

INVESTIGATING FACTORS THAT INFLUENCE EMPLOYEES' CREATIVITY IN MANUFACTURING ORGANIZATIONS: EMPIRICAL ANALYSIS

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Abstract

The purpose of this article is to reveal the factors influencing employees' creativity in manufacturing organizations. This study discussed important factors that contribute to enhance employees' creativity at manufacturing industries in Pakistan. Knowledge sharing, and supply chain strategy, on employees' creativity with mediating effect of motivation activities were found on previous studies. Creativity research has been generally studied in the different type of organizations; however, manufacturing businesses were not considered seriously by scholars. As a matter of fact, the lack of coherent understanding of theoretical and empirical foundations on the influence of employees' creativity in organizations. The framework of this paper has been tested empirically by collected data from 272 (employees) manufacturing industries working in Pakistan. Data analysis was performed by using Smart-PLS. This study provides a comprehensive finding analysis and discussion, to scholars, practitioners, and decision makers on the manufacturing sector.

Keywords: Knowledge Sharing, Knowledge Management, Motivation, Employees' Creativity, Manufacturing Organizations

INTRODUCTION

Previous studies paid more attention to employees' creative behaviour in different sectors, but the manufacturing industry is still lagged behind. It indicated that some factors influence employees' behaviour towards creativity: knowledge sharing, supply chain strategies, and motivation. Literature demands more studies on employees' creativity in the current turbulent, unpredictable competitive business environment to maintain their stability (Martono, Wulansari, & Khoiruddin, 2020; Wang, 2019). The literature on employees' creativity literature has embraced diverse methods and approaches. However, there is still a need for a coherent and basic knowledge of how employees' creativity works, that organizations still require researchers' intentions to develop.

The manufacturing industry of a country is considered the backbone of its economy and significantly contributing to its GDP. Therefore, employees on these organizations are considered a key element in an organization's success, and employees' creativity the critical component. Creativity is creating new valuable products, procedures, ideas, and services from that organization's employees (Tomczak, Horyn & Knosala, 2017; Zhang, Long, Wu, & Huang, 2015). To remain successful, organizations need to build a favourable culture to provide their employees a creative culture so creativity in an organisation can be nurtured (Haider, 2018; Zebal, Ferdous, Chambers, Ferdous, & Chambers, 2019). In addition Sarshar & Esfahani (2016) discussed the importance of knowledge sharing towards employees' creativity to stay competitive in the market. Scholars from previous studies argued the need to manage knowledge,

employees' motivation, rewards and compensation, performance, and supply chain strategies to enhance employees' creativity.

One of the precious source of an organisation which provides a competitive dynamic advantage in this current era is knowledge Management (Shabbir & Salaria, 2014; Sigala & Chalkiti, 2015; Studies, Islam, Khan, & Asad, 2019). The proper use and knowledge and management of knowledge can play a role like a bridge to enhance cognitive level of employees in order to nurture employee creativity in organisations. Managing proper resources for knowledge through systematic recruitment of talented and diversified, training up the resources with specific knowledge, skills, competencies, and abilities, that would be helpful for management to acquire creative minds, utilise and manage diversified knowledge in manufacturing organizations (Rauniyar, Ding & Rauniyar, 2017; Tomczak-horyń & Knosala, 2017).

Motivation is seen as a mediator in the association between supply chain strategies, knowledge sharing, and employees' creativity (Asif et al., 2020). Current study integrated social cognitive theory to explain how supportive supply chain strategies and knowledge sharing to influence employees' creativity *via* motivation. Social cognitive theory focused the phenomenon to examine at what extent to which an employees' behaviour is motivated and resolute (Journal & Sciences, 2017; Mohammed, Alhosani, Ahmad, Nasrun & Nawawi, 2019a). Motivation is defined in studies as one's own experience, satisfaction and pleasure of employees in the organization. Hence, previous studies proves that motivation has a positive effect on employee's behaviour to encourage them to work in a better way in organizations, similar to manufacturing industries. Hence, a little or no amount of intensions has been paid previously to organizational behavioural studies, including organisational culture, supply chain strategy, knowledge sharing, motivation, innovation, rewards, employee promotion, job performance and employee creativity (Journal & Sciences, 2017; Mohammed et al., 2019a). The researchers have considered supply chain strategy, knowledge sharing, and motivation on employee creativity Gounaris (2006), it is logical to assume that supply chain strategy and knowledge sharing may influence motivation (Aslam, Aslam & Ismail, 2017; Huang & Chen, 2018).

Scholars have paid more attention to environmental factors (Mohammed, Alhosani, Ahmad, Nasrun & Nawawi, 2019). Zebal, et al., (2019) explored the role of supply chain strategy and knowledge sharing in with motivation to resolve the gap towards employee creativity. Findings explored that both variables knowledge sharing and supply chain strategy considerably valuable to motivate employees. Literature illustrates that employees having high command of knowledge sharing have a tendency to find more meaning-fullness and discover unfamiliar stuff Wahab & Fairos (2019), employees' having new ideas and creative thinking, appear to have a ingenuity-oriented pattern of thinking, and ideal behaviour which an organisation is looking.

Environmental safety is now a crucial issue to be discussed by researchers for manufacturing industries. Previous literature has called for the high need for more studies to focus on employees' creativity in the manufacturing industry due to increasing environmental issues associated with manufacturing (Khan, 2016). Reducing environmental pollution in the manufacturing industry should focus on employees' creativity to produce more innovative solutions (Idris, Richard & Waziri, 2016; Shinhee Jeong, Mclean, Mclean, Yoo & Bartlett, 2017). Employees' creativity has significant importance by playing an important role while managing supply chain strategies in a creative way to starting from purchasing raw materials,

manufacturing the final products, and distribution of these products to end-users. Manufacturing industries play a fundamental role in economic development and social well-being in Pakistan.

Manufacturing industry of a country is the largest contributor to environmental pollution in any country's industrial sector (Aboelmaged, 2018; Nesheim & Jarle, 2014; Rahman, Zahid, Dirk De Clerco & Barry Wright, 2016). In the previous studies, emerged that the industrial sector of Pakistan has a significant role where is the necessary requirement to implement creative solutions and ideas and to deal with ever-increasing environmental issues (Aboelmaged, 2018; Boateng, Dzandu & Tang, 2016). Employee creativity and knowledge sharing are a rare combination of variables adopted by the manufacturing industry of Pakistan. Many of the scholars are still unsure of how important these variables are for business success (Liao & Chen, 2018; Serenko & Bontis, 2016). The recent literature targeted manufacturing industries in Pakistan to explore employees' creativity while implementing knowledge sharing and supply chain strategies (Andleeb et al., 2020a). Any initiative to minimize the industry's environmental impact is likely to improve environmental conservation and sustainable growth.

Supply chain techniques can lead to employees' creativity improvement because it is a mechanism that can introduce new instrumental steps for manufacturing organizations Antonio, Baez, & Romero, (2019) Supply Chain Techniques will also allow people to consider and adjust emerging trends in the manufacturing sector (Zaid, Jaaron & Bon, 2018). In addition, the new structure will enable organizations to be updated by introducing a rewarding system (Andleeb, Chan & Nazeer, 2019). Another aspect that may lead to improve employee creativity would be *via* trainings and development motivates employees.

The collected data will provide validation of this research that will help to boost employees' creativity in manufacturing organizations. Many other factors may be seen as the study gap of this model, such as sample collection and the combined results in different variable relations. (Bortolotti, Boscari & Danese, 2015). However, these variables have some contradictory outcomes, which will be part of this analysis later on, based on this literature-validated gap, different methodologies, and techniques. The rest of this article will be arranged as follows section 3 will introduces the formulated conceptual framework; therefore, section 4 addresses the development of hypotheses. Finally, section 5 is all about discussion and conclusion.

LITERATURE REVIEW

Employee's creativity is essential for individuals as well as organizations. That is why the emphasis has been on creativity research for more than four decades (Aboelmaged, 2018; Boateng et al., 2016). On the other hand, creativity study has been undertaken for more than 60 years and has grown exponentially in management and psychology over the last few decades (Goldring, 2011). Previous research about employees' creativity has followed complex and varying approaches (Adil, Khan & Khan, 2018). It has not been possible to establish a coherent philosophical knowledge about how employees' creativity works and is influenced in organizations. Hence, this study attempts to contribute to this gap. The researchers of this paper reviewed past literature, based on a synthesized review, to formulate an organized framework for the employee creativity, and to identify gaps exists in research to deliver a solid basis for any additional creativity research (Wu, 2017).

The behavioural studies for employee creativity dominated research for many years; hence, this study has examined the effects of Knowledge Sharing (KS) and Supply Chain Strategy (SCS) on Employees' Creativity (EC) whereas motivation is considered as a mediator. Number of studies have been done in behavioural areas and has been adopted motivational perspective to improve employee creativity. According to Amabile (1983) creativity of an individual or an employee affects their motivation, a creative employee surely would be motivated from inside which in turn affects creativity. Employees are considered to be the most productive resource of an organisation when they feel their motivation is high, only it can happen when employees are excited and satisfied at work engaged in it for the sake of learning knowledge (Amabile, 1988; Amabile, Hennessey & Grossman, 1986; S Jeong, McLean & Bartlett, 2016; Vygotsky, 1978).

Furthermore, individuals or employees of an organisation should be free to learn knowledge in an organisation either that knowledge learning or sharing is nationally or internationally and their efforts to try new cognitive mechanisms. Studies conducted on motivation influenced by examining and empirically testing the role of motivation and its importance towards employees' behaviour especially employees' creativity. There is showed significant association has been proved between of motivation and employees' creativity, knowledge sharing, supply chain strategy (Andleeb et al., 2020; Lo & Power, 2010). Therefore, expected characteristics of an organization that promotes motivation level and strategies to enhance creative achievement (Avkiran & Ringle, 2018; Lalitha, Omonaiye & Khan, 2017).

Scholar of this study has paid attention on three of the antecedents of employee creativity that were proposed in theory and also recommended by the scholars of previous studies the essential determinants of employee creativity are knowledge sharing, supply chain strategy and motivation in manufacturing industry of Pakistan. Past literature has highlighted that sufficient amount of knowledge sharing is required at all levels to boost of the motivation of employees to keep them stay tuned (Awais, Tipu & Fantazy, 2014; Kusi-sarpong, Gupta & Sarkis, 2018; Liou, Chih, Yuan & Lin, 2016). A little or no intention has been paid to explore the advantages of knowledge sharing, supply chain management, motivation and employee creativity together.

This research would be considered as one of the few studies of examining all of the formulated variables (employee creativity, supply chain management, motivation, knowledge sharing) in a single framework. The present study investigates knowledge sharing and supply chain strategies towards organizational behaviour elements behave in manufacturing organizations in Pakistan (Awais et al., 2014; Sukati, Hamid, Baharun & Yusoff, 2012). The aim of this study would made a contribution in manufacturing industry of Pakistan towards supply chain strategy, knowledge sharing towards motivation and finally as an outcome employees' creativity.

Research Questions

What are the determinants influencing employees' creativity in manufacturing industry in Pakistan?

How does motivation mediate the relationship between these factors and employees' creativity in manufacturing industry?

Hypothesis Development

In a process of exploring the importance of employee creativity for an organisation the first element from theory and past literature is knowledge sharing (Zebal et al., 2019). Knowledge sharing is considered as one of the powerful ways support employees thinking process, which is known as cognitive process of an individual, when an individual gives good food to its brain resulting the cognitive process enhances employees creative abilities (Naseem, 2017). According to Awais, et al., (2014) an employee would be many times more creative if given the access to get the diversified source of knowledge through online or *via* interactions with other employees. Additionally, knowledge sharing has is considered as one of most studied constructs to examine its role boost the level of employee creativity in individuals. When individuals from different backgrounds share their valuable knowledge whatever, they are keeping in their heads, this way both parties' brains start working actively for processing manipulation of ideas, so, the process manipulation works in a creative way producing creative ideas. Employees can use training, meetings, seminars, and website, through orientation and e-mail as a medium for knowledge sharing (Khattak, 2017; Li, Zhao & Begley, 2015). Therefore, from the support of literature review, it is hypothesised that:

H1 Knowledge sharing will have positive effect on employees' creativity.

There are collection of supply chain strategical problems that organizations could deal by knowledge sharing and nurturing employees' creativity (Zheng, Yang & McLean, 2010). The most crucial supply chain management concerns are the interchanges in logistics, dissemination network structure, supply chain strategies and information inventory management are major concerns with looking after distribution strategies (Park & Kim, 2015). Supply chain strategies generally deal with transportation planning, in other words how products will be dispatched, and the cost involved. When orders have few products, that means cost of shipment requires to take on more than the product's cost. Therefore, managers must think innovatively not to bear these cargo fees. It is necessary to think innovatively and attempt to reduce the cost by decide on the best cost-effective transportation (Nguyen, Nham, Froese & Malik, 2019; Shahzad, 2014; Tohidinia & Mosakhani, 2010). Literature of the earlier research demonstrates the rising value of employees' creativity in supply chain strategies within manufacturing industries. The researchers hypothesised on the grounds of literature review that:

H2 Supply chain strategy will have positive effect on employees' creativity.

Literature illustrates that few decades ago, researchers of behavioural studies have conducted in-depth research on motivation and its outcome in numerous industries on employees and managers (Awais et al., 2014; Kuisarpong et al., 2018; Liou et al., 2016). Aslam, et al., (2017) suggested that motivated employees found more active energetic, enthusiastic towards sharing knowledge with others in the organizations. Successful organization found that they followed training and development processes, rewards and compensation plans, and active in implementing the tools for knowledge management and knowledge sharing to keep their employees motivated. Motivated employees of an organization more loyal employees than others. For a successful organization it is necessary to recognize employees by introducing attractive salaries and rewards systems (Jalilvand, 2017). Motivation is positively related to

knowledge sharing. Motivated employees are much more willing towards sharing knowledge that is beneficial and valuable to the organization and other employees. Positive knowledge sharing would be helpful to motivate employees therefore, the motivated employees tend to share more knowledge. The review of literature supports the hypothesis H3 as have a positive relationship between knowledge sharing and motivation.

H3 Knowledge sharing will have positive effect on motivation.

Supply chain strategy is described as the activity in which organizations aggressively participates in proper planning of supply chain processes (Kusisarpong et al., 2018). This article, discusses that supply chain strategy constantly begins with the planning (Kusisarpong et al., 2018). Also, literature underlines the significance of supply chain strategy on motivation to support improving supply chain strategies. Instead, depending on manufacturing firms' motivations, it could become important to employ these strategies (Gjurasic & Markovic, 2017; Mohammed, Alhosani, Ahmad, Nasrun & Nawi, 2019b). Kukreja (2017) argued that encouraged business procedures and supply chain strategies are supported by management free hand. The motivation is the consequence of the environmental circumstances and the characteristics of an individual (Mirzaee & Ghaffari, 2018), it could be presumed that motivation is shaped by supply chain strategy (Chatterjee, Pereira & Bates, 2018). This study concludes a positive association of supply chain strategy towards motivation therefore, it is hypothesised that:

H4 Supply chain strategy will have positive effect on motivation.

Motivation is a desire for individuals to participate in activities that they find interesting, enjoyable, and rewarding (Martins & Martins, 2002; Mittal & Dhar, 2015). Three sources of motivation were defined by motivational research: a need for accomplishment, a need for power, and a need for association (Xie & Paik, 2018). The need for accomplishment is a dedication to success and a willingness to demonstrate expectations of performance and a need to gain recognition, status, and a sense of personal achievement (Iqbal, Ijaz, Latif & Mushtaq, 2015). The employees working in manufacturing units tend to work individually or with the once whom they feel comfortable, and they share preferences for learning that line up their creativity, problem solving skills, and achievements (Hussain & Hasan, 2018). The employees who are power seekers, pursue status and credibility to be satisfied with their authority's exercise (Shinhee Jeong et al., 2017), Employees of manufacturing industries prefer to follow their own individualistic goals, such as achieving leadership and political roles (Ali, Ali, Leal-rodriquez, & Albort-morant, 2019; Manus & Mulhall, 2016). Eventually, the need for association refers to the need to develop relationships with others that are warm and cooperative. People with clear reasons for affiliation appear to be loyal and helpful in their relationships (Kusisarpong et al., 2018). Research has found that workers with high association motivations perform best in teams made up of cooperative workers and appear as more creative. The literature review brings this scholar at a point to find a positive association of motivation towards employee creativity.

H5 Motivation will have positive effect on employees' creativity.

Motivation is defined as participating in an activity to have enjoyment and fulfilment for its own sake (Iqbal et al., 2015). While motivation has been shown to have optimistic impact on

behaviour, little consideration was paid to examine knowledge sharing in employees. Researchers have argued that motivation research required significant consideration to the factors like knowledge sharing, supply chain strategies (Andleeb, 2017). To bridge the gap that researchers observed in literature of knowledge sharing and motivation towards employee creativity (Ali et al., 2019) as per forecasted findings, knowledge sharing and employees creativity significantly predicted that relationship would perform better if motivation mediates the relationship. Previous studies showed that people having high command on knowledge sharing have a tendency to find more meaning fullness and discover unfamiliar stuffs. Literature hypothesized that individuals who are open to have different experiences with tendency to have a diversified model of feelings, thoughts, and behaviours are encouraging for motivation (Kusisarpong et al., 2018). It finds that motivation works as a positive mediator, it is hypothesised that:

H6 Motivation mediates the relationship between Knowledge Sharing and Employees' Creativity.

Numerous scholars show their concerns about individual's creativity exhibition of organizational outcome (Bai, Lin & Ping, 2016). Bandura(1977)emphasized that creativity can be viewed gathering and formulating new ideas in services, processes, and products developed by individuals in the process of sharing the collaborative thoughts developed by employees in an organization where they collaborate with others. Hassan & Din (2019) proposed that organizations can enhance their employees' creative ability by providing a conducive working environment with motivation between supply chain strategies and employees' creativity. Creative employees often need to pay more attention, be brave, and persevere in their work due to the difficulty and danger of failure (Chaubey & Sahoo, 2018). So, encouraging employees trust in this aspect is becoming a crucial factor that affects employees' creativity.

Knowledge is crucial for employees' creativity in the growth of an organization and its employees learning and new techniques, problems solving, developing basic competencies, and starting new circumstances (Iqbal et al., 2015). Knowledge from diverse approaches serves as a fundamental element for creativity in an organization; though, the first necessity is to share knowledge between employees and share their knowledge with other individuals. Aslam, et al., (2017) argued that Knowledge should be viewed as a valuable asset for an organization's progress that is shared by individual employees and then considered it as the organizational property. The literature discussion concludes that knowledge is considered important and powerful, but it requires to be effectively exchanged. Therefore, this research aims to explore the findings of previous studies while collecting the data from industry to test the findings empirically. Tra (2018) observed that knowledge sharing has been shown to create a team knowledge atmosphere that promotes diverging team thinking and creativity. Knowledge sharing is important in every sector, such as manufacturing sector because they need quick information and knowledge exchange to generate new ideas that, in turn, satisfy customers (Aboelimged, 2018; Tseng, Cheng & Gao, 2020). The empirical study of Khattak (2017) also suggested that knowledge sharing should enhance students' creative output, especially in the perspective of tourism and hospitality management. We therefore suggest the following hypothesis:

H7 Motivation mediates the relationship between Supply Chain Strategy and Employees' Creativity.

Conceptual Framework

Based on the literature evaluation, a conceptual framework is designed to explore the factors influencing employees' creativity, knowledge sharing, supply chain strategy with mediating effect of motivation were tested towards employees' creativity (see Figure 1).

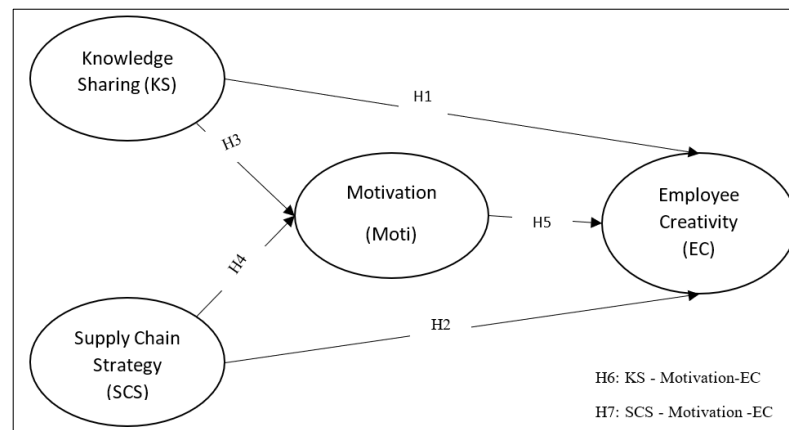


FIGURE 1
RESEARCH FRAMEWORK

METHODOLOGY

The research is based on primary data which was collected through online questionnaire from 172 selected manufacturing companies in Pakistan. There are four variables in this framework. Total number of questionnaire items for all variables are 34 in this study. Five-point Likert scale used to get responses from respondents “1” being Strongly Disagree to “5” being Strongly Agree. Due to the COVID19 pandemic, data were collected using online survey, where physical visits were impossible, and paper exchanging was not welcomed at all. Random sampling techniques were used for data collection. Further for this technique every respondent has equal opportunity to be selected. There are 540 number of employees were sent the link of online questionnaire to the employees of selected 172 manufacturing companies. Returned and the useable were found 320 for final analysis. To confirm the reliability of the measurements of items of the constructs the reliability test was performed by using SmartPLS-3 and conducted Cronbach's alpha, reliability coefficient.

Instrumentation

The questionnaire of this study was consisted of four sections. Each of the section used of one construct. The questionnaire of this study was comprised 34 questions for the measuring four variables adapted and adopted from the relevant studies. It improves the validity and reliability measurements.

Knowledge Sharing

Knowledge sharing construct were measured using the adapting scale from the study of Vuori & Okkone (2012) with nine items at 5-point Likert scale.

Supply Chain Strategy

This study measured supply chain strategy by adapting the scale from the study of (Lo & Power, 2010) with eight items at 5-point Likert scale.

Employee Creativity

This study measured employees creativity by adapting the scale from the study of (Oldham & Cummings, 1996) with seven items at 5-point Likert scale.

Motivation

Knowledge sharing construct were measured using the adapting scale from the study of (Maduka & Okafor, 2014), with ten items at 5-point Likert scale.

DATA ANALYSIS AND FINDINGS

Normality of data were obtained from SPSS by removing five-cases. After performing the normality (n=320) data was proceeded form correlation analysis. The bivariate correlation demonstrated a significant association exist among all of the constructs (please see Table 1).

Items	Mean	SD	EC	KS	SCS	MOTI
EC1	0.807	0.095	0.823	0.145	0.151	0.187
EC2	0.804	0.089	0.816	0.102	0.194	0.19
EC3	0.807	0.105	0.814	0.155	0.205	0.25
EC4	0.818	0.088	0.84	0.075	0.122	0.167
EC5	0.75	0.1	0.768	0.119	0.093	0.129
EC6	0.746	0.096	0.77	0.103	0.11	0.12
EC7	0.814	0.089	0.832	0.127	0.165	0.166
KS3	0.873	0.02	0.145	0.873	0.662	0.522
KS4	0.872	0.028	0.1	0.872	0.612	0.445
KS5	0.917	0.016	0.133	0.918	0.575	0.477
KS6	0.944	0.009	0.139	0.945	0.652	0.56
KS7	0.932	0.012	0.153	0.932	0.698	0.618
KS8	0.887	0.02	0.133	0.888	0.58	0.484
KS9	0.868	0.022	0.131	0.868	0.634	0.576
SCS1	0.708	0.052	0.135	0.548	0.705	0.753
SCS2	0.787	0.032	0.06	0.55	0.788	0.543
SCS3	0.736	0.039	0.103	0.561	0.737	0.697
SCS4	0.717	0.055	0.047	0.453	0.717	0.584
SCS5	0.898	0.015	0.213	0.627	0.898	0.725

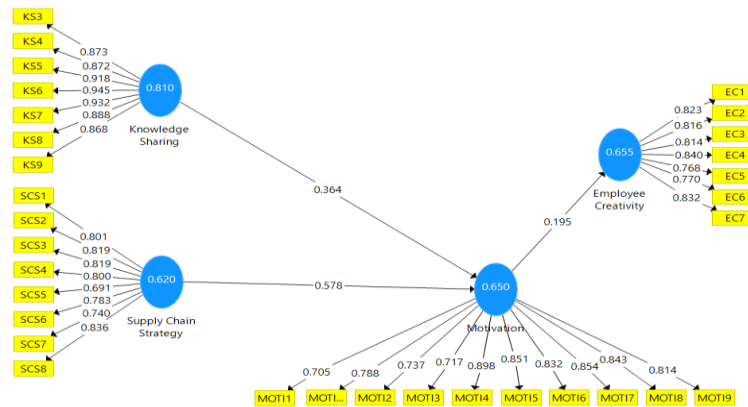
SCS6	0.852	0.022	0.208	0.618	0.851	0.67
SCS7	0.833	0.027	0.181	0.562	0.832	0.575
SCS8	0.855	0.025	0.196	0.563	0.854	0.605
Moti1	0.843	0.024	0.207	0.566	0.843	0.596
Moti2	0.812	0.032	0.191	0.59	0.814	0.575
Moti3	0.802	0.027	0.244	0.569	0.618	0.801
Moti4	0.818	0.028	0.218	0.452	0.592	0.819
Moti5	0.82	0.028	0.246	0.482	0.694	0.819
Moti6	0.802	0.032	0.17	0.462	0.664	0.8
Moti7	0.692	0.053	0.018	0.328	0.539	0.691
Moti8	0.78	0.034	0.174	0.445	0.513	0.783
Moti9	0.738	0.047	0.101	0.431	0.609	0.74
Moti10	0.836	0.028	0.211	0.513	0.714	0.836
Cronbach's alpha			0.914	0.961	0.912	0.939
Composite reliability			0.93	0.968	0.929	0.942
AVE			0.655	0.81	0.62	0.62

Exploratory Factor Analysis

Sampling adequacy were obtained by separated (n=97) samples for EFA, from the main sample (n=320) which is used (CFA) measurement and structural model as proposed by (Prooijen et al., 2001). Exploratory Factor Analysis (EFA) obtained by Varimax rotation and to get KMO value above the cut-off criteria 0.60, Bartlett's tests was used the Sphericity test showed significant values.

Confirmatory Factor Analysis

Confirmatory factor analysis obtained by following two steps, first is measurement model and second structural model. To confirm the hypothesis and mediation of this study Smart-PLS3 has been used. To specify the convergent reliability and internal consistency of the constructs, three tests from measurement model conclude the loading of the item, the Composite Reliability (CR), Cronbach alpha and the Average Variance Extracted (AVE) of the instrument. In addition, the CR values were higher than the threshold of 0.7 but one item of Supply Chain Strategy (SCS) with loading 0.691 has been retained Joseph, et al., (2014) suggested that if the value of AVE reached to the threshold 0.5 than item of a construct with loading less than its threshold 0.7 can be retained. Further from knowledge sharing there are two items (KS1 and KS2) and from employees creativity (EC8 and EC9) were removed due to its loading below the threshold 0.7 suggested by Joseph, Hult, Christian & Marko, (2014) 20% of the items of construct can be deleted.

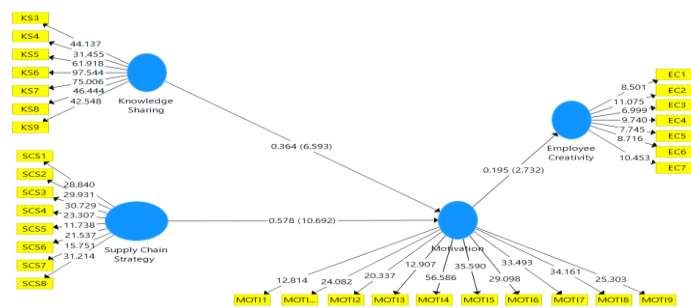


**FIGURE 2
MEASUREMENT MODEL**

According to Saunders and Mark Saunders, Lewis, and Thorn hill, (2009) algorithm test were performed to examine strength of structural model’s and quality. The results of all of the test have been confirmed satisfactory. Figure 2 shows the results and values for all variables.

As described in Table 2, discriminant validity is considered satisfactory, as each latent construct’s AVE emerged greater than its highest squared correlation with any other latent construct in the model. Figure 1, Tables1 and2 showing the outcome of measurement model evaluation. It is necessary to run data from correlation, before answering to the research questions (Almuraqab, 2019 & Almuraqab, 2021). To see the discriminant validity it is illustrated that the correlation specified that AVE’s square root should be higher than every construct of its correlation with other constructs (Fornell & Larcker 1981). The correlation matrix for inter-construct was presented in Table 1AVE square root displayed in bold:

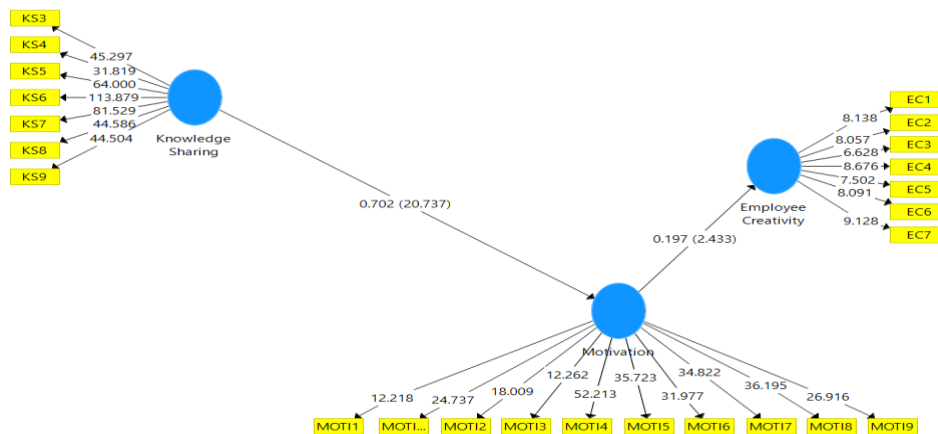
	Employees Creativity	Knowledge Sharing	Motivation	Supply Chain Strategy
Employee Creativity	0.809			
Knowledge Sharing	0.149	0.9		
Motivation	0.195	0.704	0.806	
Supply Chain Strategy	0.224	0.588	0.782	0.797



**FIGURE 3
BOOTSTRAPPING RESULT OF STRUCTURAL MODEL**

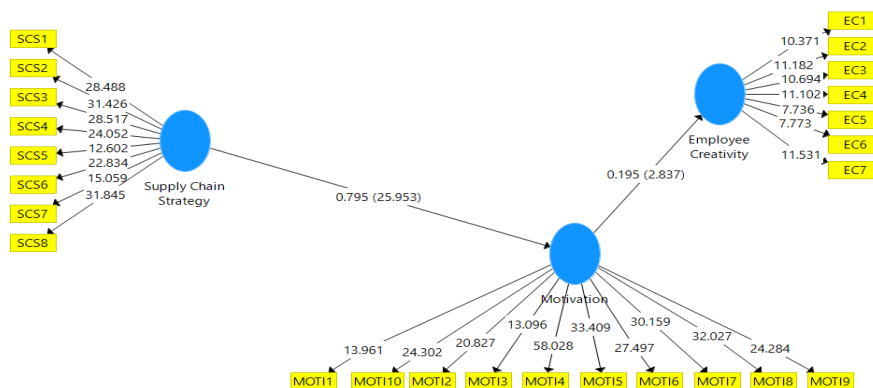
Mediation Analysis

According to Baron & Kenny (1986) mediator plays a significant role in assessing relationship between predictor variable (the dependent) and the impacting variable (the independent). Practically, a mediating effect can examine by running the model without and with mediator. Hence, motivation as a mediator was calculated run with all measures and predictor variables of employees’ creativity, along impacting variable of knowledge sharing. To run test the mediation analysis bootstrapping was used by followed (Preacher & Hayes, 2008). Mediation test illustrate that motivation mediates the relationship in knowledge sharing towards supply chain strategy and employees’ creativity.



**FIGURE 4
BOOTSTRAPPING RESULT OF MOTIVATION AS MEDIATOR WITH
KNOWLEDGE SHARING**

The results in Figure 4 illustrates that motivation is not significant mediator between knowledge sharing and employees’ creativity. The direct path t-values are (2.422), which is the satisfactory value for cut-off criteria 1.976, According to Joseph, Tomas, Christian & Marko Sarstedt (2014). This study finds the significant direct and indirect path coefficients (Preacher & Hayes, 2008) of performing the p-values and t-statistics. Section 5 discussed further findings.



**FIGURE 5
BOOTSTRAPPING RESULT OF MOTIVATION AS MEDIATOR WITH KNOWLEDGE
SHARING**

The results in Figure 5 illustrates that motivation is not significant mediator between supply chain strategy and employees' creativity. Where the direct path t-values are (0.243) which is below the tolerable threshold of 1.976 (Hair et al., 2014). Obviously, the direct and indirect path coefficients were finds to be significant confirmed by (Preacher & Hayes, 2008). Section 5discussed further findings.

S. No		Beta value	Standard error	T-Value	P-Values	Decision
H6	Knowledge Sharing →Motivation→Employee Creativity	0.138	0.057	2.422	0.016	Supported*
H7	Supply chain strategy→Motivation→Employee Creativity	0.027	0.112	0.243	0.808	Not supported

Two hypotheses are formulated to test mediation H6 and H7. According to the above discussion and analysis this study illustrated that H6 is supported and on the other side H7 is not supported, therefore it goes same with the findings of Rungtusanatham & Forza (2005) and illustrates that motivation is not a supported mediator between supply chain strategies and employees creativity. Hence it shows that motivation works as positive mediator with knowledge sharing towards employees' creativity in Pakistani manufacturing industry.

DISCUSSION

The aim of this research is to predict and improve the factors affecting employees' creativity in manufacturing industry in Pakistan. The proposed framework formulated four major variables that are common in the behavioural literature. Independent constructs, knowledge sharing, and supply chain strategy are a well-investigated variable used to explain employees' creativity in the manufacturing industry. Table 4 demonstrates the results of the hypothesis further discussion are mentioned below:

S. No	Hypothesis	Path Coefficient	P-Value	T-Value	Hypothesis Status
H1	Knowledge Sharing→Employee Creativity	0.071	0.014	2.456	Supported
H2	Supply chain strategy→Employee creativity	0.113	0.009	2.619	Supported
H3	Knowledge Sharing→Motivation	0.364	0	6.593	Supported
H4	Supply chain strategy→Motivation	0.578	0	10.69	Supported
H5	Motivation→Employee creativity	0.195	0.007	2.732	Supported

* $P \leq 0.05$.

** $P \leq 0.01$

This study determined motivation as mediator to predict at which level it influences employees' creativity. Additionally, knowledge sharing, and supply chain strategy directly positively affect employees' creativity ($\beta=0.071$, $p=0.014$, t value=2.456). The most influential construct on employees' creativity was supply chain strategy as a direct effect ($\beta=0.113$,

$p=0.009$, t value= 2.619). Respondents emphasized the significance of employees' creativity is a knowledge sharing behaviour of employees, which would enhance employees' cognitive ability. The results reflect how important it is for the manufacturing industry to intervene and support its knowledge sharing and motivation to enhance employees' creativity in manufacturing industries, which will drive them to gain more profits and sustainable position in competitive market by introducing creative products as to fulfil customers' demands as first.

Undeniably, as explained earlier, one of the hindering factors influencing employees' creativity in the manufacturing industry is the absence of knowledge sharing. The second significant factor was supply chain strategy ($\beta=0.113$); in fact, the data analysis explored that the respondents manufacturing industry of Pakistan highlighted the importance of employees' creativity as useful as a major factor in organizational growth in competitive environment. Though, generally, this research opens new investigation potentials both practitioners and scholars. Besides adopting the prospective strategies for studying supply chain associations in employees' creativity.

Such assumptions illustrate a situation in developing countries where knowledge sharing, and supply chain strategies are advancing employees' use. It is highly recommended that knowledge sharing, and supply chain strategies guide the management of the manufacturing industry and government to policymaking.

CONCLUSION

Literature review illustrates that knowledge sharing, supply chain strategy towards employees' creativity and motivation is associated in HRM studies. However, majority of the scholars (Shahbaz, Rasi, Zulfakar, Ahmad & Asad, 2018), have testified and described a significant relationship of this framework variables. Implementation the proper strategies and pedagogies of knowledge sharing in an organization to enhance employee creativity. As of now the manufacturing industry has failed to seek the due intention and interest from scholars in Pakistan (Syed, 2014). The literature has paid less or no intention on knowledge sharing and supply chain strategy in manufacturing industries in Pakistan especially to enhance employee creativity. This study tries to highlight the importance of the supply chain strategy and knowledge sharing in Pakistan's manufacturing industries to the creativity of employees. The framework needed the modifications to be appropriately adopted in manufacturing industries in Pakistan. Lastly, knowledge sharing, and supply chain strategy and knowledge sharing has a significant importance in employee creativity along with motivation as a mediator. We believe that this is an important tool to involve employees of the company in the sharing of knowledge, thereby enhancing employees' creativity.

Theoretical Implications

Results of the empirical work of this paper illustrates the relevance of research model, based on employee creativity and the factors affecting employee creativity in manufacturing industry. The formulated factors that affect employees' creativity in manufacturing business are knowledge sharing, supply chain strategy and motivation. The findings indicate that knowledge sharing is the strongest factor, followed by motivation as mediator towards employee creativity.

In addition to, just being aware of knowledge sharing is not only affecting the creativity of employees of manufacturing industry but formulation of supply chain strategies as an

independent variable along also worth having combination of variables. Therefore, testing the framework in other industry and country than Pakistan is preferable to test the same framework. In other words, further studies can consider innovation, production strategies, and other variables related to employee's behaviour, salaries, incentives, promotions may be worth to see the contribution of more factors in order to evaluate the factors affecting employee creativity.

Practical Implications

While this research has been utilized for the assessment of employees' creativity in manufacturing industry, it is having some limitations, for future studies direction. Although, data has been collected from manufacturing industry, however this framework can also be utilized in other industries to examine the validity and reliability in future. The present research has been done in Pakistan; however, more experiments can also be performed in several countries having various cultures to cross-validate the results. Further, this study is valuable for government organizations and policymakers, to understand employees' creativity, which supports the formulation of a framework.

Research limitations

This research also has some boundaries like every research has. First it is existed in the data collection the sample in this paper was a modest size to present the trend of employee creativity in whole manufacturing industry in Pakistan. It might not be accurate or suitable in demonstrating the behaviour of employees in Pakistan, which let the future researchers to investigate differences between different manufacturing industries of similar categories in Pakistan or other countries. Future researchers might also investigate the relationships of other variables not assessed by this study.

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