



**THE CONSEQUENCES OF CYBERBULLYING IN THE
MANUFACTURING SECTOR ON EMPLOYEES' PRODUCTIVITY
IN MALAYSIA: MEDIATING ROLE OF JOB STRESS AND
MODERATING ROLE OF CO-WORKERS SUPPORT**

**Kumaran Kanapathipillai,
Nur Nadiah Mahbob**

Faculty of Business and Technology,
UNITAR International University,
Tierra Crest, Jalan SS6/3,
Kelana Jaya, 47301 Petaling Jaya,
Selangor, Malaysia

Abstract:

The ultimate purpose of this moderated mediation study is to get an in-depth cognition of how stress as a mediator influences the relationship between cyberbullying and employees' productivity in the manufacturing sector in Malaysia. Additionally, this research scrutinised the moderating effect of co-workers' support in the manufacturing sector between stress and employees' productivity. The results of this study ascertained that cyberbullying creates tremendous stress, affecting the employees' productivity. This research confirms that when stress starts manifesting in employees, it significantly affects the relationship between cyberbullying and the productivity of employees. It was also evident that without stress as the mediating variable, the significant association between cyberbullying and the employees' productivity would not transpire. Subsequently, the moderating factor co-workers' support illustrated those fellow employees who render their support could significantly buffer the stress experienced at the workplace and heighten the productivity of their colleagues. Overall, this research has offered precious current knowledge on the significant impact of cyberbullying on employees' productivity and why management and employees should curtail this heinous act. This research has also revealed the crucial roles co-workers play in shielding their fellow workers from the stress that could hamper their productivity. The manufacturing sector is the backbone of the Malaysian economy; as such, this research could significantly furnish managers with the knowledge of why improving the mutual support among co-workers is vital as it could protect them from the monstrous cyberbullying activities of cybercrooks, increase productivity and eventually create an innocuous work environment.

ⁱ Correspondence: email kumar.erapintar@gmail.com

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1. Introduction

This research comprises an array of knowledge regarding cyberbullying and its impact on employees' stress and its relation to employee productivity. Some theories, and findings of previous research on the same topic, will be presented in this research. Cyberbullying is a form of persecution that happens to fellow human beings through the use of online social media (Wong-Lo & Bullock, 2011; Miller & Hufstedler, 2009). Cyberbullying can also be called online or non-face to face bullying through the medium in cyberspace (Hinduja & Patchin, 2021).

As internet technology has advanced through constant innovation, cyberbullying has also become an inevitable part of this technology which has caused some severe impact on the life of humans. Heinous acts by a group or an individual through internet technology have harmed another human and created a victim who cannot defend themselves (Einarsen et al., 2009). Jain (2020) also mentions that online cyberbullying is so harmful that it has triggered suicide attempts and character assassinations.

Cyberbullying differs from traditional bullying because in cyberbullying, the victims may never know the character of their bully or why the bully is targeting them, but it is more pervasive through online interactions (Hinduja & Patchin, 2021; Slonje et al., 2012). Cyberbullying has evolved from traditional bullying with the advent of online social media (Huang et al., 2021; Li, 2007).

According to (Hinduja & Patchin, 2021; Madden and Loh, 2018; Wright, 2018; Kowalski & Limber, 2013), the consequence of cyberbullying is physical and psychological dilemmas. As such, this is one of the relationships studied in this research. Additionally, based on (Madden and Loh, 2018; Muhonen et al., 2017; Kowalski et al., 2014), cyberbullying also affects the workforce in an organisation leading to various ill-effects such as stress, isolation, angst, dejection, and insomnia. These ill effects will surely cause deterioration to the employees' productivity as mentioned by (Hinduja & Patchin, 2021; Huang et al., 2021; Karthikeyan, 2020). Therefore, the relationship between cyberbullying and employees' productivity is also the main theme in this research.

1.1 Overview of the Manufacturing Sector in Malaysia

The manufacturing sector has developed remarkably since Malaysia's independence in 1957. The manufacturing sector is vital to maintaining Malaysia's industrial production with a resilient demand dampening the current recession (Yusof, 2021). There are 259 industries within the manufacturing sector (DOSM, 2021), and it has also been a source of growth for the Malaysian economy. Even with the onslaught of the Covid-19 pandemic, which is on the rise in Malaysia, the manufacturing sector is expected to increase production in the coming months due to the robust demand, according to Sonia

Zhu (MIDA, 2021). This is in line with the findings of the Department of Statistics Malaysia that the Industrial Production Index (IPI) improved to 50.1 per cent in April 2021 as compared to April 2020 (DOSM, 2021).

1.2 Background

According to (Huang et al., 2021; Karthikeyan, 2020; Forsell, 2016; Smith et al., 2008; Whitney & Smith, 1993; Keashly & Jagatic, 2011; Olweus, 1999), cyberbullying is a violent, deliberate action performed by an individual or a group, using cyberspace mediums (Pieschl et al., 2013) to frequently communicate to cause harm without personal interaction, whereby the victim becomes helpless and unable to protect themselves. Victims become so distressed and afraid that they can usually not identify their invisible assailant (Juvonen & Gross, 2008; Faryadi, 2011). The definition of cyberbullying varies based on different studies, researches and scholars. But, one thing is certain cyberbullying diminishes the physical, psychological, emotional, well-being and security of employees in the workplace.

Cyberbullying can have a horrendous effect on the psychology of workers. Constant cyberbullying can cause victims to feel anguish, ignominy and end up in isolation. According to (Bonanno & Hymel, 2013; Hinduja & Patchin, 2008), in extreme instances, workers tend to opt for suicide due to the depression and anxiety from cyberbullies. There have been cases where the victims also resorted to violence to get back at the cyberbullies, which will disrupt the productivity of the workers (Khine et al., 2020; Peng et al., 2019). Previous studies have also shown that victims of cyberbullying turn into cyberbullies themselves (Balakrishnan, 2015; Ojanen et al., 2009; Katzer et al., 2009). Cyberbullying in the work environment usually happens when an employee shares humiliating information, spread rumours or engage in malicious activity to tarnish the reputation of a co-worker (Johanis et al., 2020; Privitera & Campbell, 2009; Barron, 2003; Zapf & Einarsen, 2001; Leymann, 1996). Workplace cyberbullying is not an isolated or sporadic matter but a global concern. According to research conducted by (Kalyar et al., 2021), cyberbullying negatively impacts employees' creativity through increased psychological distress. A previous study conducted in Malaysia (Johanis et al., 2020) have found that cyberbullying affects all individuals irrespective of their position. Thus, this shows that Malaysia is also not spared regarding cyberbullying issues at the workplace, just like anywhere else on the globe.

Therefore, this study aims to investigate workplace cyberbullying specifically in the manufacturing sector, concentrating on the manufacturing industries located at Shah Alam, Malaysia. Based on the findings, this research will attempt to close the gaps in the literature and specify remedies for victims and employers of the manufacturing sector to overcome workplace cyberbullying issues.

1.3 Research Problem Statement

Most of the research concerning cyberbullying were previously conducted on young schooling children (Faryadi, 2011) and young adults (Balakrishnan, 2015) in Malaysia. Only a handful of studies have been conducted around the world and in Malaysia which focuses on this anti-social behaviour at the workplace.

A contemporary study conducted by (Privitera & Campbell, 2009) on employees of the manufacturing industry in Australia has revealed that out of one hundred and three respondents nearly eleven percent of employees have been cyberbullied. Additionally, research conducted by (Baruch, 2005) has exposed that cyberspace bullying through the use of email has elevated anxiety and decreased job satisfaction among employees.

Cyberbullying is becoming more rampant (Alhujaili et al., 2020; Lee and Shin, 2017; Michel & Heirman, 2011; Needham, 2003) and is one of the causes of stress (Alhujaili et al., 2020; Slavich, 2016; Joshi et al., 2012; Aune, 2009), reduced employee productivity, impacts employee's life, career and family (Michel & Heirman, 2011; Namie & Namie, 2003). According to (Johanis et al., 2020; Choi and Park, 2019; Farley et al., 2015; Vranjes et al., 2018; Faryadi, 2011) the extent of cyberbullying is not restricted to one's personal and social dwelling, but its remnants have lurked into the places of work in various sectors. There is further evidence from the research conducted by (Nag, 2016; West et al., 2014) that cyberbullying leads to an unproductive workplace and becomes a very stressful issue for both employees and employers. There is also proof of the devastation that cyberbullying causes on workers' lives. According to (Makhulo, 2018), a female firefighter in Virginia, USA committed suicide because of constant cyberbullying by her co-workers. A similar tragic incident also transpired in Malaysia whereby continuous workplace cyberbullying led a 20-year-old Malaysian girl to commit suicide (Nortajuddin, 2020). Therefore, these incidents show the severity of the problems with regards to cyberbullying and why they need scrutinising.

Additionally, cyberbullying at the workplace can also occur when the cyberbully uses a proxy to do his or her heinous act (D'Cruz, 2016; Madden and Loh, 2018). With the advent of online social media this horrific act of cyberbullying using a third-party has even given a cyberbully an upper hand to evade the current cyber laws. According to a study conducted by (Gonzalez-Cabrera et al., 2016) cyber victims and cyberbully-victims undergo high levels of stress as compared to cyberbullies and cyberbystanders. This high level of stress causes the productivity of the employees to diminish. This can be corroborated from the studies conducted by (Giumetti et al., 2013; Szalma & Hancock, 2011) that negative stressors that reoccurs can over time generate emotional distress and lower productivity.

Moreover, the mediating role of stress between cyberbullying and employees' productivity needs scrutinizing. Additionally, the moderated effect of co-workers' support on the relationship between stress and employee's productivity needs investigating. Therefore, it is vital to explore how cyberbullying as a new form of bullying

through cyberspace mediums have affected employees' productivity in the manufacturing sector in Shah Alam, Malaysia.

1.4 Research Objectives

RO1: To examine the significant relationship between cyberbullying and stress in the manufacturing sector in Malaysia.

RO2: To scrutinise the significant relationship between stress and employees' productivity in the manufacturing sector in Malaysia.

RO3: To explore the significant relationship between cyberbullying and employees' productivity in the manufacturing sector in Malaysia.

RO4: To investigate the mediating role of stress between cyberbullying and employees' productivity in the manufacturing sector in Malaysia.

RO5: To analyse the moderating effect of co-workers' support between stress and employees' productivity in the manufacturing sector in Malaysia.

1.5 Research Questions

RQ1: Is there a significant relationship between cyberbullying and stress in the manufacturing sector in Malaysia.

RQ2: Is there a significant relationship between stress and employees' productivity in the manufacturing sector in Malaysia.

RQ3: Is there a significant relationship between cyberbullying and employees' productivity in the manufacturing sector in Malaysia.

RQ4: Does stress mediate the relationship between cyberbullying and employees' productivity in the manufacturing sector in Malaysia.

RQ5: Does co-workers' support moderate the relationship between stress and employees' productivity in the manufacturing sector in Malaysia.

2. Literature Review

To develop the study framework, independent and dependent variables will be discussed in this section. The research hypothesis is formed in this section to comprehend and recognise the problem of workplace cyberbullying.

2.1 Cyberbullying and Stress

Stress is a part and parcel of life in the work environment just like anywhere else on this globe. It is considered as the main reason for a large number of serious illnesses (Alhujaili et al., 2020; Slavich, 2016; Lazarus & Folkman, 1984). Stress has been defined differently by different scholars based on their findings and situations (Alhujaili et al., 2020; Fink, 2017). According to (Tan & Yip, 2018), the father of stress, Hans Selye, has defined stress as a non-specific reaction of the physique to any pressure. Furthermore, (Alhujaili et al., 2020; Fink, 2017; Didden et al., 2009) mentions that stress is deemed as the acuity of threat,

which causes angst, nervousness, and adaptation problems. No matter what the definition is, stress cannot be ignored as it triggers human health malfunction. Based on (Makhulo, 2018; Joshi et al., 2012), stress at the moderate level can enrich mental performance but, extreme stress level leads to nervousness and desolation (Didden et al, 2009).

Various researches have shown the ill-effect of cyberbullying at the working environment where sufferers have exhibited several stress associated signs. Employees who have been bullied or cyberbullied express heightened burnout and decreased productivity in their jobs (Jang et al., 2014; Ybarra & Mitchell, 2007; Einarsen et al., 1998). Additionally, (Alhujaili et al., 2020; Makhulo, 2018; Dooley et al., 2009; Agervold & Mikkelsen, 2004) revealed that workers subjected to bullying or cyberbullying displayed worsened psychological stress and amplified mental fatigue.

Furthermore, destructive conducts for instance frequently propagating rumours about someone either face-to-face or through cyberspace at the work environment initiates social stress (Alhujaili et al., 2020; Jang et al., 2014; Lewis, 2004; Zapf, 1999). Moreover, (Hansen et al., 2006) stated that in a study comprised of 437 employees, ten percent who were bullied victims at the work environment displayed signs of despair, unease and somatisation when observed against to non-casualties of bullying or cyberbullying. Comparably, (Mikkelsen & Einarsen, 2002) found that post-traumatic stress disorder is a result of continuous traditional bullying or cyberbullying at the work environment. In another research, internet users have testified that cyberbullying has caused extreme stress and other related symptoms (Staude-Müller et al., 2012). D'Cruz and Noronha (2013) conducted a research in the Indian information technology sector has also exposed that employees were feeling uneasy and emotionally stress due to cyberbullying. In a more recent study conducted by (Iftikhar et al., 2021) in Pakistan has also uncovered that cyberbullying leads to mental stress among employees. Thus, this has led to the development of the following hypothesis as below:

H₁: There is a significant relationship between cyberbullying and stress in the manufacturing sector in Malaysia.

2.2 Stress and Employees Productivity

Many employees in various organisations are undergoing stress which is affecting their productivity (Sathasivam et al., 2015). Various research conducted by (Daniel, 2020; Enyonam et al., 2017; Makoni & Mutanana, 2016; Okeke et al., 2016; Ekienabor, 2016; Shehzad, 2011; Henry & Evans, 2008) have unearthed the negative impact of stress on employees' productivity. Employees who suffer from stress exhibit various symptoms such as reduced productivity, increased absenteeism, decreased health and carelessly utilising organisational resources, severe psychological dilemma, heightened anxiety and lower job satisfaction which in turn affects the operations of an organisation (Daniel, 2020; Ehsan & Ali, 2019; Enyonam et al., 2017; Makoni & Mutanana, 2016; Okeke et al., 2016; Ekienabor, 2016; Muhammad et al., 2016; Shehzad, 2011; Henry & Evans, 2008)

Stress also causes diminished psychological well-being in employees that directly affects their productivity at the workplace and also negatively impacts the whole organisation. Some studies have shown that temperate level of stress heightens employee's productivity. But, when stress reach overwhelming levels employees breakdown and this causes their productivity to fade away leading to organisational malfunction (Cho-Hee, 2021; Daniel, 2020; Naqvi et al., 2013; Khattak et al., 2011; Shahid, 2012; Salami, 2010; Bytyqi et al., 2010).

According to (Alias et al., 2019) stress is causing serious mental illnesses among employees in the manufacturing sector in Malaysia. To support this, (Thye, 2017) also mentions that employees in Malaysia are suffering from workplace related stress. This issue leads to decreased work satisfaction and productivity. Additionally, a study conducted by the "Malaysia's Healthiest Workplace by AIA Vitality Survey 2017" found that the Malaysian workforce is one of the highly affected by workplace stress which impacts the productivity of employees (Alias et al., 2019). Therefore, (Alias et al., 2018) highlighted that to heighten the productivity of employees, high stress level encountered at the workplace by the Malaysia employees must be curtailed.

On the contrary, there are studies that show that stress only moderately affects employees' productivity. In a study conducted by (Rosalie & Singaravelloo, 2020; Aasia, 2014). Thus, this has led to the development of the following hypothesis as below:

H₂: There is a significant relationship between stress and employees' productivity in the manufacturing sector in Malaysia.

2.3 Cyberbullying and Employee Productivity

Employee's productivity is central to the success of any business. But when employees become anxious or distressed due to the interventions of malicious acts such as cyberbullying, this leads to highly diminished productivity. Employees who are faced with malevolent exploitation by irresponsible and scruples people who misuse cyberspace to bully may affect the productivity of employees (Karthikeyan, 2020; Makhulo, 2018; Dehue, 2013; Mackay, 2012).

According to (West et al., 2014), employees' declined productivity at the workplace due to cyberbullying also affect the organisation as a whole. To support this, (Glambek et al., 2014) alluded that employees who are defenceless to cyberbullying are subjected to adverse circumstances that increase their absenteeism, which negatively influences productivity.

Moreover, (Woodrow & Guest, 2014) elucidated that cyberbullying does not just happen during working hours but also after work hours. With the uninterrupted internet connections, cyber perpetrators continue to harass their victims even after working hours, thus creating tremendous stress. This atrocious cyberbullying behaviour inflicts deterioration to employees' productivity and negatively impacts the progress of a business.

Cyberbullying is quite prevalent among co-workers based on (Sarkar, 2015). In this situation, co-workers also become the casualties or culprits of cyberbullying in the work environment. The co-workers are usually forced to take sides not to become victims themselves, or they just ignore the situation because the cyberbully is also a member of the same organisation (Synman & Loh, 2015). The act of choosing the dark side by the co-workers will eventually lead to an unproductive workforce (Farley et al., 2015). If this situation continues, it will propagate an unhealthy workplace and an organisation of sadists, which will be detrimental to employee productivity.

There have been cases where the crimes of bullying employees are done by those who hold power and authority in an organisation, according to (Barlett, 2015). This horrendous act will prompt the casualties to leave their jobs because of their vulnerability. The perpetrators, on the other hand, will have full hegemony of the situation. The drastic action taken by the victims to evade the cyberbully will only lead to decreased productivity (Karthikeyan, 2020). Thus, this has led to the development of the following hypothesis as below:

H₃: There is a significant relationship between cyberbullying and employee' productivity in the manufacturing sector in Malaysia.

2.4 The Mediating Role of Stress Between Cyberbullying and Employees' Productivity

In this research cyberbullying actions are deemed as an impactor on employees' productivity. Besides the direct impacts of cyberbullying on stress and employees' productivity, it can also indirectly impact the outcome variable. Consequently, it is important to investigate stress that mediates the relationship between cyberbullying and employees' productivity.

Employees' productivity can be indirectly impacted through the stress that they are subjected to. This is an adverse domino effect which is the consequence of cyberbullying that leads to stress and then causes employees' productivity to deteriorate until it affects the employees' well-being and the organisations' survival (Cho-Hee, 2021; Daniel, 2020; Tuckey, 2016). Employees who suffer from stress due to the impact of cyberbullying endure several ill-effects, which in turn affects their productivity according to (Daniel, 2020; Ehsan & Ali, 2019; Enyonam et al., 2017; Makoni & Mutanana, 2016; Okeke et al., 2016; Ekienabor, 2016; Muhammad et al., 2016; Shehzad, 2011; Henry & Evans, 2008)

According to (Karthikeyan, 2020; Hammad, 2012; Leka et al., 2003; Subbulaxmi, 2002; DeFrank & Ivancevich 1998) employees' productivity is affected when workplace cyberbullying stimulates high levels of stress on the employees of an organisation. When the employees' productivity diminishes due to stress caused by cyberbullying, it also impacts the organisation as a whole, causing the business to plunge into calamity (Van Laer, 2014). This will then have an equally negative effect on the employees' productivity (Harold & Holtz, 2014; Samnani et al., 2012; Stale et al., 2003). Thus, this has led to the development of the following hypothesis as below:

H₄: Stress mediates the relationship between cyberbullying and employees' productivity in the manufacturing sector in Malaysia.

2.5 The Moderating Role of Co-Workers' Support Between Stress and Employees' Productivity

According to (Baron & Kenny, 1986), a moderator is a variable that affects the direction and strength of the relationship between an independent variable (stress) and a dependent variable (employees' productivity). Therefore, this study is also designed to provide an insight into how co-workers' support moderates the relationship between stress and employees' productivity. Previous research has shown that the support of a co-worker has been considered as a moderator and have been found to 'buffer' the effects of stress (Karasek et al., 1982) and employees' productivity.

The support from fellow workers can turn an employee's workplace into heaven or a horrible work environment that creates unnecessary tension and conflicts. According to (Hodson, 1997) the social interactions among employees in the work environment contributes to productivity. Additionally, this study is also conducted to scrutinise the moderating effect of co-workers' support between stress and employees' productivity in the manufacturing sector. The focus is on co-workers because all employees are in constant contact with their fellow workers either at the workplace or after work hours. Therefore, the support of co-workers is deemed as a crucial moderating factor that can alter both the ill-effects of stress caused by cyberbullying and also impact the productivity level of the employee (Daniel, 2020; Ehsan & Ali, 2019; Enyonam et al., 2017; Makoni & Mutanana, 2016; Okeke et al., 2016; Ekienabor, 2016; Muhammad et al., 2016; Shehzad, 2011; Henry & Evans, 2008).

Based on (Zhou & George, 2001), co-worker support denotes fellow workers coming to the aid of another in completing jobs when required by contributing knowledge, skills, abilities and experiences and offering reinforcement and care, which will, in turn, reduce stress and increase productivity. Moreover, (Kaul & Lakey, 2003) state that support from fellow employees has a significant effect whereby the social interaction between workers after working hours outside the organisation reduces stress and other health issues.

On the other hand, (Ng & Sorenson, 2008) mention that co-workers who seek support from other employees of the organisation are considered incompetent. Therefore, co-workers are reluctant to engage with their co-workers when they are stressed or affected by the act of cyberbullying. But, (Babins & Boles, 1996) in their research have evidence that support from fellow workers contributes to productivity at the workplace. Additionally, (Hodson, 1997) indicates that employees' support has amplified in contemporary organisations such as the manufacturing sector, which requires teamwork to achieve organisational objectives. This is parallel to the findings of (Fass et al., 2007), who reveal that in a workplace where teamwork is emphasised, such as the manufacturing sector, co-workers' support is heightened. Workers in these types of

workplaces continuously share ideas, interact more openly, and create relationships that could eliminate stress and increase productivity. Albar-Marin & Garcia-Ramirez (2005) has also denoted that co-worker support is an efficient basis of assistance, specifically when the fellow worker is psychologically drained, which subsequently impacts stress.

Research conducted by (Lindorff, 2001) demonstrates that support from fellow workers is suitable for explicit work issues and can alleviate stress compared to non-work-related support such as from friends and family.

Based on the literature on social support theory, co-worker support has a positive effect and eliminates stress (McIntosh, 1991). Therefore, when stress levels at the workplace are reduced due to the interaction and constant support by co-workers, employees do not tend to resign from their jobs (Levy, 2006), leading to better productivity (Joiner, 2007). Thus, this has led to the development of the following hypothesis as below:

H₅: Co-workers' support moderates the relationship between stress and employees' productivity in the manufacturing sector in Malaysia.

2.7 Proposed Conceptual Framework

From the literature review, it was established that cyberbullying causes stress and impacts employees' productivity. Therefore, this research aimed to analyse the mediating role of stress between cyberbullying and employees' productivity in the manufacturing sector in Malaysia as shown in Figure 1. Moreover, based on the literature review, this study was also designed to scrutinise how co-workers' support moderates the relationship between stress and employees' productivity which is depicted in Figure 1. Consequently, based on the literature review, the Figure 1 conceptual framework shows the hypothesised relationships.

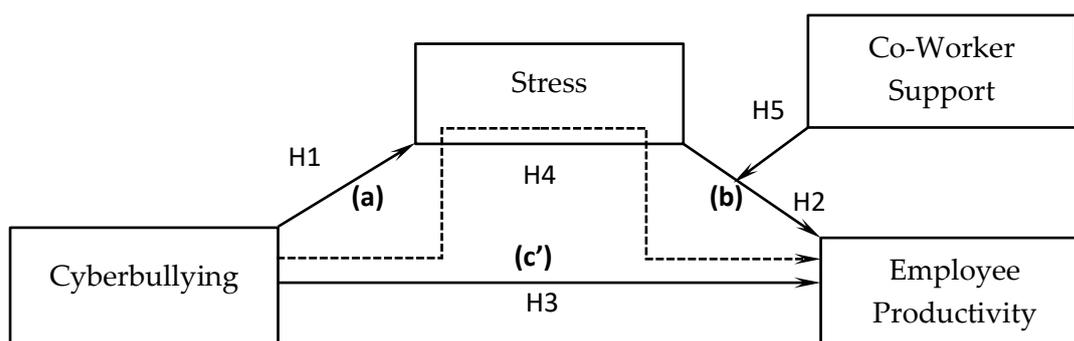


Figure 1: Proposed Conceptual Framework: Moderated Mediation Model

3. Methodology

This study examines the relationship between the act of cyberbullying in the workplace among employees in the manufacturing sector and employees' productivity with stress as the mediating factor. The moderating factor between stress and employees' productivity was also scrutinised in this research. A total of 3000 self-administered

survey questionnaires were distributed among workers in the manufacturing sector comprising various industries located at Shah Alam, Malaysia. The questionnaires utilised Likert's 5-points scale varying from "Strongly disagree (1)" to "Strongly agree (5)". The survey instrument is comprised of five sections. The first section intended to obtain data about the respondents' demographic profile, the second section generated data on cyberbullying; the third section produced data on the impact of stress. The fourth section is used to gather data pertaining to co-workers' support. Finally, the fifth section provided data on employees' productivity at their workplace.

To obtain data regarding cyberbullying, which is the independent variable, the 5-point Likert's scale was based on (Hinduja & Patchin, 2021; Madden and Loh, 2018; Wright, 2018; Kowalski & Limber, 2013). It measured 5 items. Next, to attain data on the stress level (mediating variable) caused by cyberbullying, the questions were based on (Alhujaili et al., 2020; Makhulo, 2018; Dooley et al., 2009; Agervold & Mikkelsen, 2004). The measure contained 5 items. To procure data on the support provided by co-workers (moderating variable), the questions were based on (Ng & Sorenson, 2008; Levy, 2006; Albar-Marin & Garcia-Ramirez, 2005; Lindorff, 2001). To analyse the dependent variable employees' productivity; the questions were based on (Karthikeyan, 2020; Makhulo, 2018; Dehue, 2013; Mackay, 2012). The measure comprised of 5 items. The demographic profile contained 7 questions to identify the respondent's (manufacturing sector employees) profile.

Table 1 shows the reliability of the instrument used in this research. Upon testing the reliability, the Cronbach's Alpha values were all ($\alpha > 0.8$), which showed that the internal consistency of the questionnaire is good.

Table 1: Reliability Analysis

Variables	Cronbach's Alpha	No of Items
Cyberbullying	0.813	5
Stress	0.877	5
Employee Productivity	0.891	5
Co-worker Support	0.896	5

3.1 Population, Sampling and Measurements

The population of this study are employees of the manufacturing sector at various industries located in Shah Alam, Malaysia. Shah Alam was chosen because it has the highest concentration of manufacturing industries in Malaysia. The employees surveyed are all full-time employees. The total labour force in Malaysia is 16.08 million as of February 2001 ((DOSM, 2021). The total workforce in the manufacturing sector is 2.236 million (DOSM, 2021). Therefore, to obtain an appropriate sample size for this research from the population, the (Krejcie and Morgan, 1970) population and sample size tabulation was utilized. Based on (Krejcie and Morgan, 1970) tabulation, the alpha value is 0.05, and the degree of accuracy is 0.05. Thus, no calculations were obligatory when ascertaining the sample size for this study. According to (Krejcie and Morgan, 1970)

tabularization, the sample size representative of the employees in the manufacturing sector is 346.

A simple random sampling technique was used in this study. The respondents willingly participated in the survey without any compulsion. Additionally, the necessary approvals were obtained from the management of the manufacturing sectors to gather the data from their employees. A total of 3000 questionnaires were distributed to employees of the manufacturing sectors in Shah Alam, Malaysia, which comprised various industries. A total of 1863 questionnaires were received, which is approximately a 62.1% return rate. While codification, it was disclosed that 35 out of 1863 questionnaires that were returned were not fully answered. Factor Analysis was conducted, which explained the construction of associations within the group of variables. Correlation analysis was used to determine the association between variables. A structural equation model was used to confirm the model's goodness-of-fit. Hayes Process Macro Version 3.5 (Model Number:14) was used to test for moderated mediation effects (Hayes & Rockwood, 2020).

4. Findings and Interpretations

This section presents the results of this research to give a comprehension of the demographics profiles of respondents, association between variables and the relationships between the independent, mediating, moderating and dependent variables.

4.1 Demographic Profile of Respondents

Table 2: Manufacturing Sector Employees' Profile (N=1828)

Demographics	Category	Frequency	Percentage
Gender	Female	1020	56
	Male	808	44
Age	18 – 25	231	13
	26 – 35	257	14
	36 – 45	720	39
	46 – 55	357	20
	56 - 65	263	14
Highest Educational Level	Secondary	362	20
	Diploma	644	35
	Undergraduate	439	24
	Postgraduate	242	13
	Professional	141	8
Current Position	Clerical	1182	65
	Supervisor	379	20
	Manager	142	8
	Senior Manager	125	7
Years of Experience	< 1	173	9
	2 – 10	849	46
	11 – 20	762	42

	≥21	44	3
Type of Manufacturer/industry	Clothing and Textiles	72	4
	Petroleum, Chemical and Rubber	47	3
	Electric, Electronic, Computers	405	22
	Food and Beverages	631	35
	Metal	152	8
	Wood, Furniture, Leather, Paper	146	8
	Non-Metal (Glass and Ceramics)	106	6
	Machinery	172	9
	Live Stock Feed	97	5
	Ethnicity	Malay	847
Chinese		329	18
Indian		386	21
Others		266	15

Based on Table 2, the demographics survey of the employees in the manufacturing sector in Shah Alam, Malaysia, shows that the majority of the employees are females (56%). In terms of age, the majority are 36 – 45 years old (39%). Academic qualification wise the majority of the employees are diploma holders (35%). A majority of (65%) of the employees surveyed are in a clerical positions. In terms of years of experience, the majority are employees who have been working between 2 – 10 years (46%). The majority of employees of this survey are from the food and beverages industry (35%). Finally, in terms of the employees' ethnicity, the majority are Malays (46%).

4.2 Mean, Standard Deviation and Normality Analysis

Table 3: Descriptive Statistics (N=1828)

Factors	Mean	SD	Skew	Kurtosis	Min	Max
Cyberbullying	3.529	0.891	-0.376	-0.118	1	5
Stress	3.522	0.896	-0.144	-0.255	1	5
Co-worker Support	3.410	1.007	-0.379	-0.502	1	5
Employee Productivity	3.551	0.816	-0.398	-0.406	1	5

The descriptive statistics in Table 3 displays the mean, standard deviation (SD), skewness and kurtosis values of this study. From Table 3, cyberbullying shows the highest mean value of 3.529 ± 0.891 . The lowest mean value is co-worker support, 3.410 ± 1.007 . The normality test shows that the skewness and kurtosis values have a threshold of ± 1 which means that the data are symmetrical and mesokurtic, as clarified by (Chinna & Yuen, 2015; Gravetter & Wallnau, 2014). Therefore, it can be assumed that the data are distributed normal.

4.3 Factor Analysis

Factor Analysis is used to determine the important variables that explain the framework of associations within the group of variables. Factor analysis is commonly employed to

reduce data to classify a small number of variables that simplify the variance in a higher number of visible variables. All the factors loaded adequately as mentioned by (Shrestha, 2021). Table 4 shows all twenty factor loadings are between 0.7 and 0.9. Therefore, it can be concluded that the factors loaded adequately in this study.

Table 4: Factor Loadings

Factor ID	Factors & Items	Factor Loading
Cyberbullying at the Work Place		
CB1	Posting humiliating rumours, gossips, or comments about me on social media.	0.811
CB2	Receiving intimidating or offensive messages on my emails.	0.842
CB3	Disseminating fabricated information about me on social media.	0.769
CB4	Placing humiliating images of me on the social media.	0.853
CB5	Intentionally rejecting me from an online group i.e. WhatsApp, Telegram, etc.	0.712
Stress		
ST1	I feel nervous all the time at work and unable to achieve my goals.	0.828
ST2	I feel depressed at work and feel like quitting from my job.	0.806
ST3	I feel that everything is a waste of my effort.	0.731
ST4	I feel worthless and avoid undertaking tasks.	0.786
ST5	I feel sad at work and stay away from others.	0.852
Co-Worker Support		
CW1	I get helpful information and encouragement from my fellow workers.	0.816
CW2	My co-workers are sympathetic and are always understanding.	0.775
CW3	My co-workers often supported my decisions and help me in achieving goals.	0.702
CW4	I get advice and help from co-workers to cope with my job-related problems.	0.819
CW5	My co-workers understand my feelings and always try to console me.	0.767
Employee Productivity		
EP1	I do a large amount of work without hesitation.	0.758
EP2	I have a high standard of job success.	0.816
EP3	I am able to achieve my goals effectively and efficiently.	0.743
EP4	I am able to achieve superiority in all my job outcomes.	0.883
EP5	I am able to outperform others in my department	0.872

4.4 Correlation Analysis

Table 5: Correlation Matrix (N=1828)

Variable	CB	ST	CW	EP
Cyberbullying (CB)	1			
Stress (ST)	0.816**	1		
Co-worker Support (CW)	0.711**	0.688**	1	
Employee Productivity (EP)	0.658**	0.664**	0.662**	1

** Correlation is significant at the 0.01 level (2-tailed)

To study how the variables are correlated, the correlation analysis is shown in Table 5. Based on the correlation matrix obtained, it was observed that data adequately supported the measurement model. The correlation matrix recorded that the item cyberbullying (CB) has a strong positive correlation with stress (ST), co-worker support (CW) and employees' productivity (EP). The item stress (ST) also shows a strong positive correlation with the item co-worker support (CW) and employees' productivity (EP). Finally, the item co-worker support (CW) also strongly correlated with the item employees' productivity (EP).

4.5 Goodness-of-Fit for Model 1

The goodness-of-fit for Figure 2: Model 1 indexes were determined which provided the following values shown in Table 6 Goodness-of-Fit.

From Table 6 Goodness-of-Fit, it was observed that all the values fulfil the criteria and are within range as such the goodness-of fit was met.

Table 6: Goodness-of-Fit

Goodness of fit values	Author(s)	Good	Observed
p	Meyer et al., 2005	$0.05 \leq p \leq 1.00$	0.088
χ^2/df	Hair et al., 2010	0 – 2	1.731
RMSEA	Meyers et al., 2005	≤ 0.05	0.031
RMR	Hair et al., 2010	≤ 0.05	0.026
CFI	Bentler, 1990	≥ 0.95	0.983
IFI	Meyers et al., 2005	≥ 0.95	0.969
GFI	Gefen et al., 2000	≥ 0.90	0.972
AGFI	Hair et al., 2010	≥ 0.90	0.939
TLI	Tucker & Lewis, 1973	≥ 0.90	0.952
NFI	Bentler & Bonett, 1980	≥ 0.90	0.964

4.6 Moderated Mediation Analysis

The moderated mediation analysis is conducted using Hayes Process: Model number 14 (Hayes & Rockwood, 2020). Figure 2: Model 1 and Table 7 Path Coefficient shows the Path (a) displayed in Figure 1: Proposed Conceptual Framework: Moderated Mediation Model.

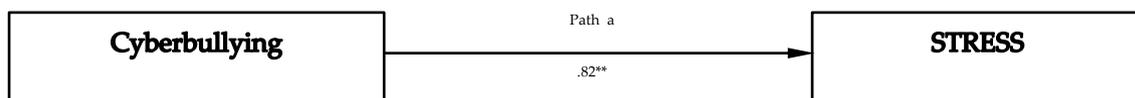


Figure 2: Model 1

Table 7: Path Coefficient for Figure 2: Model 1

Path (a)		Standardised β	S.E	p
Cyberbullying	Stress	0.8205	0.0136	0.000

From Table 7: Path Coefficient for Figure 2: Model 1 is the first regression sub model. In this regression sub model, there is a statistically significant (a) path ($\beta=0.8205$; $p<0.001$), which explains that cyberbullying turned out as a positive and statistically significant predictor of stress. According to this finding there is a significant relationship between cyberbullying and stress in the manufacturing sector in Malaysia. Thus, the Hypothesis H_1 is supported by data.

4.7 Goodness-of-Fit for Model 2

The goodness-of-fit for Figure 3: Model 2 indexes were determined which provided the following values shown in Table 8 Goodness-of-Fit .

From Table 8 Goodness-of-Fit, it was observed that all the values fulfil the criteria and are within range as such the goodness-of fit-was met.

Table 8: Goodness of Fit for Figure 3: Model 2

Goodness of fit values	Author	Good	Observed
P	Meyer et al., 2005	$0.05 \leq p \leq 1.00$	0.067
χ^2/df	Hair et al., 2010	0 – 2	1.514
RMSEA	Meyers et al., 2005	≤ 0.05	0.035
RMR	Hair et al., 2010	≤ 0.05	0.024
CFI	Bentler, 1990	≥ 0.95	0.983
IFI	Meyers et al., 2005	≥ 0.95	0.972
GFI	Gefen et al., 2000	≥ 0.90	0.998
AGFI	Hair et al., 2010	≥ 0.90	0.966
TLI	Tucker & Lewis, 1973	≥ 0.90	0.951
NFI	Bentler & Bonett, 1980	≥ 0.90	0.962

Figure 3: Model 2 and Table 8 Path Coefficient shows the Path (c') and b displayed in Figure 1: Proposed Conceptual Framework: Moderated Mediation Model.

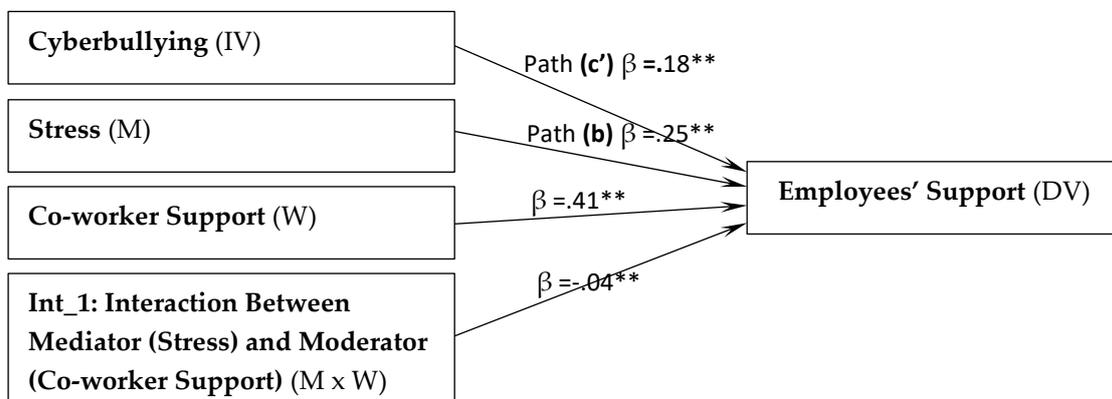


Figure 3: Model 2

Table 8: Path Coefficient for Figure 3: Model 2

Path			Standardised β	S.E	p
Cyberbullying (IV)	(c') ---->	Employees' Productivity	0.1785	0.0271	0.0000
Stress (M)	(b) ---->	Employees' Productivity	0.2479	0.0499	0.0000
Co-Worker Support (W)		Employees' Productivity	0.2633	0.0191	0.0000
Stress * Co-Worker Support (M x W)	Int_1 ---->	Employees' Productivity	-0.0424	0.0124	0.0006

Table 8: Path Coefficient for Figure 3: Model 2 shows the second regression sub-model, which shows the direct effect (Path c') and the indirect (Path b). Therefore, in this regression model there is a statistically significant direct (c') path ($\beta=0.1785$; $p<0.001$), which explains that cyberbullying turned out as a direct positive and statistically significant predictor of employees' productivity. According to this finding there is a significant relationship between cyberbullying and employee' productivity in the manufacturing sector in Malaysia. Thus, the Hypothesis H₃ is supported by data.

From Table 8: Path Coefficient for Figure 3: Model 2, it was found that the conditional effect (Path b) shows ($\beta=0.2479$; $p<0.001$), which explains that stress turned out as a conditional positive and statistically significant predictor of employees' productivity at the mean of co-worker support. Grounded on this finding, there is a significant relationship between stress and employees' productivity in the manufacturing sector in Malaysia. Thus, the Hypothesis H₂ is supported by data.

Based on Table 8: Path Coefficient for Figure 3: Model 2 yields the conditional effect of co-workers' support and employee productivity at the mean of stress. The ($\beta=0.2633$; $p<0.001$) expresses that co-workers' support is a positive and statistically significant predictor of employees' productivity at the mean of stress.

The regression slope for the interaction term (stress x co-workers' support) in Table 8: Path Coefficient for Figure 3: Model 2 yields ($\beta=-0.0424$; $p<0.001$), which shows statistical significance. These findings indicate that there is evidence of moderation of the effect of stress on employees' productivity by the co-workers' support variable. Therefore, according to this finding, Co-workers' support moderates the relationship between stress and employees' productivity in the manufacturing sector in Malaysia. Thus, the Hypothesis H₅ is supported by data.

Based on the evidence presented on the moderated effect, Table 9: Conditional Effects of the Focal Predictor (Stress) at Different Values of the Moderator indicates that all the simple slopes are statistically significant for the effects. To further visualise these effects, the graph in Figure 4: Association Between Stress (ST) and Employees Productivity (EP) Depending on Co-workers' Support (CW) is presented.

Table 9: Conditional Effects of the Focal Predictor (Stress) at Different Values of the Moderator

Mediator	Co-worker Support	Effect	BootSE	p	BootLLCI	BootULCI
Stress	-1.0075	0.2906	0.0291	0.0000	0.2336	0.3476
Stress	0.0000	0.2479	0.0261	0.0000	0.1967	0.2991
Stress	1.0075	0.2051	0.0289	0.0000	0.1485	0.2617

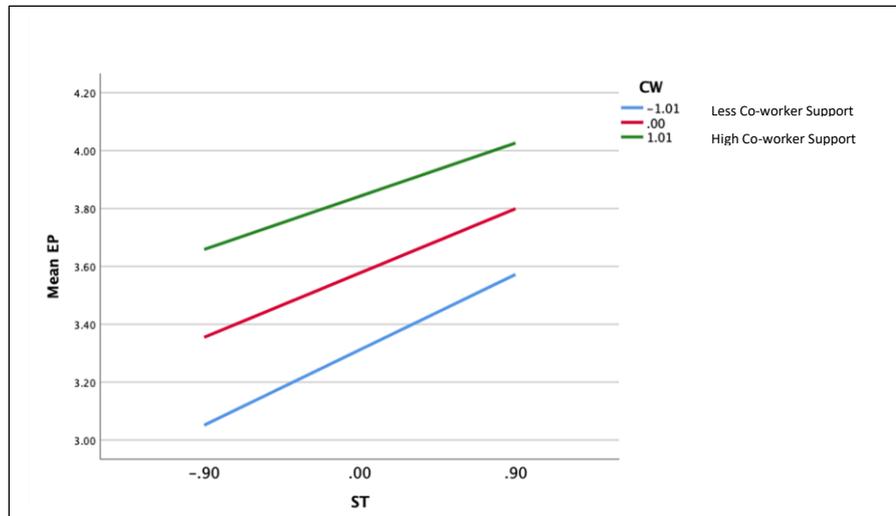


Figure 4: Association Between Stress (ST) and Employees Productivity (EP) Depending on Co-workers' Support (CW)

Based on Figure 4: Association Between Stress (ST) and Employees Productivity (EP) Depending on Co-workers' Support (CW), there are three slopes. The blue slope is reflecting the relationship between stress (ST) and employees' productivity (mean EP) among those employees that fall one standard deviation below the mean on co-workers' support (CW). The red slope reflects the relationship between stress (ST) and employees' productivity (mean EP) among those employees at the mean on co-workers' support. The green slope reflects the relationship between stress (ST) and employees' productivity (mean EP) among those employees that fall one standard deviation above the mean on co-workers' support. Thus, it can be noted that basically, the slopes appear to become increasingly positive as an employee moves from lower levels of co-workers' support to higher levels of co-workers' support.

Table 10: Index of Moderated Mediation

Index	BootSE	BootLLCI	BootULCI
-0.0348	0.0111	-0.0554	-0.0120

Based on Table 10: Index of Moderated Mediation, it was noted that both the bootstrap lower-level confidence interval (LLCI) and the upper-level confidence interval (ULCI) are negative. The value zero does not fall into the confidence intervals. Therefore, this result shows a statistically significant index of moderated mediation. Thus, it can be concluded there is a significant moderated mediation effect in this study result.

4.8 Mediation Analysis

Using Hayes Process, Model number=4 (Hayes & Rockwood, 2020), the following results were obtained for the mediation analysis.

Table 11: Coefficient

	Coeff	SE	t	p
Constant	2.9473	0.0973	20.2893	0.0000
Cyberbullying	0.1785	0.0271	6.5805	0.0000
Stress	0.2479	0.0261	9.4905	0.0000

Outcome Var: Employees' Productivity

Table 12: Indirect Effect of Cyberbullying on Employees' Productivity via Stress

Effect	BootSE	BootLLCI	BootULCI
0.2831	0.0217	0.2416	0.3262

Based on Table 7: Path Coefficient for Figure 2: Model 1, it was evident that cyberbullying has a statistically significant effect on stress ($\beta = 0.8205$; $p < 0.001$). Table 11 Coefficient shows that when the effect of stress on employees' productivity was observed, it became obvious that there is a statistically significant effect ($\beta = 0.2479$; $p < 0.001$). Next, when the direct effect of cyberbullying on employees' productivity was checked ($b = 0.1785$; $p < 0.001$). Therefore, the direct relationship between cyberbullying and employees' productivity was also statistically significant. Therefore, this indicates that stress partially mediates the relationship between cyberbullying and employees' productivity according to the criteria proposed by (Hayes & Rockwood, 2020; Baron & Kenny, 1986).

To further illustrate the mediation effect, Table 12: Indirect Effect of Cyberbullying On Employees' Productivity via Stress shows that the bootstrap lower level confidence (LLCI) interval and the upper-level confidence interval (ULCI) are positive. The value zero does not fall in between the LLCI and ULCI, which indicates that the variable stress is a statistically significant mediator between the relationship cyberbullying and employees' productivity. Thus, it can be concluded that stress mediates the relationship between cyberbullying and employees' productivity in the manufacturing sector in Malaysia. Therefore, it can be deduced that data supported hypothesis H₄.

5. Discussion

This study concentrated on the moderated mediating effect between cyberbullying and employees' productivity. To obtain the outcome, this research stressed on the moderating consequence of co-workers' support between stress endured by employees and their productivity in the manufacturing sector in Malaysia. Next, the study highlighted the mediating impact of stress between the act of cyberbullying and the productivity of employees attached to the manufacturing sector in Malaysia. A total of 1828 responses from manufacturing sector employees from various industries concentrated in one of the most reputable industrial estates generated the figures for this study.

The first objective of this study was to examine the significant relationship between the act of cyberbullying and the stress that employees of the manufacturing sector suffer. Hypothesis H₁ is supported by data and disclosed that there is a significant relationship between cyberbullying and stress. This outcome is parallel to the findings of (Alhujaili et al., 2020 & Makhulo, 2018), who verified that cyberbullying causes stress and severe mental exhaustion. Additionally, this result supports the study conducted by (Iftikhar, 2021 & Jang et al., 2014) that cyberbullying through rumours heightens employees' stress levels. Therefore, the findings of this research demonstrate that not only there is a significant relationship between cyberbullying and stress, but the heinous act of cyberbullying creates high levels of stress among employees of the manufacturing sector, which leads to serious health and mental issues.

The second objective of this study was to scrutinise the significant relationship between stress and employees' productivity. The hypothesis H₂ is also supported by data and unveiled that there is a significant relationship between stress and employees' productivity in the manufacturing sector in Malaysia. This is in line with the findings of previous researchers (Daniel, 2020; Ehsan & Ali, 2019; Enyonam et al., 2017; Makoni & Mutanana, 2016; Okeke et al., 2016; Ekienabor, 2016), who discovered that productivity and health decrease when employees are subjected to high levels of stress at the workplace. Additionally, (Alias et al., 2019) previously researched Malaysia and revealed that stress is one of the main causes among workers in the manufacturing sector, leading to reduced satisfaction and productivity. Even though (Rosalie & Singaravelloo, 2020) found only a moderate effect of stress on the productivity of employees. It can be established that the result of this study exposes that stress indefinitely diminishes the productivity of employees immaterial, whether moderately or fully.

The third objective of this study was to explore the significant relationship between cyberbullying and employees' productivity in the manufacturing sector in Malaysia. Based on the findings, hypothesis H₃ is also supported by data. Consequently, indicating that there is a significant relationship between cyberbullying and employees' productivity. This research result can be validated by previous scholars (Karthikeyan, 2020; Makhulo, 2018; Farley et al., 2015; Synman & Loh, 2015; West et al., 2014; Glambek et al., 2014), who asserted that continuous cyberbullying not only causes a decline in employees' productivity but will eventually create an organisation of sadist and unproductive workforce in the organisation. Therefore, it is proven in this study that cyberbullying is detrimental to the progress and productivity of employees of the manufacturing sector.

The fourth objective of this study was to investigate the mediating role of stress between cyberbullying and employees' productivity. From the results it was determined that hypothesis H₄ is supported by data, subsequently implying that stress partially mediates the relationship between cyberbullying and employees' productivity. This outcome substantiates and is parallel to previous researchers (Cho-Hee, 2021; Daniel, 2020; Karthikeyan, 2020; Tuckey, 2016; Ehsan & Ali, 2019; Enyonam et al., 2017; Makoni

& Mutanana, 2016; Okeke et al., 2016; Hammad, 2012; Leka et al., 2003; Subbulaxmi, 2002) who have provided evidence that stress is a potential factor by which cyberbullying can produce changes on the employees' productivity. Henceforth, this study confirms the mediating effect of stress between cyberbullying and employees' productivity.

The fifth objective of this research was to analyse the moderating effect of co-workers' support between stress and employees' productivity. According to the outcome, hypothesis H₅ is supported by data. There is a significant moderating effect of co-workers' support between stress and employees' productivity. This result complements the findings of previous researches such as (Daniel, 2020; Ehsan & Ali, 2019; Enyonam et al., 2017; Makoni & Mutanana, 2016; Okeke et al., 2016; Ekienabor, 2016; Muhammad et al., 2016; Shehzad, 2011; Henry & Evans, 2008; Karasek et al., 1982) who reveal that co-workers' support affects the strength and relationship between stress and employees' productivity. Thus, the results of this research and the disclosure of previous scholars have signified that when the stress level of employees at the workplace is high, the support rendered by fellow workers is also equally high. Therefore, employees who undergo high stress can cope with it and achieve higher levels of productivity.

6. Conclusion and Managerial Implications

This moderated mediation research was executed to ascertain if stress mediates the relationship between cyberbullying and employees' productivity as well as to substantiate if co-workers' support moderates the relationship between stress and employees' productivity. The results established that cyberbullying is one of the main factors that trigger stress among employees, and stress affects the productivity of employees in the manufacturing sector in Malaysia. This can be corroborated by the findings of previous researchers (Alhujaili et al., 2020; Karthikeyan, 2020; Makhulo, 2018; Daniel, 2020; Ehsan & Ali, 2019; Enyonam et al., 2017; Makoni & Mutanana, 2016; Okeke et al., 2016).

Based on this research, it was also determined that with the support of co-workers, the stress levels could be reduced, and the productivity of the employees can be heightened. This is parallel to the previous scholars (Daniel, 2020; Ehsan & Ali, 2019; Enyonam et al., 2017; Ekienabor, 2016; Muhammad et al., 2016; Shehzad, 2011; Henry & Evans, 2008). This research also discovered that when the stress level increased, co-workers' support also increased to ensure that the employees' productivity is not diminished, as indicated by previous researchers (Zhou & George, 2001; Kaul & Lakey, 2003).

Furthermore, from this study, it can be concluded that cyberbullying elevates the stress level of employees and, in turn, stress impacts the productivity of employees in the manufacturing sector in Malaysia. Additionally, it was discovered that co-workers' support could help heighten employees' productivity by reducing the stress level that employees are subjected to. The support rendered by co-workers is able to buffer the

stress levels among fellow workers and improve the workers' productivity, ensuring that the organisation does not encounter calamity.

The managerial implication is to buffer stress caused by cyberbullying through continuous collaboration among workers. As mentioned by (Fass et al., 2007), teamwork can help overcome stress caused by cyberbullying. Managers should also put a stringent policy and standard operating procedures in place so that bullying among workers using cyberspace could be curtailed.

Additionally, managers of the manufacturing facilities should disclose the negative impacts of cyberbullying and how this could interrupt the functions of the whole organisation when the productivity of the workers begin to deteriorate. Managers should get the local authorities such as the Malaysian Communications and Multimedia Commissions (MCMC) to conduct previews at the manufacturing facilities regularly to point out the ill-effects of cyberbullying and also the legal consequences that an employee will be subjected to when they take part in an atrocious act of bullying others through cyberspace.

Finally, this study's findings and literature can be a guide that will illuminate all businesses. More precisely, the manufacturing sector owners, managers and employees, and scholars can obtain the facts and figures as to why cyberbullying should be curbed in an organisation and foster significant social change to realise a superior workplace for employees.

7. Limitations and Future Research

The focus of this study was only on the manufacturing sectors in Shah Alam, Malaysia. Consequently, to acquire more knowledge on this moderated mediation study, research can be conducted on a much bigger scale encompassing other sectors such as the service and agricultural sectors. This may provide a comparison among the various sectors on the effect of cyberbullying and the whether the support of co-workers could buffer stress caused by the act of cyberbullying and ensure the productivity of employees are not compromised.

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Conflict of Interest

The authors of this research would like to declare that there are no conflicts of interest linked with this research, and this research was not sponsored by anyone that could have influenced its outcomes. As the researchers of this study, the authors validate its novelty

and assert that this study has not been published previously and verify that it is not presently being considered for publication elsewhere.

About the Authors

The authors are academics in the Faculty of Business and Technology at UNITAR International University, an outstanding private university in Malaysia. They have been involved in scholarly and research activities for more than twenty years.

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JOB STRESS AND MODERATING ROLE OF CO-WORKERS SUPPORT

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