not responsible in terms of its operations for the environmental and social system. For the collection of data, we use random sampling technique and we have targeted the SME sector of Pakistan and focused on big cities: Karachi, Lahore, Sialkot, Faisalabad and Multan, which have their industrial zones. Moreover, the sample size is selected on the basis of the previous studies (Ali, Dey, & Filieri, 2015; An & Noh, 2009; Archana & Subha, 2012; Farooq & Markovic, 2017). The questionnaire is developed and distributed physically and through emails. It was intended that the sample population consisted of working individuals. The survey was conducted among 750 key informants, through convenient sampling technique, their confidentiality was assured. The questionnaires which were unanswered and had missing values were deleted, and in total, we received back 480 considerable questionnaires.

Demographic Information

For technological opportunism and business sustainability, here is the compressed demographic information with responses of 480, the target population was small and medium-sized enterprises, and distributed questionnaires were (N = 750), questionnaires with missing values and suspicious responses were deleted. In return, the total responses were (N = 480) with 64% rate. 139 respondents (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. The rate of respondents according to their firm's location includes 23% Karachi, Sialkot 26%, Lahore 18%, Faisalabad 20%, and Multan 13%.

Table 1. Demographic Information

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

Source: own study.

Measurements

All the constructs were measured on a seven point Likert-scale, strongly disagree = 1 to strongly agree = 7. The dependent variable business sustainability was measured in terms of the environmental, economic and social performance and this is the adaption of

(Maignan & Ferrell, 2000; Turker, 2009). The questionnaire items used for this measurement were based on those used in (Raderbauer, 2011).

Technological opportunism came into existence by sensing and responding to technological capabilities (Srinivasan *et al.*, 2002). By using 8 item scales, we measured technological opportunism on the basis of behaviours related to the organisation with respect to new technologies. The regulation was assessed using four items: compliance with regulation, penalties imposed, inspection and attainment (Fernando, Jabbour, & Wah, 2019).

Analytical Methods

The data was analysed using Smart PLS version 3.2.7 (Ringle, Wende, & Becker, 2017). The PLS-SEM approach was adopted, because it can handle reflectively and formatively both types of measurement models which are involved in the proposed model of study. A recent study (Farooq *et al.*, 2017) for validating his UTAUT3 model (i.e. an extended version of the unified theory of acceptance and use of technology) also used PLS-SEM. In addition, the selection of PLS-SEM is based on its ability to simultaneously estimate causal interactions between all potential constructs, while addressing measurement errors in the structural model (Farooq *et al.*, 2017; Hair, Hult, Ringle, & Sarstedt, 2017). Furthermore, our study is descriptive in nature; therefore, PLS-SEM is best for this study (Farooq & Markovic, 2017). The measurement model was evaluated separately before evaluating the structural equation model (Hair *et al.*, 2017). Before performing PLS-SEM analysis several tests were performed, like validity and reliability of the data by using the quality of data and consistency of the structural model.

RESULTS AND DISCUSSION

The Measurement Model

Individual item reliability: Following previous studies (Duarte & Raposo, 2010; Hair Jr., Sarstedt, Hopkins, & Kuppelwieser, 2014; Hulland, 1999), an individual item reliability is assessed by observing the outer loadings of each item of each construct. For researchers, there is a rule to follow that the values of outer loading should be retained 0.4 to 0.70 (Hair Jr. *et al.*, 2014). In Figure 2, loading factors are drawn for each of the indicators in the research model. Moreover, this study met the standardised criterion of individual item reliability.

Internal consistency reliability: for measuring the internal consistency reliability, it is a rule of thumb as for composite reliability, and Cronbach's alpha must be 0.70 or above (Bagozzi & Yi, 1988; Hair Jr. *et al.*, 2014). This study met the criterion of composite reliability (CR) and Cronbach's alpha (CA) successfully, and all variables are between 0.826 to 0.927 as CR and 0.720 to 0.913 as CA.

Convergent Validity: for measuring the convergent validity with average variance extracted (AVE), (Fornell & Larcker, 1981). AVE should be 0.5 or more to prove the convergent validity of a particular construct. Moreover, this study achieved the threshold of AVE (Chin, 1998). All the above-described reliabilities and validities are mentioned in Table 2.

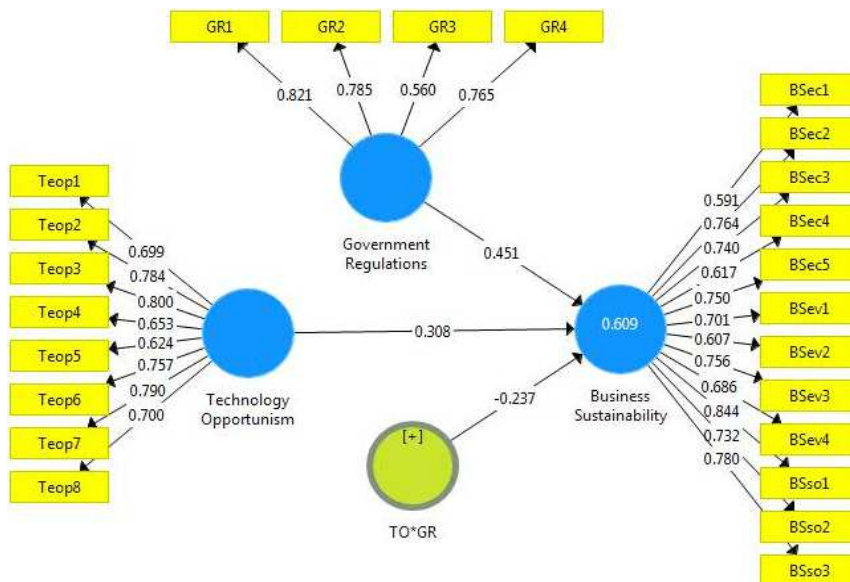


Figure 2. Factor loadings and structural factors influence

Source: own elaboration.

Table 2. Reliabilities and validates

Latent variables	Outer Loadings	AVE	CR	CA
Business Sustainability		0.515	0.927	0.913
BSec1	0.591			
BSec2	0.764			
BSec3	0.740			
BSec4	0.617			
BSec5	0.750			
BSev1	0.701			
BSev2	0.607			
BSev3	0.756			
BSev4	0.686			
BSso1	0.844			
BSso2	0.732			
BSso3	0.780			
Government Regulations		0.547	0.826	0.720
Gps1	0.821			
Gps2	0.785			
Gps3	0.560			
Gps4	0.765			
Technology Opportunism		0.531	0.900	0.872
Teop1	0.699			
Teop2	0.784			
Teop3	0.800			
Teop4	0.653			

Teop5	0.624			
Teop6	0.757			
Teop7	0.790			
Teop8	0.700			

Source: own study.

Discriminant Validity: Fornell and Larker standardise the discriminant validity by using AVE with a higher value of 0.50 and took the square root of AVE of the latent variables, and it must be higher than the correlation among the variables (Fornell & Larcker, 1981), as shown in Table 3.

Table 3. Discriminant validities of variables

Variable	Mean	SD	BS	GR	TO
BS	5.6809	0.80779	0.718		
GR	5.7094	0.81857	0.652	0.740	
TO	5.8590	0.64586	0.660	0.568	0.729

Notes: TO =Technology Opportunism, GR = Government Regulations, BS = Business Sustainability.

Source: own study.

Structural Measures

This study used the standard bootstrapping procedure with 500 bootstrap samples, 480 samples to determine the significance of the path coefficients (Hair Jr *et al.*, 2014; Henseler, Ringle & Sarstedt, 2015; Henseler, Ringle & Sinkovics, 2009). Full results of the structural measures of our model are demonstrated in Table 4. Where technology opportunism (TO) has a significant positive ($\beta = 0.309$, t -value = 7.871 and p -value < 0.000) relationship with business sustainability (BS) as we expected. So it supports H1. Government regulations (GR) have a significant positive impact ($\beta = 0.447$, t -value = 8.126, p -value < 0.000) on business sustainability (BS) as we expected. This supports H2. The interaction coefficient (TO*GR) between technology opportunism (TO) and government regulations (GR) is negative and significant ($\beta = -0.237$, t -value = 7.256, p -value = 0.000) indicating that GR moderate negatively between TO and BS. This supports H3. However, the moderating role of GR in explaining the relationship between TO and BS is also supported by Figure 4, which is used to plot the moderating role of GR between TO and BS.

Table 4. Path coefficients

Hypothesis Relationship	Beta	SD	t-value	p value	Decision
H1 TO \longrightarrow BS	0.309	0.039	7.871***	0.000	Supported
H2 GR \longrightarrow BS	0.447	0.063	8.126***	0.000	Supported
H3 TO*GR \longrightarrow BS	-0.237	0.034	7.256***	0.000	Supported

Notes: TO =Technology Opportunism, GR = Government Regulations, BS = Business Sustainability. *** $p < 0.01$.

Source: own study.

PLS-SEM structural model assesses for overall explanatory power of constructs through R^2 ; this R^2 value is also called coefficient of determination (Hair Jr. *et al.*, 2014; Henseler *et al.*, 2009). R^2 value is acceptable at 0.10 (Falk & Miller, 1992). According to Chin (1998) in PLS-SEM, R^2 is significant at 0.60, moderate at 0.33 and weak at 0.19. With

respect to the values in Figure 3, R^2 is 0.609 for latent variables i.e., technology opportunism (TO), government regulations (GR) and business sustainability (BS), therefore it can be explained that latent exogenous variables have a significant impact on the latent endogenous variable. In this study, TO and GR together explain the 61% of the variance in BS.

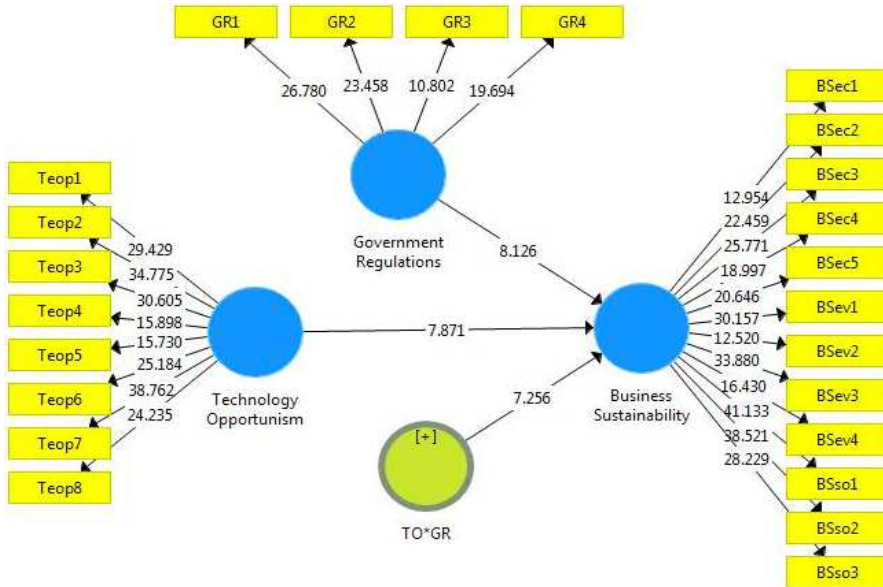


Figure 3. Model loadings with the t values of variables
Source: own elaboration.

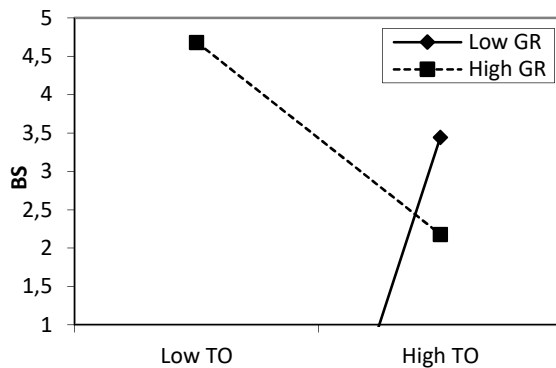


Figure 4. Interaction of Technology Opportunism and Government Regulations on Business Sustainability
Source: own elaboration.

Discussion

Initially, this research reveals the relation of entrepreneurial technology opportunism and regulations with business sustainability by using two complementary theories of Stevenson’s conceptualisation of entrepreneurship in an opportunity context and Resource-

Based View (RBV). The framework which has been developed based on these theories creates better understanding of the relationship of entrepreneurial technology opportunism and business sustainability. These two theories are correlated with each other in favour of SMEs' resources based on capabilities and abilities to create, adapt, execute, and exploit new technological opportunities, and also empower SMEs for the business sustainability which leads them among business competitors. RBV and Stevenson's concept can be used to support the role of regulations as a moderator between technological opportunism and business sustainability by measuring the impact of the interaction between technological opportunism and government regulations on business sustainability (economy, society, and environment). By using the PLS-SEM, the results show positive and significant effects of technological opportunism and government regulations on business sustainability, which supports the proposed hypothesis. Moreover, the impacts of the interaction of technological opportunism and regulations are significant but negative on the dependent variable. Also the central question of this research, namely how can SMEs improve their sustainability by using entrepreneurial technology opportunism with the interaction of government regulations, is answered in the following way: exploiting new technologies and overcoming the threats related to adopting new technologies has a positive impact on business sustainability of the SME sector (Jenkins, 2009; Meijer, Huijben, van Boxstael, & Romme, 2019; Niaki, Torabi, & Nonino, 2019), specifically of Pakistani SMEs (Jasra, Hunjra, Rehman, Azam, & Khan, 2011). SMEs should focus on sustainability in the context of technology; in this competitive technological era firms cannot be staying on the market without focusing on the exploitations and adoption of technological opportunities. Government regulations also have a positive impact on business sustainability (Porter & Kramer, 2019) and the government should make supportive regulations and environmental policies, which should be essential to follow by SMEs, as these can lead to business sustainability (Chams & García-Blandón, 2019; Matinaro, Liu, Lee, & Poesche, 2019; Parker, Redmond, & Simpson, 2009). The interaction of technological opportunism and government regulations has a significant but negative impact on business sustainability, which rejects the previous study (Satapathy *et al.*, 2017). In Pakistan's perspective, this study reveals that government regulations as a moderator makes a significant impact on technology and business sustainability, but the sum of both predictors which are government regulations and technology opportunism produces negative interaction coefficient.

CONCLUSIONS

This study fills the literature gap with theoretically developed and empirically tested model based on previous studies. The empirical testing for the model shows a strong influence of technology opportunism and government regulations on sustainable business practices. The hypothesis of the study suggested that technological opportunism can increase the performance of business sustainability in the SME sector of Pakistan. Adopting new technologies and changing technologies with time is effective for a safe environment. Top management, policymakers should take an efficient and effective decision for the environment and social contribution because many of the previous studies say firms cannot exist longer if they focus on or attain only their economic goals. Government regulations which are direct and positively related to business sustainability show that the government regulates environmental policies and imposes penalties on those firms which do not take adequate

measures to protect the environment and society. Overall, the results of this study suggest that technological opportunism and government regulations both contribute to achieving the environmental, social and economic performance of the SME sector of Pakistan. This study suggests that technological opportunism, adoption of technology, exploitation of technology and effective government regulations are essential for the environmental, social and economic performance of SMEs. The conclusion signifies that technological opportunism and government regulations can play an important role in achieving business sustainability for Pakistani SMEs.

The results of this study expand the concepts by suggesting that practices on technological opportunism and successive government environmental regulations could have a unique strategic advantage in enhancing business sustainability concerning the environment, the social and economic performance of firms. This proposes that managers should recognize the stature of their firm capabilities.

The findings of this study may imply that technological opportunism and government regulations related to environmental policies for SMEs may increase the ability of firms to take initiatives for the practices in their operations which lead toward business sustainability. Managers should develop internal capabilities proactively to focus on technological opportunism and follow technological changes which happen to meet the requirements for achieving social, environmental and economic goals. However, we suggest the government should create some strict environmental policies and ensure the implementations of those policies by routine inspection. The government should arrange seminars, conferences, and technology-based sustainability workshops to create awareness among managers. To enhance business sustainability, in technological opportunism, firms from all sectors have to put more focus on all the three – environmental, social and economic sustainability-related practices together. The study suggests to the managers that a firm's sustainability is strengthened by developing capabilities to attain technological opportunism to improve the environment, society, and economic performance.

Government regulations also affect the adoption of technological opportunism for firms. In emerging economies like Pakistan, the SME sector needs to realize the importance and benefits of technological opportunism that can have an impact on their firms, economy, society, and environment at large. In Pakistan, managers should set their the environment and community standards following local culture and adhere to the law. Regulatory stakeholders should understand the importance of the technology partner pressure and must set regulations and policies to encourage SMEs to enhance their societal safety and promote their wellbeing by providing an easy path, directions, expertise knowledge and financial support in adopting the technological opportunism practices. Besides this, regulatory stakeholders can develop sustainability standards, offer technical assistance, pieces of training, introduce new technologies, pollution prevention techniques and support SMEs to adopt new technologies to attain more sustainability in the world market. In Pakistan, companies have made themselves more socially responsible for training and educating themselves about technical opportunism. The study suggests and identifies the importance of technological opportunities and ecological elements (e.g., environmental, social and economic) for the SME sector of Pakistan and it also suggests that government regulations play a dynamic role between both latent variables.

The study identified several limitations, ranging from data collected from 480 SMEs of Pakistan which are limited and these SMEs are randomly selected, a small number of industries and a limited time frame. With the rapid growth of sustainability practices in developing countries, there is a need for a cross-industry comparison of sustainability practices by measuring their impact on business sustainability performance in developing and developed countries in the future. The governance mechanism can interpret and predict performance outcomes for different cultural and individual differences; it affects relationships and performance outcomes. We recommend that future research should be conducted on how the cultural competence of employees can improve the effectiveness of contract and relationship of governance in adopting a technical opportunism with the context to enhance social sustainability, In future research the sample size can also be increased and data could be collected through systematically selected SMEs of Pakistan. Another future research opportunity is that researchers could explore and provide a detailed investigation of social issues at the technological level in SMEs because SMEs often lack capabilities and resources to deal with social issues and they may not be able to meet emergent social standards. Compared with large data sets, future research can test the motivation of SMEs to adopt technical opportunism. There are some problems in improving the governance mechanism for social issues in developing countries.

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