

## Does Relationship of Corporate Social Responsibility, Absorptive Capacity and Innovation Performance Exist in Manufacturing Micro Companies

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*This research is designed to check the Impact of kinds of Corporate Social Responsibility (CSR) on kinds of Absorptive Capacity (AC) and the impact of kinds of Absorptive Capacity (AC) on Innovation performance (IP). Data was collected from 375 employees of manufacturing micro-companies in Pakistan with the help of purposive sampling. Results indicate that there are positive impacts of kinds of Corporate Social Responsibility (CSR) on kinds of Absorptive Capacity (AC). This research also describes that there is a positive impact of kinds of Absorptive Capacity (AC) on Innovation performance (IP). The study also has managerial implications by revealing the contribution of intangible resources to innovation performance. The research also offers different configurations that production managers might choose to use to achieve innovation by using the concept of absorptive capabilities.*

## 1 Introduction

One of the crucial concerns that corporate governance has raised in the last ten years is corporate social responsibility (CSR) with dimensions (Community, environment, consumers and employees). Since it has played a vital role in ensuring public accountability and enlightening a company's commitment towards (Jo & Harjoto, 2014). According to previous research (Srinaruewan et al., 2015; Ajina et al., 2019), CSR has a direct impact on the company, its clients, and social causes. According to Hur et al. (2020), CSR is thought to enhance business status and have a beneficial impact on customer satisfaction and loyalty. Additionally, it can improve the well-being of clients and change their social behaviour. CSR contributes to lessening the impact of social issues and increasing knowledge of their roots (KsiężaK, 2016). According to Minor and Morgan (201), the social performance of an organisation can affect its financial performance. Therefore, it is imperative that managers carefully consider how they should connect with society.

Today's businesses function in a "knowledge-based economy" (Melnikas, 2010). The core of economic growth are knowledge and information, thus businesses must be able to dynamically absorb and apply this knowledge (Malerba & McKelvey, 2020). For policy initiatives like the new industrial strategies that are regaining popularity in many nations, this has significant ramifications, and Industrial tactics intended to increase productivity in businesses are likely to be ineffective if businesses lack the ability to learn, gather, and effectively utilize external information (Harris & Yan, 2019). The idea of AC is associated with the function and use of intangible assets, which are known as knowledge displayed in intellectual assets (Acevedo & Díaz-Molina, 2021). These latter have been recognised as an essential component of enterprise performance and, eventually, combine efficiency, and their function originates from the "resource-based" theory of the firm (e.g., Valentina & Passiante, 2009).

According to, AC has a beneficial impact on innovation. Innovation depends on new information, and on the ability of a company to assimilate it. The process of converting fresh information into organizational innovation is reliable on absorptive capacity. Companies can employ this to achieve and maintain a competitive edge, particularly in highly dynamic circumstances (Lewin et al., 2011; Volberda et al., 2010). The need for relevance of information and its effective application for organizations has risen, as a result of the economic and social transformations brought on by the technological revolution (Abbas et al., 2014; Mothe & Nguyen-Thi, 2017). The contribution of AC on sustainable performance is currently underrepresented in the literature, claimed by Lim et al. (2017).

With various ambiguous implications and denotations, innovation has an extensive philosophical history (Godin, 2015). Many businesses have invested in big data to find creative ways to set themselves apart from their rivals in the complicated business climate of today (Côte-Real, Oliveira, & Ruivo, 2017). Many businesses are investing more to come up with novel strategies to set themselves apart from their rivals in today's complicated business climate (Côte-

Real, Oliveira, & Ruivo, 2017). Proactive personnel are regarded with strong dedication to the company by innovation performance. Innovation is difficult for everyone, but it's particularly dangerous for big businesses. (Seppälä et al., 2019; Garcia 1997). According to studies on innovation and creativity in organisations, there is a 20%–30% chance that an idea would be financially successful. (Garcia 1997; Seppälä and colleagues, 2019). Innovation requires the courage to accept danger. It becomes vital to increase the likelihood of success when there is a 20% to 30% success rate. While it also enlightens the causes for a company's success or failure to survive (Dyer Jr & Panicheva Mortensen, 2005; Rico & Cabrer-Borrás, 2019). According to (Inkinen et al., 2017), businesses develop absorptive capacity by using tangible resources and Innovation performance, necessary for attaining innovation. According to Zhang et al. (2019), in order for commercial organisations to survive over the long term, they must adopt innovative practises (both non-technological and technological). The threat and pressure of global competition regarding innovation in the originations is very prominent in European countries and in USA (Pfothenauer et al., 2019). Latin America is face the problem of less productivity due to lack of innovation (Paus 2019). Altaf et al. (2019), argues that Pakistani organizations are much behind in innovation.

This research is design to check the relationship between corporate social responsibility (community, environment, consumers, employees), Absorptive capacity (knowledge assimilation, knowledge acquisition, knowledge transformation, knowledge exploitation) and innovation performance. These relationships especially with dimensions of CSR and AC with innovative performance in a single model is still undiscovered in developing countries and consider valuable area worth examining for business studies. Companies boost their innovativeness by improving their corporate social responsibility (CSR), support their marketing plans, and create new goods and services (Schiuma & Lerro, 2014) hence engage in innovative performance.

## **2 Literature Review**

### **2.1 Relationship of CSR and AC**

The impact of CSR activities on an organization's financial and nonfinancial performance has been emphasised in several studies (Santhosh & Baral, 2015). Also, because of their AC, staff members could put pressure on management to engage in CSR activities, which ultimately affects the sustainability of the company. According to Božič and Dimovski (2019), “AC is defined as the firm's ability ‘to recognize the value, acquire, transform or assimilate, and exploit knowledge’”. Internally, AC enables an organization to assimilate and integrate new knowledge with current knowledge as well as identify new knowledge from beyond the organization (Yu, et al., 2020). So, it is perfectly likely that employee knowledge will have an influence on the CSR action plans in addition to fostering sustainable performance. Several studies have discovered a negative correlation between CSR efforts and company performance. Several current researches, such as (Martinez-Conesa et al., 2017; Mehralian et al., 2016; Palacios-Manzano et al., 2021) have

shown positive connections between CSR and AC. In order to strengthen our case for the direct role of CSR in the environmental setting, the following hypotheses are put forth.

***H1. Dimensions of CSR(community) has positive impact on kinds of AC ((a)knowledge assimilation (b) knowledge acquisition, (c) knowledge transformation(d) knowledge exploitation).***

***H2. Dimensions of CSR(community, environment, consumers, employees) has positive impact on kinds of AC ((a)knowledge assimilation (b) knowledge acquisition, (c) knowledge transformation(d) knowledge exploitation).***

***H3. Dimensions of CSR(community, environment, consumers, employees) has positive impact on kinds of AC ((a)knowledge assimilation (b) knowledge acquisition, (c) knowledge transformation(d) knowledge exploitation).***

***H4. Dimensions of CSR(community, environment, consumers, employees) has positive impact on kinds of AC ((a)knowledge assimilation (b) knowledge acquisition, (c) knowledge transformation(d) knowledge exploitation).***

## **2.2. Relationship of kinds of AC and IP**

The ability of an organization to consider and get outside generated knowledge that is crucial to its processes is referred to as knowledge acquisition capability. (Zahra & George, 2002). As businesses connect with their internal and external customers, they gain important knowledge resources. This process is known as knowledge acquisition. ( Sherwood & Covin, 2008; Buckley et al., 2009). The first step in the process of learning is knowledge acquisition. Knowledge acquisition capabilities let businesses more rapidly recognise the external environment in a changing context. (Lei, Hitt, & Bettis, 1996) This enables students to broaden and deepen their knowledge, which can improve their technical proficiency (Yli-Renko et al., 2001). Additionally, outside knowledge can improve a firm's ability to create new connections (Jansen et al., 2005). Knowledge acquisition and corporate innovation have been linked in numerous prior research (Sullivan & Marvel, 2011; Chen & Huang, 2009; Zhou et al., 2012). Students may widen and enhance their knowledge in this way, which can help them become more technically proficient (Berchicci, 2013; Carayannopoulos & Auster, 2010). In this regard current study suggest the following:

***H5(a): Knowledge acquisition capacity has positive impact on firms' innovation performance***

A company's knowledge assimilation ability is defined as its capacity to assess, analyze, and understand data from external sources (Zahra & George, 2002). The ability to take in outside knowledge shortens the time needed to develop new products and expedites problem-solving. Also, using outside expertise helps modernise a company's knowledge reserves and prevent repetitious effort (Atuahene-Gima, 2003), and enhance a firm's innovativeness and competitiveness (Hoarau, 2014). As a result, an organization's capacity for incorporation dictates

how creatively effective it is (Inkpen, 2000). On the other hand, if a business has a high ability to assimilate fresh knowledge, it would be wasting intellectual resources. (Huber, 2001). Consequently, current study suggest the following:

***H5(b): Knowledge assimilation capacity has positive impact on firms' innovation performance***

An essential part of knowledge absorption is knowledge transformation, which is the process through which tacit and explicit information are transformed. As a result, according to Zahra & George (2002), "knowledge transformation describes a business's ability to establish and fine-tune procedures that enable it feasible to integrate previously known data with recently acquired and absorbed knowledge. Knowledge is transferred in a social environment, and social connections frequently provide the means and chances for doing so (Chang et al., 2012). Successful knowledge transformation is intended to improve organisational performance by accelerating the absorption of new information and realising effective collaboration and innovation (YliRenko et al., 2001). When there are gaps between new knowledge and existing knowledge, a company's knowledge transformation capability is even more crucial because it inhibits the company from immediately duplicating or comprehending external knowledge. Businesses may reinvent their cognitive framework through knowledge transformation from a fresh perspective, improving their innovation performance (Todorova & Durisin, 2007). Consequently, current research suggests the following:

***H5(c): Knowledge transformation capacity has positive impact on firms' innovation performance***

In order to handle real-world challenges, businesses must be able to incorporate newly acquired, absorbed, and converted information into their operations and routines. This enables them to develop new operations, competences, and routines and, eventually, turn that knowledge into profit ( Mitchell, 2006; Camisón & Forés, 2010). According to studies, a firm's ability to use information and produce innovative ideas are closely related. As using knowledge to solve a problem efficiently might help one recognise the worth of that information (Alavi & Leidner, 2001; Choi et al., 2010), A company with a strong capacity for knowledge exploitation can consistently transform both new and current knowledge into cutting-edge goods and services (Alavi & Tiwana, 2002). But, by enhancing the performance of individual creativity, a firm's knowledge exploitation ability might assist them in promoting their innovative outputs (Cheung & Yeung, 2011; Miller et al., 2007). In order to improve their innovation performance, businesses must therefore increase the use of outside knowledge (Majchrzak et al., 2004). Consequently, current study suggest the following:

***H5(d): Knowledge exploitation capacity has positive impact on firms' innovation performance***

### **3. Methodology**

### 3.1. Questionnaire of the Study

CSR consist of following dimensions community, environment, consumers, and responsibility. Community scale consist of three-item scale (Mousa & Othman, 2020), four items scale was used for the environment, five items scale was utilized for the consumers, and six items scale was measured for the employees by (Yusoff et al., 2018).

Absorptive capacity (AC) is comprised of four dimensions named knowledge assimilation, knowledge acquisition, knowledge transformation, and knowledge exploitation. Five items the knowledge assimilation, four items the knowledge acquisition, four items the knowledge transformation, and five items represent knowledge exploitation, respectively (Huang & Kung, 2011). A 4 items scale measured by (Kim et al., 2019) was employed to measure innovative performance. Using Brislin's back-translation technique, the questionnaire was converted from English to Urdu (1970). The Professional Development Unit's editing and translation unit at the School of Business, management Civilization, and humanities at Lahore Garrison university Pakistan provided translation and editing services from English to Urdu. The questionnaire was translated from English into Urdu. Later, another translator translated the questionnaire (Pakistan version) back into English. Finally, any differences between the English and Urdu versions were examined. The translators looked for all variations. Sending the measuring tool to specialists, including corporate social responsibility of manufacturing micro companies and assistant managers with special training in manufacturing sectors, was done to ensure that the content was genuine. Some small modifications were made in response to their recommendations. Pilot research was carried out to guarantee clarity, and 35 respondents were given the questionnaires to get their input. The surveys didn't need to be changed at all.

### 3.2. Sample design and data collection

The Pakistani city of Lahore was chosen for data collection. The Lahore Development Authority (LDA) claims that there are several foreign and local manufacturers in Lahore, making it one of the most manufacturing-intensive cities in the world. Because it is one of the most well-liked locations in Pakistan for manufacturers, Lahore city was chosen as the focus of data collecting. The Pakistani Association of Manufacturers provided the following list of manufacturing micro-firms (PAM). Twenty manufacturing micro companies in all were chosen at random. Data were gathered throughout three months (July 2022 to September 2022). Surveyors were used to gathering data. According to the guidelines given to the surveyors, they explained the study's goals to every respondent before obtaining their permission to complete the questionnaire. All of the chosen manufacturers adhered to CSR and fully followed the guidelines outlined in the Pakistan Micro Firms Act. Purposive sampling was used to get information from the personnel who were directly involved in the implementation of CSR in the Manufacturer. The administrative personnel of a few chosen Manufacturer micro-firms were surveyed for data. An invitation letter was issued to the HR department of the chosen manufacturer industries prior to



the official data-collecting process, asking them to refer to the real responders following clearance. The questionnaire was sent to a group of chosen managers for completion. 650 employees from the 20 industrial businesses that were chosen responded to the surveys. Overall 375 complete questionnaires were used for final analysis, yielding a response rate of 57%. This response rate is consistent with research done in the field of manufacturing micro-firms (Ali et al., 2021).

### 3.3. Demographics

The demographic details of the respondents are covered in this section. This poll drew in 374 responses in total. According to the findings, out of 374 participants, 266 (71.2%) were men and 108 (20.8%) were women. Most responders were between the ages of 31 and 40. According to the poll, 53% (198) of people were in that age bracket. The remaining 9% (34) belonged to the age bracket of 41–50 years, while 38% (142) were under the age of 30. According to their level of education, the participants comprised 72.3% (270) with a bachelor's degree, 17.7% (66) with a master's, 9% (34) with another degree, and 1.1% (4) with a Ph.D. According to the findings regarding the duration of service, 54.9% (205) of respondents had an experience of one to five years, 21.7% (81) of respondents had an experience of six to ten years in their respective organizations, and the remaining 23.4% (88) had more than ten years of experience.

### 4. Results and Discussions

PLS-SEM was employed to test hypotheses since it is often utilized and regarded as a cutting-edge evaluation approach across all business sectors, notably in the domain of manufacturing micro-firms (Ali et al., 2018). The objective of this empirical inquiry was to forecast and clarify the latent variables under study using the current theory. It is also thought to be a versatile tool for model evaluation (Ringle, 2005). The second justification for using PLS-SEM is because it has less strict criteria for sample size compared to Amos and for data normality (Hair Jr et al., 2016). In order to confirm internal consistency and the construct validity of the hypotheses, reliability, route coefficients, matching significant levels, and factor loadings are also discovered using the PLS method and bootstrapping technique (Ali et al., 2018). After the measurement model was created, estimates were found by analyzing the structural model. Even though PLS-SEM is a non-parametric statistical method and does not involve an understanding of the normal distribution of data as described in the preceding paragraph, the data normality distribution must not be disregarded before utilising any statistical inference (Hair et al., 2007). Estimates were discovered through the evaluation of the structural model after the measurement model had been produced. The data normality distribution must not be overlooked before using any inferential statistics, even if PLS-SEM is a non-parametric analytic technique and does not need the requirement of the normal distribution of data as indicated in the preceding paragraph (Hair et al., 2007). After the measurement model was created, estimations were found by analyzing the structural model. Even though PLS-SEM is a non-parametric statistical method and does not involve an understanding of the normal distribution of data as described in the previous

section, the data uniformity distribution must not be disregarded before utilizing any inferential statistics (Hair et al., 2007). As advised by Kocks and Raupp (2015), VIF was employed to evaluate common methods for biasness. The results demonstrated that, in line with the advice of (Kocks & Raupp, 2015), each of the scores of VIFs were utilised to evaluate common technique bias. The results demonstrated that every single one of the ratings of this research are fall in range.

**4.1. Measurement Model Assessment**

The measuring model was evaluated before the hypotheses were put to the test. The convergent validity was assessed using, average variance extract (AVE), factor loadings, and composite reliability (CR) (CV). The convergent validity values are displayed in Table 2. There should be more factor loadings than 0.60. According to the results shown in Table 2, all factor loadings, with the exception of a few, are beyond the cutoff point of 0.60. The AVE and CR values must to be higher than 0.50 and 0.70, respectively (Hair Jr et al., 2016). According to the data, all AVE and CR values are more than 0.50 and 0.70 . The items with the lowest factor loadings (0.50) were eliminated.

The evaluation of discriminant validity was enhanced by (Henseler, Ringle, & Sarstedt, 2015). They argued that while the Fornell-Larcker criteria can accurately assess discriminant validity, it may not be able to identify cases where discriminant validity is lacking. Thus, HTMT evaluated the discriminant validity of the model. Values for the variables under research are shown in Table 3 for HTMT. All variables' HTMT values must be less than 0.90 in accordance with the criteria (Gold et al., 2001). The discriminant validity for all variables under research is established by Table 3's HTMT values for entire constructs are below 0.90.

**4.2. Structural Model Assessment**

After the measurement model was evaluated, the structural model was evaluated. The model significance was assessed using the path coefficients, t-values, and standard errors. The direct and indirect hypotheses were tested using the bootstrapping method (Ringle et al., 2012). Table 4 and Fig. 2 provide information on the tested hypotheses. Only two of the hypotheses did not find any statistical support, according to the data, whereas all of the other hypotheses did.

**Table No 2: Convergent Validity**

Constructs	Items	Loadings	Alpha	rho_A	CR	AVE
<b>Corporate Social Responsibility</b>						
Community	COM1	0.900	0.841	0.856	0.904	0.758
	COM2	0.845				
	COM3	0.921				
Environment	EN1	0.899	0.850	0.868	0.897	0.686
	EN2	0.745				
	EN3	0.772				



	EN4	0.892				
Consumers	CON1	0.889	0.905	0.995	0.928	0.721
	CON2	0.784				
	CON3	0.866				
	CON4	0.790				
	CON5	0.878				
Employees	EM1	0.821	0.895	0.907	0.918	0.652
	EM2	0.741				
	EM3	0.817				
	EM4	0.845				
	EM5	0.847				
	EM6	0.879				
<b>Absorptive Capacity</b>						
Knowledge Assimilation	KAS1	0.799	0.845	0.847	0.890	0.618
	KAS2	0.861				
	KAS3	0.795				
	KAS4	0.750				
	KAS5	0.879				
Knowledge Acquisition	KAC1	0.815	0.818	0.833	0.879	0.645
	KAC2	0.823				
	KAC3	0.856				
	KAC4	0.865				
Knowledge Transformation	KT1	0.779	0.818	0.828	0.879	0.644
	KT2	0.791				
	KT3	0.801				
	KT4	0.901				
Knowledge Exploitation	KE1	0.815	0.862	0.865	0.901	0.646
	KE2	0.843				
	KE3	0.883				
	KE4	0.815				
	KE5	0.809				
<b>Innovation Performance</b>	IP1	0.758	0.750	0.750	0.843	0.573
	IP2	0.850				
	IP3	0.750				
	IP4	0.880				

Note: AVE-Average Variance Extracted; CR-Composite Reliability

**Table No 3 : HTMT Ratio**

	COM	CON	EM	EN	IP	KAC	KAS	KE	KT
COM									
CON	0.119								
CV	0.105	0.072							
EM	0.077	0.108							
EN	0.284	0.146	0.197						
IP	0.210	0.073	0.285	0.443					
KAC	0.562	0.261	0.243	0.407	0.784				
KAS	0.385	0.150	0.394	0.418	0.795	0.907			
KE	0.284	0.212	0.514	0.293	0.737	0.818	0.913		
KT	0.272	0.211	0.241	0.264	0.549	0.544	0.485	0.530	

According to Table 5, which shows that all of the VIF values for the predictors were lower than 5, as advised by (Hair et al., 2011), multicollinearity was not a problem. Using Table 5, we can see that the exogenous components (community, environment, consumers, and employees) were responsible for 35.6% of the variation in the knowledge assimilation, knowledge acquisition, knowledge transformation, and knowledge exploitation processes. It can be shown that the community, environment, consumers, and employees also contributed to the explanation of 22.8% of the variation in absorptive capacity. The variance in knowledge absorption, knowledge acquisition, knowledge transformation, and knowledge exploitation was 21.3%.

#### 4.2. Discussion

This study looked at the relationship between CSR, AC and innovative performance in the context of Pakistan manufacturing micro companies. Results of current research are presented and analyzed in the context of hypothesis. The study's findings have supported that there is positive impact of community, environment, consumers, and employees on knowledge assimilation, knowledge transformation, knowledge acquisition, and knowledge exploitation respectively. This supports the hypothesis that kinds of corporate social responsibility and kinds of absorptive capacity are related. The results show that manufacturing micro companies must teach their employees about corporate social responsibility in order to increase their capacity for absorption.

These findings are in line with prior studies (for e.g., Pham et al., 2020; Ma et al., 2021; Yusliza et al., 2020), which suggest that production micro firms must consider that will give their employees new CSR-related knowledge, skills, and abilities in order to increase their AC (Pham et al., 2019). Similar to this, offering services to the public, the environment, customers, and staff members enhances their aptitudes, expertise, and skills (Pham et al., 2019), which leads to the growth of AC (Yong et al., 2019). Knowledge assimilation, knowledge acquisition, knowledge transformation, and knowledge exploitation make up AC. When analyzing the causes of AC (Ma et al., 2021) produced empirical proof that the service supplied to workers causes absorptive capacity. The results of the study also confirmed the link between CSR and absorptive

ability. Notably, there is little evidence to support the hypothesis that CSR and absorptive capacity are related. The study's results also supported a link between absorptive ability and other factors. When the staff members are knowledgeable, skilled, and competent in CSR.

Initiatives or routines that they will be more likely to engage in the AC (Yusliza et al., 2020). The results of the current study support the claim made above. It was also found that kinds of absorptive capability has positive impact on innovative performance. The earlier investigations provide support for these results. For instance, (Elshaer & Azazz, 2021) claimed that from the standpoint of the manufacturing micro Firms, employee absorptive ability resulted innovative performance. It was determined that there is a positive correlation between corporate social responsibility and absorptive power. These findings are supported by past research. The findings of the current study are strengthened by the results of Umrani et al. (2020), Naz et al. (2021) & Ojo et al. (2020), who also reported a positive relationship impact of knowledge acquisition, knowledge assimilation, knowledge exploitation, knowledge transformation, and innovation performance.

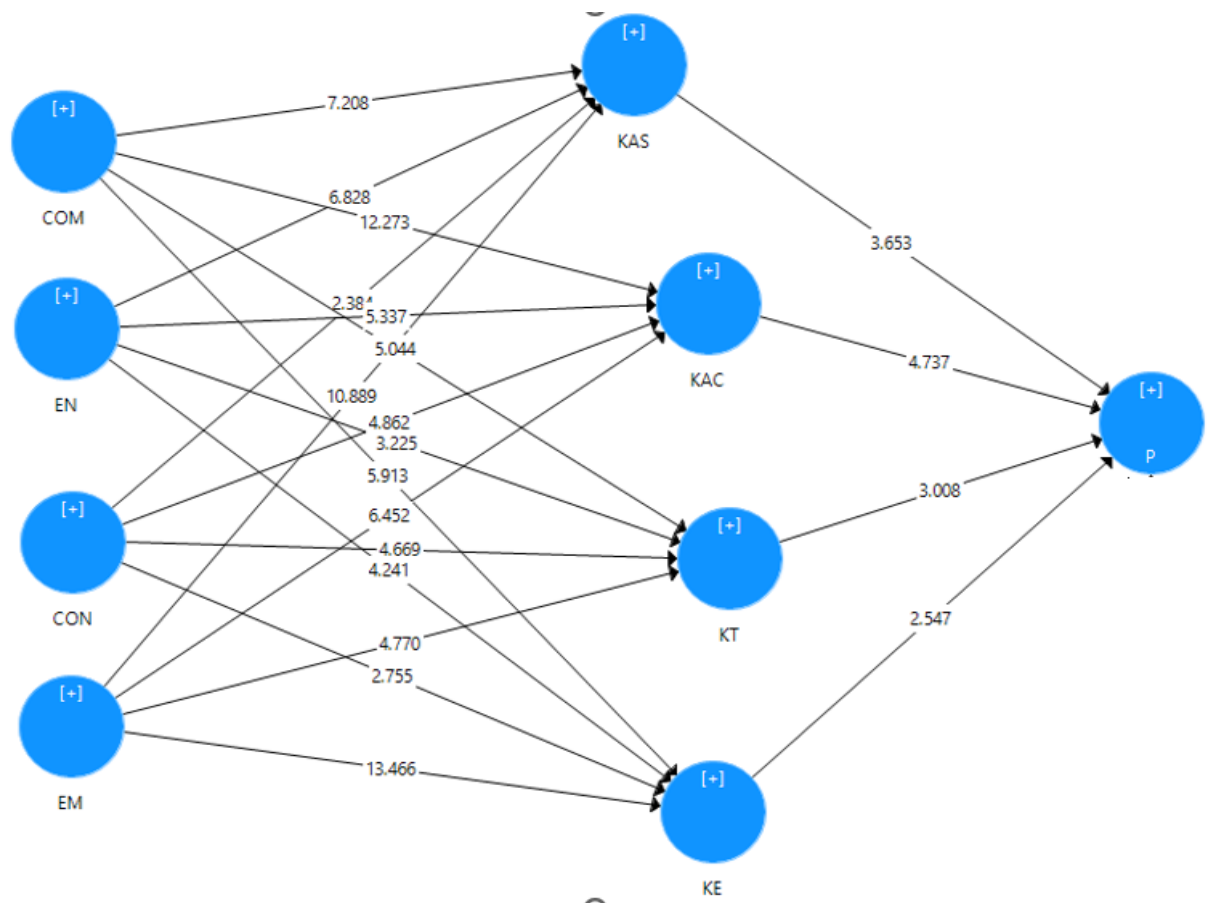
**Table No 4: Path Analysis**

Relationships	Beta	t-value	BC L.L	U.L	Decision
	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values
COM -> AC	0.445	0.439	0.036	12.273	0.000
COM -> KAS	0.277	0.278	0.038	7.208	0.000
COM -> KE	0.222	0.225	0.038	5.913	0.000
COM -> KT	0.208	0.210	0.041	5.044	0.000
CON -> KAC	0.234	0.233	0.048	4.862	0.000
CON -> KAS	0.109	0.111	0.046	2.384	0.017
CON -> KE	0.150	0.152	0.055	2.755	0.006
CON -> KT	0.197	0.203	0.042	4.669	0.000
EM -> KAC	0.218	0.220	0.034	6.452	0.000
EM -> KAS	0.353	0.355	0.032	10.889	0.000
EM -> KE	0.465	0.466	0.035	13.466	0.000
EM -> KT	0.212	0.212	0.044	4.770	0.000
EN -> KAC	0.217	0.220	0.041	5.337	0.000
EN -> KAS	0.296	0.296	0.043	6.828	0.000
EN -> KE	0.207	0.205	0.049	4.241	0.000
EN -> KT	0.151	0.150	0.047	3.225	0.001
KAC -> IP	0.272	0.276	0.057	4.737	0.000

KAS -> IP	0.235	0.227	0.064	3.653	0.000
KE -> IP	0.172	0.169	0.067	2.547	0.011
KT -> IP	0.128	0.135	0.042	3.008	0.003

Accordingly, the results of the current study also showed that kinds of absorptive capacity affects the innovative performance. According to the results of the current study, competence is built and facilitated inside the organization by sustaining CSR, which helps with absorptive capacity. It is important to highlight that employee knowledge, aptitude, and attitude are all crucial components of absorptive ability and work together to enhance employee competence and attitude (Yusoff et al., 2019).

Figure No 1: Research Model with values of R<sup>2</sup>



Tefera and Hunsaker (2020), for instance, presented proof that people would be more driven to work in a creative manner if they had the necessary information, skills, and organizational processes and procedures.

Table No 5: R<sup>2</sup>, f<sup>2</sup>, and VIF.

	R Square	R Square Adjusted	F Square	VIF
<b>Innovation Performance</b>	0.487	0.480	0.016	2.617
<b>Knowledge Acquisition</b>	0.391	0.385	0.054	1.773
<b>Knowledge Assimilation</b>	0.342	0.335	0.032	1.791
<b>Knowledge Exploitation</b>	0.358	0.352	0.020	2.001
<b>Knowledge Transformation</b>	0.169	0.160	0.024	1.620

## 5. Conclusion

The current study is a significant contribution to the body of knowledge on enhancing corporate social responsibility, particularly in the context of Pakistani manufacturing micro companies. Employees of manufacturing businesses were shown to have an association between Absorptive capability and the function of corporate social responsibility. In conclusion, manufacturing micro-enterprises may increase their capacity for assimilation by employing CSR-conscious personnel, catering for the needs of the community, the environment, and customers, as well as managing the workforce. According to the research, absorptive capacity acts as a motivator to help employees believe they are capable of performing particular absorptive capabilities since they have the ability to assimilate, acquire, convert, and utilize information. This will ultimately lead to absorptive capacity, which will eventually contribute to increased innovation performance.

### 5.1. Implications

With the help of this study, it is advised that in order to improve absorptive ability, corporate social responsibility (with dimensions) should be accepted and followed. Corporate social responsibility demands that managers of manufacturing companies use online forums for the production process. By doing this, the consumption of paper will be decreased, which will ultimately result in a significant decrease in the cutting down of trees. They must also complete online interviews, which reduces their need for gasoline and energy and lowers their carbon footprints. As a result, firms' manufacturing practices may be enhanced and brought more closely in line with environmental sustainability. In addition to reframing the manufacturing process from the standpoint of cleaner production, it is also recommended that employees of manufacturing micro enterprises may get online training. This might help cut down on energy waste and travel-related carbon emissions.

### 5.2. Theoretical implications

This work has implications from a theoretical standpoint. It has been suggested in the past that studies on corporate social responsibility and absorptive capacity are lacking, however, because it is difficult to determine how corporate social responsibility affects absorptive capacity with including at least some mediating variable (Pham et al., 2019).

The current study makes an important contribution to the body of literature since it addresses the problem of absorptive capacity in the services industry, particularly in the manufacturing micro-enterprises that are dealing with a number of difficulties. Few studies have been done on AC with regards to environmental management (Yusoff et al., 2019), but those that have been done have mostly identified it as a factor in innovation performance (Malik, McFadden, Elharake, & Omer, 2020; Yusliza et al., 2020; Yusoff et al., 2019). In addition to examining the absorptive capacity (dimensions) from the IP standpoint, this study also improved our knowledge of how it influences employee behaviors rather than producing absorptive capacity directly.

### **5.3. Practical implications**

Our research has various applications for manufacturing microbusinesses. The results of the study have suggested that corporate social responsibility is a crucial strategy for increasing AC. As a result, manufacturing microbusinesses must give their staff member's opportunity to learn about environmental efforts and practices. Additionally, manufacturing microbusinesses must provide their staff member's chances to put the lessons they have acquired during the guidelines into practice. As a result of these opportunities, their environmental knowledge, skills, and abilities will advance. This will increase their capacity for absorption, which will ultimately lead to increased manufacturing microform innovation performance. Additionally, because the research has produced empirical data on the role of CSR towards absorptive ability, it can aid managers in their efforts to increase absorptive capacity. The results also assist managers in identifying and emphasizing certain actions to promote the Absorptive ability.

### **5.4 Future Research Avenues**

In the current study, just a few corporate social obligations were taken into account. Future research may take into account additional corporate social obligations that can increase absorptive capacity, and because absorptive capacity is a multidimensional construct, it is advised that future research explore the dimensions influencing both corporate social responsibility and absorptive capacity in order to gain better understanding of which aspect of innovation performance should be prioritized. More crucially, the study focused on increasing the absorptive capacity (with dimensions) but neglected to take staff retention into account (If they leave the manufacturing micro firms may lose their absorptive capacity). Since Pakistan's manufacturing micro industry falls under the category of high turnover sectors, it is advised that future research include retention techniques as well to maintain the absorptive capacity (Abo-Murad & Abdullah, 2019; Zainol, Amin, & Asmadi, 2015). Studying the moderating factors between the connections of absorptive



capacity is very intriguing. For future research investigations, it is suggested that generic metrics of corporate social responsibility be developed.

## 6. Reference

- Abbas, M., Raja, U., Darr, W., & Bouckenooghe, D. (2014). Combined effects of perceived politics and psychological capital on job satisfaction, turnover intentions, and performance. *Journal of management*, 40(7), 1813-1830.
- Abo-Murad, M., & Abdullah, A.-K. (2019). Turnover culture and crisis management: Insights from Malaysian hotel industry. *Academy of Strategic Management Journal*, 18(2), 1-14.
- Acevedo, J., & Díaz-Molina, I. (2021). The role of absorptive capacity in innovation and productivity in Chilean companies: An adapted CDM model across industries. *Journal of technology management & innovation*, 16(4), 22-35.
- Ajina, A. S., Japutra, A., Nguyen, B., Syed Alwi, S. F., & Al-Hajla, A. H. (2019). The importance of CSR initiatives in building customer support and loyalty: Evidence from Saudi Arabia. *Asia Pacific Journal of Marketing and Logistics*, 31(3), 691-713.
- Alavi, M., & Leidner, D. E. (2001). Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS quarterly*, 107-136.
- Alavi, M., & Tiwana, A. (2002). Knowledge integration in virtual teams: The potential role of KMS. *Journal of the American Society for Information Science and Technology*, 53(12), 1029-1037.
- Ali, B. J., Saleh, P. F., Akoi, S., Abdulrahman, A. A., Muhamed, A. S., Noori, H. N., & Anwar, G. (2021). *Impact of Service Quality on the Customer Satisfaction: Case study at Online Meeting Platforms*. Paper presented at the Ali, BJ, Saleh, Akoi, S., Abdulrahman, AA, Muhamed, AS, Noori, HN, Anwar, G.(2021). Impact of Service Quality on the Customer Satisfaction: Case study at Online Meeting Platforms. *International journal of Engineering, Business and Management*. 19(1), 225-247.
- Ali, S., Ganai, B. A., Kamili, A. N., Bhat, A. A., Mir, Z. A., Bhat, J. A., . . . Yadav, P. (2018). Pathogenesis-related proteins and peptides as promising tools for engineering plants with multiple stress tolerance. *Microbiological Research*, 212, 29-37.
- Atuahene-Gima, K. (2003). The effects of centrifugal and centripetal forces on product development speed and quality: how does problem solving matter? *Academy of management journal*, 46(3), 359-373.
- Berchicci, L. (2013). Towards an open R&D system: Internal R&D investment, external knowledge acquisition and innovative performance. *Research policy*, 42(1), 117-127.
- Buckley, P. J., Glaister, K. W., Klijn, E., & Tan, H. (2009). Knowledge accession and knowledge acquisition in strategic alliances: the impact of supplementary and complementary dimensions. *British Journal of Management*, 20(4), 598-609.
- Camisón, C., & Forés, B. (2010). Knowledge absorptive capacity: New insights for its conceptualization and measurement. *Journal of Business Research*, 63(7), 707-715.



- Carayannopoulos, S., & Auster, E. R. (2010). External knowledge sourcing in biotechnology through acquisition versus alliance: A KBV approach. *Research policy*, 39(2), 254-267.
- Chang, E. K., Guo, Y., & Xia, X. (2012). CMIP5 multimodel ensemble projection of storm track change under global warming. *Journal of Geophysical Research: Atmospheres*, 117(D23).
- Chen, C.-J., & Huang, J.-W. (2009). Strategic human resource practices and innovation performance—The mediating role of knowledge management capacity. *Journal of Business Research*, 62(1), 104-114.
- Cheung, C.-k., & Yeung, J. W.-k. (2011). Meta-analysis of relationships between religiosity and constructive and destructive behaviors among adolescents. *Children and Youth Services Review*, 33(2), 376-385.
- Choi, S. Y., Lee, H., & Yoo, Y. (2010). The impact of information technology and transactive memory systems on knowledge sharing, application, and team performance: A field study. *MIS quarterly*, 855-870.
- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative science quarterly*, 128-152.
- Crespo, N. F., Curado, C., Oliveira, M., & Muñoz-Pascual, L. (2021). Entrepreneurial capital leveraging innovation in micro firms: A mixed-methods perspective. *Journal of Business Research*, 123, 333-342.
- Daily, G. C., Polasky, S., Goldstein, J., Kareiva, P. M., Mooney, H. A., Pejchar, L., . . . Shallenberger, R. (2009). Ecosystem services in decision making: time to deliver. *Frontiers in Ecology and the Environment*, 7(1), 21-28.
- Datta, A. (2015). New urban utopias of postcolonial India: 'Entrepreneurial urbanization' in Dholera smart city, Gujarat. *Dialogues in Human Geography*, 5(1), 3-22.
- David, P. A., & Foray, D. (2003). Economic fundamentals of the knowledge society. *Policy futures in education*, 1(1), 20-49.
- Dewar, R. D., & Dutton, J. E. (1986). The adoption of radical and incremental innovations: An empirical analysis. *Management science*, 32(11), 1422-1433.
- Dyer Jr, W. G., & Panicheva Mortensen, S. (2005). Entrepreneurship and family business in a hostile environment: The case of Lithuania. *Family Business Review*, 18(3), 247-258.
- Elshaer, I. A., & Azazz, A. M. (2021). Amid the COVID-19 Pandemic, Unethical Behavior in the Name of the Company: The Role of Job Insecurity, Job Embeddedness, and Turnover Intention. *International Journal of Environmental Research and Public Health*, 19(1), 247-268.
- Ferraris, A., Santoro, G., & Dezi, L. (2017). How MNC's subsidiaries may improve their innovative performance? The role of external sources and knowledge management capabilities. *Journal of knowledge management*. 12(1), 47-59.
- Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: An organizational capabilities perspective. *Journal of management information systems*, 18(1), 185-214.

- Hair Jr, J. F., Sarstedt, M., Matthews, L. M., & Ringle, C. M. (2016). Identifying and treating unobserved heterogeneity with FIMIX-PLS: part I—method. *European Business Review*, 8, 116974-117017.
- Hair, J. F., Money, A. H., Samouel, P., & Page, M. (2007). Research methods for business. *Education+ Training*.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing theory and Practice*, 19(2), 139-152.
- Harris, R., & Yan, J. (2019). The measurement of absorptive capacity from an economics perspective: definition, measurement and importance. *Journal of Economic Surveys*, 33(3), 729-756.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing science*, 43(1), 115-135.
- Hoarau, H. (2014). Knowledge acquisition and assimilation in tourism-innovation processes. *Scandinavian Journal of Hospitality and Tourism*, 14(2), 135-151.
- Huber, G. P. (2001). Transfer of knowledge in knowledge management systems: unexplored issues and suggested studies. *European Journal of Information Systems*, 10(2), 72-79.
- Hur, W. M., Moon, T. W., & Kim, H. (2020). When does customer CSR perception lead to customer extra-role behaviors? The roles of customer spirituality and emotional brand attachment. *Journal of Brand Management*, 27, 421-437.
- Inkinen, H., Kianto, A., Vanhala, M., & Ritala, P. (2017). Structure of intellectual capital—an international comparison. *Accounting, Auditing & Accountability Journal*.
- Inkpen, A. C. (2000). Learning through joint ventures: A framework of knowledge acquisition. *Journal of Management Studies*, 37(7), 1019-1044.
- Jamali, D., Karam, C., & Blowfield, M. (2015). *Development-Oriented Corporate Social Responsibility: Volume*: Greenleaf Publishing Sheffield, UK.
- Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2005). Managing potential and realized absorptive capacity: how do organizational antecedents matter? *Academy of management journal*, 48(6), 999-1015.
- Jo, H., & Harjoto, M. (2014). Analyst coverage, corporate social responsibility, and firm risk. *Business Ethics: A European Review*, 23(3), 272-292.
- Kang, K., Lee, K.-H., Han, Y., Gao, H., Xie, S., Muller, D. A., & Park, J. (2017). Layer-by-layer assembly of two-dimensional materials into wafer-scale heterostructures. *Nature*, 550(7675), 229-233.
- Kato, M., & Zhou, H. (2018). Numerical labor flexibility and innovation outcomes of start-up firms: A panel data analysis. *Technovation*, 69, 15-27.
- Kim, S., Chen, J., Cheng, T., Gindulyte, A., He, J., He, S., . . . Yu, B. (2019). PubChem 2019 update: improved access to chemical data. *Nucleic acids research*, 47(D1), D1102-D1109.

- Kim, Y. J., Kim, W. G., Choi, H.-M., & Phetvaroon, K. (2019). The effect of green human resource management on hotel employees' eco-friendly behavior and environmental performance. *International Journal of Hospitality Management*, 76, 83-93.
- Kocks, J. N., & Raupp, J. (2015). 16 Flesh and Bone or the Integration of Perspectives in Social Network Analysis. *Political Communication in the Online World: Theoretical Approaches and Research Designs*, 248.
- Książka, P. (2016). The Benefits from CSR for a Company and Society. *Journal of Corporate responsibility and leadership*, 3(4), 53-65.
- Larrán Jorge, M., Herrera Maduena, J., & Javier Andrades Peña, F. (2015). Factors influencing the presence of sustainability initiatives in the strategic planning of Spanish universities. *Environmental Education Research*, 21(8), 1155-1187.
- Laursen, K., & Salter, A. (2006). Open for innovation: the role of openness in explaining innovation performance among UK manufacturing firms. *Strategic management journal*, 27(2), 131-150.
- Lee, P.-C., Lo, T.-P., Tian, M.-Y., & Long, D. (2019). An efficient design support system based on automatic rule checking and case-based reasoning. *KSCE Journal of Civil Engineering*, 23(5), 1952-1962.
- Lei, D., Hitt, M. A., & Bettis, R. (1996). Dynamic core competences through meta-learning and strategic context. *Journal of management*, 22(4), 549-569.
- Lewin, A. Y., Massini, S., & Peeters, C. (2011). Microfoundations of internal and external absorptive capacity routines. *Organization science*, 22(1), 81-98.
- Ma, J., Li, Y., Grundish, N. S., Goodenough, J. B., Chen, Y., Guo, L., . . . Qie, L. (2021). The 2021 battery technology roadmap. *Journal of Physics D: Applied Physics*, 54(18), 183001.
- Majchrzak, A., Cooper, L. P., & Neece, O. E. (2004). Knowledge reuse for innovation. *Management science*, 50(2), 174-188.
- Malerba, F., & McKelvey, M. (2020). Knowledge-intensive innovative entrepreneurship integrating Schumpeter, evolutionary economics, and innovation systems. *Small Business Economics*, 54(2), 503-522.
- Malik, A. A., McFadden, S. M., Elharake, J., & Omer, S. B. (2020). Determinants of COVID-19 vaccine acceptance in the US. *EClinicalMedicine*, 26, 100495.
- Martinez-Conesa, I., Soto-Acosta, P., & Palacios-Manzano, M. (2017). Corporate social responsibility and its effect on innovation and firm performance: An empirical research in SMEs. *Journal of Cleaner Production*, 142, 2374-2383.
- Mehralian, G., Nazari, J. A., Zarei, L., & Rasekh, H. R. (2016). The effects of corporate social responsibility on organizational performance in the Iranian pharmaceutical industry: The mediating role of TQM. *Journal of Cleaner Production*, 135, 689-698.
- Melnikas, B. (2010). Sustainable development and creation of the knowledge economy: the new theoretical approach. *Technological and Economic Development of Economy*, 16(3), 516-540.

- Miller, D. J., Fern, M. J., & Cardinal, L. B. (2007). The use of knowledge for technological innovation within diversified firms. *Academy of management journal*, 50(2), 307-325.
- Minor, D., & Morgan, J. (2011). CSR as reputation insurance: Primum non nocere. *California Management Review*, 53(3), 40-59.
- Mitchell, T. M. (2006). *The discipline of machine learning* (Vol. 9): Carnegie Mellon University, School of Computer Science, Machine Learning . . . .
- Mothe, C., & Nguyen-Thi, U. T. (2017). Persistent openness and environmental innovation: An empirical analysis of French manufacturing firms. *Journal of Cleaner Production*, 162, S59-S69.
- Mousa, S. K., & Othman, M. (2020). The impact of green human resource management practices on sustainable performance in healthcare organisations: A conceptual framework. *Journal of Cleaner Production*, 243, 118595.
- Muster, V., & Schrader, U. (2011). Green work-life balance: A new perspective for green HRM. *German Journal of Human Resource Management*, 25(2), 140-156.
- Naz, M., Bou-Rabee, M., Shukrullah, S., Ghaffar, A., Gungor, A., & Sulaiman, S. (2021). A review of hybrid energy technologies tenets, controls and combinational strategies. *Cleaner Engineering and Technology*, 5, 100340.
- Ojo, A. S., Balogun, S. A., Williams, O. T., & Ojo, O. S. (2020). Pulmonary fibrosis in COVID-19 survivors: predictive factors and risk reduction strategies. *Pulmonary medicine*, 2020.
- Oliveira, M., Curado, C. M., Maçada, A. C., & Nodari, F. (2015). Using alternative scales to measure knowledge sharing behavior: Are there any differences? *Computers in Human Behavior*, 44, 132-140.
- Ooi, M. K., Denham, A. J., Santana, V. M., & Auld, T. D. (2014). Temperature thresholds of physically dormant seeds and plant functional response to fire: variation among species and relative impact of climate change. *Ecology and evolution*, 4(5), 656-671.
- Paill, W., Gunczy, J., DeGasperi, G., & Kunz, G. Neufund von Parophonus hirsutulus (Dejean, 1829) und ein Bestimmungsschlüssel der Gattung für Österreich (Coleoptera: Carabidae).
- Palacios-Manzano, M., Gras-Gil, E., & Santos-Jaen, J. M. (2021). Corporate social responsibility and its effect on earnings management: an empirical research on Spanish firms. *Total Quality Management & Business Excellence*, 32(7-8), 921-937.
- Peltoniemi, M. (2015). Cultural industries: Product–market characteristics, management challenges and industry dynamics. *International journal of management reviews*, 17(1), 41-68.
- Petruzzelli, A. M., & Savino, T. (2014). Search, recombination, and innovation: Lessons from haute cuisine. *Long Range Planning*, 47(4), 224-238.
- Pham, N. T., Tučková, Z., & Jabbour, C. J. C. (2019). Greening the hospitality industry: How do green human resource management practices influence organizational citizenship behavior in hotels? A mixed-methods study. *Tourism Management*, 72, 386-399.
- Pham, Q.-V., Fang, F., Ha, V. N., Piran, M. J., Le, M., Le, L. B., . . . Ding, Z. (2020). A survey of multi-access edge computing in 5G and beyond: Fundamentals, technology integration, and state-of-the-art. *IEEE Access*, 8, 116974-117017.



- Pütz, L., Schell, S., & Werner, A. (2022). Openness to knowledge: does corporate social responsibility mediate the relationship between familiness and absorptive capacity? *Small Business Economics*, 1-34.
- Rico, P., & Cabrer-Borrás, B. (2019). Entrepreneurship, firms creation and regional performance. *European Journal of Management and Business Economics*. 8, 116974-117017.
- Ringle, C. M. (2005). SmartPLS 2.0 (M3). <http://www.smartpls.de>.
- Ringle, C. M., Sarstedt, M., & Straub, D. W. (2012). Editor's comments: a critical look at the use of PLS-SEM in "MIS Quarterly". *MIS quarterly*, iii-xiv.
- Rooney, D., Hearn, G., & Kastle, T. (2012). Knowledge is people doing things, knowledge economies are people doing things with better outcomes for more people. In *Handbook on the knowledge economy, volume two* (pp. 1-14): Edward Elgar Publishing.
- Saeidi, S. P., Sofian, S., Saeidi, P., Saeidi, S. P., & Saeidi, S. A. (2015). How does corporate social responsibility contribute to firm financial performance? The mediating role of competitive advantage, reputation, and customer satisfaction. *Journal of Business Research*, 68(2), 341-350.
- Santhosh, M., & Baral, R. (2015). A conceptual framework for exploring the impacts of corporate social responsibility on employee attitudes and behaviour. *Journal of Human Values*, 21(2), 127-136.
- Santoro, G., Bresciani, S., & Papa, A. (2020). Collaborative modes with cultural and creative industries and innovation performance: the moderating role of heterogeneous sources of knowledge and absorptive capacity. *Technovation*, 92, 102040.
- Schiama, G. (2011). *The value of arts for business*: Cambridge University Press.
- Schiama, G., & Lerro, A. (2014). Do Cultural and Creative Industries (CCI) matter for innovation and value creation in knowledge-based business? Aims, forms and practice of collaboration in Italy.
- Sherwood, A. L., & Covin, J. G. (2008). Knowledge acquisition in university–industry alliances: An empirical investigation from a learning theory perspective. *Journal of Product Innovation Management*, 25(2), 162-179.
- Soo, C., Tian, A. W., Teo, S. T., & Cordery, J. (2017). Intellectual capital–enhancing HR, absorptive capacity, and innovation. *Human Resource Management*, 56(3), 431-454.
- Srinaruewan, P., Binney, W., & Higgins, C. (2015). Consumer reactions to corporate social responsibility (CSR) in Thailand: The moderating effect of competitive positioning. *Asia Pacific Journal of Marketing and Logistics*, 27(4), 628-652.
- Sullivan, D. M., & Marvel, M. R. (2011). Knowledge acquisition, network reliance, and early-stage technology venture outcomes. *Journal of Management Studies*, 48(6), 1169-1193.
- Tefera, C. A., & Hunsaker, W. D. (2020). Intangible assets and organizational citizenship behavior: A conceptual model. *Heliyon*, 6(7), e04497.
- Todorova, G., & Durisin, B. (2007). Absorptive capacity: Valuing a reconceptualization. *Academy of management review*, 32(3), 774-786.





- Umrani, W. A., Channa, N. A., Yousaf, A., Ahmed, U., Pahi, M. H., & Ramayah, T. (2020). Greening the workforce to achieve environmental performance in hotel industry: A serial mediation model. *Journal of Hospitality and Tourism Management*, 44, 50-60.
- Valentina, N., & Passiante, G. (2009). Impacts of absorptive capacity on value creation. *Anatolia*, 20(2), 269-287.
- Volberda, H. W., Foss, N. J., & Lyles, M. A. (2010). Perspective—Absorbing the concept of absorptive capacity: How to realize its potential in the organization field. *Organization science*, 21(4), 931-951.
- Yli-Renko, H., Autio, E., & Sapienza, H. J. (2001). Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms. *Strategic management journal*, 22(6-7), 587-613.
- Yong, J. Y., Yusliza, M.-Y., & Fawehinmi, O. O. (2019). Green human resource management: A systematic literature review from 2007 to 2019. *Benchmarking: An International Journal*.
- Yoo, D. K., Vonderembse, M. A., & Ragu-Nathan, T. (2011). Knowledge quality: antecedents and consequence in project teams. *Journal of knowledge management*.
- Yusliza, M. Y., Yong, J. Y., Tanveer, M. I., Ramayah, T., Faezah, J. N., & Muhammad, Z. (2020). A structural model of the impact of green intellectual capital on sustainable performance. *Journal of Cleaner Production*, 249, 119334.
- Yusoff, Y. M., Omar, M. K., Zaman, M. D. K., & Samad, S. (2019). Do all elements of green intellectual capital contribute toward business sustainability? Evidence from the Malaysian context using the Partial Least Squares method. *Journal of Cleaner Production*, 234, 626-637.
- Yusoff, Y., Nejati, M., Kee, D., & Amran, A. (2018). Linking green human resource management practices to environmental performance in hotel industry. 0972150918779294.
- Zahra, S. A., & George, G. (2002). The net-enabled business innovation cycle and the evolution of dynamic capabilities. *Information systems research*, 13(2), 147-150.
- Zainol, M. M., Amin, N. A. S., & Asmadi, M. (2015). Synthesis and characterization of carbon cryogel microspheres from lignin–furfural mixtures for biodiesel production. *Bioresource technology*, 190, 44-50.
- Zhou, D., Zheng, H., Liu, Q., Lu, X., Deng, X., Jiang, L., . . . Ding, Y. (2019). Attenuated plasmodium sporozoite expressing MAGE-A3 induces antigen-specific CD8+ T cell response against lung cancer in mice. *Cancer Biology & Medicine*, 16(2), 288.
- Zhou, L., Lin, Y., Huang, Z., Ren, J., & Qu, X. (2012). Carbon nanodots as fluorescence probes for rapid, sensitive, and label-free detection of Hg 2+ and biothiols in complex matrices. *Chemical communications*, 48(8), 1147-1149.