

# Psychological Improvement in Employee Productivity by Maintaining Attendance System, CSR, Entrepreneurial Intentions and Machine Learning Behavior

**Lishidong**

Jeonju University; JinZhong University  
201901588@jj.ac.kr

**Lili**

Department of Foreign Languages, Jinzhong University.  
lili0930@live.com

**Syed Zeeshan Zafar,**

School of Economics and finance, Xi'an Jiaotong University, Shaanxi Province, Xi'an, China  
shahzeeshan18@hotmail.com

**Aqza Zia**

IBA department, Punjab University Gujranwala Campus, Pakistan  
aqsazia90@icloud.com

## Abstract

Worker efficiency is an essential part for the organizational success and affected by many factors but time theft activity along with non-compliances of corporate social responsibilities (CSR) and lack of entrepreneurial intentions are the leading causes of reduction. Thus, the present study aims to examine the impact of CSR, entrepreneurial intentions and maintains of attendance system on the worker efficiency of manufacturing industry in Malaysia. The purpose of the research also includes the mediating role of machine learning performance among the nexus of CSR, maintains attendance system and worker efficiency. This study has adopted the quantitative methods of data collection and survey questionnaires were used for gathering the data from respondents, and smart-PLS has been used for analysis. The results exposed that CSR, entrepreneurial intentions and maintains of attendance system have a positive association with worker efficiency of manufacturing industry in Malaysia. The outcomes also indicated that machine learning performance of workers positively mediates among the nexus of CSR, maintains of attendance system and worker efficiency. The results also estimated that maintains of attendance system approach has a psychological impact on worker working performances that enhance organizational efficiency and performance. This helps enforce organizational policies and regulations and improve organizational performance through accurate and consistent attendance processing.

**Keywords:** corporate social responsibilities, entrepreneurial intentions, maintains attendance system, worker efficiency, machine learning performance

*Tob Regul Sci.*™ 2021;7(6-1): 6691-6707

DOI: [doi.org/10.18001/TRS.7.6.1.3](https://doi.org/10.18001/TRS.7.6.1.3)

## Introduction

Various factors have prevailed in the market that contribute toward the worker efficiency of the manufacturing sector in Malaysia. With the emergence of entrepreneurship intentions, a significant endorsement has been seen over the efficiency of workers. It is upon the entrepreneurship intentions which have a significant proportion toward the industries because of its eminent contribution toward the country's growth. This growth is in need of entrepreneurship intentions which through a variety of determinants have ambition over the workers' productive approach (Shahid, Imran, & Shehryar, 2018). Some surroundings have an eminent proportion where the individual capabilities are more considered with a significant approach. This approach does not consider the fear of failures which thereon supports the worker potential in the manufacturing sector. This is due to the positive motivations where the starting contains the first step to be followed and the failures could be eliminated (Ng & Jenkins, 2018). With the inducement of entrepreneurship intentions, corporate social responsibility also has a significant proportion toward worker efficiency (Basheer, Muneer, Nawaz, & Ahmad, 2020). This has positive intentions over the manufacturing sector of Malaysia where worker efficiency is prevalent upon the corporate responsible structure. This structure also contains the regulative environments which have some voluntary steps where the corporate social responsibility could not be omitted (Haslam, 2018).

Although, many factors have dominance toward worker efficiency the corporate social responsibilities insert a vital role. This emerges the intentions of performance which asserts the significance of worker efficiency. It is demonstrated through the crucial role of determined CSR among many Malaysian companies. This enabled the influence of CSR on the choices of brand and response of customers which is changed by the dominance of worker efficiency (Han, Yu, Lee, & Baek, 2020). Various factors have prominence in the company structure but the working system also has an important role in organizational performance. Worker efficiency could be enhanced by the proper inducement of working systems where the attendance could be marked. This marking could bring positive results with a new generation, dual stressors, and high performance in the markets (Y. Huang, Fan, Su, & Wu, 2018). The covid-19 is also a significant factor that affects not only the health and safety of the countries (Hao, Shah, Nawazb, Barkat, & Souhail, 2020) but also affect the business activities as shown in Figure 1. The forecasted increase in the manufacturing sector is probably to expand by 4.7% supporting 4% with industrial production. As compared to other sectors, the manufacturing sector is enhanced by 4.2% in 2019 specifying a considered increment of 4.3% at the end of 2019. Some departments of the manufacturing sector also specified 6.9% of other manufactured products with a slight percentage of 3.7% among electronics and electrical manufactured products. Other chemicals, plastic, and rubber items after manufactured at 3.2 % with considerable output. This is with significant worker efficiency where other sectors could also rise by some feasible percentage. Malaysian manufacturing industry production in the year of 2020 is given in Figure 1. There are mix trends reported in manufacturing section from October, 2019 to October, 2020. The decrease in the production of manufacturing recording in Mar-20 and Apr-20 due covid-19 lockdown. While after covid-19 lockdown relaxation the production level of manufacturing company increases. The manufacturing production in Malaysia is reported 2.4% in the month of October, 2020.

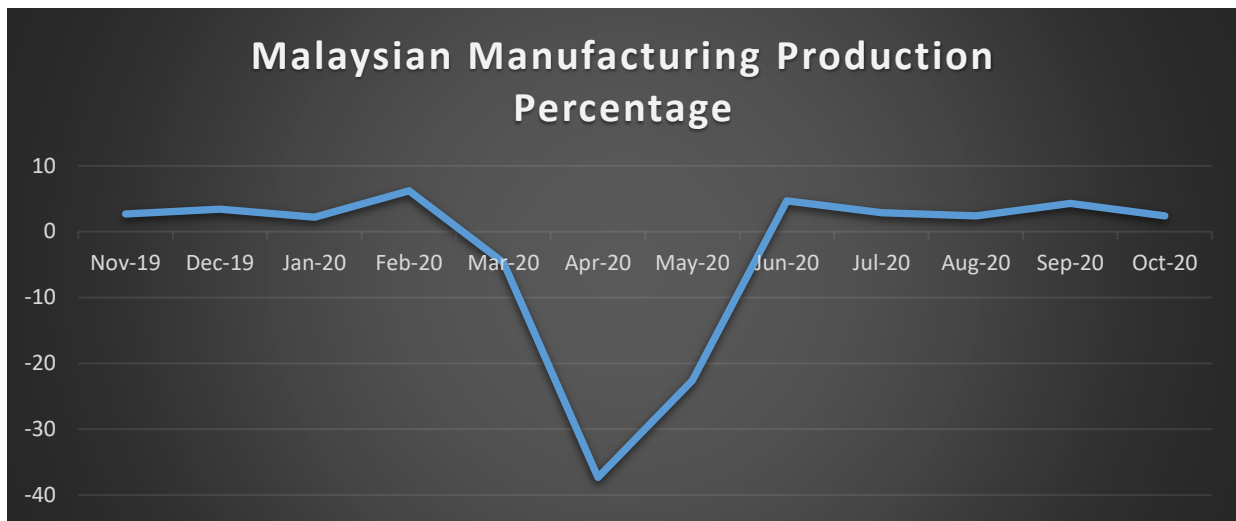


Figure 1: Malaysian Manufacturing Production

With the disclosure of the attendance system in the companies, efficiency has attained a considerable rise. Workers' attendance is considered a major factor in organizational efficiency. It not only measures the performance of a worker but also the performance of the organization as well. It is accepted that the automated attendance system has the potential to address the fake leaves and attendance issues. Using these systems in the organization is expected to control the problems related to fake leaves. It is observed in the banking sector that various sorts of workers take counterfeit leaves resulting in reducing the performance of the banks. In this advanced age, the principal thing that describes the financial output largely depends upon the administration policies. Organizations having regular and punctual workers get sustainable development in the world of business. Moreover, the presence of an effective attendance system creates an environment of trust between workers and management. The conventional attendance system is observed with an increase in attendance issues that influences organizational performance. To address these issues, the conventional system needs to be replaced with a computer-based attendance system. An automated attendance system helped the management in controlling the worker theft activities in working times. The use of a web-based attendance system in managing the performance of the workers has shown many fruitful results. It is observed that a centralized approach not only increases worker attendance but also organizational efficiency as well.

This is with the performance of boards that are working in the organizations and through the independence of multivariate implications. It could assert the practicing and disclosing approach where the shame and name could dominate in the competitive environment (Chapple, Gray, Nowland, & Sadiq, 2018). The human network in the organization has played an important role in attaining the higher performance of an organization. Therefore, technological advancements have also played a vital role. This role is positively depicted by the detection of machine learning which intervened in many issues prevailing among the organizational structures. Although, human prediction dominates but the machine learning has much considerable prediction with significant performances (Na, Geem, & Cho, 2020). The manufacturing sector in Malaysia has been grown over the last decade. The sales rise has been depicted during 2019 with 2.2% where the registered sales have been seen at 74.6 billion. This is only due to the increase in worker efficiency which has inserted innovativeness among the manufacturing sector. Malaysian products have been transported to the other world with an increase of about 6.8% other manufactured products, 5.5% fabricated products, and 2.1% electronic products comprising various manufactured products. Production in the manufacturing sector has been enhanced up to 0.3% since last year with the driving index of electricity and manufacturing with 0.5% and 2.2% respectively.

This also enhanced worker efficiency with the involvement of machine learning and technological assistance. This assistance positively constructed a feasible approach among the students as well as workers. Supervised learning models depend upon marked information for the training of the model. It is generally used to tackle identification issues. Numerous sorts of supervised learning algorithms can be utilized to solve these problems but the Convolutional neural network has got importance due to its more accurate results in identification problems. The key objective of a CNN is to describe the strategy of self-learned features. Numerous organizations use different features to mark the attendance of the workers. The attendance is marked by utilization of the Radio Frequency Identification, iris, and finger features. These frameworks are line-based which may devour additional time and are intrusive in nature. Face detection based frameworks are moderately negligent of different outward appearances. Face identification is classified into face verification and recognition. The motivation behind this model is to develop a worker attendance system that depends on face identification procedures. In this paper, we shall propose a framework that will mark the attendance of a worker by catching his facial features from the live web-based video and will match it with a already maintained database. This new framework will spend less time as compared to conventional methods.

The role has compared machine learning with the performances of students with some gaming systems to develop the eminence of knowledge (Paquette & Baker, 2019). It is also important to predict the performance and generalizability which asserts the significant enhancement of worker efficiency. Knowledge management is usually based on practical achievements which are accounted for the efficiency of workers. In most Malaysian tourism companies, worker efficiency is positively considered as a eminent management practice. This develops the procedure of accounting among the worker efficiency which could be enhanced by the production of knowledge management practices (Ritsri & Meeprom, 2020). Different resources also assert the propensity of job in companies where the front line workers are more emphasized with worker efficiency. This is taken by another view of front line worker where the demands of jobs have attained considerable rise in competitive markets (Harris, 2020). It is the holistic nature of companies that considers the workers who contribute their major role in worker efficiency. This also includes a variety of supporting elements that enhances worker efficiency in organizations.

## Literature Review

The establishment of motivation among the young entrepreneurs proceeds for successful businesses. This establishment is widely supported by the intentions of entrepreneurship which asserts a variety of dimensions to support the business. The entrepreneurship intentions also extend the state of mind that helps to up bring worker efficiency in an organization. Therefore, the significance of higher education in entrepreneurship supports the development of businesses as well as engineering technologies (Herman & Stefanescu, 2017). This is fundamental for every business to have entrepreneurship intentions because it also enhances worker efficiency in an organization. A variety of characteristics also prevail in the entrepreneurial intentions with the significance of passion. Without passion, the entrepreneurs could not develop productive workers and could also result in derailing businesses. These are the performance intentions in entrepreneurs that affect the hosts of planned performances developed in workers and affecting efficiency. This indication is formally positive for the students as well as for the entrepreneurs for the creation of passion (Karimi, 2020). Passion and intentions are interlinked with each other and increase the productiveness among entrepreneurs and workers. Therefore, the contribution with norms of entrepreneurial intentions is beneficial for worker efficiency. The contribution of university students to new businesses has been eminent in many countries especially in Malaysia. This contribution not only developed new businesses but also developed significant procedures for worker productiveness. Therefore, regarding the educational aspect among entrepreneurial intentions, self-efficacy is another determinant for worker efficiency. This is the state of mind among genders where self-efficacy is developed through educations and brings positive changes toward entrepreneurial

intentions (Nowiński, Haddoud, Lančarič, Egerová, & Czeglédi, 2019). Different introductions have been elaborated with the dominant influence of worker efficiency and worker intentions. This influence is widely stated in many organizations especially in the manufacturing sector of Malaysia.

While describing the worker productiveness and entrepreneurship intentions, the strategic approach could assert positive results. This nexus also develops the designs that are important for the creation of worker efficiency in the manufacturing sector. A strong relationship exists between entrepreneurial intentions and worker efficiency due to higher education reforms in many countries like Malaysia. These reforms are also described in the bankers of many countries while emphasizing the relationship between worker efficiency and motivation (Aderibigbe, 2017). So, the factors that are stated in the worker efficiency and entrepreneurial intentions are applied in most of the manufacturing sectors. Various consequences also occur with the ability and concentration of work to enable significant output in organizations. It is usually the burden on workers to enable a productive approach due to a lack of entrepreneurial intentions. Therefore, the productive approach is also needed in the worker with better capabilities of entrepreneurs. This reduces the burden as well as the linkage among the performanceal workers proceeding for productiveness. With the effectiveness of indirect costs and the productive burden of work, many workers suffer from high health problems (Dasari et al., 2020). This induction of entrepreneurial intentions not only covers the issues with worker efficiency but also enables productive capabilities. This is the consideration of significant increments that are initiated by the new entrepreneurs in the presence of efficiency losses in organizations.

**H1:** There is a positive association between Entrepreneurship intentions and worker efficiency.

Various influential factors are eminently described in company procedures. This contains the eminence of corporate social responsibility which brings significant change toward worker efficiency. This factor is also associated with a variety of corresponding elements that significantly influence worker efficiency. Therefore, the influential association of corporate social responsibility for the perception of consumers is highlighted with the global brands (Crespo & Inacio, 2019). Some validated relationships between corporate social responsibility and the ability to deal with corporate brands could enumerate the significance of worker efficiency. Positive relevance has been depicted among the perceptions of consumers while creating the links of emotions and sense of attachments with proper worker efficiency. Some constructive approaches are also needed in the organizations which bring an enhancement toward worker efficiency. The links of association and corporate social responsibility places a joint effect on worker efficiency. This endorsement of elements also asserts the applicability and complications with other elements related to the CSR. It is among the construction of the education system that relates with responsibility oriented and corporate social responsibility (Wang, 2018). This implementation could bring certain changes in worker efficiency and also enhances the performance of organizations. The repute of an organization usually prevails on the corporate social responsibility and the relevance of worker efficiency. The emergence of some sustainable talents and virtue could facilitate the CSR with significant norms over worker efficiency. This emergence has developed a significant relationship among voluntariness, shareholders, economic and social structure, and environments. This upbringing helps the organizations to develop efficiency goals for organizations which enables worker efficiency. Numerous elements are relatively associated with the financial decisions where the structure of corporate social responsibility inserts a dominant role. This role usually explores the relation between firm competitiveness and corporate social responsibility (Lu et al., 2020). The efficiency of satisfying the needs of consumers is significantly developed by the induction of corporate social responsibility and worker efficiency.

Various stressors are also founded in organizations where the impacts of worker efficiency are dominant. This structure of stressor indulges the expert approach to enhance worker efficiency. Although, the structure is beneficial but could also place some negative aspects in the growth of an organization. This wide interpretation of psychosocial

stressors and worker efficiency in construction is clearly depicted by the significance of industry experience and worker age (Maqsoom, Mughees, Safdar, Afsar, & Ali Zeeshan, 2018). Worker efficiency is closely associated with these elements and could not be omitted due to the prominent in industries. Variety of supports and career development with plenty of motivational support also increases worker efficiency. While inducing the worker with some varied ages, the worker efficiency has not attained considerable rise. This lack of achievement usually prevails on corporate social responsibility which is widely affecting worker efficiency. Proper inducement of corporate social responsibility could not only enhance the performance of the organization but also develop skills of productiveness. This productive approach is engaged with the performance building among the discretionary and productive efforts (Curry, Gravina, Sleiman, & Richard, 2019). Proper controls are always required in the organizations with a specification of some grouped variables. These variables must contain the significance of corporate social responsibility.

**H2:** There is a positive association between corporate social responsibilities and worker efficiency.

The developing efforts of the attendance system have enhanced the performance of an organization also helped to establish strategic decision making. It opens the broader views of the competitive market which describes the importance of worker efficiency for the economy. The performances of attendance have developed significant worker efficiency in many organizations. For online consumers, different attributes of non-attendance have placed bifurcated effects on the provisions of information (Maaya, Meulders, & Vandebroek, 2020). This development has also resulted in a loss to many organizations. Therefore, the lack of controls is resulting in frequent losses and could be countered by eminent privacy and security seals. Some Malaysian manufacturing industries have stated the influence on different formations of worker efficiency. This formation is also supported by the construction of variant emotional links as well as the corporate associations of attendance systems. Models of attendance are impacting worker efficiency certainly in positive and negative aspects. This enabling measure usually matters in the organizations to assess the inequitable dimensions among worker efficiency (Dougherty, 2018). Supportive material is always required in organizations to control mismanagements. These mismanagement controls develop higher outcomes in organizations and also state the prominence of significant worker efficiency. Many businesses are involved in the manufacturing sector which is efficacious toward the attainment of worker efficiency. Therefore, the establishment of attendance systems and their maintainability is important with certain effects that are ascertained with the conditional distribution of production. The institutions that have been developed in many countries specifying the importance of attendance systems and their maintenance are positive toward worker efficiency. Usually, the attendance system in mobile devices and its maintains have brought positive results for the increment in worker efficiency (Mohandes, 2017). The systems are considered as an eminent approach for the organizations through which proper monitoring has been established among the workers.

Where the maintenance of the attendance system states some adverse effects on the performance of worker efficiency and also states positive implications though. This inducement of positive approaches widely develops the internal and external aspects which are more sensitive for the worker efficiency. The impacts of maintains of attendance system are certain in the manufacturing sector. This dominance is for the probable controls which may cause the mismanagement in worker efficiency. This not only impacts the performance in a competitive market but also impacts the labor efficiency with the interlinked factors of turnover volatility and worker turnover (De Winne, Marescaux, Sels, Van Beveren, & Vanormelingen, 2019). Certain decreases and increases have also been depicted with the maintenance of the attendance system on worker efficiency. Numerous understandings are considered as a frontline in the organizations about maintains of attendance system. Many workers are suffering due to technological advancements and also have resulted in a probable decrease in worker efficiency. These turnover effects of advancements have specified the emergence of an attendance system that inserted strong controls over the

workers. Usually, some industries have stated the worker turnover and its understanding with emotional intelligence which links the influential factors (C. Huang, Wu, & Zhang, 2019). Mostly, the impacts are direct as well as indirect over the worker efficiency. Therefore, the maintenance of the attendance system uplifts the satisfaction among management and performance among equal workers.

**H3:** There is a positive association between maintains of attendance system and worker efficiency.

With the emergence of technological advancement, worker efficiency has started considerable rise. This rise has also uplifted the performance of organizations in international markets and the dominance of worker efficiency. The activeness of machine learning is significantly linked with technological advancement. This linkage has developed a significant rise in worker efficiency. It is the recognition of skills that are also required to be developed among the children about machine learning (Radwan, Birkan, Hania, & Cataltepe, 2017). This not only helps the children to get well acquired with the technology but also help to obtain the skillful knowledge to workers to enhance worker efficiency. Although, a variety of instances have also stated positive responses of machine learning in the workers. This also started a significant approach of skills toward the workers in enhancing the efficiency. With the effectiveness of machine learning worker efficiency has also attained different achievements in the organization. Usually, machine learning is against the disorders of performances but is designed to perform the specified tasks of reaching worker efficiency (Thabtah, 2019). This productive approach is a wide improvement among the quality, precision, and timing in organizations. Therefore, the manufacturing sector is most benefited from machine learning because of its significant enhancement and contribution to worker efficiency.

The prominence of machine learning has also diagnosed the probable effects that could disrupt production in the manufacturing sector. This consideration of diagnostics has inserted effective approaches toward human performance and the workers responsible. With the help of machine learning, different capabilities have also been achieved in a short span. Therefore, it is also important to analyze the foresight of machine learning where the human is centered with significant approaches (Crews, 2019). This has wider effects on the embracing effects on worker efficiency and corporate achievements. Many companies have enabled machine learning which enhanced worker efficiency in a short time. Certain limits are also prescribed in machine learning and human need is compulsory though. This limit states the significance of worker over the machine which supports the environmental quality over the end consumer effects. Strong impacts of the quality environment are depicted over human health due to the frequent involvement of machine learning in every sector. The knowledge of workers is also enhanced in the organizations due to the positive field testing and development of machine learning techniques (Fernandes, Carey, Bortoluzzi, & McArthur, 2019). Variety of dimensions also prevail which insert impact on the worker efficiency. These dimensions usually state the office-wide efficiency, individual efficiency, engagement, and self-assessment in organizations with machine learning performances. The models of machine learning enable various feasible techniques to uplift worker efficiency but also stated some defects. It is primarily important that human work could not be challenged with the machine with effectiveness but time constraints are dominant issues. The defects are asserted in many organizations with the workplace environments for machine and human performance. The social support for worker efficiency usually requires the stigma of self-efficacy and secure aspects of job tenure to eliminate mental disorders (Villotti et al., 2018). This enabling support could establish dominant controls on worker efficiency. The enterprise workplace significantly discusses the positive relationship between worker efficiency and machine learning performance.

**H4:** Machine learning performance positively acts as a mediator on the relationship between corporate social responsibility and worker efficiency.

**H5:** Machine learning performance positively acts as a mediator on the relationship between maintains of attendance system and worker efficiency.

### Research Methods

This research aims to examine the impact of CSR, entrepreneurial intentions and maintains of attendance system on worker efficiency, the mediating role of machine learning performance among the nexus of CSR, maintains of attendance system, and worker efficiency of the manufacturing industry in Malaysia. However, the research was conducted mainly to find out the psychological impact on worker efficiency by using facial features for the attendance in the organization along with CSR and entrepreneurial intentions. This study has adopted the quantitative methods of data collection and survey questionnaires were used for gathering the data from respondents. The workers of the manufacturing industry in Malaysia are the respondents of the study that were selected based on simple random sampling. A total of 620 questionnaires were sent to the respondents by personal visit, and after fifteen days, only 410 were received that represents about 66.13 per cent response rate.

In addition, the smart-PLS has been used for analysis because the complex model has been adopted by the study along with the hypotheses testing is the purpose of the ongoing research (Hair Jr, Babin, & Krey, 2017). This study has taken machine learning performance (MLB) as mediating variable that has five items, and worker efficiency (EP) has taken as a dependent variable that has eight items (Delmas & Pekovic, 2018). In addition, three predictors have been used by the study includes entrepreneurial intentions (EI) that has six items, maintains of attendance system (MAS) that has ten items and corporate social responsibilities (CSR) with twelve items (He & Harris, 2020). These variables along with items, are mentioned in Figure 2.

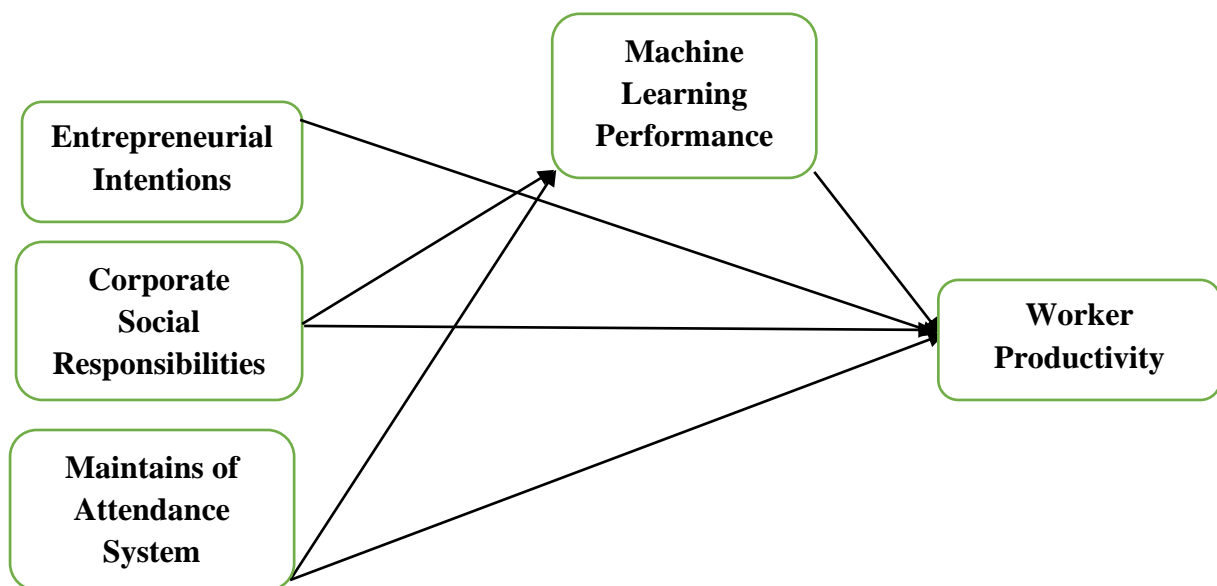


Figure 2: Research model

### Findings

The finding section shows the structural and measurement model assessment because the assessment of structural cannot be executed without the assessment of measurement model. Firstly, assessment of measurement model has been executed, and the results of convergent validity that exposed the links among the items have shown that high correlation among items because the Alpha and composite reliability (CR) values are more than 0.70 and the loadings and AVE, are more than 0.50. Thus, the results also proved the valid convergent validity and these outcomes were shown in Table 1.

**Table 1:** Convergent validity

Constructs	Items	Loadings	Alpha	CR	AVE
Corporate Social Responsibilities	CSR1	0.867	0.953	0.959	0.663
	CSR10	0.804			
	CSR11	0.772			
	CSR12	0.856			
	CSR2	0.873			
	CSR3	0.863			
	CSR4	0.851			
	CSR5	0.856			
	CSR6	0.806			
	CSR7	0.684			
	CSR8	0.766			
Entrepreneurial Intentions	EI1	0.606	0.891	0.918	0.655
	EI2	0.831			
	EI3	0.851			
	EI4	0.876			
	EI5	0.883			
	EI6	0.774			
Worker Efficiency	EP1	0.609	0.881	0.908	0.588
	EP2	0.764			
	EP3	0.870			
	EP5	0.679			
	EP6	0.850			
	EP7	0.769			
	EP8	0.794			
	Maintains of Attendance System	MAS1			
MAS10		0.573			
MAS2		0.749			
MAS3		0.752			
MAS4		0.706			
MAS5		0.698			
MAS6		0.805			
MAS8		0.742			
MAS9		0.739			
Machine Learning Performance	MLB1	0.906	0.924	0.946	0.814
	MLB3	0.900			
	MLB4	0.905			
	MLB5	0.898			

The measurement model assessment has also included the examination of discriminant validity that show the nexus among the variables. Firstly, Fornell Larcker and cross-loadings have been used to examine the discriminant validity,

and the outcomes have also shown that low correlation among variables because the values that show links with construct itself are larger than the values that show links with other constructs. Thus, the results also proved the valid discriminant validity and these outcomes were shown in Table 2 and Table 3.

**Table 2:** Fornell Larcker

	CSR	EI	EP	MAS	MLB
CSR	0.814				
EI	0.453	0.809			
EP	0.509	0.416	0.767		
MAS	0.037	0.103	0.174	0.725	
MLB	0.688	0.424	0.489	0.026	0.902

**Table 3:** Cross-loadings

	CSR	EI	EP	MAS	MLB
CSR1	<b>0.867</b>	0.388	0.476	-0.059	0.750
CSR10	<b>0.804</b>	0.408	0.387	-0.006	0.686
CSR11	<b>0.772</b>	0.350	0.288	-0.036	0.661
CSR12	<b>0.856</b>	0.350	0.446	-0.020	0.815
CSR2	<b>0.873</b>	0.385	0.461	-0.046	0.747
CSR3	<b>0.863</b>	0.387	0.439	-0.013	0.789
CSR4	<b>0.851</b>	0.379	0.438	-0.007	0.767
CSR5	<b>0.856</b>	0.349	0.448	-0.015	0.807
CSR6	<b>0.806</b>	0.382	0.439	-0.013	0.725
CSR7	<b>0.684</b>	0.351	0.333	-0.069	0.539
CSR8	<b>0.766</b>	0.357	0.385	0.005	0.684
CSR9	<b>0.751</b>	0.356	0.400	-0.101	0.657
EI1	0.258	<b>0.606</b>	0.259	-0.090	0.255
EI2	0.390	<b>0.831</b>	0.288	-0.060	0.370
EI3	0.387	<b>0.851</b>	0.308	-0.096	0.346
EI4	0.410	<b>0.876</b>	0.366	-0.083	0.369
EI5	0.398	<b>0.883</b>	0.422	-0.102	0.385
EI6	0.340	<b>0.774</b>	0.337	-0.068	0.317
EP1	0.293	0.195	<b>0.609</b>	-0.126	0.288
EP2	0.479	0.375	<b>0.764</b>	-0.170	0.444
EP3	0.432	0.376	<b>0.870</b>	-0.127	0.412
EP5	0.256	0.233	<b>0.679</b>	-0.109	0.240
EP6	0.446	0.347	<b>0.850</b>	-0.165	0.393
EP7	0.380	0.316	<b>0.769</b>	-0.082	0.405
EP8	0.380	0.331	<b>0.794</b>	-0.144	0.385
MAS1	-0.064	-0.129	-0.135	<b>0.741</b>	-0.004
MAS10	0.027	-0.048	-0.169	<b>0.573</b>	0.032
MAS2	-0.024	-0.058	-0.088	<b>0.749</b>	0.033
MAS3	0.016	-0.063	-0.091	<b>0.752</b>	0.050
MAS4	0.062	-0.030	-0.030	<b>0.706</b>	0.093

MAS5	0.026	-0.053	-0.075	<b>0.698</b>	0.053
MAS6	-0.073	-0.112	-0.162	<b>0.805</b>	-0.004
MAS8	-0.082	-0.006	-0.133	<b>0.742</b>	-0.009
MAS9	-0.046	-0.129	-0.119	<b>0.739</b>	0.001
MLB1	0.805	0.397	0.461	0.013	<b>0.906</b>
MLB3	0.802	0.368	0.425	0.033	<b>0.900</b>
MLB4	0.806	0.397	0.456	0.015	<b>0.905</b>
MLB5	0.793	0.367	0.422	0.035	<b>0.898</b>

Secondly, the Heterotrait Monotrait (HTMT) ratio has also been used to examine the discriminant validity. The outcomes have also shown that low correlation among variables because the values are lower than 0.85. Thus, the results also proved the valid discriminant validity and these outcomes were shown in Table 4.

Table 4: Heterotrait Monotrait ratio

	CSR	EI	EP	MAS	MLB
CSR					
EI	0.493				
EP	0.541	0.452			
MAS	0.085	0.115	0.177		
MLB	0.642	0.466	0.532	0.055	

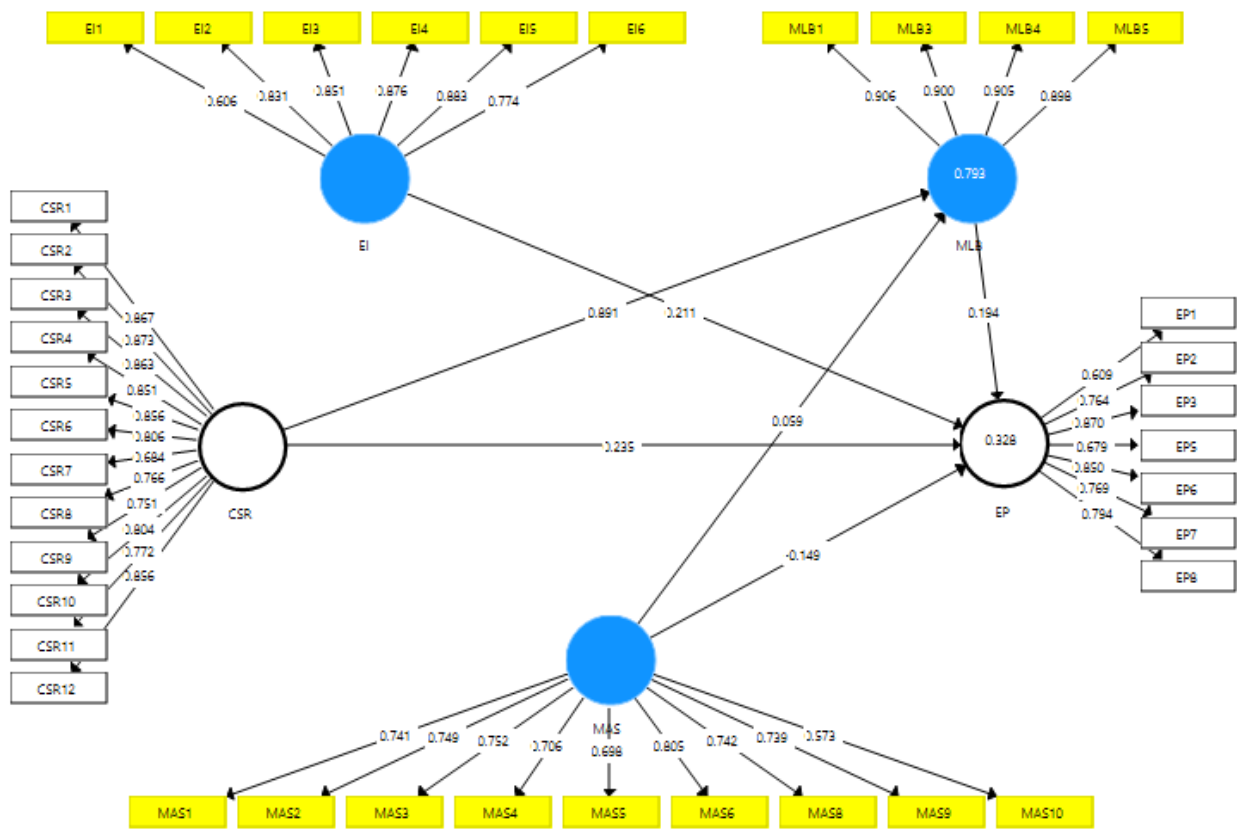


Figure 3: Measurement model assessment

The study has also executed the structural model assessment and the results exposed that CSR, entrepreneurial intentions and maintains of attendance system have a positive association with worker efficiency of manufacturing industry in Malaysia and accept H1, H2 and H3. In addition, the outcomes also indicated that machine learning performance of workers positively mediates among the nexus of CSR, maintains attendance system and worker efficiency and accept H4 and H5. These outcomes are shown in Table 5.

Table 5: A path analysis

Relationships	Beta	S.D.	T Statistics	P Values	L.L.	U.L.
CSR -> EP	0.235	0.120	1.967	0.026	0.027	0.450
CSR -> MLB	0.891	0.012	71.427	0.000	0.871	0.910
EI -> EP	0.211	0.061	3.455	0.000	0.108	0.300
MAS -> MLB	0.059	0.034	1.760	0.041	0.006	0.115
MLB -> EP	0.194	0.112	1.734	0.043	0.017	0.343
CSR -> MLB -> EP	0.173	0.100	1.733	0.043	0.015	0.307
MAS -> MLB -> EP	0.032	0.010	3.200	0.001	0.001	1.032

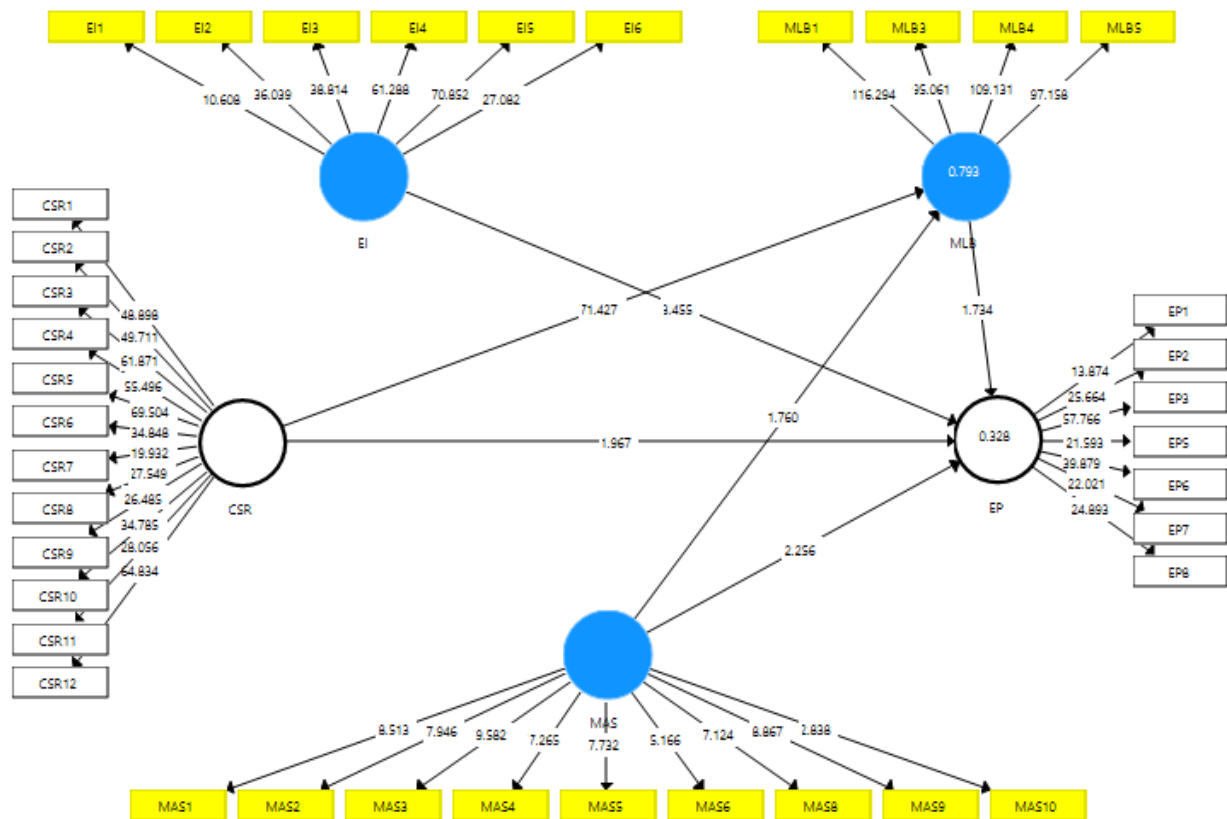


Figure 4: Structural model assessment

Finally, the results also show the R square value of the model and the figures highlighted that the 32.8 per cent variation in the worker production is due to the all the predictors used by the study. In addition, 79.3 per cent variations in machine learning performance are due to all the predictors used by the study. These results have been mentioned in Table 6.

Table 6: R Square

	Beta	S.D.	T Statistics	P Values
EP	0.328	0.040	8.193	0.000
MLB	0.793	0.020	39.273	0.000

## Discussions

The results of the ongoing study exposed that CSR have positive linkage with the worker efficiency in the organization and this outcome is similar to the results of Rupp et al. (2018) who also examined that CSR has played a vital role in the worker efficiency by improving their motivation with improving their social norms. In addition, the outcomes also indicated the entrepreneurial intentions also have a positive role on the worker efficiency in the organization, and this finding is matched with the findings of Singh and Onahring (2019) who also examined the positive nexus among entrepreneurial intentions and worker efficiency in the organization. The results are also estimated that maintains of attendance system has also played a positive role in the organization's worker efficiency. Because the computer-based attendance system has more accuracy than the conventional system, these outcomes are in line with the results of Gopala, Balaji, Rajesh, and Umamakeswari (2015) who implemented automated attendance System by using face detection. They elaborated the errors in the conventional attendance system. They urged the need of the computerized system for the organizations that improved the attendance resulting in healthy working environments. The technique is more secure and reliable and need hardware like a camera and computer. In addition, Granato, Santos, Escher, Ferreira, and Maggio (2018) used principle component analysis and linear discriminate analysis algorithms for the attendance system. They used face recognition features to mark attendance. They utilized different databases to maintain the record of enrollment. They elaborated that computer-based attendance had given more accurate results than the manual system. Akbar et al. (2018) described the machine based attendance system. They elaborated the fusion of face detection with Radio Frequency Identification (RFID) model. The model kept the record of each registered student and made comparison with existing database to mark the absence or presence of the students.

Moreover, Khatun, Haque, Ahmed, and Rahman (2015) described the use of iris features to mark attendance. The database was maintained by ensuring the unique iris features. The system automatically marked attendance using the web-based application to capture the students' eye images using iris features and compare it with the already maintained database. Poornima, SriPriya, Vijayalakshmi, and Vishnupriya (2017) used a facial recognition system for attendance. They implemented Viola-Jones and Histogram of Oriented Gradients (HOG) algorithms along with Support Vector Machine (SVM) classifier. They considered pose, scaling, occlusions and illumination for the attendance. They executed the algorithm in MATLAB and performed quantitative analysis on the values calculated through Peak Signal to Noise Ratio (PSNR) values. Cerna, Charlemaine, and Mengstie developed the attendance system by the recognition of the face. They utilized face features and positions of the students in the classroom to mark the attendance. They estimated the absence or presence of the students by constant inspection and footage. They reported that continuous inspection of students has increased attendance of the students. Hameed, Saquib, ul Hassan, and Junejo (2015) used GSM based system for attendance. They focused on face recognition features for marking the attendance. Footage of the students was used for the validation of the systems. They elaborated that the system performed better than the conventional system.

The outcomes also show that machine learning performance of the workers has positive mediates among the nexus of CSR and worker efficiency in the organization, and this could be similar to the outcomes of the Obeidat (2016) who also examined that machine learning performance of the workers could affect the CSR and worker efficiency in the organization. In addition, the results also show that machine learning performance of the workers has positive mediates among the nexus of maintains of attendance system and worker efficiency in the organization and this

could be in line with the outcomes of the Gray and Perkins (2019) who also examined that machine learning performance of the workers could affect the maintains of attendance system and worker efficiency in the organization.

### Conclusion Implications and Limitations

The study showed that attendance of workers, CSR and entrepreneurial intention had a direct relationship with organizational efficiency. Different factors have a crucial role in time management, punctuality, fake leaves, absenteeism and accountability. Time management has an impact on a worker's efficiency. Organizations having time management culture have more performance and outcome as compare to other organizations. Time management system ensures the right person at right place performing the schedule tasks. The system reduces fake leave issues and creates the psychological impact of time management among the workers. The effective implementations of CSR practices and positive entrepreneurial intention could also play a positive role in worker efficiency of the organization. This study has provided the regulators' guidelines that they should develop the policies related to the attendance system and CSR implementation that could enhance the worker efficiency in the organization and it is the essential element for the organizational success. This study should contribute to the knowledge of the existing literature related to the organizational efficiency along with worker attendance system, CSR and entrepreneurial intentions. This study also helpful for the new studies who want to examine this area in future.

This study has some limitation that could be the directions for the future studies such as the present research has taken only three predictors named as CSR, entrepreneurial intentions and maintains of attendance system to predict the worker efficiency and ignore the other factors and suggested that future studies should add more factors in their studies. In addition, this study takes machine learning performance as mediating variable and ignores the moderating role in the model and recommended that future studies should add moderator in their analysis. Moreover, ongoing research has included the workers of the manufacturing industry in Malaysia. The results of the study could not be generalized in the other industry and country and suggested that future studies add more industries or countries in their analysis. Finally, the present study has taken CSR as a whole and ignored the CSR dimensions and recommended that future studies incorporate it in their studies.

### References

- [1]. Aderibigbe, I. A. I. (2017). Relationship between Worker Motivation and Efficiency among Bankers in Nigeria. *Journal of Economics*, 8(1), 76-80. doi: 10.1080/09765239.2017.1316964
- [2]. Basheer, M. F., Muneer, S., Nawaz, M. A., & Ahmad, Z. (2020). The antecedents of corporate social and environmental responsibility discourse in Pakistan: Multiple theoretical perspectives. *Abasyn University Journal of Social Sciences*, 13(1), 1-11. doi: 10.34091/AJSS.13.1.01
- [3]. Cerna, P., Charlemaine, M., & Mengstie, M. Machine Learning Biometric Attendance System using Fingerprint Fuzzy Vault Scheme Algorithm and Multi-Task Convolution Neural Network Face Recognition Algorithm. *International Journal of Computer Applications*, 179(48), 1-6.
- [4]. Chapple, L., Gray, S., Nowland, J., & Sadiq, K. (2018). 'Name and shame' – director attendance disclosure and practice. *Journal of Corporate Law Studies*, 18(2), 311-337. doi: 10.1080/14735970.2017.1412674
- [5]. Crespo, C. F., & Inacio, N. (2019). The influence of corporate social responsibility associations on consumers' perceptions towards global brands. *Journal of Strategic Marketing*, 27(8), 679-695. doi: 10.1080/0965254X.2018.1464497
- [6]. Crews, C. (2019). What Machine Learning Can Learn from Foresight: A Human-Centered Approach. *Research-Technology Management*, 62(1), 30-33. doi: 10.1080/08956308.2019.1541725

- [7]. Curry, S. M., Gravina, N. E., Sleiman, A. A., & Richard, E. (2019). The Effects of Engaging in Rapport-Building Performances on Efficiency and Discretionary Effort. *Journal of Organizational Performance Management*, 39(3-4), 213-226. doi: 10.1080/01608061.2019.1667940
- [8]. Dasari, A., Joish, V. N., Perez-Olle, R., Dharba, S., Balaji, K., & Halperin, D. M. (2020). Work efficiency burden and indirect costs associated with carcinoid syndrome diarrhea. *Expert Review of Pharmacoeconomics & Outcomes Research*, 20(5), 507-511. doi: 10.1080/14737167.2019.1660646
- [9]. De Winne, S., Marescaux, E., Sels, L., Van Beveren, I., & Vanormelingen, S. (2019). The impact of worker turnover and turnover volatility on labor efficiency: a flexible non-linear approach. *The International Journal of Human Resource Management*, 30(21), 3049-3079. doi: 10.1080/09585192.2018.1449129
- [10]. Delmas, M. A., & Pekovic, S. (2018). Organizational configurations for sustainability and worker efficiency: A qualitative comparative analysis approach. *Business & Society*, 57(1), 216-251. doi: <https://doi.org/10.1177/0007650317703648>
- [11]. Dougherty, S. M. (2018). How Measurement and Modeling of Attendance Matter to Assessing Dimensions of Inequality. *Journal of Education for Students Placed at Risk (JESPAR)*, 23(1-2), 9-23. doi: 10.1080/10824669.2018.1438203
- [12]. Fernandes, R., Carey, D., Bortoluzzi, B., & McArthur, J. J. (2019). Development and field testing of a multi-dimensional tool for benchmarking knowledge worker efficiency. *Intelligent Buildings International*, 11(3-4), 227-247. doi: 10.1080/17508975.2019.1674625
- [13]. Gopala, M., Balaji, K., Rajesh, K., & Umamakeswari, A. (2015). Implementation of Automated Attendance System using Face Recognition. *International Journal of Scientific & Engineering Research*, 6(3), 1-15.
- [14]. Granato, D., Santos, J. S., Escher, G. B., Ferreira, B. L., & Maggio, R. M. (2018). Use of principal component analysis (PCA) and hierarchical cluster analysis (HCA) for multivariate association between bioactive compounds and functional properties in foods: A critical perspective. *Trends in Food Science & Technology*, 72, 83-90. doi: <https://doi.org/10.1016/j.tifs.2017.12.006>
- [15]. Gray, C. C., & Perkins, D. (2019). Utilizing early engagement and machine learning to predict student outcomes. *Computers & Education*, 131, 22-32. doi: <https://doi.org/10.1016/j.compedu.2018.12.006>
- [16]. Hair Jr, J. F., Babin, B. J., & Krey, N. (2017). Covariance-based structural equation modeling in the Journal of Advertising: Review and recommendations. *Journal of Advertising*, 46(1), 163-177. doi: <https://doi.org/10.1080/00913367.2017.1281777>
- [17]. Hameed, S., Saquib, S. M. T., ul Hassan, M., & Junejo, F. (2015). Radio frequency identification (RFID) based attendance & assessment system with wireless database records. *Procedia-Social and Performanceal Sciences*, 195, 2889-2895. doi: <https://doi.org/10.1016/j.sbspro.2015.06.414>
- [18]. Han, H., Yu, J., Lee, K.-S., & Baek, H. (2020). Impact of corporate social responsibilities on customer responses and brand choices. *Journal of Travel & Tourism Marketing*, 37(3), 302-316. doi: 10.1080/10548408.2020.1746731
- [19]. Hao, W., Shah, S. M. A., Nawazb, A., Barkat, M. Q., & Souhail, A. (2020). COVID-19 Epidemic Spread and the Impact on Public Health & Safety Policy: An Analysis of the Adoption of Preventive Measures and Effective Management: Evidence from Pakistan. *Revista Argentina de Clínica Psicológica*, 29(4), 722-736. doi: 10.24205/03276716.2020.877
- [20]. Harris, E. G. (2020). Another look at frontline worker efficiency propensity: a job demands – resources approach. *Journal of Marketing Theory and Practice*, 28(3), 318-329. doi: 10.1080/10696679.2020.1763810

- [21]. Haslam, P. A. (2018). Beyond voluntary: state–firm bargaining over corporate social responsibilities in mining. *Review of International Political Economy*, 25(3), 418-440. doi: 10.1080/09692290.2018.1447497
- [22]. He, H., & Harris, L. (2020). The impact of Covid-19 pandemic on corporate social responsibility and marketing philosophy. *Journal of Business research*, 116, 176-182. doi: <https://doi.org/10.1016/j.jbusres.2020.05.030>
- [23]. Herman, E., & Stefanescu, D. (2017). Can higher education stimulate entrepreneurial intentions among engineering and business students? *Educational Studies*, 43(3), 312-327. doi: 10.1080/03055698.2016.1277134
- [24]. Huang, C., Wu, K., & Zhang, Y. (2019). Understanding precedents for frontline worker turnover in luxury hotels: Emotional intelligence as a unifying factor. *Journal of Human Resources in Hospitality & Tourism*, 18(1), 26-46. doi: 10.1080/15332845.2019.1526504
- [25]. Huang, Y., Fan, D., Su, Y., & Wu, F. (2018). High-performance work systems, dual stressors and ‘new generation’ worker in China. *Asia Pacific Business Review*, 24(4), 490-509. doi: 10.1080/13602381.2018.1451127
- [26]. Karimi, S. (2020). The role of entrepreneurial passion in the formation of students’ entrepreneurial intentions. *Applied Economics*, 52(3), 331-344. doi: 10.1080/00036846.2019.1645287
- [27]. Khatun, A., Haque, A. F., Ahmed, S., & Rahman, M. M. (2015). *Design and implementation of iris recognition based attendance management system*. Paper presented at the 2015 International Conference on Electrical Engineering and Information Communication Technology (ICEEICT).
- [28]. Lu, J., Ren, L., Yao, S., Qiao, J., Mikalauskiene, A., & Streimikis, J. (2020). Exploring the relationship between corporate social responsibility and firm competitiveness. *Economic Research-Ekonomska Istraživanja*, 33(1), 1621-1646. doi: 10.1080/1331677X.2020.1761419
- [29]. Maaya, L., Meulders, M., & Vandebroek, M. (2020). Online Consumers’ Attribute Non-Attendance Performance: Effects of Information Provision. *International Journal of Electronic Commerce*, 24(3), 338-365. doi: 10.1080/10864415.2020.1767429
- [30]. Maqsoom, A., Mughees, A., Safdar, U., Afsar, B., & Ali Zeeshan, B. u. (2018). Intrinsic psychosocial stressors and construction worker efficiency: impact of worker age and industry experience. *Economic Research-Ekonomska Istraživanja*, 31(1), 1880-1902. doi: 10.1080/1331677X.2018.1495571
- [31]. Mohandes, M. A. (2017). Class Attendance Management System Using NFC Mobile Devices. *Intelligent Automation & Soft Computing*, 23(2), 251-259. doi: 10.1080/10798587.2016.1204749
- [32]. Na, K.-S., Geem, Z. W., & Cho, S.-E. (2020). Machine learning-based prediction of persistent oppositional defiant performance for 5 years. *Nordic Journal of Psychiatry*, 74(7), 505-510. doi: 10.1080/08039488.2020.1748711
- [33]. Ng, L., & Jenkins, A. S. (2018). Motivated but not starting: how fear of failure impacts entrepreneurial intentions. *Small Enterprise Research*, 25(2), 152-167. doi: 10.1080/13215906.2018.1480412
- [34]. Nowiński, W., Haddoud, M. Y., Lančarič, D., Egerová, D., & Czeglédi, C. (2019). The impact of entrepreneurship education, entrepreneurial self-efficacy and gender on entrepreneurial intentions of university students in the Visegrad countries. *Studies in Higher Education*, 44(2), 361-379. doi: 10.1080/03075079.2017.1365359
- [35]. Obeidat, B. Y. (2016). Exploring the relationship between corporate social responsibility, worker engagement, and organizational performance: The case of Jordanian mobile telecommunication companies. *International Journal of Communications, Network and System Sciences*, 9(09), 361-375. doi: 10.4236/ijcns.2016.99032

- [36]. Paquette, L., & Baker, R. S. (2019). Comparing machine learning to knowledge engineering for student performance modeling: a case study in gaming the system. *Interactive Learning Environments*, 27(5-6), 585-597. doi: 10.1080/10494820.2019.1610450
- [37]. Poornima, S., Sripriya, N., Vijayalakshmi, B., & Vishnupriya, P. (2017). *Attendance monitoring system using facial recognition with audio output and gender classification*. Paper presented at the 2017 International Conference on Computer, Communication and Signal Processing (ICCCSP).
- [38]. Radwan, A. M., Birkan, B., Hania, F., & Cataltepe, Z. (2017). Active machine learning framework for teaching object recognition skills to children with autism. *International Journal of Developmental Disabilities*, 63(3), 158-169. doi: 10.1080/20473869.2016.1190543
- [39]. Ritsri, U., & Meeprom, S. (2020). Does knowledge management practice produce accounting worker efficiency in the tourism business in Thailand? *Anatolia*, 31(1), 99-110. doi: 10.1080/13032917.2019.1708424
- [40]. Rupp, D. E., Shao, R., Skarlicki, D. P., Paddock, E. L., Kim, T. Y., & Nadisic, T. (2018). Corporate social responsibility and worker engagement: The moderating role of CSR-specific relative autonomy and individualism. *Journal of Organizational Performance*, 39(5), 559-579. doi: <https://doi.org/10.1002/job.2282>
- [41]. Shahid, M. S., Imran, Y., & Shehryar, H. (2018). Determinants of entrepreneurial intentions: An institutional embeddedness perspective. *Journal of Small Business & Entrepreneurship*, 30(2), 139-156. doi: 10.1080/08276331.2017.1389053
- [42]. Singh, K. D., & Onahring, B. (2019). Entrepreneurial intention, job satisfaction and organisation commitment-construct of a research model through literature review. *Journal of Global Entrepreneurship Research*, 9(1), 1-18. doi: <https://doi.org/10.1186/s40497-018-0134-2>
- [43]. Thabtah, F. (2019). Machine learning in autistic spectrum disorder performance research: A review and ways forward. *Informatics for Health and Social Care*, 44(3), 278-297. doi: 10.1080/17538157.2017.1399132
- [44]. Villotti, P., Corbière, M., Dewa, C. S., Fraccaroli, F., Sultan-Taïeb, H., Zaniboni, S., & Lecomte, T. (2018). A serial mediation model of workplace social support on work efficiency: the role of self-stigma and job tenure self-efficacy in people with severe mental disorders. *Disability and Rehabilitation*, 40(26), 3113-3119. doi: 10.1080/09638288.2017.1377294
- [45]. Wang, M.-X. (2018). Construction of "responsibility-oriented" education system of corporate social responsibility in colleges. *Journal of Interdisciplinary Mathematics*, 21(2), 369-376. doi: 10.1080/09720502.2017.1420566