

Environmental Performance, Environmental Innovation, Corporate Environmental Strategies and Financial Performance

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This letter intent to test the relationship between financial performance (FP) and environmental performance (EP) while environmental innovation (EI) (product innovation and process innovation) and corporate environmental strategies (CES) has been taken as mediating variables. The data collection was through the survey-based method from 270 firms with ISO 14001 certification from the surgical instrument industry of Pakistan. The comprehensive integrated model was designed to test the impact of EP on the FP of the surgical instrument industry of Pakistan with two mediators' EI (product innovation and process innovation) and ES. The findings of the study reveal that environmental performance positively influences FP however, the relationship is insignificant. Furthermore, EI does not mediate the relationship between EP and FP moreover, EI (product innovation and process innovation) positively and significantly influence FP. CES mediate the relationship between EP and FP. CES also positively and significantly influence FP at the firm level.

Keywords: EP, environmental innovation, corporate environmental strategies, financial performance, product innovation, process innovation, environmental management system, Pakistan, surgical instrument industry.

Introduction

The theme of the day is sustainable business development, sustainability deals with socioeconomic and environmental issues that affect the businesses' survival in the future (Witjes & Lozano, 2016). Dealing with social, economic, and environmental issues are considered as complex phenomena in regulated and competitive environment. The successor survival of businesses is associated with the effective management of environmental and socioeconomic issues (Chandler & Hanks, 1994). A growing conceptual and empirical literature supports the myth that family-owned businesses have a pronounced proclivity for socio-economic wealth through sustainable development and corporate citizenship (Kashmiri & Mahajan, 2010). Family-owned firms are considered inextricably linked with family reputations (Ward, 1989). Family-owned businesses are assumed to act as a good corporate citizen in contrast to non-family businesses because they have more on the stake (Miller, Le Breton-Miller, & Scholnick, 2008).

In current competitive business environment producers and consumers attempt to make cleaner and greener business environments because higher demand for green products has been observed (Prathibha, Latha, & Sumathi, 2014). A competitive business environment recognized the need to consider environmental concerns and sustainability into "considerations of the bottom line" (Allen & Malin, 2008). Environmentally responsible businesses can be categorized into two variants: "green businesses" and "green-green businesses". A traditional green business was not started out that way instead it was establishing in the traditional way, management realizes the innovation, market and cost advantages of green businesses. They transform their firms into green enterprises. Green-green businesses are those designed and established to be green from its inception, processes, and final products from scratch.

Moreover, these businesses transform the industrial sector socially in which they operated and ensure sustainable development (Isaak, 2016).

The economy potentially affects the environment that triggered the concerns among scholars and practitioners about the sustainable development and sustainability of small businesses (Cohen & Winn, 2007). Additionally, Allen and Malin (2008) revealed that entrepreneurs needed to address environmental concerns and potential challenges. Harini and Meenakshi (2012) argue that there is an increasing trend in green, sustainable and environmental friendly businesses. These businesses are engaging themselves in sustainable and green initiatives to minimize their impact on the environment. These businesses are trying to improve the environment for the society and local communities and for the employees (Choi & Gray, 2008). Businesses need to create a balance between business goals and environmental management. Firms need to think beyond the traditional economic issues and need to look at environmental issues and suitability (Hockerts & Wüstenhagen, 2010).

Trade scenarios dynamically changing around the world, aligned with the policies of world trade organizations and northern businesses and governments' emphasis on environmental and ecologically friendly production. Moreover, developing countries like Pakistan need to adhere to the required environmental standards imposed by the WTO and developed countries to ensure the old market rule "consumers' sovereignty prevails" (Desai, 2005). Along with Pakistan many other southern countries export to USA and OECD economies and have to adhere to the standards, in the case of Pakistan is mostly related to child labor and ecologically friendly production. SMEs in Pakistan considered it an additional cost imposed by northern governments and it is really hard to survive in a competitive

environment. Like other South-Asian countries Pakistan in a state of double-bind (Devarajan & Nabi, 2006).

Firms in Pakistan need to understand restrictions imposed by Northern Governments are non-tariff barriers for example countries like Pakistan are not doing enough about clean production technologies, lean production management, governance and child labor. Moreover, businesses in north required by their shareholders and board of directors' firms from the south need to adhere "voluntary" quality and environmental standards. In other words, a cleaner environment and ecologically friendly production is considered as more valuable or luxury product and consumers are willing to pay extra. SMEs in Pakistan need to understand this is market-dictated standards, not a non-tariff barrier and Pakistani SMEs have to conform to exports to northern businesses and governments.

LITERATURE REVIEW

Environmental Performance and Environmental Innovation

Firms' environmental capabilities considered as underpinning resources to ensure EP. Environmental capabilities enable the firms in the implementation of environmental strategies as underpinned dynamic capability and new resource-based view (Eisenhardt & Martin, 2000; Helfat & Peteraf, 2003; Teece, 2007). Furthermore, literature evident that organizational environmental capabilities positively and significantly influence innovation. EP leads to success or higher level performance through effectively and efficiently implementation of environmental strategies, systems, and structure which considered as an antecedent for innovation or innovation practices (Crossan & Apaydin, 2010). These environmental strategies were considered as an initial step in designing procedures and processes which facilitate firms to ensure continuous improvements and innovations in product design and production process which is more environmentally friendly. In the current competitive environment, environmental capabilities were considered as strength or competitive resources to gain a competitive position in the market and ensure the survival of the firm (Cohen & Levinthal, 1990; Delmas & Burbano, 2011). A higher level of EP also contributes to acquiring environmental knowledge to improve product design and processes. Well established literature evident that firms' EP positively and significantly associated with innovation and firms' FP (Wagner, 2009). Most of the literature has been documented in developed countries on EP and its impact on the firms' FP, however, more recent studies from Asian economies start considering EP, green performance, and green product innovation, results revealed that EP among the manufacturing firms' positively associated with FP (Chen, Lai, & Wen, 2006; Carrión-Flores & Innes, 2010; Chiou, Chan, Lettice, & Chung, 2011; Sezen & Cankaya, 2013). Taking together literature and theoretical foundation suggests that EP leads to better environmental innovation. To test this relationship current study posits that greater EP resultant high environmental innovation. Hypothesis to test this relationship is as;

H1: Environmental performance positively and significantly influence environmental innovation.

Environmental Performance and Corporate Environmental Strategies

CES are considered as a set of measures or initiatives that can manage or reduce the environmental sustainability through operations, processes, product design, and corporate policies by incorporating the theme of lean and green integration in processes (Bansal & Roth, 2000). Proactive corporate environment strategy positively influences environmental (Christmann, 2000), environmental capabilities enhance firms' competitiveness (Sharma & Vredenburg, 1998; Bhupendra & Sangle, 2015), organizational image (Klassen & Whybark, 1999), gaining of new skills, capabilities and EP (Aragón-Correa, Hurtado-Torres, Sharma, & García-Morales, 2008), quality improvements, waste reduction, cost-saving, processes and product improvements (Banerjee & Solomon, 2003), and eventually translate into FP (Porter & Kramer, The link between competitive advantage and corporate social responsibility, 2006).

Proactive corporate environmental strategy is triggered by management attention towards the environmental issues (Hart & Dowell, Invited editorial: A natural-resource-based view of the firm: Fifteen years after, 2011). Firms with proactive CES achieve a higher level of EP (Rodrigue, Magnan, & Boulianne, 2013). In this competitive environment, firms need to act proactively towards the environmental strategies, information management systems, management systems to predict the environmental changes required in the future. Environmental management systems facilitate the firms in the establishment of corporate environmental strategies. The FP of firms can be improved by effective management of corporate environmental strategies. The following hypothesis was established based on discussion;

H2: Environmental performance positively and significantly influence corporate environmental strategies.

Environmental Performance and Financial Performance

The natural resource-based view (NRBV) claims organizational performance based on the capabilities and resources (Barney, 1991). Firms utilize capabilities and resources based on CES to generate a higher level of FP (Hart & Dowell, Invited editorial: A natural-resource-based view of the firm: Fifteen years after, 2011). The NRBV theory claims that firms with environmental strategies influences positively FP and competitive advantage. NRBV theory emphasis on implementation of environmentally friendly processes and policies that eventually facilitate the firms in improving product design and production processes as the result of innovations with the low operational cost which transforms into FP. Significant amount of cross-sectional literature affirms significant and positive relationship between financial and EP (Clarkson, Li, Richardson, & Vasvari, 2011; Eltayeb, Zailani, & Ramayah, 2011; Yang, M., Hong, & Modi, 2011; Long, Chen, Du, Oh, & Han, 2017). Similarly, similar results reported by studies with longitudinal designs shows that environmental and FP as positively associated (Wagner, 2009; Clarkson, Li, Richardson, & Vasvari, 2011; Delmas & Burbano, 2011). However, few studies in literature documented contrary results and also report

the relationship between environmental and FP is negative and significant. Moreover, limited literature documented there is no relationship between financial and environmental (Iwata & Okada, 2011). Although a few studies documented negative and no relationship between environmental and financial, however, most of the studies claim that significant and positive relationship between financial and EP in the manufacturing sector. Thus, this study focuses on NRBV as an underpinning theory because it claims that a significant and positive relationship between financial and EP. However, only limited literature with the integrated model including environmental innovation, CES between financial and EP (Ong, Lee, Teh, & Magsi, 2019). Thus, the hypothesis is proposed:

H3: Environmental performance positively and significantly influence financial performance.

Environmental Innovation and Financial Performance

EI has been taken as the theme of the decade in the industry as well as in academic research as a key antecedent to measure firm's FP (Chiou, Chan, Lettice, & Chung, 2011; Forsman, 2013; Long, Chen, Du, Oh, & Han, 2017). EI contributes positively towards the firm's FP in two distinguish manners (1) competitive advantage through cost leadership by improving production processes and product designs (2) firms' improve their image by addressing the environmental issues which distinguish them from competitors which transform them financial benefits (Porter & Kramer, The link between competitive advantage and corporate social responsibility, 2006; Stefan & Paul, 2008). Empirical literature reveals that EI significantly and positively influence export, total revenue and FP (Rennings, Ziegler, Ankele, & Hoffmann, 2006; Cheng, Yang, & Sheu, 2014). The current study has taken NRBV as an underpinning theory to claim EI significantly and positively influence FP at the firm level. Only limited literature so far documented the relationship of FP and EI in integrated theoretical framework this study considers CES and EP along with ownership style as controlling variable to measure FP. Most recent studies suggested that there is a need to test this relationship based on country, industry and ownership style dynamics to validate the relationship. Thus, this study posits the hypothesis;

H4: There is a significant and positive relationship between environmental innovation and financial performance.

Corporate Environmental Strategies and Financial Performance

Porter and Van der Linde, (1995) criticize regarding the positive relationship between the performance of corporate environment (CEP) and performance of corporate financial that hypothesis was accepted into both cases in literature (Hart & Ahuja, 1996; Karagozoglu & Lindell, 2000; King & Lenox, 2001; Wagner, 2009; Endrikat, Guenther, & Hoppe, 2014). In further discussion according to rules government want to increase the level and performance of the corporate environment and provided benefits to different companies by promoting and selling new high technologies and different types of manufacturing methods. Furthermore, the efficient role of natural resources may lead their firm towards their competitive

advantage and make the environment successful by using lower productions (Porter & Van der Linde, 1995). the participation of governmental regulations to make the firm effective by using a different combination of environmental features, as a result, old trading rules converted into best solutions (Beckmann, Hielscher, & Pies, 2014).

According to instrumental stakeholder theory indicated regarding the positive effect towards CEP on CFP consider as effective resources. The submission level of environmental values may consider as environmental issues that can provide the expectations regarding the implementation of stakeholders and unable to described regarding activeness of environmental strategy (Buysse & Verbeke, 2003). The reputation can be increased through the reduction of environmental impact on the stakeholders by taking the action of the company (Jones, 1995). Therefore, the results indicated that with the higher level of SMA the CEP will be on the larger reputation in this way, the relationship between CEP and CFP generates a positive impact on each other (Dixon-Fowler, Slater, Johnson, Ellstrand, & Romi, 2013). According to the underpinning theories of NRBV and the instrumental stakeholder theory described regarding the combination of expectations of stakeholders into the strategy of the firm and consider the decisions as the ability of firm as well as RBV also consider the intangible asset of the firm (Hart & Dowell, 2011). In addition to this study described as an accepted hypothesis in both cases, the RBV, the NRBV and the theory of stakeholders described regarding the impact between CEP and CFP are positive.

H5: Corporate environmental strategies significantly influence financial performance

Environmental Innovation as a Mediator between Environmental Performance and Financial

The relationship between EP and the firm's performance is described by strategies of EP that is the concept of eco-efficiency considered to clear all dues financially. For achieving eco-efficiency, firms need benefits regarding the economic level for the best EP as well as perform their activities regarding the environment in an efficient way by using the minimum level of input (Schaltegger & Synnestvedt, 2002; Wagner, 2009). In literature, (Schaltegger & Synnestvedt, 2002; Figge, 2005; Wagner, 2009), according to underpinning theory of value-based eco-management indicated that the level of eco-efficiency will be low because of EP, so this is only way to achieve the firm's efficiency by reducing the bad effect on EP with a minor influence of market orientation. However, the results indicated regarding the EI that generates a high level of eco-efficiency so the meaning of this to increase the level of market-orientated products and development in environmental management that can create a lot of benefits regarding their economic strategies. Furthermore, the higher level of EI indicated regarding creative markets that can produce the products to gain total revenues (Porter & Van der Linde, 1995; Stefan & Paul, 2008). Similarly, the operational cost of manufacturing activities can be reduced through the green process. In order to achieve the optimal level of FP, firms need to create an ability that can be generated by environmental processes and procedures into environmental

innovation. Therefore, green products and their processes can be improved by using strengths in EP so, the firm will achieve the best FP. As a result, this below hypothesis is generated:

H6: Environmental innovation mediates the relationship between environmental performance on financial performance.

Corporate Environmental Strategies as a Mediator between Environmental Performance and Financial

Moreover, it is important to address the environmental features that improve firm organizational abilities through NRBV of the firm (Hart & Ahuja, 1996; Dixon-Fowler, Slater, Johnson, Ellstrand, & Romi, 2013), which is based on RBV. Those companies who are willing to reproduce and redesigned the products and generate different technologies just because to reduce the level of pollution and are able to follow proactive environmental strategies for future expectations (Aragón-Correa, Hurtado-Torres, Sharma, & García-Morales, 2008). Furthermore, the level of organizational learning, the addition of stakeholder and improvements on daily bases are the requirements of proactive strategies that can create together organizational abilities in terms of RBV as a result CEP and CFP has a positive relationship (Aragón-Correa, Hurtado-Torres, Sharma, & García-Morales, 2008; Clarkson, Li, Richardson, & Vasvari, 2011). Additionally, competitive advantage is considered as an intangible asset with a lot of new abilities and these intangible assets are very rare, unique and non-sustainable (Buisse & Verbeke, 2003). The ability to enhance PRO is particularly considered the development of environmental-related abilities and cost reduction by using natural resources efficiently and effectively (Dixon-Fowler, Slater, Johnson, Ellstrand, & Romi, 2013).

RESEARCH METHODOLOGY

Based on the review of the literature and theoretical justification a framework connecting the constructs was tested to achieve the research objective as shown in figure 1. Proactive environmental firms of competitive abilities included EP, environmental innovation, and corporate environmental strategies. The measurement of EP is the environmental benefits that are generated from environmental practices. The term environmental process and innovation of the product is considered as environmental innovation. The measurement of environmental product innovation dimensions is the development of products under the actions of environmental combinations. The measurement of environmental process innovation regarding the action of the manufacturing process in the firm under the implementation of environmental actions. In most developing countries just like Pakistan, the process of innovation is very slow as compared to new extreme innovation, for instance, the production of new products and new technologies as well. The measurement of CES is considered as firms' evaluation of environmental factors on regular interval. The FP measurement through financial practices according to EP in their firms. Furthermore, the ownership style is taken as the control variable in this study because most of the firms in the surgical instrument industry were owned by families and literature affirms that family-owned businesses significantly differ from non-family-owned businesses. This term will help

with the performance of the firm. Table 1 reports the measurement and operationalization of constructs taken under consideration.

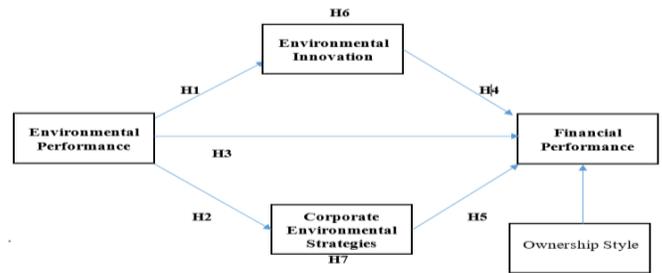


Figure 1: Theoretical Framework

Table 1: Measurement and Operationalization of variables

| Construct | Items | Source of scale | |
|------------------------------------|-------|---|------------------------------|
| Financial Performance | 1 | Increases in profit margin | (Karagozolu & Lindell, 2000) |
| | 2 | Increases in market share | |
| | 3 | Increase in sales revenues | |
| | 4 | Increase in returns on investment | |
| | 5 | New market opportunities | |
| | 6 | Increase in overall financial performance | |
| Environmental Performance | 1 | Reduction of air emission | (Zhu & Sarkis, 2004) |
| | 2 | Reduction of wastewater | |
| | 3 | Reduction of solid waste | |
| | 4 | Decrease consumption for hazardous/harmful/toxic materials | |
| | 5 | Decrease frequency of environmental accidents | |
| | 6 | Improved environmental situation | |
| Environmental Innovation | 1 | Use non-polluting or non-toxic materials | (Rao, 2002) |
| | 2 | Design for recycling, reuse, and decomposition | |
| | 3 | Collect back products after end-of-life for recycling | |
| | 4 | Use environmental friendly packaging for existing and new products | |
| | 5 | Use materials that consume lower energies | |
| | 6 | Use materials to the least amount possible | |
| | 7 | Use eco-labeling | |
| Environmental Innovation | 1 | Carried out recycle, reuse, and remanufacturing of materials or parts | (Rao, 2002) |
| | 2 | Redesign manufacturing process to lower pollution (air, water, noise) | |
| | 3 | Redesign manufacturing process to lower solid waste | |
| | 4 | Redesign manufacturing process to lower energies consumption (water, electricity, gas, petrol) | |
| | 5 | Redesign manufacturing process to lower material use | |
| | 6 | Use cleaner technologies to make savings (e.g. Energy, water, waste). | |
| Corporate Environmental Strategies | 1 | Detailed assessment of the environmental impact of operations every years | (Sanjay & Harrie, 1998) |
| | 2 | comprehensive environmental audit every year | |
| | 3 | Employee training programs on environmental issues | |
| | 4 | Organizational policies and processes are according to ISO 140001 environmental management systems | |
| | 5 | Provide immunity and protection to employees who report environmental accidents to management or authorities | |
| | 6 | Follow environmental practices according to North American regulations in developing countries where environmental regulations are less stringent | |

Research Methods

The survey-based method is appropriate for the correlational-descriptive nature of the study (Case & Lingerfelt, 1974; Hernandez Sampieri, Fernandez Collado, & Baptista Lucio, 2006). The surgical instrument industry (manufacturing) of Pakistan was considered a unit of analysis. Surgical instrument industry namely manufacturing scissors, retractors & holding instruments, forceps, laboratory accessories, wound closure, and cutting & manipulators, etc. surgical instrument industry contributes \$283.8 during financial year 2017-18 and \$279.67 million dollars during the financial year 2018-19 with aggregate decline 1.46% during the one financial year. Moreover, the same

pattern has been observed during the last decade in the surgical instrument industry of Pakistan.

A total of 4,788 SMEs was registered with the Sialkot chamber of commerce during the financial year 2018-19 as a manufacturer under the surgical instrument industry of Pakistan. To calculate minimum sample size G*Power 3.1.9.2 tool was used based on linear multiple regression with the effect size f^2 0.15, power (1- β err prob) 0.99, α err prob 0.05 as suggested by (Cohen, 1988). The minimum sample of 125 firms was sufficient based on the calculations of *a priori*. Thus, firms actively participating in environmental programs and ensure environmental upgradation were considered as a participant in this survey. A total of 270 firms were selected as samples based on non-probability sampling (judgment or representative sampling) technique.

The survey tool was considered for current study is most complete and comprehensive for measuring the comprehensive integrated relationship between environmental and FP through EI(product and process) and CES were previously elaborated in literature (Karagozoglu & Lindell, 2000; Rao, 2002; Zhu & Sarkis, 2004; Ong, Lee, Teh, & Magsi, 2019). The survey tool for measuring dependent variable FP was previously elaborated (Karagozoglu & Lindell, 2000). The survey questionnaire was translated and face validity was tested by the expert to make it suitable for data collection in the Pakistani context. The final version of the survey questionnaire was based on 31 items to measure the constructs at a 7-Likert scale and also include demographic questions about ownership structure.

The evaluation of measurement model to assess the relationship between measured constructs, three statistical tools need to perform (i) confirmatory factor analysis, (ii) face, convergent validity and reliability, and (iii) discriminant validity (Henseler, Ringle, & Sinkovics, The use of partial least squares path modeling in international marketing, 2009). To assess the confirmatory factor analysis minimum threshold value for each item being used to measure constructs in the current study was 0.50 (Tzeng, Chiang, & Li, 2007). As compared to collective concepts, the presence of hidden higher-order concepts can be tested through a most suitable method named CFA (Law, et al., 1998). The structural model will test before to check the validity of the measurement of model cause to avoid unclear theoretical explanation (Hair, Black, Babin, Anderson, & Tatham, 2006).

Table 2: Demographics of respondents

| | | Frequency | Percent | Cumulative Percent |
|-----------|----------------------------------|-----------|---------|--------------------|
| Firm Size | Small (10-49 employees) | 108 | 40.0% | 39.93 |
| | Scissors | 32 | 30.08 | 30.08 |
| | Retractors & holding instruments | 22 | 20.33 | 50.41 |
| | Forceps | 24 | 21.95 | 72.36 |
| | Laboratory | 13 | 12.20 | 84.55 |
| | accessories | | | |
| | Wound closure | 10 | 8.94 | 93.50 |
| | Cutting & manipulators | 7 | 6.50 | 100.0 |
| | Medium (50-150 employees) | 82 | 30.19 | 70.12 |
| | Scissors | 13 | 16.12 | 16.12 |
| | Retractors & holding instruments | 9 | 10.75 | 26.88 |

| | | Frequency | Percent | Cumulative Percent |
|-----------------|----------------------------------|-----------|---------|--------------------|
| | Forceps | 16 | 19.35 | 46.24 |
| | Laboratory | 12 | 15.05 | 61.29 |
| | accessories | | | |
| | Wound closure | 18 | 22.58 | 83.87 |
| | Cutting & manipulators | 13 | 16.12 | 100.0 |
| | Large (151-250 employees) | 81 | 29.88 | 100 |
| | Scissors | 12 | 15.21 | 15.21 |
| | Retractors & holding instruments | 13 | 16.30 | 31.52 |
| | Forceps | 17 | 20.65 | 52.17 |
| | Laboratory | 14 | 17.39 | 69.57 |
| | accessories | | | |
| | Wound closure | 11 | 14.13 | 83.70 |
| | Cutting & manipulators | 13 | 16.30 | 100.0 |
| Age | 25-40 Years | 80 | 29.54 | 29.54 |
| | 41-60 Years | 106 | 39.28 | 68.82 |
| | 61-79 Years | 84 | 31.18 | 100 |
| Education | Middle to High School | 139 | 51.62 | 51.62 |
| | High School to DAE | 80 | 29.54 | 81.16 |
| | Graduation to Masters | 51 | 18.84 | 100.0 |
| Ownership Style | Family-Owned | 187 | 69.30 | 69.30 |
| | Non-Family Owned | 83 | 30.70 | 100 |

Table 3: Correlation Matrix

| | Corporate Environmental Strategy | Environmental Innovation | Environmental Performance | Financial Performance | Process Innovation | Product Innovation |
|----------------------------------|----------------------------------|--------------------------|---------------------------|-----------------------|--------------------|--------------------|
| Corporate Environmental Strategy | 1.000 | | | | | |
| Environmental Innovation | 0.737 | 1.000 | | | | |
| Environmental Performance | 0.489 | 0.671 | 1.000 | | | |
| Financial Performance | 0.647 | 0.682 | 0.542 | 1.000 | | |
| Process Innovation | 0.658 | 0.914 | 0.688 | 0.632 | 1.000 | |
| Product Innovation | 0.704 | 0.939 | 0.566 | 0.628 | 0.719 | 1.000 |

Measurement Model Assessment

To assess the relationship among the measured constructs measurement model, evaluate based on three types of validity (i) face validity, (ii) convergent validity, and (iii) discriminant validity. Face validity was ensured after translation and little modification of scales through expert opinion before proceeding for the collection of data. Convergent and discriminant validity were examined followed by the confirmatory factor analysis.

Convergent Validity

The convergent validity was established based on AVE and composite reliability following by the factor loadings (Gholami, Sulaiman, Ramayah, & Molla, 2013). The value of loadings was higher than 0.5, similarly, all the values of composite reliability were above 0.7 and AVE was higher than 0.50 (Table 4).

Table 4: Convergent Validity

| Construct | Items | Loading | Cronbach's Alpha | rho_A | CR | AVE |
|-----------------------|-------|---------|------------------|-------|-------|-------|
| Financial Performance | FP1 | 0.719 | 0.719 | 0.727 | 0.815 | 0.671 |
| | FP2 | 0.620 | | | | |
| | FP3 | 0.609 | | | | |
| | FP4 | 0.800 | | | | |
| | FP5 | 0.667 | | | | |
| | FP6 | 0.719 | | | | |
| | EPI | 0.702 | | | | |
| | | 0.875 | 0.889 | 0.905 | 0.614 | |

| | | | | | | |
|------------------------------------|----------------------------------|-------|-------|-------|-------|-------|
| Environmental Performance | EP2 | 0.770 | | | | |
| | EP3 | 0.642 | | | | |
| | EP4 | 0.822 | | | | |
| | EP5 | 0.755 | | | | |
| | EP6 | 0.751 | | | | |
| | EIPI1 | 0.742 | | | | |
| | EIPI2 | 0.755 | | | | |
| Environmental Innovation | Environmental Product Innovation | 0.708 | 0.818 | 0.836 | 0.869 | 0.531 |
| | EIPI4 | 0.811 | | | | |
| | EIPI5 | 0.848 | | | | |
| | EIPI6 | 0.576 | | | | |
| | EIPI7 | 0.707 | | | | |
| | IP11 | 0.615 | | | | |
| | IP12 | 0.567 | | | | |
| Environmental process innovation | IP13 | 0.628 | 0.759 | 0.771 | 0.833 | 0.658 |
| | IP14 | 0.609 | | | | |
| | IP15 | 0.568 | | | | |
| | IP16 | 0.516 | | | | |
| | CES1 | 0.785 | | | | |
| | CES2 | 0.844 | | | | |
| | CES3 | 0.731 | | | | |
| Corporate Environmental Strategies | CES4 | 0.818 | 0.836 | 0.840 | 0.880 | 0.551 |
| | CES5 | 0.746 | | | | |
| | CES6 | 0.771 | | | | |

Discriminant Validity

The most appropriate and reliable statistics for the measurement of discriminant validity was considered in literature was heterotrait-monotrait (HTMT) ratio after the statistically proven criticism on Fornell-Larcker (Henseler, Ringle, & Sarstedt, A new criterion for assessing discriminant validity in variance-based structural equation modeling, 2015). Furthermore, there are two schools of thoughts (Kline, 2011) claims that maximum value of HTMT must be not more than 0.85 while (Gold, Malhotra, & Segars, 2001) claims that maximum value of HTMT must not be more than 0.90. if the value of the HTMT ratio is higher than 0.90 than there is an issue of discriminant validity. The results of the HTMT ratio indicate that the value was less than the threshold values criterion was defined (Gold, Malhotra, & Segars, 2001; Kline, 2011). The results of the HTMT ratio was given in Table 5.

Table 5: Discriminant Validity (HTMT Ratio)

| | Corporate Environmental Strategy | Environmental Innovation | Environmental Performance | Financial Performance | Process Innovation | Product Innovation |
|----------------------------------|----------------------------------|--------------------------|---------------------------|-----------------------|--------------------|--------------------|
| Corporate Environmental Strategy | 0.841 | | | | | |
| Environmental Innovation | 0.644 | 0.743 | | | | |
| Environmental Performance | 0.791 | 0.846 | 0.669 | | | |
| Financial Performance | 0.821 | 0.731 | 0.806 | 0.838 | | |
| Process Innovation | 0.838 | 0.703 | 0.651 | 0.814 | 0.811 | |
| Product Innovation | | | | | | |

Structural Model Assessment

The structural model should be assessed with the resampling of 5000 via bootstrapping and need to consider R-square, beta and t-values (Hair, Hult, Ringle, Sarstedt, & Thiele, 2017). Furthermore, p-value just informs the reader about the presence or absence of effect while not about the size of effect so the other two factors further need to consider for the assessment of structural model q-square and f-square (Sánchez-Mendiola, Kieffer-Escobar, Marín-Beltrán, Downing, & Schwartz, 2012). Moreover, studies need to report both effect size and statistical significance of measured constructs (Hair, Hult, Ringle, Sarstedt, & Thiele, 2017). As per the suggested criteria, the results of effect sizes and statistical significance was reported in Table 6. The results of EI positively associated with FP ($\beta = 0.448$, $t=3.682$, $p<0.01$, $f\text{-square}=0.076$) this given support to H4.

Furthermore, results showed that H2, H3, H5 were supported based on results positive and significant association between the measured constructs. Furthermore, predictive values showed that H1 was supported and indicate a positive but insignificant association between EP and EI ($\beta = 0.002$, $t=0.489$, $p>0.05$) similarly, EP and FP has a positive but insignificant relationship ($\beta = 0.166$, $t=1.466$, $p>0.05$) H3 was not supported. The results of hypothesis testing were reported in Table 6.

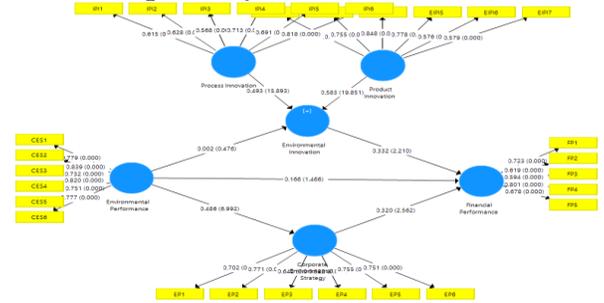


Figure 2: Structural Model Assessment

Table 6: Testing of Hypothesis

| | | Original Sample (O) | Stan. Error | T Statistic | P Value | 2.5 % | 97.5 % | VI |
|-----|------------|---------------------|-------------|-------------|---------|-------|--------|--------|
| H 1 | EP -> EI | 0.002 | 0.004 | 0.489 | 0.625 | - | 0.01 | 1.9 38 |
| H 2 | EP -> CES | 0.489 | 0.070 | 7.021 | 0.000 | 0.3 | 0.60 | 1.0 00 |
| H 3 | EP -> FP | 0.166 | 0.113 | 1.466 | 0.143 | - | 0.39 | 2.1 8 |
| H 4 | EI -> FP | 0.448 | 0.122 | 3.682 | 0.000 | 0.1 | 0.66 | 2.1 91 |
| H 5 | CES -> FP | 0.317 | 0.122 | 2.590 | 0.010 | 0.0 | 0.54 | 2.1 91 |
| | PI -> EI | 0.493 | 0.031 | 15.657 | 0.000 | 0.4 | 0.56 | 2.1 12 |
| | ProI -> EI | 0.583 | 0.030 | 19.628 | 0.000 | 0.5 | 0.64 | 2.7 29 |

Environmental Innovation and Corporate Environmental Strategies mediate the relationship Environmental and Financial Performance

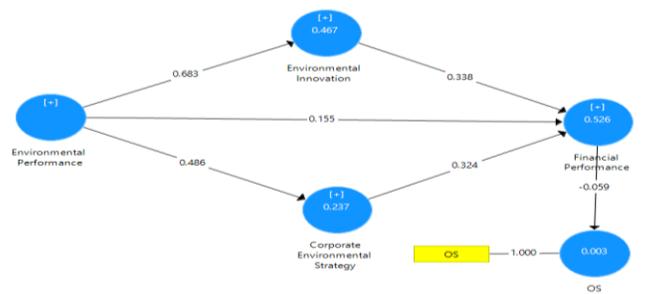


Figure 3: Mediation effect

The results of the mediation effect of EI and corporate environment strategy was reported in Table 7. The findings of mediation revealed that corporate environmental strategy mediate the relationship between financial and EP ($\beta = 0.156$, $t=2.366$, $p < 0.05$) while, EI does not mediate the relationship between financial and EP ($\beta = 0.001$, $t=0.476$, $p > 0.05$). Furthermore, the results support H7 while H6 was not supported by results and support H2 and H5 in the measurement of constructs.

Table 7: Mediation effect

| | | Original Sample (O) | Standard Error | T Statistics (O/STDEV) | P Values |
|---|--------------|------------------------|-------------------|---------------------------|-------------|
| H | EP -> EI -> | 0.001 | 0.001 | 0.476 | 0.634 |
| 6 | FP | | | | |
| H | EP -> CES -> | 0.156 | 0.066 | 2.366 | 0.018 |
| 7 | FP | | | | |

Discussion

Contribution of this paper was three-fold, each one discussed below in detail;

Firstly, the current study extended and test the model presented by (Ong, Lee, Teh, & Magsi, 2019), by adding the CES as mediating variables and results affirm that CES positively and significantly influence the FP. Secondly, the current study is first which test the environmental-related construct on the surgical instrument industry of Pakistan by considering the firms proactively participation in environmental-related factors. ISO 14001 environmental management systems are considered based on the selection of the sample. Thirdly, the current study used a comprehensive integrated model measurement model to test the impact of EP, environmental innovation, and CES on the financial. The results affirm that indicators positively influence the FP of firms at the firm level in the surgical instrument industry of Pakistan.

The findings indicate that EP positively influences EI as suggested by the literature, however, the results of the current study indicate that there is no significant relationship between EP and EI in the case of the surgical instrument industry of Pakistan. Furthermore, the results of the current study were contradictory this could be due to business culture, nature of the industry, cost associated with EP and environmental innovation. Moreover, the findings of the current study do not support the relationship between EP and EI so, based on the finding ($\beta = 0.002$, $t=0.489$, $p > 0.05$) fails to accept H1.

The findings reveal that EP positively associated with corporate environmental strategies. The findings of the current study were aligned with recent literature and theoretical claims of natural resource-based view. The findings indicate that EP positively and significantly influences CES ($\beta = 0.489$, $t=7.021$, $p < 0.01$) so H2 was accepted based on the findings. EP of firms positively associated with FP, the literature also an evident and theoretical perspective of natural resource-based view also claims that there is a positive and significant relationship between environmental and FP. However, the results of the current study failed to accept H3 based on the finding moreover, the relationship between environmental and FP is positive but insignificant. These findings could be possible due to the nature of industry, ownership style and possibly due to the business environment ($\beta = 0.166$, $t=1.466$, $p > 0.05$). Moreover, the results of the literature also evident few studies report the negative link between environmental and FP (Horváthová, 2010).

EI and FP were well-established claims and affirm through literature and theoretical perceptive. The findings of the current study also evident that H4 EI positively and significantly associated with FP ($\beta = 0.448$, $t=3.682$, $p < 0.01$). The findings of the current study were consistent with the previous study (Chen, Lai, & Wen, 2006; Forsman, 2013). EI includes

dimensions' product innovation ($\beta = 0.583$, $t=19.628$, $p < 0.01$) and process innovation ($\beta = 0.493$, $t=15.657$, $p < 0.01$) both indicators also positively and significantly contributing towards FP. The role or intentions of top management always positively and significantly influence the financial outcome of firms. Strategies of firms provide guidance or roadmap for future operations which lead firms to achieve higher returns. The findings of the current study also evident that CES positively and significantly influence FP ($\beta = 0.317$, $t=2.590$, $p < 0.01$).

EI plays a positive role in the translation of EP to FP. However, the results of H3 affirms that there is not significant and direct relationship between environmental and FP ($\beta = 0.166$, $t=1.466$, $p > 0.05$). Similarly, the results of H6 affirms that EI does not mediate the relationship between EP and FP ($\beta = 0.001$, $t=0.476$, $p > 0.05$). This study affirms that EI does not mediate the relationship between EP and FP. Although the results of H4 indicates there is a positive and significant relationship between EI and FP ($\beta = 0.448$, $t=3.682$, $p < 0.01$). As foreseen, the findings of the current study affirm that CES fully mediate the relationship between EP and FP ($\beta = 0.156$, $t=2.366$, $p < 0.01$). Moreover, CES also positively influence FP H5 ($\beta = 0.317$, $t=2.590$, $p < 0.01$). The findings of the current study affirm that CES transform the effects of EP into the FP of firms.

CONCLUSIONS

The underpinning objective of the current study was to test the impact of EP on FP with the mediating role of EI (product and process innovation) and corporate environmental strategies. The findings of the study will facilitate the businesses and regulatory authorities in understanding the pathway which can produce higher revenues and higher FP in the surgical instrument industry (manufacturing) of Pakistan. To achieve the research objectives of current study data were collected through a survey from firms from the surgical instrument industry of Pakistan and firms with the certification of ISO 14001 were considered as a sample. The findings of the study indicate that EP positively influences FP however, there is no significant relationship between environmental and FP. EI (product and process innovation) indicates a positive and significant relationship with FP however, EP does not translate the EP into FP. Moreover, CES play a positive role in FP. The findings also evident that CES successfully transform EP into FP. The findings suggested that firms with CES can have a competitive advantage and higher FP.

The findings of the current study suggest the following important insights to firms operating in the surgical instrument industry (manufacturing) of Pakistan. Firms environmentally proactive in the industry may have a competitive advantage in the market. This study provides the pathway to the manufacturer of the surgical instrument industry that CES and EI positively and significantly influence the FP moreover, CES facilitate the firms in the transformation of EP into FP. The findings also suggest that firms need to focus on CES because CES play a significant role in the transformation of EP as well as has a positive and significant relationship with FP and EI (product and

process innovation) positive and significant relationship with higher FP. The findings of the current study facilitate the firms in the manufacturing sector of surgical instrument industry of Pakistan and are willing to achieve a competitive position in the market based on green and environmental policies with higher FP. Those firms need to focus on environmentally friendly policies and strategies to improve FP by reducing waste, recycling, remanufacturing, reuse and more environmentally friendly production processes. These policies and procedures will ensure survival and as well as the competitive position of the firm in the market with higher FP. As current Pakistan was ranked as 137 out 190 in ease of doing businesses and two cities of Pakistan were considered as most polluted in the top ten cities of world and exports of the surgical instrument industry was declining over the period. The government of Pakistan needs to redesign the policies and need to facilitate the firms in establishing the environment-friendly product processes which will be translated into EI and CES as regulatory required which eventually will be translated into higher FP at the firm level. Moreover, environmentally proactive initiatives need to be taken by the government of Pakistan in order to ensure environmentally friendly production processes at the industry and firm level.

The future studies need to address some limitation which may provide more valuable insights on the relationship between EP, environmental innovation, corporate environmental strategies, and FP. The current study considered the sample from the surgical instrument industry (manufacturers) of Pakistan with ISO 14001 certification so the findings of the study may be not applicable for the other industries or firms without the certification of ISO 14001. Future studies need to test this framework on other industries and other countries with similar characteristics. The current study considered ownership style as a control variable in the current study, however, well-established literature evident that family-owned businesses were significantly different from non-family-owned businesses so future studies need to perform Multi-Group Analysis (MGA) to test the impact of ownership style on the FP.

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