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### **UTILIZING ENGINEERS WORKFORCE DIVERSITY TO ENHANCE MANUFACTURING PRODUCTIVITY**

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### **ABSTRACT**

Workforce's variety and adaptability are critical elements for the manufacturing companies to increase an ability to expand and growth. Lack of workforce diversity has detrimental effects to the employee's performance and motivation to work better in organisation. Therefore, this study is pertinent to explore the utilization of engineers' workforce diversity practices in manufacturing companies to enhance the productivity. Specifically, the study involves three main workforce diversity such as recruitment strategy, culture diversity, and generational diversity in order to enhance organisational productivity mainly for the manufacturing companies. The study employed quantitative method involving 200 engineers from the manufacturing company. The findings revealed that all constructs tested were correlated and significance towards manufacturing productivity. The study contributes to the body of knowledge on the workforce diversity practices in helping manufacturing companies to enhance the productivity. It also could be a foundation for future research. Practically, the study helps the manufacturing companies, engineers and managers to strengthens the human resource policies i.e. workforce diversity via developing and planning an effective program in the organisation to improve productivity. Finally, the study also addressed a study limitation, recommendations and conclusion.

**Keywords:** Engineer workforce, manufacturing productivity, recruitment strategy, culture diversity, generational diversity.

## **INTRODUCTION**

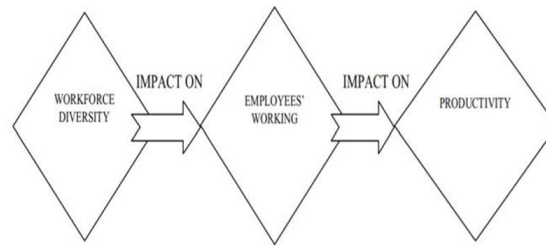
Due to an effect of customer demand complexities in the business, many organisations facing critical challenges in order to enhance their organisational performance. Organisation need to increase productivity efficiency, sustaining the product quality with cost effective in order to ensure the customer demands and the satisfaction can be fulfilled. In view of the above scenarios, many organisations have to work hardly to overcome varieties of obstacle to survive and sustain in the market. Manufacturing has become one of the world's major revenue-generating activities and human resources are the most important aspect of its success. The workforce's variety and adaptability are critical to the organisation's ability to expand and growth because to it has impacts on the performance and productivity of organisation (Wang et al., 2024). Diversity can be divided diversity into two categories i.e. surface level and deep level diversity. Surface level diversity refers to physical attributes, such as an individual's age, gender, ethnicity, and so on but deep level diversity referring to individual differences in abilities, personality traits, work attitudes, and other factors. The study also found that workforce diversity, encompassing factors such as ethnicity, skills and education, age and experience, and gender, has been found to have an impact on organisation productivity.

Based on Maqsoom et al. (2023), workforce diversity referring to the breadth of human variation, which includes both generic and unique human characteristics such as skillset and experience. Various definitions depict that diversity is not only pertinent to intergroup but also to interpersonal relations in the workplace. It allows a minorities employee to get access to social resources and opportunities. The manufacturing companies that employ a quality and competitive workforce able to compete in the current business environment, regardless of the age, attitude, language, gender or religion. Organisation increasingly implementing the workforce diversity in the human resource practices, it can be one of competitive advantages and allow to exploit and accelerate organisational growth prospects. To ensure an effective workforce diversity policy, the manufacturing's leaders and managers are primarily responsible for its success. Consequently, the manufacturing companies must focus on discovering and responding to these disparities rather than treating all employees similarly to ensure employee retention and productivity.

Fostering diversity in the workplace is a multi-layered process that takes place across many phases. It will begin with the human resource activities i.e. recruitment and selection. Human Resource (HR) Department needs to search and select qualify candidate and assisting them in adapting and finding the place within the organisation, despite the wide range of jobs and strengths. To maximize workforce potential, organisation must build and maintain a suitable work environment in which the diversity of human traits is valued (Sharma, 2023). Solving discrimination problem in demographic composition and educational background is the most important issue in the workforce diversity that need to resolve. It is because the workforce diversity practices may contribute to the manufacturing productivity. The impact of workforce diversity in productivity can be depicted in the Figure 1.

**Figure 1**

*Impact of Workforce Diversity on Productivity*



It notes that, manufacturing companies need to recognize the workforce diversity not solely effecting the organisational productivity however, it also depends on how diversity has influenced in terms of how the HR recruit, retain, train and organise their future workforce. Shanahan and Doyle-Kent (2023) discovered that workforce diversity has different effects on organisation productivity when both managers and non-managerial employees are considered in the organisation. In order to maximize productivity and also embracing workforce diversity, the organisation need to developed workforce diversity policies, initiatives and strategies to encourage representational diversity within companies. It is due to the workforce diversity practices allow the organisation to improve organisational culture, productivity and customer requirement as per depicts in Figure 2.

**Figure 2**

*The Statistic of Workforce Diversity*



Understanding the influence of workforce diversity towards organisational performance including employee satisfaction, attrition rates and proper diversity management are must and critical by the manager in the manufacturing companies. Since the workforce diversity trends were first identified in the 1980s, they were heralded as a way for all organisations to be more inventive and creative to reach untapped markets, to gain and maintain a competitive advantage over other organisations. Due to the leader in the manufacturing is not well trained in the discipline of diversity management and its principles causes conflict and instability in the workplace (Maqsoom et al., 2020). As a result, most human resource managers are having trouble laying up a recruitment plan that can handle diversity-related concerns in the workplace.

On top of that, unmanaged diversity i.e. development possibilities proven that reducing motivation, high turnover rate leading to workplace instability and reduce organisational efficiency. In terms of job related issues as revealed by past researchers, such as McCaffree (2007), inappropriate job or unpleasant job assignments are increasingly in the manufacturing due to the managers unable to manage workforce diversity accordingly. It is because employee retention, highly motivated workers and a good working environment could be the most important advantages of diversity. This diversity is seen as a positive

motivator for employee performance by segment, whilst its absence is seen as detrimental to organisational and employee performance.

Furthermore, failure to manage workforce diversity effectively in the workplace, it will create uncertainty and disruption that could be caused by miscommunications resulting in altercations (Choi & Rainey, 2014). This is the primary reason why businesses must disregard such events to preserve the turnover rate caused by workplace disagreements. Consequently, workforce diversity practices must reflect in the manufacturing policies which systematically disfavour some people. It is because workforce diversity has a significant effect in organisation productivity. Workforce diversity practices can be implemented in various human resource management in the organisation such as variety in age, gender, education and ethnicity consequently enhance manufacturing performance. Again, research suggests that a diversity management training program is thought to boost decision-making, creative solutions and job efficiency. However, it rarely exhibits the desired mentality and long-term productivity improvements. Therefore, it is very pertinent to conduct this study by exploring workforce diversity practices to enhance manufacturing productivity. It is due to many years of past studies found the effects of workforce diversity on organisation productivity have revealed that the workforce diversity has both positive and negative effects on productivity and this study is still vague. Specifically, the objective of this study is to investigate the role of recruitment strategy, cultural diversity, and generational diversity on the effect of manufacturing productivity. This study organised in several section such as first, introduction that elaborate the concepts of workforce diversity in the organisations, it potential benefits to organisations and issues related to the practices. Second, the discussion on past reviews related to the constructs i.e. of recruitment strategy, cultural diversity, generational diversity used in this study on the effects to the manufacturing productivity. Third, methodology and the research framework for the study. Finally, the findings and discussion as well as conclusion are adduced.

## **LITERATURE REVIEW**

To obtain a clear understanding on the workforce diversity, it is important to review each of the constructs involved in the past studies. Based on the past studies, the discussion for each construct such as workforce diversity and manufacturing productivity, recruitment strategy, cultural diversity and generational diversity are discussed as below.

### **Workforce Diversity and Manufacturing Productivity**

There is still a lot of argument to determine the precise constitutes the workforce diversity. Even three decades of discussion about workplace diversity but still exist misunderstanding about the issue of diversity in the organisation. Numerous discusses such as Ashta et al. (2023), to determine diversity should be defined as physiological (age, gender, ethnicity) or encompass all elements of variation in the human resources. Some scholars believe that workforce diversity should be seen broadly, while others say that it should be viewed narrowly. They stated that workforce diversity should be limited to natural features such as age and gender. It is due to workforce diversity is the degree of variation among employees confined to natural characteristics such as age, gender, and ethnicity. Despite of that, the danger of a limited diversity concept is only focus to one element of natural variation (race, age, ethnicity, or gender).

The effects of workforce diversity and organisation productivity can be viewed through multiple diversity perspectives. Prior studies such as Ferraro et al. (2023) diversity can be narrowed down into a few levels that can increase productivity due to the career advancement or opportunity cultivates the employees' thinking into believing that every hard work pledged to the organisation will not be left unnoticed. Hence,

creates a desire within the employee to continuously perform at the highest level. They also expand a comprehensive understanding of workforce diversity that can be related to recognition, acceptance, assessment and celebration of differences between culturally diverse individuals. It bases on age, class, ethnicity, gender, physical and mental aptitude, race, economic position, sexual orientation, spiritual practices, and public support status. Every employee is unique from a broader point of view in his own right. The manufacturing company develop with multiple generational employees in terms of wide range of experience and skillset level allow the organisations increases employee's competitiveness which further contributes to a diversified workforce. As a result, workplace diversity entails embracing, respecting and valuing each employee's regardless of background.

Manufacturing productivity is a measure of how well an organisation functions as well as an indicator of a single or department's efficiency and competition. The efficiency manufacturing activities in the organisation will be determined by performance and productivity is a mix of precision and optimal utilization of personnel and material resources available. Nizam and Shah (2025) stated that productivity is to measure how well resources are brought together in an organisation activity and utilize to achieve manufacturers goals. Productivity is the best level with the least amount of money or resources spent that commonly referred to the ratio of total output to total inputs. Specifically, manufacturing productivity is a series of structured and planned activities designed to enhance the program and make better use of people, resources, places and locations. These methods are created and implemented in modern programs. Wang et al. (2024) evaluated the linkage between workforce diversity and organisational performance and productivity in the construction companies. The organisational knowledge recognized as a key element in obtaining a competitive advantage and to be a major contributor to the organisation's success and survival in a highly competitive business environment. The primary goal of the organisation is to ensure that employees understand that knowledge sharing benefits both employees and company. It is because to be innovative manufacturing company must have a strong workforce diversity that encourages employees to engage in creative thinking.

## **Recruitment Strategy**

Anwar and Surarchith (2015) defined recruitment is the process of identifying, choosing and employing the best-qualified candidate within a company. It involves the process by which companies locate and attract people to fill job openings. Again, it also as the series of operations undertaken by a company in order to attract job applicants with the skills required to assist the organisation in achieving its objectives and goals. The recruitment process involves examining the employment requirements, attracting employees, screening and selecting candidates, contracting and integrating new employee into the organisation.

In organisation, Human Resource department is in charge of recruiting suitable candidates and obtaining the most qualified candidates for the position in an organisation. HR department must ensure to determine the employee employs for the organisation able to match the diverse workforce requirements. However, if an employee from external organisation it would be important whereby the employees must go through via assessment, job analysis and design stages in a diversified organisation. The study conducted by Gursoy et al. (2008), in the manufacturing companies, more than three out of every four job seekers and employees believe that diverse workforce is a significant element when assessing organisations and job offers. This implies that, whether the organisation is interested in expanding workforce diversity or otherwise, most candidates will consider the diversity factor in selecting the organisation to work in. By having a diversified workforce is essential for underrepresented groups in the organisation. Almost one third of employees and job seekers would not apply for a position if workforce diversity is lacking in the organisation. It is due to

diverse workforce is important to the company whereby HR must ensure all new recruits understand and aware about organisation initiatives by involving them in many efforts. By having this, it helps the companies to recruit diverse talents eventually contribute to organisation productivity (Wandelt & Wang, 2024).

To enhance organisational ability and sustain competitive advantage, the organisation must be able to recruit and retain capable employees to achieve company competitive edge. It is because effective and efficient recruitment and selection procedures may lead to better organisational productivity. Effective company's selection technique enables the organisation influence bottom-line business outcomes i.e. productivity and financial performance. Furthermore, recruitment and selection activities play critical process to determine the efficacy and performance of a company. High worker turnover, poor performance and disgruntled customers, all costs that can be avoided through recruitment and ensure smooth business operation.

Based on the above reviews from the past studies such as Casebolt et al. (2023) have identified several pertinent constructs that need to be emphasized by the organisations to enhance their productivity. First construct selected in this study is recruitment strategy. It is referring to the process the companies locate and attract employees to fill the job openings. The justification selecting this construct more than three out of every four job seekers and employees believe that a diverse workforce is a significant element when assessing organisations and job offers. Again, the important role of Human Resource Department, the department may ensure the employee employs for the organisation would be able to match the diverse workforce requirements.

### **The Linkage between Recruitment Strategy and Manufacturing Productivity**

Employee recruitment and selection is one of the important HR functions that contribute to a significant impact on organisational productivity and enhance the company's image. Effective recruitment and selection strategy are critical consequently bringing in the right talents in the company that may help the company improve and maintain its success. To preserve organisational ability and sustain competitive advantage, the organisation must be able to recruit and retain the talents that required to sustain company competitive edge. Thus, effective recruitment and selection procedures lead to better organisational results. Promoting effective recruitment strategies in the organisation and selecting diverse candidates from different background leading to complement in terms of competencies, skills and knowledge between organisational members. In occurs in the sense that when the organisation recruiting and selecting various skills, knowledge and competencies from the external talents, it increases better employees' commitment and cooperation to complement between each other eventually enhance organisation performance (Ashta et al., 2023).

Furthermore, effective organisation's recruitment and selection technique may influence bottom-line business outcomes such as productivity and financial performance. It occurs when an organisation using various recruitment strategies to recruit and select the candidates that have gone through proper screening process for the right candidates to the prospective applicants for a job. It would be positive impacts to the organisational productivity when the organisation has integrated and emphasised workforce diversity recruitment strategy in the HR policies uphold the organisational mission and vision that aim to improve and sustain organisational performance. Consistent with Ali and Anwar (2021), it was revealed that recruitment strategy is one of the most critical variables to determine an organisation's performance. It is due to recruitment and selection play an important role in ensuring quality talent bring in the organisation to ensure positive organisational outcomes. It is stated that employee recruitment and selection conducted



not only to replace existing employees or to add manpower, however it also to ensure the manpower selected can perform well and demonstrate dedication that pertinent to enhance organisation productivity. Failure to implement effective and efficient recruitment and selection function lead to wrong decision making eventually undermine an organisational effectiveness, invalidate incentive and development schemes, be unjust to individual recruits, and be stressful for managers to deal with incompetence employees. Based on the above reviews, the study hypothesised that

H1: There is a positive relationship between recruitment strategy and manufacturing productivity.

## **Cultural Diversity**

Cultural diversity can be referred to how different civilizations value between one another. It also can be referred to the differences of various racial, religious and geographical origins within the organisation. Aissa et al. (2019) defined cultural variety is the diversity of people's communities or cultures in a given place or around the world. The presence and participation of individuals from various cultural backgrounds provides an organisation with many advantages and possibilities to improve productivity. In the organisation perspective cultural diversity denotes a specific set of values, beliefs, behaviors and attitudes by sharing interpretation, a transmission that collective from other collectives. It also can be described as the recognition of understanding individuals, which has been discussed broadly in cross cultural psychology and significantly increased.

Cultural diversity in organisation is a set shared values and perceptions that influence all aspects of the organisation, including structure, strategy, leadership and processes. In order to enhance organisational productivity, organisations should focus to increase their flexibility and responsiveness in the global market through implementing a culturally diverse environment. It is due to diverse culture of an organisation could affect how a company responds to the diversity characteristics of its employees and influences employees' perceived experiences. In the study indicated by Gursoy et al. (2008), differences of cultural diversity help diversity management approaches and that diversity has a major impact on organisational outcomes and performance. It occurs in the sense that, when the organisation enable to develop diversity initiatives by considering diversity in each employee, it can result in enhance commitment and productivity in the various roles.

Again, cultural abilities are enhanced in order to develop the ability to recognize and communicate with individuals in the organisation and also effectively collaborate with them on dysfunctional cultural values. Employees from various cultural backgrounds may cooperate and generating better ideas that allow the business utilizing the critical thinking abilities. Subsequently, boosts organisational efficiency. Three important ways that the culture may influences teams in an organisation first, the norms of the cultures present in the work team second, the degree of cultural diversity among individual team members, and finally the proportion of cultural variety in the composition of a team. All above are recognized to be a good factor in an organisation since it improves productivity. Having cultural diversity allow them in the long-term effects to fosters an innovative and creative organisational environment, hybrid of working methods eventually contributes to increase of global competitiveness, cost-effectiveness, job motivation and product variety. It is due to organisational members comprised of individuals' differences in terms of backgrounds, views and cultural values may enhance a wide range of ideas, enabling the most reserved team members to express their own points of view. Similarly, Shemla and Meyer (2012) further supported that variety encourages constructive conflict that can boosts creativity and improves decision-making efficiency and quality that contribute to the improve organisational productivity.

In short, cultural diversity refers to the organisation's set of shared values and perceptions that influence all aspects of the organisation, including structure, strategy, leadership and processes. The plausible in selecting this construct in the study because of the presence and participation of individuals from various cultural backgrounds provides an organisation with many advantages and possibilities eventually enhance productivity. By having cultural diversity perspective, a specific set of values, beliefs, behaviours and attitudes by sharing interpretation, a transmission that collective from other collectives would be a complimentary between organisation members.

### **The Linkage between Cultural Diversity and Manufacturing Productivity**

Employees from difference cultural backgrounds may cooperate and come up with better ideas that will benefit business via utilizing the critical thinking abilities among them. Employing employees from various cultures leads to boost organisational efficiency significantly. Alessio and Vasilakis (2024) stated that cultural diversity refers to the existence of people in a company who originate from different origins and have different characteristics. Employees vary in terms of experience, age, culture, ethnicity, ethnic origin, and sexual orientation, and all of these variables contribute to diversity that can compliments competencies between team members subsequently enhance organisational productivity.

Several important ways in which culture influences teams in an organisation. It can influence the norms of the cultures present in the work team, the degree of cultural diversity among individual team members, and the proportion of cultural variety in the composition of a team. These will contribute to the increase of various skills, knowledge and abilities for the organisation to run the business. Again, he also found that cultural diversity is recognized to be a good factor in an organisation to improve productivity. Yet, diversity also presents major difficulties for business leaders because it puts individuals from different regions, faiths, and cultures together. Akinnusi et al. (2017) also stated that cultural diversity is now an essential part of every organisational structure. It is because the cultural diversity enables to foster an innovative and creative organisational environment, as well as a hybrid of working methods, which contributes to increased global competitiveness, cost-effectiveness, job motivation, and product variety in the long term.

The team comprised of different individual backgrounds, views, and cultural values may help to create a wide range of ideas, enabling most reserved team members to express their own points of view. In addition to that, cultural variety encourages constructive conflict which boosts creativity and improve decision-making efficiency and quality. According to Akinnusi et al. (2017), the management needs to engage employees rationally, promoting and recognise good practices and rational thinking. This will improve employee loyalty while also creating a healthy and pleasant work environment, resulting in increased productivity. Employees prefer to engage on an individualized level, which is a big step backwards considering that the majority of companies are concerned to reducing inequalities. This may be an issue for business since the personalized approach harms cooperation. The study conducted by Foma (2014) examined an employee's view of cultural diversity among the companies. The study found that there is a significant relationship between organisational support and cultural diversity management. In a diverse workforce, management's support to the employees is critical. Top management need to recognise and appreciate the employees regardless of race, gender, colour, ethnicity, or cultural background. The research found that managers in a culturally diverse organisation need the proper tools, training, evaluation, and monitoring programs, as well as top-level support, in order to improve organisational performance. Therefore, cultural diversity can be hypothesized as follows

H2: There is a positive relationship between cultural diversity and manufacturing productivity.



## **Generational Diversity**

Several generations are working in today's industries and there are several ranges are used in a variety of companies worldwide. A generation could be a group of people born between a set of births for a long time and occasions that happened over a certain period of time. Prensky (2001) divided workforce from four generations first, Baby Boomers was born between 1946 and 1964, second, Generation X was born between 1965 and 1980 and third, Millennials or Generation Y was born between 1981 and 1995, and the last is Generation Z was born between 1996 and 2012. Every generation possesses different characteristics, shaped by their individual life experiences and the environment in which they were raised and each of generation having their own strengthens, unique perspectives and work styles that contribute to enhance organisational productivity.

The Baby Boomers were the biggest generational group. They are competitive, hard, they set objectives, and they are usually loyal. Generation X, also known as Gen Xers is known for having low ambitions, alienation, and being the first generation to grow up in two-parent families. They are frequently described as egotistical, skeptical of authority, and organisationally mobile (Gursoy et al., 2008). Generation Y/Gen Yers—Millennials—Hoodies are Internet citizens, and thus global citizens. In addition to a desire for development, Gen Y is recognized to have entrepreneurial work value aspirations and their free time is one of their major motivators. They respect personal time and receptive to variety and risk as well as possessed stronger multitasking abilities. Their work practices and values differ significantly from those of earlier generations. Thus, the attitudes, goals, mind-sets and values, the workplace's generational mix presents both possibilities and difficulties.

Due to rapid development of digital technology, it has transformed the people's lives, creating a distinction between the generations born into the digital world called as "digital natives". Those who adopted these technologies later in life, referred as "digital immigrants" (Prensky, 2001). The employees under the digital natives possessed distinct characteristics, preference receiving information at high speed, parallel processing, multitasking, perform well in networking, and thriving on instant gratification and frequent rewards. However, the digital immigrants, they are slower pace, prefer performing individual tasks rather than multitasking. In terms of the learning nature, it differs between these two groups, posing another challenge for employers to successfully manage a multi-generational workforce where older workers represent a considerable proportion.

In the perspective of organisation perspectives each generation reacts differently to eight working environments. Workplace settings include behaviours, training, learning styles, communication styles, problem-solving, decision-making, leadership styles and feedback. The self-worth of Baby Boomers is frequently assessed in terms of how far they have advance in their corporate ladder while Gen Xers are defined by their work and personal obligations. Gen Yers are confident and bold. Having difference generation diversity in the organisation lead to better organisational commitments, preferred leadership styles and favourite leaders. Numerous past studies such as Glass (2007) conducted research on how generational changes in the diversity of the workforce. These will that affect ethical employees' beliefs, ideologies, consumer ethics, value systems and found the cultures and generative traits affect ethical beliefs, ideologies, and value systems in the organisation. Gen Yers had greater tolerance than idealistic Gen Yers in this connection. Their perceptions are deceptive because they are not always based on facts, but rather on an individual's own intuitions, beliefs, and cognitive perspective of others.

To promote effective generation diversity in organisation, HR department may implement an organisation-wide awareness campaign to educate all workers regardless of job positions on the distinct features of each

age group. So that, employees and managers could obtain benefit from regular campaigns and training sessions to achieve better understanding on various expectations of generational groups in order to achieve organisational efficiency. On top of that, the management also should focus to address the misconceptions among employees in all generations have between one another. Therefore, it creates effective long-term approach and more inclusive working environment whereby all four generational groups' views would be heard. Such dedication and effort to change must begin at the top level of management and via leadership by example. It can be implemented such as mentor-mentee program to address the concerns and prejudices that younger employees may have about their older co-workers. Despite that, the employees from Gen Y are innovative and willing to share their ideas with others. This may encourage employees to continue loyal and drives the company develop and expand. Again, they also innovative and willing to share the ideas with others. This would motivate employees to remain loyal and facilitate in developing and expanding the organisational performance particularly enhance productivity level.

To sum up, generational diversity is referring to a generation could be a group of people born between a set of births for a long time and occasions that happened over a certain period of time. Every group of birth gets older and external circumstances that define its formation years affect its expectations, values, attitudes and beliefs. The most prevalent birth generational groups recognized in the literature are Baby Boomer generation, Generation X/Gen Xers, Generation Y/Gen Years—Millennials—Hoodies, and Generation Z. Various composition of multigenerational workforce allows the organisation work practices and values differ significantly from those of earlier generations leading to the various ideas generating towards boost organisational productivity. In view of the above justifications thus, it is important to include the generational workforce diversity in the manufacturing in order to enhance their productivity.

### **The Linkage between Generational Diversity and Manufacturing Productivity**

The integration of diverse generations among employees in organisation leading to create competitive advantage for the organisation to strengthen the organisation performance. It is because the combination from various employees' generation i.e. generational diversity such as Generation X, Y or Millennials enable the organisation increases the employee's competencies eventually contribute to enhance organisation productivity (Ranasinghe et al., 2023). One effective approach is to implement an organisation-wide awareness campaign to educate all employees regardless of job position about the distinct features of each age group. The employees and managers would benefit from regular campaigns and training sessions to obtain better understanding various expectations from the various generational groups. It is very pertinent to achieve organisational efficiency.

On top of that, the management should focus to address the misconceptions that employees of all generations have same ideas between one another. It would be effective in the long run when the managers create a more inclusive work atmosphere in which all three generational groups' views would be heard. Organisational change also can be implemented smoothly by having combination of diverse employees' generation when the dedication and effort to change address at the top level of management. They might, for example, create a mentor-mentee program to address the concerns and prejudices that younger employees may have about their senior co-workers. The employees of Gen Y are innovative and willing to share their ideas with others. This would encourage to create a positive working environment whereby the employees would continue to be engaged and help the company develop, growth and the motivated employees to remain loyal and help build and expand their business together. Meanwhile, as emphasized by Ozkan-Ozen and Kazacoglu (2022) the organisation integrates inter-generationally inclusive work practices, the productivity was higher in younger generations. These practices include ensuring all

employees have similar levels of voice when collaborating and advancing employees based on merit regardless of their age. In short, based on the above linkages, this study hypothesized that

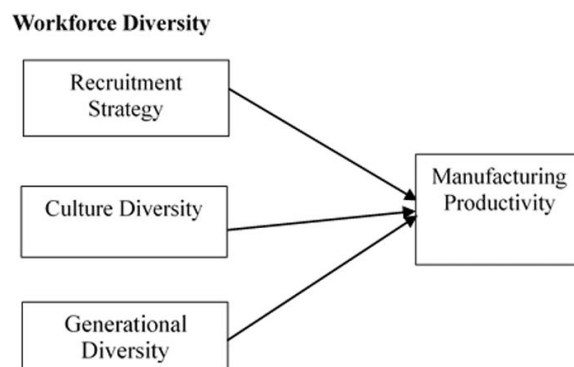
H3: There is a positive relationship between generational diversity and manufacturing productivity.

## METHOD

To develop the research framework, this study conducting the review from the past studies related to workforce diversity in the organisation. During the review, each of the refereed journals are carefully selected and narrow down to the workforce diversity and effects to the productivity. Then, the review focusing to the specific important constructs that need to be emphasized by the organisation in order to enhance productivity i.e. recruitment strategy, cultural diversity, generational diversity and the linkage to the productivity mainly in the manufacturing companies. The study employed a quantitative data table (Krejcie & Morgan, 1970) used to determine the sample size and the sample size required for the study is 196 respondents. In order to overcome non-responses and incomplete responses, the study distributed questionnaires to 250 engineers using convenience sampling techniques. Finally, there are 200 respondents were responded and proceed for data analysis using SPSS version 26 software package. Each construct measured based on several authors from past studies. Based on the above reviews and justifications, the study proposing the research framework as depicts in Figure 1. The proposed research framework consists three main pertinent factors i.e. recruitment strategy, culture diversity and generational diversity to enhance manufacturing productivity.

**Figure 3**

*Research Framework*



## FINDINGS AND DISCUSSION

### Respondents' Demographic Profile

The majority respondents involve in this study were among male engineers at 58.5% of the respondents, age range between 31 to 40 at 43%, and Malay respondents at 25%. In terms of education level, the majority of the respondents are degree holders at 25% with the length of service above 10 years at 31.5%. This employee's willingness to remain in the same workplace shows how comfortable and happy they are in the organisation.

## Reliability Analysis

The consistency and stability of variables are measured using the reliability test (Sekaran, 2003). With reliability analysis, the properties of measuring scales and objects can be investigated. The approach to reliability analysis develops a number of reliability measures regularly utilized and provides data on the correlations between separate elements. Cronbach's alpha used to measure how effectively the items in a set are related to one another. Instruments with a Cronbach alpha value near 1 are superior. According to (Sekaran, 2003), numbers below 0.6 are regarded as poor, while those above 0.7 are rated as good. Table 1 below shows the reliability analysis.

**Table 1**

*Reliability analysis results*

No of items.	Study Variables.	Cronbach's. Alpha.	Remarks
5	Manufacturing Productivity	0.845	Good
5	Recruitment Strategy	0.805	Good
5	Cultural Diversity	0.826	Good
5	Generational Diversity	0.777	Good

Based on Table 1, the Cronbach's Alpha value for manufacturing productivity is 0.845, recruitment strategy is 0.805, cultural diversity is 0.826, and generational diversity is 0.777. The findings revealed that all constructs were good, adequate, and capable of accurately to measure. Manufacturing productivity has the highest reliability score of 0.845 followed by cultural diversity 0.845, recruitment strategy at 0.805 and lastly is generational diversity at 0.777. Those constructs indicate that most reliable factor in determining organisation productivity. This is owing to the fact that when an organisation supports its employees, it has parallel effects, such as bringing diversity into the organisation. Cultural diversity brings a sense of ownership to the employees and makes them want to perform and contribute to the organisation.

## Pearson Correlation Analysis

To perform the correlation analysis, it is sufficient the correlation between at least two continuous variables by using the person's correlation. Davis (1971) stated that, the correlation values between 0.7 and above indicate a very strong relationship, correlation values between 0.5 and 0.69 indicate a strong relationship, correlation values between 0.3 and 0.49 indicate a moderate relationship, correlation values between 0.1 and 0.29 indicate a low relationship, and values 0.01 to 0.09 indicate a very low relationship.

**Table 2**

*Pearson Correlation results*

Variables	Manufacturing Productivity	Recruitment Strategy	Cultural Diversity	Generational Diversity
Manufacturing Productivity	1			
Recruitment Strategy	0.380**	1		
Cultural Diversity	0.616**	0.651**	1	
Generational Diversity	0.559**	0.715**	0.687**	1

Table 2 depicts the Pearson correlation analysis. The findings revealed that as per suggested by Davis (1971), the association between the first independent; variable recruitment strategy, and the dependent variable, manufacturing productivity, have a 0.38 or 38% association, indicating a moderate correlation. The cultural diversity towards manufacturing productivity, have a correlation of 0.616 or 61.6%, indicating a strong association between the variables. Finally, the correlation value for generational diversity is 0.559, or 55.9%, indicating that it has a strong towards manufacturing productivity. It is possibly due to the fact that when an organisation supports its employees, it creates a parallel effect and promoting diversity practices in the organisation.

### **Regression Analysis**

The influence of all independent variables on manufacturing productivity was investigated using regression analysis. Table 3 indicates the findings of multiple linear regression to investigate these effects. Workforce diversity, through its four constructs in the study model, explains manufacturing productivity by 47.7% ( $R^2=0.477$ ,  $F=44.467$ ,  $p=0.000$ ) of the variance explained. This shows a relatively high impact recruitment strategy, cultural diversity and generational diversity on manufacturing productivity. This also implies that the model is a good model to predict manufacturing productivity. The model was also statistically significant ( $P = 0.00$ ). Cultural diversity ( $B=0.405$ ,  $t=4.763$ ,  $p=0.000$ ) was found to have the greatest impact on manufacturing productivity, followed by generational diversity ( $B=0.331$ ,  $t=3.805$ ,  $p=0.000$ ). However, it was also found that the recruitment strategy ( $B=-0.357$ ,  $t=-3.987$ ,  $p=0.000$ ) had a negative beta and t value of -0.357 and -3.987, with a p value of 0.000. This shows that recruitment strategy has a significant and inverse impact on organisation productivity.

**Table 3**

*Multiple Regression Analysis*

	<b>B</b>	<b>t</b>	<b>Sig.</b>
Recruitment Strategy	-.357	-3.987	.000
Cultural Diversity	.405	4.763	.000
Generational Diversity	.331	3.805	.000
$R^2$	0.477		
$F$	44.467		
$Sig.$	0.000		

There are four primary hypotheses were developed. This part uses statistical tools to test the hypotheses that have been generated. To evaluate H1 to H3, multiple regression analysis was used as shown in Table 3. Referring to that table, the findings revealed that all hypotheses H1 to H3 tested are accepted whereby p value 0.000 obtained from all variables is  $<0.001$ . In short, all hypotheses i.e. H1, H2 and H3 are accepted.

## **CONCLUSION**

In nutshell, the main aim of the study is utilising engineer's workforce diversity on the relationship of manufacturing productivity. There are three important constructs identified and integrate in this study in order to boost the manufacturing productivity. Among the constructs are recruitment strategy, cultural diversity and generational diversity on the manufacturing productivity. Each construct is carefully identified, analysed and justified based on the past studies that allow the manufacturing companies to enhance the productivity. The study findings revealed that, all constructs i.e. recruitment strategy, cultural diversity, generational diversity were correlate and significance towards manufacturing productivity.

The study could contribute to both theoretical and practical contributions. The theoretical contributions, this study enables to enrich the body of knowledge related to the managing human resource diversity in organisational specifically among manufacturing companies. Next, this study may act as foundation for future studies to include any other constructs that not being identified in the current study. In term of practical contributions, this study allows the Human Resource Practitioners to emphasize on the important elements that effectively and efficiently contribute to the enhancing productivity. Lastly, the study contributes to the organisations in developing and planning relevance policies in workforce diversity practices, training and development program for their employees to enhance organisational productivity.

As other studies, this study also cannot be avoided from its limitation. First, the generalization of the study only limited to the manufacturing companies rather than other companies such as services and so forth. Second, the study is only focusing to the three main constructs specifically recruitment strategy, cultural diversity and generational diversity towards enhancing the manufacturing productivity. Finally, this study is cross sectional that involves survey only one time that could limit the findings of the study. Future study can be extended to other sectors such as services, agriculture and so forth. Again, integration various constructs by considering constructs in individual, organisational and social factors in the study to ensure holistic findings and research framework. Lastly, future study can be extended mix methods integrating both quantitative and qualitative in order to strengthen the findings of the study.

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