Pakistan Journal of Commerce and Social Sciences
2020, Vol. 14 (3), 815-837
Pak J Commer Soc Sci

Environmental Innovation and Financial Performance: Mediating Role of Environmental Management Accounting and Firm's Environmental Strategy

Naveed Iqbal Chaudhry
Department of Business Administration, University of the Punjab, Gujranwala, Pakistan
Email: naveed.iqbal@pugc.edu.pk

Humaira Asad
Institute of Business Administration, University of the Punjab, Lahore, Pakistan
Email: humaira@ibapu.edu.pk

Muhammad Amir Ch.
Department of Commerce, University of the Punjab, Gujranwala Campus, Pakistan
Email: ma.arain824@gmail.com

Rai Imitiaz Hussian
Department of Commerce, University of Okara, Pakistan
Email: raihussain1982@yahoo.ca

Article History

Received: 24 June 2020 Revised: 26 Aug 2020 Accepted: 07 Sept 2020 Published: 30 Sept 2020

Abstract

The purpose of this study is to empirically investigate the impact of environmental innovation constituting product innovation (PDI) and process innovation (PCI) on firms' financial performance (FFP). It also inquires the mediating roles of environmental management accounting (EMA) and the firm's environmental strategy (FES) between innovation and FFP. We have analyzed primary data collected from 363 respondents, working at the managing positions in the manufacturing sector of Pakistan. The proposed model was estimated by applying structural equation modeling. Results show that PDI and PCI have positive and significant impacts on FFP. Furthermore, the findings indicate that EMA and FES mediate the relationship between innovation and FFP in the manufacturing sector of Pakistan. This is the first study in the available literature on EMA, which promulgates a comprehensive theoretical model in the context of the manufacturing sector of Pakistan by introducing two mediators between the association of environmental innovation and firms' financial performance. This study suggests the managers of the manufacturing companies or similar sectors to introduce innovations in their products and processes for developing a better EMA system; they must propose appropriate environmental strategies to enhance their firms' performance. The current study also tends to assist policymakers in developing appropriate policies for the

manufacturing sector of Pakistan by realizing the importance of environmental innovation, EMA, and FES so that their environmental and economic impacts can be managed and regulated.

Keywords: environmental innovation, product innovation, process innovation, financial performance, environmental management accounting, firm's environmental strategy, manufacturing sector, Pakistan.

1. Introduction

Sustainable development refers to the development of a firm balancing the three-vector approach comprising social development, environmental development, and economic development. It means that the firm needs to consider the aspects of people, planet, and prosperity for achieving sustainable development (Castro et al., 2016; Novikova et al., 2019). This definition of sustainable development has been used here because a solution resulting from a three-vector balanced approach performs better in the long as well as short run. In this regard, the main objective of Environmental management accounting (EMA) is to bring the stakeholders' attention towards the influence of the manufacturing process on the environment. EMA enables such decision making which is highly effective for the organization and decreases the hazards for the environment. A study of Lu and Taylor (2018) indicated that EMA's objective to keep organizations responsible for environmental and financial considerations remains one of the essential points of EMA considerations. The ultimate purpose of most organizations is to be rewarded in terms of physical and monetary gains. To fulfill this purpose, they apply different kinds of practices, strategies, tools, and techniques for maximization of their returns (Saeidi & Othman, 2017). Many studies focus on the relationship between EMA and environmental performance (Solovida & Latan, 2017) but a few investigate the association between EMA and FFP (Qiu et al., 2016). In this study, we investigate the impact of different EMA tools on FFP.

The ultimate purpose of most organizations is to increase their financial value with the help of different applications. To achieve their core objective of maximizing the financial value, companies also pay attention to activities like corporate social responsibility (CSR), environmental performance, sustainability reporting, and environmental disclosure, etc. (Karlsson & Bäckström, 2015; Lu & Taylor, 2018). Nowadays, organizations are operating in a highly competitive and rapidly changing business environment (Lasyoud et al., 2018). In such a competitive and fluctuating environment, firms are looking for ways through which they can boost their performance and strategies. In such a situation, the ability to innovate can be helpful for companies to survive and grow. Hence, firms innovate by producing innovative products through innovative processes. In this way, they reduce wastage and enhance their profitability (Reed, 2012). Innovation does not only contribute towards increasing the FFP but it also helps the firm in achieving different strategic and environmental goals that are necessary to achieve in the modern business world to survive and grow efficiently (Saeidi et al., 2018; Seman et al., 2019; Singh et al., 2020).

Nowadays, for the assessment of the value of a firm, factors such as environmental performance, CSR, reporting structures are also considered along with the conventional

indicators of financial performance (Malcolm, 2011). Due to this trend, stakeholders require firms to focus on sustainable development indicators also (Rodrigue, 2013). The stakeholder theory suggests that the interests of stakeholders and pressure from different stakeholders push the firm to adopt certain practices and tools, develop certain decisions and strategies, and implement specific systems to achieve certain goals (Fernando & Lawrence, 2014). These effects regarding the environmental concerns driven by the push from the stakeholders are compelling firms of the modern business world to adopt innovative practices, EMA systems, and effective strategies so that they can accomplish the desired goals. In the modern era, firms want to prove themselves as sustainable and environmentally friendly organizations because the current stakeholders not only demand financial reporting but also require organizations to publish the social and environmental reports as they publish financial reports. This allows the public to assess the organizations whether they are socially and environmentally sustainable (Le et al., 2019; Neagu, 2019; Schönborn et al., 2019).

Developed countries show a deep interest in developing pro-environmental strategies and respond to the changing environment promptly. On the contrary, in developing countries like Pakistan, due to the lack of environmental concern and poor pro-environmental management in the manufacturing sector, a significant decline in the FFP is observed (Pakistan Economic Survey [PES], 2020). Realizing the severity of the issue, environmental consideration has become a focal point of research and policy in the emerging economies (Hasniza & Malcolm, 2013; Lu & Taylor, 2018). If such environmental considerations will not be acted upon then not only the firms' performance will decline but the overall global environment will be affected as the global environmental skimp is being polluted. Currently, many companies are applying different environmental tools for achieving sustainable goals (Solovida & Latan, 2017). The two EMA tools that are directly related to sustainable development and indirectly related to FFP are EMA and FES. Innovation helps the firm in applying these tools because bringing innovation in the firm results in the application of new methods, technologies, and systems through which the decision-making process, operations, and strategic position of the firm can be improved (Saeidi et al., 2018; Seman et al., 2019; Singh et al., 2020). An effective EMA system with a well-developed FES helps the firm to make informed decisions and strategies for addressing the environmental issues and concerns cost-effectively and efficiently. This explains how these tools contribute to improving FFP. However, the process through which EMA and FES mediate the relationship between innovation and the firm's performance remains unexplored. The literature concerning these influences on a firm's performance is scant. The current study intends to fill this gap in the literature by analyzing the mediating roles of EMA and FES between environmental innovation and a firm's performance in a combined model in the context of the manufacturing sector of Pakistan. To accomplish this aim and to address the gap in the literature, the following research questions are answered in this study:

- How EMA affects the relationship between PCI and FFP?
- How EMA affects the relationship between PDI and FFP?

- How FES affects the relationship between PCI and FFP?
- How FES affects the relationship between PDI and FFP?

This study contributes in three ways. First, it explains the mechanism of enhancing the firm's financial performance through the mediating effects of EMA on the relationships between PCI and FFP and PDI and FFP in the context of a developing country Pakistan. Secondly, it explains how FES can be used to improve a firm's performance by promoting product and process innovations. Third, this study has a methodological contribution. We have employed structural equation modeling (SEM) to estimate the proposed model. Being a second-generation method it possesses multiple advantages of modeling the primary data (Hair et al., 2018). Furthermore, findings of the study will help strategy makers of firms to understand how they can improve their FFP through promoting innovative products and processes and by applying the EMA system. They should also emphasize on developing and executing an effective FES. In this way, strategy makers and firms will be able to come up with better strategies and decisions for the improvement of their environmental and financial performance. Hence, the present study is expected to be a significant addition to the literature on EMA and FES due to its theoretical and practical contributions.

2. Literature Review and Hypotheses Development

2.1 Process Innovation (PCI) and Firms' Financial Performance (FFP)

Innovation is one of the basic factors that enhance the market share of the firms and provide them a competitive advantage over others (Malcolm, 2011). It builds up the potential of companies amplifies their performance in many aspects. There are three dimensions of the company's performance on which innovation has a particular impact. These dimensions include customer's performance, FFP, and market performance. Previous literature describes innovation as a key factor in initiating a multiplier effect. Companies performing well have an option to be financed easily. This can further improve the product and process innovations because innovation is a capital-intensive activity. Although similar innovations in an industry may reduce their effectiveness (Saeidi et al., 2018), a greater variation in process innovations may help in enhancing the financial performance considerably (Albelda, 2011; Ong et al., 2019; Saeidi & Othman, 2017).

The linkage between innovation and firm's effectiveness, competitive advantage, and performance established by the literature is further supported by the theory of creative destruction (TOCD), which states that the innovativeness of the firm enables it to outperform non-innovative firms (Chun et al., 2008). According to this theory, innovation is a great way to facilitate economic development and improve the firm's performance. This theory provides a strong basis for the argument that innovation facilitates the adoption of modern systems and innovative strategies that ultimately enhance the economic performance of the firm. It is emphasized by this theory that the innovation entails greater importance in developing the competitive advantage of firms to make them superior to their non-innovative competitors (Canh et al., 2019). Therefore, innovative processes adopted by firms tend to play a significant role in increasing the economic performance and growth of firms. Besides TOCD, the resource-based-view (RBV) also

supports this argument because according to the latter, the competitive advantage and firm's performance rely on the rare, unique, and innovative resources and capabilities of a firm. These resources facilitate achieving a competitive advantage over other competitors in the market (Bakar & Ahmad, 2010; Hart, 1995). Contingency theory suggests that different contingent factors and uncertainties (organizational strategy, innovation conditions, etc.) lead the firm to behave in certain ways and adopt certain practices. Therefore, contingency theory also supports the argument that the innovations taking place in a firm can enhance its financial performance (Islam & Hu, 2012; Otley, 2016). It means that the literature and existing theories provide sufficient support to the argument that the PCI helps the firm to boost its performance.

A study conducted by the Hasniza and Malcolm (2013) in Turkey showed a strong and positive effect of the PCI on firms' performance by using the balanced scoreboard approach using data from 197 manufacturing firms. Lasyoud et al. (2018) found that when companies bring innovation in its branding, they consequently bring growth in FFP. In contrast, less innovation brings less growth. A recent study by Hutahayan (2020) indicated that innovation does not always require a significant change in the process, sometimes it may be a small improvement in the previous arrangement. For example, improvement in processing, reducing wastage, minimizing the cost. Applying innovation strategy may improve the performance of the internal processes, which may contribute to increasing FFP. Hasniza and Malcolm (2013) stated that if a firm introduces new processing ideas, it gains a competitive advantage over other firms. Firms with a high level of competitive advantage have an option to introduce a high level of innovation which is not easily copied by the competitors; firms can tackle long-run benefits by using this approach (Gomez-Conde et al., 2019; Reed, 2012; Saeidi et al., 2018).

Few studies negate the presence of a positive relationship between PCI and FFP. For example, a study by Njanja (2013) concluded that PCI has a significant negative impact on a firm's performance. In another study, PCI was identified as a hurdle in the growth of a firm (Mahfud, 2015). This may be due to the factors not considered by the researchers. Most of the studies that explain the link between PCI and FFP were carried out in the developed economies with a highly structured and developed manufacturing sector. The literature on this linkage in the context of emerging economies is very thin. Hence, there is an extreme need to find out about the linkage between PCI and firms' performance in emerging economies (Spencer et al., 2013). Furthermore, the review of previous studies shows that a part of the literature regards the PCI as the positive predictor of FFP while another part of the literature regards the PCI as the negative predictor of FFP. This lack of harmony among findings of the role of PCI in determining the FFP requires further empirical research on this relationship. Based on the above discussion, the following hypothesis is proposed:

- **H_1:** PCI has a positive and significant effect on FFP.

2.2 Product Innovation (PDI) and Firms' Financial Performance (FFP)

PDI either in the form of radical innovation or incremental innovation can be determined by its degree of change. Radical innovation is related to introducing a new product or

technology in the market while, incremental innovation relates to improvements or modifying existing product (Habib et al., 2020; Wright, 2004). There exists a massive debate in the academic literature on innovation. TOCD suggests that the innovativeness of the firm enables it to outperform non-innovative firms (Chun et al., 2008). It means that when a firm introduces innovation in its offerings and products, it attains a better position to achieve and sustain an advantage over non-innovative competitors. This innovation brings new customers to the company and holds the existing. In TOCD, it is emphasized that the creative destruction proceeded through the innovations and evolutions brings better economic results for the firm. When a firm brings innovation in its products, it will be more likely to earn monopoly revenues and profits leading to increased FFP (Canh et al., 2019). Therefore, it is argued that the PDI of the firm plays an important role in the enhancement of its performance because it acts as the source to gain a competitive advantage over other market players. TOCD supports this argument. RBV also supports this argument because a firm's performance and competitive advantage are expected to be strongly reliant on unique and rare capabilities, resources, and strategies of the firm (Bakar & Ahmad, 2010; Hart, 1995).

According to Nwokah (2009), PDI is positively and significantly correlated with corporate performance in terms of profitability, customer loyalty, and growth rate. Furthermore, the study of Berger and Mester (2003) indicated that the novelty in products is a major key for a competitive edge and plays a significant role in increasing a firms' performance. Gabriel and Valentin (2007) Conducted a study on the banking sector in the USA and stated that a substantial portion of banks' profits came from the improvements in the products. They further argued that the highly innovative banks show better performance and possess a greater attraction in customers' minds. They further claimed that if the firms continuously provide innovative experiences to their clients, they can easily enhance their profit margin. Hence, firms can get an extraordinary profit by launching PDI. The review of the literature shows that the PDI helps the firms to incorporate new and required features and aspects in their product development. This enables them to survive and compete in the market efficiently. Therefore, the PDI is considered as an important determinant of FFP.

On the other hand, Simpson (2006) deemed that the PDI may bring negative effects on firms' performance due to high experimental cost and increased risk. In contrast, the study of Wright (2004) based on two environmental perspectives stated that the PDI does not affect firms' performance in a benign environment, but has a positive and significant impact on a firm's performance in a hostile environment. In another study, Hasniza and Malcolm (2013) claimed that PDI does not affect the firms' productivity, however, it plays a positive role in increasing a firm's growth. It means that a large part of the literature regards the PDI as the positive predictor of FFP. A few studies identify the PDI as the negative or insignificant predictor of FFP. These opposing views about the role of PDI in determining the FFP require further empirical research on this relationship. Therefore, after analyzing the literature on PDI, researchers of this study propose the following hypothesis:

- **H_2:** PDI has a positive and significant impact on FFP.

2.3 Mediating Role of Environmental Management Accounting (EMA)

The main objective of the EMA is to achieve sustainability in the companies by making pro-environmental decisions (Mahfud, 2015). Furthermore, the EMA also assists organizations to save the environment and to recognize the environmental costs (Saeidi et al., 2018). This can be achieved by switching to such machinery and material which does not produce toxic waste. EMA also facilitates organizations to enhance their efficiency in material and energy use. In addition, it plays a vital role in decreasing the environmental influence through identifying, investigating, collecting, assigning, and controlling environmental cost which is approximately 20% of any firm's operating cost and is typically unseen (Ferreira et al., 2010). Prior studies of Gale (2006) and Ferreira et al. (2010) stated that clarifying the cost for the environment by EMA leads the organizations to admit the true accounts for the annual cost. As a result, the managers are motivated and forced to discover or introduce new systems and methods for reducing environmental costs in the process of production or even at the time of new product development. Furthermore, Minoja et al. (2010) indicated that the development of typical products that required creative efforts have a plus point of the viable edge. In the literature on the environment, the study by Chang (2011) highlighted that the production of green products intervenes in the positive association between the organization's ecological ethics and a viable edge (Amir et al., 2020). Although, many studies investigate the impact of innovation and the firm's performance, a few investigated the relationship of innovation with EMA. Hutahayan (2020) suggested that the contribution of innovation strategy towards the EMA and the ultimate contribution of EMA towards the FFP have been very scarcely examined in the prior studies. It means that there exists a clear gap in the literature regarding the mediating role of EMA between innovation and a firm's performance. Hence, this study fills this gap by drilling EMA as a mediator between environmental innovation and firms' performance. This argument of the current study finds theoretical support from TOCD because this theory suggests that innovation enables the firm to adopt new and efficient ways and systems to enhance its growth and performance. It means that the innovative firms are more likely to adopt the EMA system so that, they can make reliable and informed decisions for the economic development of the firm. Adoption of this system ultimately helps the firm to develop better accounting and financial decisions favorable to the growth and success of the firm (Bakar & Ahmad, 2010; Canh et al., 2019; Chun et al., 2008; Fuzi et al., 2019; Andries & Stephan, 2019). Hutahayan (2020) also suggests that the innovation strategy leads to the effective application of the management information system within the firm, which in turn, enhances the FFP. However, this study does not examine the distinct roles of PCI and PDI towards EMA, and the ultimate role of EMA towards FFP. Based on the theory and past studies, the following two hypotheses are developed:

- **H_3**: EMA mediates the effect of PCI on FFP.
- **H_4**: EMA mediates the effect of PDI on FFP.

2.4 Mediating Role of Firm's Environmental Strategy (FES)

A firm's operations get affected by several factors due to environmental issues, for instance, raw material processing, manufacturing process, usage of energy, advancement in the process, product development, and management of waste. Often, firms apply different environmental techniques to overcome these issues i.e. Life-cycle Assessment (LCA), Total quality environmental management (TQEM), etc. Of all the available choices, managers have to choose those environmental strategies that are integrated with the firm's environmental issues and environmental practices like EMA (Banerjee, 2001). Hence, every organization is focused on its environmental management information system (EMIS), environmental management control system (EMCS), and environmental management accounting (EMA) to achieve sustainable growth and to improve its environmental strategies according to its operational needs.

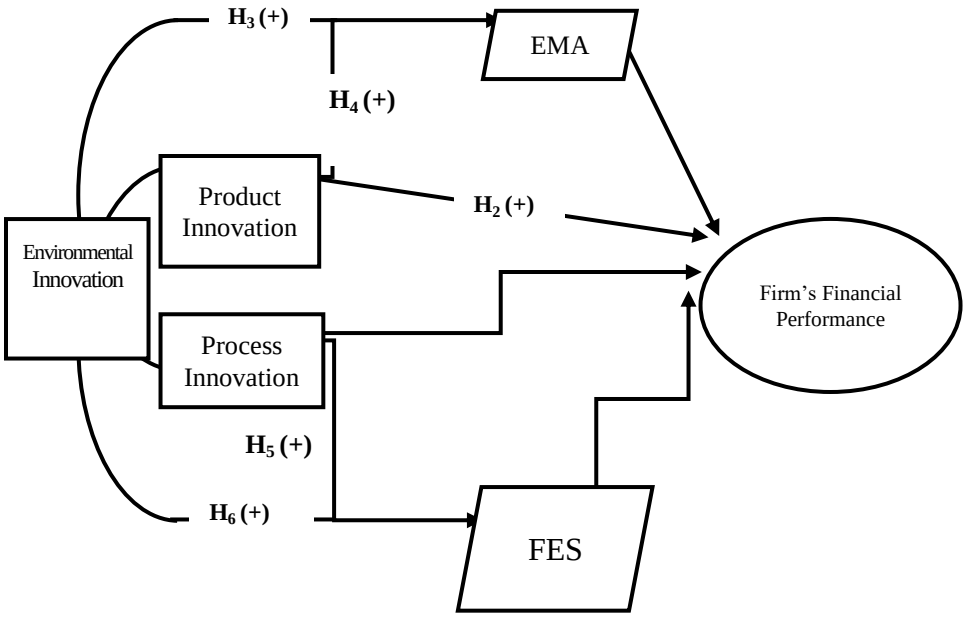
In addition, firms also consider environmental strategy (FES) as a core objective to achieve a competitive advantage over their competitors (Narayanan, 2014; Solovida & Latan, 2017). The literature on FES indicated that firms can effectively apply FES through practices like introducing green activities, developing pro-environmental products, advancing in existing processes, change in technological procedures, or doing any other environmental innovations (Mahfud, 2015). According to Solovida and Latan (2017), continuous improvement can be achieved by improving the intangible assets of a firm. The intangible assets of a company can be improved in two ways. First, environmental issues must be integrated into the strategic planning processes. Second, EMA practices must be used. The interaction of these two factors brings improvement in the company's overall performance. Gosselin (1997) claimed that different types of the strategy adopted by the firm according to business nature can be used for improving the innovation process of the company. Malcolm (2011) suggested that the current practices in conventional accounting are not sufficient for a company to achieve sustainability. There is a need to develop a link among practices such as EMA, Environmental Management System (EMS), EMCS, EMIS, etc. Hence, FES along with EMA is considered as the key element in achieving environmental sustainability (Christ & Burritt, 2013). The FES creates an innovative environment within the organization by saving wastage cost, implementing sustainable procedures, etc.

Given this, we can state that the FES has a significant intervening role in the relationship of innovative orientation practiced by a firm and the firms' performance (Malcolm, 2011). Extending RBV, it can be stated that if a firm utilizes its internal resources to develop innovative strategies and plans, its financial performance can be improved. Therefore, it can be argued that the RBV provides a pathway to the argument that the innovation within the products and processes of firms through internal resources leads them to practice effective FES, which is ultimately beneficial for the economic performance of the firm. The role of FES in increasing the firm's performance lies in the fact that stakeholders mostly view and evaluate the performance of the firm through its social and environmental performance. Therefore, RBV provides support to this argument by suggesting that firms benefit from environmental strategies through their effect on external reputation and internal capabilities (Akben-Selcuk, 2019; Canh et al., 2019). When FES is based on innovations, there are more chances that the environmental

and CSR performance of the firm will contribute towards its reputation so, the number of customers attracted to the firm will increase. It means that innovation helps the firm to apply new tools and technologies to structure its FES so that, it can identify environmental and financial concerns and address them through improved strategies. An effective FES formulated and executed properly, in turn, helps the firm to achieve its financial as well as environmental goals. Hence, FES is theorized to act as a mediator between innovation and firm's performance. However, the existing literature does not provide any explanation and empirical evidence regarding the mediating role of FES between innovation and firm's financial performance. Based on the discussion above, we propose the following two hypotheses:

- **H_5**: FES mediates the relationship between PCI and FFP.
- **H_6**: FES mediates the relationship between PDI and FFP.

The proposed theoretical model tested in this study is demonstrated in Figure 1. Product (PDI) and process innovation (PCI) are the independent variables, financial performance (FFP) is the dependent variable. Environmental management accounting (EMA) and the firm's environmental strategy (FES) are the mediating variables.



3. Research Methodology

This study uses a quantitative approach and follows the philosophy of positivism because this study aims to investigate the empirical effect of environmental innovation on FFP with the mediating role of EMA and FES. The non-probability purposive sampling technique has been used in the current study because this sampling technique enables the researcher to select an appropriate sample, which perfectly fits with the purpose of the

study (Etikan et al., 2016; Tongco, 2007). As the purpose of this study is to examine the effect of environmental innovation on FFP along with the mediating role of EMA and FES in the manufacturing sector of an emerging economy, middle-level, and top-level managers of manufacturing firms in Pakistan were chosen as the respondents for this study. The contact details of these managers were obtained from the website of Yellow Pages to determine the sample size, we have used the rule proposed by Hair et al. (2018) was applied. According to this rule, the sample size must be at least 10 times the number of items used (Kline, 2015; Amir & Chaudhry 2019). Following this rule, there must be 350 observations (=35 items x 10). Keeping the risk of missing and blank responses under consideration, 375 questionnaires were distributed among target participants through personal meetings and online platforms. Only 17 responses were received via online sources, including one incomplete response, which was deleted. On the other hand, 356 questionnaires were filled through self-administered data collection. Out of these 356 questionnaires, 9 questionnaires were roughly marked and incomplete. Hence, 363 responses were used for data analysis. The final sample size with 363 responses fulfills the requirement specified by Hair et al. (2018) and Kline (2015) for performing structural equation modeling (SEM) through AMOS. This software was used to estimate the measurement and structural models.

3.1 Measures

The scales used to measure the variables of this study were adopted from prior studies. Five-point Likert scale indicating 1 for "strongly disagree" to 5 for "strongly agree" was used to measure the responses. In this study, environmental innovation was measured in terms of two dimensions, namely PCI and PDI. The instrument regarding the PCI and PDI was adopted from the study of Wang and Ahmed (2004). These scales have good reliability standards and have been used in several studies (Gunday, Ulusoy, Kilic, & Alpkan, 2011; Saeidi & Othman, 2017). EMA was measured through the scale developed and used by Ferreira et al. (2010). FES was measured by using the scale consisting of eight items developed by Walls, Phan, & Berrone (2008). FFP was measured through a scale developed by Kaplan and Norton (1996), which is considered as the best measurement instrument for the FFP according to the literature. It has been used by many studies (Bodlaj, 2010; Gunday et al., 2011; Iqbal, 2013; Saeidi & Othman, 2017; Saeidi et al., 2018).

4. Data Analysis and Results

Data from 363 respondents were analyzed to estimate the proposed theoretical model given in Fig. 1. Among the 363 respondents, 227 respondents were males and the remaining 136 respondents were females. The educational qualification of respondents indicated that the majority of the respondents (i.e. 150 out of 363) were having a postgraduate degree (41.3%). 143 respondents had a graduation degree (39.4% of the total). 70 respondents (19.3%) of the total sample were having more than 16 years of education (e.g. M.Phil, M.Com-Hons., MBA, and MS).

4.1 Discriminant Validity

To ensure the discriminant validity in the scales used in this study, the correlations of all five variables have been computed. Table 1 presents the correlation coefficients of EMA,

FES, PCI, PDI, and FFP. The values of the variance inflation factor (VIF) are also reported in column 2.

Table 1: Multicollinearity and Discriminant Validity (n=363)

Constructs	VIF	EMA	FFP	FES	PDI	PCI
EMA	1.525	**0.751****				
FFP	-	0.609	**0.758****			
FES	1.964	0.560	0.681	**0.756****		
FDI	1.749	0.455	0.667	0.679	**0.806****	
PCI	1.829	0.553	0.735	0.619	0.650	**0.819****

Notes: Correlation is significant at the 0.01 level (2-tailed), *=*p<0.05*, **=*p<0.01*, ***=*p<0.001*.EMA=EMA; FFP=Firm FFP; FES=Firm FES; PDI=PDI; PCI=PCI.

Discriminant validity reveals whether a theoretically distinct variable is numerically distinct or not. For this purpose, VIF and correlations are analyzed. It can be seen that the correlation of each PDI with itself, PCI with itself, EMA with itself, FES with itself, and FFP with itself are larger than the inter-variable correlation coefficients. It means that the scales used in this study qualify for discriminant validity. The multicollinearity issue is checked by calculating the value of VIF for all independent and mediating variables of the current study. Results given in Table 1 show that VIF against EMA, FES, PCI, and FDI are all less than 5. This indicates that there is no multicollinearity issue in the data for all the variables of this study (Campbell & Fiske, 1959; Kline, 2015).

4.2 Convergent Validity

Fornell and Larcker (1981) suggest that composite reliability (CR) is a good measure to establish the reliability of scales used in a study. Therefore, CR has been computed for all five variables of this study. Furthermore, the average variance extracted (AVE) for each of the five variables was estimated. The indicators of reliability and convergent validity are presented in Table 2.

Table 2: Reliability and Convergent Validity

		Reliability		Convergent Validity
Constructs	Items	Cronbach's alpha (α)	Composite Reliabilities (CR)	Average Variance Extracted (AVE)
EMA	13	.946	0.944	0.564
FFP	7	.905	0.904	0.575
FES	8	.915	0.914	0.572
PDI	4	.880	0.881	0.649
PCI	3	.859	0.859	0.671

Notes: EMA=EMA; FFP=Firm FFP; FES=Firm FES; PDI=PDI; PCI=PCI; α=Cronbach's alpha; CR=Composite reliability.

It can be seen in Table 2 that the Cronbach's alpha coefficients and composite reliability values for all five variables are greater than 0.7. This indicates that the scales used to measure these variables are reliable. The above-mentioned values of AVE for all five variables are greater than 0.5. This indicates that the data has convergent validity also (Campbell & Fiske, 1959; Kline, 2015).

4.3 Confirmatory Factor Analysis (CFA)

To assess the appropriateness of the items used to measure the five latent variables used in this study we have performed Confirmatory Factor Analysis (CFA). The model fit statistics of the model obtained through CFA are given in Table 3.

Table 3: Nested Confirmatory Factor Analysis (n=363)

	Model Fit Indices	**Threshold Range**	**Observed Values**
Nested Model	χ^2		1375.932
	Df		538
	χ^2 / df	Lesser than 3	2.557
	GFI	≥.80	.830
	IFI	≥ .90	.908
	CFI	≥ .90	.907
	RMSEA	≤ .08	.066

Notes: χ^2= Chi Square; Df= Degree of freedom; CFI= Comparative Fit Index; RMSEA= Root Mean Square Error of Approximation.

It can be seen that the values of CMIN/Df, IFI, CFI, GFI, and RMSEA of the current model fall within the acceptable ranges given in column 3. The value of CMIN/df is less than 3, GFI is greater than 0.80, IFI and CFI are greater than 0.9, and RMSEA is less than 0.08. Hence, the estimated CFA is a good fit.

The estimated measurement model is demonstrated in Figure 2.

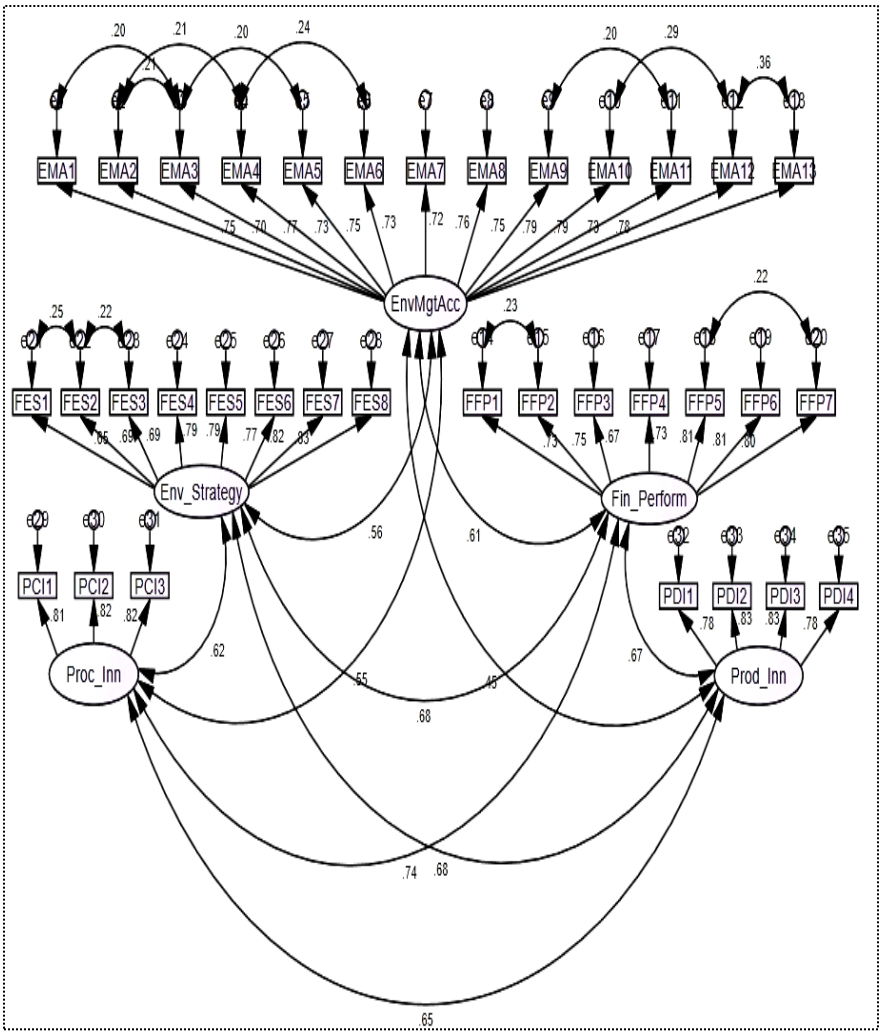


Figure 2: Measurement Model

4.4 Descriptive Analysis of the Variables

To check the normality of the data for all five variables the descriptive statistics have been computed and presented in Table 4. It presents the minimum, maximum, and mean values of PCI, PDI, EMA, FES, and FFP. The mean value of each of the five variables falls around 3, which is within the normal range of the data i.e. 1-5. It ensures the absence of any extreme value or outlier in the data of each of these variables. The values of the standard deviation of EMA, FES, both types of innovations, and FFP also indicate that

there exists moderate variation in the data because the standard deviation is around 1/3rd of the mean (Mishra et al., 2019).

Table 4: Descriptive of Study Variables

Constructs	Min	Max	Mean	SD	Skewness
PCI	1.00	5.00	3.3939	.9999	-.561
PDI	1.00	5.00	3.6253	.2442	-.927
FES	1.00	4.88	3.6758	.9468	-.339
EMA	1.00	5.00	3.5052	.9958	-.719
FFP	1.00	5.00	3.5919	.9818	-.903

Note: EMA=EMA; FFP=Firm FFP; FES=Firm FES; PDI=PDI; PCI=PCI.

It is evident from Table 4 that the coefficients of skewness for EMA, innovation (process and product), FES, and FFP given in column 6 are greater than minus one but smaller than plus one. The threshold for the skewness coefficient indicates that if the values of skewness are within the range of -1 to +1, data is normally distributed. As this condition is fulfilled for the current data so, the normality and adequacy of the current data are proved. Based on the above discussion we can conclude that the data collected for this study is appropriate for further analysis (Cain, Zhang, & Yuan, 2017; Kim, 2013).

4.5 Structural Equation Modeling

To assess the effects of PDI and PCI on FFP and the mediating paths, SEM has been performed in which direct, total, and indirect effects of variables along with their significance levels have been computed. Results of SEM are presented in Tables 5 and 6. The unstandardized and standardized beta values are given in columns 2 and 3 respectively. Columns 4, 5, and 6 present the corresponding values of standard errors (S.E.), critical ratios (C.R.), and p-values.

Table 5: Regression Weights

Relationship	Unstandardized β	Standardized β	S.E.	C.R.	P-value
PDI → FES	.414	.448	.044	9.361	0.000
PDI → EMA	.186	.192	.053	3.528	0.000
PCI → FES	.278	.294	.045	6.134	0.000
PCI → EMA	.389	.390	.054	7.182	0.000
EMA → FFP	.229	.234	.041	5.595	0.000
FES → FFP	.218	.212	.049	4.462	0.000
PCI → FFP	.294	.302	.047	6.248	0.000
PDI → FFP	.169	.178	.046	3.643	0.000

Note: EMA=EMA; FFP=Firm FFP; FES=Firm FES; PDI=PDI; PCI=PCI.
*ns=not significant, ns=p>0.1, *=p<0.05, **=p<0.01, ***=p<0.001.*

The regression weights show that PCI and PDI have significant positive effects on firms' financial performance, EMA, and FES. It means that an increase in PCI and PDI causes a significant increase in FFP, EMA, and FES because p-values corresponding to regression weight is less than 0.001. Similarly, the regression weights of each of EMA and FES on FFP are also positive and significant. It means that an improvement in EMA and FES

causes a significant increase in FFP because the p-value corresponding to the regression weights is less than 0.001. Table 6 shows the results of indirect, direct, and total effects of PCI and PDI on FFP, EMA, and FES. The p-value corresponding to the regression weights is less than 0.001, indicating that all the regression weights are significant (Afthanorhan, 2013; Kline, 2015).

4.5.1 Mediation Analysis

Table 6 shows the results of indirect, direct, and total effects of PCI and PDI on FFP, EMA, and FES. The p-value against all these regression weights is <0.001 so, all these regression weights are significant (Afthanorhan, 2013; Kline, 2015).

Table 6: Structural Model Results

Variables	Effect	FES	EMA	FFP	P-Values
PCI	Indirect	-	-	.154**	.010
	Direct	.294**	.390*	.302**	.010
	Total	.294**	.390**	.456**	.010
PDI	Indirect	-	-	.140**	.010
	Direct	.448**	.192**	.178*	.014
	Total	.448**	.192**	.318**	.010

*Note: All values are standardized. EMA=EMA; FFP=Firm FFP; FES=Firm FES; PDI=PDI; PCI=PCI. ns=not significant, ns=p>0.1, *=p<0.05, **=p<0.01, ***=p<0.001.*

Results given in Table 6 show that the PCI and PDI have significant positive effects on FFP, which means that product and process innovations are followed by an increase in the FFP (p-value<0.05). However, the direct effects of PCI and PDI on FFP do not make up the total effects of PCI and PDI on FFP. It means that there exists some mediation between PCI and FFP as well as between PDI and FFP. This mediation is caused by EMA and FES, which is termed as the indirect effects of PCI and PDI on FFP. Results are showing that PCI and PDI both have significant positive effects on EMA as well as on FES, and both EMA and FES in turn, have significant positive effects on FFP so, the mediating roles of EMA and FES between PCI and FFP as well as between PDI and FFP have been established. Figure 3 shows the estimated structural model obtained using AMOS. This model shows that PCI and PDI have positive effects on FFP. Furthermore, this figure reveals that both mediating paths of this study are also positive.

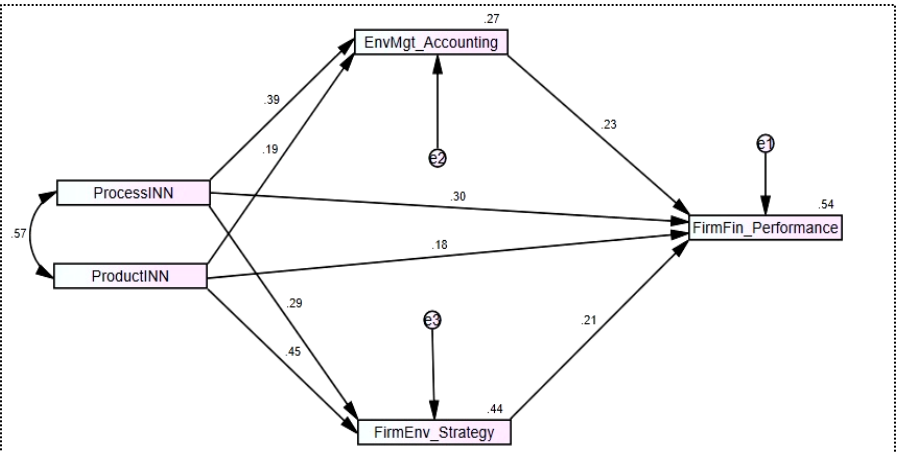


Figure 3: Structural Model

5. Discussion

The main purpose of this study was to empirically examine the effects of PCI and PDI on FFP. EMA and FES are the factors which were introduced in this study as the mediators. To test the proposed model, data from 363 managers of manufacturing firms in Pakistan was gathered through a questionnaire specifically developed for this study. The collected data was analyzed using SPSS v-25 and AMOS v-24. The first hypothesis of the study indicates that there is a positive and significant relationship between PCI and FFP. The claim of H_1 has been proved by the SEM results, which shows that the standardized beta coefficient showing the effect of PCI on firm performance is 0.302 (p-value < 0.001). This result is consistent with the findings of Forsman (2013) and Saeidi and Othman (2017). The H_2 of the study stated that there is a positive and significant association between PDI and firm performance. The outcome of the current study against PDI indicates that it has a significant positive effect of 17.8% on firm performance (Standardized Beta coefficient is 0.178 with p-value = 0.014). The result of current research is inconsistent with Mahfud (2015) but consistent with Wright (2004). Results regarding the hypotheses related to EMA (i.e. H_3 and H_4) indicated that the process and PDI have individual positive and significant effects on EMA, which in turn has a significant positive effect on firm FFP via EMA. These results are consistent with some prior studies that proved the positive and significant association of EMA with firm performance e.g. (Ferreira et al., 2010; Solovida & Latan, 2017). The next two hypotheses claimed that product and PCI have positive and significant effects on firm performance via FES. The results of SEM proved both these hypotheses so, these two hypotheses are also accepted. These results are in line with suggestions of Hoos et al (2015) and Schaltegger and Burritt (2017) because these studies also support the positive contribution of innovation and FES towards the firm's performance.

6 .Conclusion

The purpose of this research was to examine the effect of product and PCI on FFP along with mediating effects of EMA and FES on the relationship between the two dimensions of environmental innovations and the firm's performance. Subsequently, it assessed the separate effect of PCI and PDI on FFP through the mediating roles of EMA and FES. The results of the current research indicate that PDI has a positive and significant effect on FFP. Based on these results, it is suggested that the successful PDI will result in cost reductions and eventually will lead to the enhancement of the profitability of the organizations. Based on the empirical analysis done in this study, we may conclude that the companies that produce a wide range of products by using innovative techniques and processes will be able to attract more customers, for a greater time-span. This will enable them to increase their profitability. PCIs and PDIs are an advancement or improvement in the company's existing system which leads to attracting more clients/buyers. Innovation brings a competitive edge for the company over its competitors and consequently increases the company's performance. Moreover, based on this study's results, it is deemed that EMA and FES play a vital role between environmental innovation and firm performance. When firms adopt innovative processes and offerings, they get into a better position to improve their EMA system so that, they can make improved and informed decisions through an effective EMA system. This improvement in the EMA system contributes towards the FFP positively. Therefore, it can be suggested here that EMA plays a positive mediating role in the relationship between innovation and firm's performance. When firms adopt innovative processes, they come in a better position to develop better FES so that, they can practice better decisions and strategies regarding their environmental performance. The effective FES contributes towards the FFP positively because it enhances the reputation and CSR involvement of the firm. Therefore, it can be suggested here that FES plays a positive mediating role in the relationship between innovation and firm's performance.

7. Implications, Limitations, and Further Suggestions

The current study, its suggestions, its findings, and empirical evidence tend to be of great importance in the literature and practice due to their theoretical as well as practical implications. The current study and its findings will contribute to the literature by overcoming the existing gap in the literature regarding the mediating roles of EMA and FES between innovation and firm's performance. The proposed theoretical model is tested using a second-generation analytical technique. The empirical evidence supports the proposed theory explaining the mechanism of improving financial performance through environmental innovation. The model presented in this study will help researchers and practitioners to understand the phenomenon in detail. Furthermore, the literature about the contingency theory, stakeholders' theory, and TOCD will be enhanced through current findings. Practically, the findings of the study will help strategy makers of firms to understand how they can improve their FFP by bringing innovation, applying the EMA system, and developing as well as executing an effective FES. In this way, strategy makers and firms will be able to develop and implement better strategies, systems, and decisions for the improvement of FFP. This study will be helpful for

policymakers as it emphasizes the significance of EMA, innovation, and FES in improving organizational performance.

Besides contributions, there exist some limitations in this study that should be overcome in future studies. First, the current study and its results are limited to manufacturing firms of Pakistan as the findings are based on the perspective of managers of manufacturing firms in Pakistan. The role of innovation, FES, and EMA towards the corporate FFP may not be similar among all sectors, industries, or firms. Therefore, future researchers are recommended to conduct cross-sector examinations and comparisons for improving the findings of the study and their generalizability. Secondly, the current study used subjective measures for evaluating the FFP. Future researchers should use objective/numerical indicators to measure FFPs for better and accurate measurement of the variable. Thirdly, the current study incorporates EMA and FES as the mediators between innovation and firm performance while the innovation can help the firm in developing certain capabilities and competitive edge that in turn, contribute towards the FFP. Therefore, future researchers should evaluate the phenomenon through which innovation can help the firm to build organizational capabilities. Furthermore, mere FFP is not enough to evaluate the performance of the firm therefore, future researchers should focus on other types of firm's performance indicators in future studies e.g. environmental performance, social performance etc.

Grant Support Details / Funding

This research work received no research grant.

REFERENCES

Afthanorhan, W. (2013). A comparison of partial least square structural equation modeling (PLS-SEM) and covariance-based structural equation modeling (CB-SEM) for confirmatory factor analysis. *International Journal of Engineering Science and Innovative Technology, 2*(5), 198-205.

Ahmed, N. (1998). Organizational performance and environmental consciousness: an empirical study. *Management Decision, 36*(2), 57-62.

Akben-Selcuk, E. (2019). Corporate social responsibility and financial performance: The moderating role of ownership concentration in Turkey. *Sustainability, 11*(13), 1-10.

Albelda, E. (2011). The role of management accounting practices as facilitators of the environmental management: Evidence from EMAS organisations. *Sustainability Accounting, Management and Policy Journal, 2*(1), 76-100.

Amir, M., & Chaudhry, N. I. (2019). Linking environmental strategy to firm performance: A sequential mediation model via environmental management accounting and top management commitment. *Pakistan Journal of Commerce and Social Sciences (PJCSS), 13*(4), 849-867.

Amir, M., Rehman, S. A., & Khan, M. I. (2020). Mediating role of environmental management accounting and control system between top management commitment and

environmental performance: A legitimacy theory. *Journal of Management and Research, 7*(1), 132-160.

Andries, P., & Stephan, U. (2019). Environmental innovation and firm performance: how firm size and motives matter. *Sustainability, 11*(13), 1-17.

Bakar, L. J. A., & Ahmad, H. (2010). Assessing the relationship between firm resources and product innovation performance. *Business Process Management Journal, 16*(3), 420-435.

Berger, A. N., & Mester, L. J. (2003). Explaining the dramatic changes in performance of US banks: technological change, deregulation, and dynamic changes in competition. *Journal of Financial Intermediation, 12*(1), 57-95.

Banerjee, S. B. (2001). Corporate environmental strategies and actions. *Management Decision, 39*(1), 36-44.

Bodlaj, M. (2010). The impact of a responsive and proactive market orientation on innovation and business performance. *Economic and Business Review, 12*(4), 241-261.

Bouten, L., & Hoozée, S. (2013). On the interplay between environmental reporting and management accounting change. *Management Accounting Research, 24*(4), 333-348.

Cain, M. K., Zhang, Z., & Yuan, K.-H. (2017). Univariate and multivariate skewness and kurtosis for measuring nonnormality: Prevalence, influence and estimation. *Behavior Research Methods, 49*(5), 1716-1735.

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin, 56*(2), 81-99.

Canh, N. T., Liem, N. T., Thu, P. A., & Khuong, N. V. (2019). The Impact of Innovation on the Firm Performance and Corporate Social Responsibility of Vietnamese Manufacturing Firms. *Sustainability, 11*(13), 1-14.

Castro, P., Azeiteiro, U. M., Bacelar-Nicolau, P., Leal Filho, W., & Azul, A. M. (Eds.). (2016). *Biodiversity and Education for Sustainable Development*. Springer.

Chang, C.-H. (2011). The influence of corporate environmental ethics on competitive advantage: The mediation role of green innovation. *Journal of Business Ethics, 104*(3), 361-370.

Christ, K. L., & Burritt, R. L. (2013). Environmental management accounting: the significance of contingent variables for adoption. *Journal of Cleaner Production, 41*, 163-173.

Chun, H., Kim, J.-W., Morck, R., & Yeung, B. (2008). Creative destruction and firm-specific performance heterogeneity. *Journal of Financial Economics, 89*(1), 109-135.

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics, 5*(1), 1-4.

Fernando, S., & Lawrence, S. (2014). A theoretical framework for CSR practices: Integrating legitimacy theory, stakeholder theory and institutional theory. *Journal of Theoretical Accounting Research, 10*(1), 149-178.

Ferreira, A., Moulang, C., & Hendro, B. (2010). Environmental management accounting and innovation: an exploratory analysis. *Accounting, Auditing & Accountability Journal, 23*(7), 920-948.

Fornell, C., & Larcker, D. F. (1981). Structural Equation Models With Unobservable Variables and Measurement Error: Algebra and Statistics. *Journal of Marketing Research, 18*(3), 382-388.

Forsman, H. (2013). Environmental innovations as a source of competitive advantage or vice versa? *Business Strategy and the Environment, 22*(5), 306-320.

Fuzi, N. M., Habidin, N. F., Janudin, S. E., & Ong, S. Y. Y. (2019). Environmental management accounting practices, environmental management system and environmental performance for the Malaysian manufacturing industry. *International Journal of Business Excellence, 18*(1), 120-136.

Gabriel, A., & Valentin, Z. (2007). The dominance of product mix over productivity and technical change in the US banking. *Journal of Financial Intermediation, 2*(2), 4-11.

Gale, R. (2006). Environmental costs at a Canadian paper mill: a case study of Environmental Management Accounting (EMA). *Journal of Cleaner Production, 14*(14), 1237-1251.

Gomez-Conde, J., Lunkes, R. J., & Rosa, F. S. (2019). Environmental innovation practices and operational performance. *Accounting, Auditing & Accountability Journal, 32*(5), 1325-1357.

Gosselin, M. (1997). The effect of strategy and organizational structure on the adoption and implementation of activity-based costing. *Accounting, Organizations and Society, 22*(2), 105-122.

Gunday, G., Ulusoy, G., Kilic, K., & Alpkan, L. (2011). Effects of innovation types on firm performance. *International Journal of Production Economics, 133*(2), 662-676.

Habib, T., Kristiansen, J. N., Rana, M. B., & Ritala, P. (2020). Revisiting the role of modular innovation in technological radicalness and architectural change of products: The case of tesla X and Roomba. *Technovation*, 98, 102163.

Hair, J. F., Black, W. C., Anderson, R. E., & Babin, B. J. (2018). *Multivariate Data Analysis*. Pearson Education.

Hart, S. L. (1995). A natural-resource-based view of the firm. *Academy of Management Review, 20*(4), 986-1014.

Hasniza, & Malcolm. (2013). Management accounting practices and the turnaround process. *Asian Review of Accounting, 21*(2), 100-112.

Hoos, A., Anderson, J., Boutin, M., Dewulf, L., Geissler, J., Johnston, G., Sargeant, I. (2015). Partnering with patients in the development and lifecycle of medicines: a call for action. *Therapeutic Innovation & Regulatory Science, 49*(6), 929-939.

Hutahayan, B. (2020). The mediating role of human capital and management accounting information system in the relationship between innovation strategy and internal process performance and the impact on corporate financial performance. *Benchmarking: An International Journal, 27*(4), 1289-1318.

Iqbal, N. (2013). *A framework for assessing the impact of investment in human capital development on organisational performance*. PhD thesis. University of Bedfordshire, UK.

Islam, J., & Hu, H. (2012). A review of literature on contingency theory in managerial accounting. *African Journal of Business Management, 6*(15), 5159-5164.

Kaplan, R. S., & Norton, D. P. (2007). Using the balanced scorecard as a strategic management system. *Harvard Business Review*, 85(7-8), 51-65.

Karlsson, J., & Bäckström, S.-L. (2015). Corporate Sustainability and Financial Performance: The influence of board diversity in a Swedish context. Dissertation. [Online] Available at: http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-255581 (November 19th, 2019).

Kim, H.-Y. (2013). Statistical notes for clinical researchers: assessing normal distribution (2) using skewness and kurtosis. *Restorative Dentistry & Endodontics*, *38*(1), 52-54.

Kline, R. B., & Santor, D. A. (1999). Principles & Practice of Structural Equation Modelling. *Canadian Psychology*, 40(4), 381-427.

Lasyoud, A. A., Haslam, J., & Roslender, R. (2018). Management accounting change in developing countries: evidence from Libya. *Asian Review of Accounting, 26*(3), 278-313.

Le, T. T., Nguyen, T. M. A., & Phan, T. T. H. (2019). Environmental Management Accounting and Performance Efficiency in the Vietnamese Construction Material Industry—A Managerial Implication for Sustainable Development. *Sustainability, 11*(19), 5152.

Lu, L. W., & Taylor, M. E. (2018). A study of the relationships among environmental performance, environmental disclosure, and financial performance. *Asian Review of Accounting, 26*(1), 107-130.

Mahfud. (2015). The impact of social and environmental information on managers' decisions: Experimental evidence from Indonesia. *Asian Review of Accounting, 23*(2), 156-169.

Malcolm. (2011). Changes in management accounting practices in Malaysia. *Asian Review of Accounting, 19*(3), 221-242.

Minoja, M., Zollo, M., & Coda, V. (2010). Stakeholder cohesion, innovation, and competitive advantage. *Corporate Governance: The international journal of business in society, 10*(4), 395-405.

Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019). Descriptive statistics and normality tests for statistical data. *Annals of Cardiac Anaesthesia, 22*(1), 67-72.

Narayanan, V. (2014). Environmental Management Accounting: Case Studies of South-East Asian Companies. *Sustainability Accounting, Management and Policy Journal, 5*(2), 255-258.

Neagu, O. (2019). The Link between Economic Complexity and Carbon Emissions in the European Union Countries: A Model Based on the Environmental Kuznets Curve (EKC) Approach. *Sustainability, 11*(17), 4753.

Ngugi, K., & Karina, B. (2013). Effect of innovation strategy on performance of commercial banks in Kenya. *International Journal of Social Sciences and Entrepreneurship, 1*(3), 158-170.

Njanja, L. W. (2013). Effect of reward on employee performance: A case of Kenya Power and Lighting Company Ltd., Nakuru, Kenya. *International Journal of Business and Management, 8*(21), 41-49.

Novikova, O., Ostafiichuk, Y., & Khandii, O. (2019). Mechanism of strengthening social and labor potential of sustainable development. *Problemy Ekorozwoju, 14*(1), 63-72.

Nwokah, N. G. (2009). Product development and organizational performance. *African Journal of Marketing Management, 1*(3), 89-101.

Ong, T. S., Lee, A. S., Teh, B. H., & Magsi, H. B. (2019). Environmental innovation, environmental performance and financial performance: Evidence from Malaysian environmental proactive firms. *Sustainability, 11*(12), 3494.

Otley, D. (2016). The contingency theory of management accounting and control: 1980–2014. *Management Accounting Research, 31*, 45-62.

Pakistan Economic Survey (2020). [ONLINE] Available at: www.finance.gov.pk (August 8th, 2020).

Qiu, Y., Shaukat, A., & Tharyan, R. (2016). Environmental and social disclosures: Link with corporate financial performance. *The British Accounting Review, 48*(1), 102-116.

Reed, R. (2012). How open innovation affects the drivers of competitive advantage: Trading the benefits of IP creation and ownership for free invention. *Management Decision, 50*(1), 58-73.

Rodrigue, M. (2013). Stakeholders' influence on environmental strategy and performance indicators: A managerial perspective. *Management Accounting Research, 24*(4), 301-316.

Saeidi, S. P., & Othman, M. S. H. (2017). The mediating role of process and product innovation in the relationship between environmental management accounting and firm's financial performance. *International Journal of Business Innovation and Research*, 14(4), 421-438.

Saeidi, S. P., Othman, M. S. H., Saeidi, P., & Saeidi, S. P. (2018). The moderating role of environmental management accounting between environmental innovation and firm financial performance. *International Journal of Business Performance Management, 19*(3), 326-348.

Schönborn, G., Berlin, C., Pinzone, M., Hanisch, C., Georgoulias, K., & Lanz, M. (2019). Why social sustainability counts: The impact of corporate social sustainability culture on financial success. *Sustainable Production and Consumption, 17*, 1-10.

Seman, N. A. A., Govindan, K., Mardani, A., Zakuan, N., Saman, M. Z. M., Hooker, R. E., & Ozkul, S. (2019). The mediating effect of green innovation on the relationship between green supply chain management and environmental performance. *Journal of Cleaner Production, 229*, 115-127.

Simpson, P. (2006). Innovation orientation outcomes: The good and the bad. *Journal of Business Research, 59*(10-11), 1133-1141.

Singh, S. K., Del Giudice, M., Chierici, R., & Graziano, D. (2020). Green innovation and environmental performance: The role of green transformational leadership and green human resource management. *Technological Forecasting and Social Change, 150*, 119762.

Solovida, G. T., & Latan, H. (2017). Linking environmental strategy to environmental performance: Mediation role of environmental management accounting. *Sustainability Accounting, Management and Policy Journal, 8*(5), 595-619.

Spencer, S. Y., Adams, C., & Yapa, P. W. (2013). The mediating effects of the adoption of an environmental information system on top management's commitment and environmental performance. *Sustainability Accounting, Management and Policy Journal*, 4(1), 75-102.

Tongco, M. D. C. (2007). Purposive sampling as a tool for informant selection. *Ethnobotany Research and Applications, 5*, 147-158.

Walls, J. L., Phan, P. H., & Berrone, P. (2008). An assessment of the construct validity of environmental strategy measures. Working Paper (No. D/754). IESE Business School.

Wang, C. L., & Ahmed, P. K. (2004). The development and validation of the organisational innovativeness construct using confirmatory factor analysis. *European Journal of Innovation Management, 7*(4), 303-313.

Wright, R. (2004). Types of product innovations and small business performance in hostile and benign environments. *Journal of Small Business Strategy, 15*(2), 33-44.