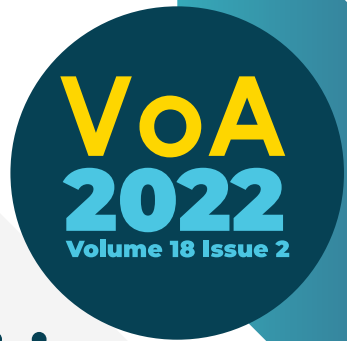




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## THE EFFECTS OF TEAM COMPOSITION ON THE PERFORMANCE OF PUBLIC HEALTHCARE WORKERS IN MALAYSIA

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### ABSTRACT

Healthcare workers are the pulse of medical services in the country. In medical teams, the composition of workers plays a big impact in the delivery of healthcare services. In this paper, team composition consists of team diversity and team skills. The effects of team composition on the performance of healthcare workers are analyzed and discussed. This study involved 300 healthcare teams in Malaysia. The paper intends to examine the relationship between team diversity and team skills on the team performance of healthcare workers. Team performance is characterized by team task performance and team contextual performance. Data were analyzed using the structural equation modeling (SEM) technique and results indicated that team diversity has no significant effect on team performance (team task performance  $\beta = 0.081$ ,  $p > 0.05$ ; team contextual performance  $\beta = 0.026$ ,  $p > 0.05$ ). Meanwhile, team skills have proven to have a significant effect on both dimensions of team performance (task performance  $\beta = 0.1446$ ,  $p < 0.01$ ; and team contextual performance  $\beta = 0.1149$ ,  $p < 0.05$ ). Furthermore, a fit model was explored between all the factors. This study would assist in the understanding of team composition and team performance among healthcare workers in Malaysia.

## **1. Introduction**

Public healthcare workers carry the responsibility of healing and caring for others. Their performance reflects the well-being of the end-receivers of their service i.e. the patients. In the context of public healthcare, this means that the performance of the frontliners will ensure the well-being of the citizens which in turn, will reflect the healthy growth of the nation. More often than not, healthcare workers work in a synergy and collaborative manner through team-working. High-performing teams are crucial in healthcare because the tasks in this sector are highly interdependent, unpredictable, and dynamic (Traylor, Tannenbaum, Thomas, & Salas, 2021; Bleakley, 2013). Healthcare teams are often faced with challenges that are complex and difficult to coordinate, requiring the teams to align high levels of collaboration between tasks, members' attributes, and the overall team strategy (Traylor et.al., 2021). Medical frontline workers are highly dependent on teams because high-performing teams will lead to a higher degree of members' satisfaction, decreased stress, increased quality of healthcare, reduced medical errors, and increased patient safety (Kalisch, Weaver, & Salas, 2009). The urge for healthcare workers to be coordinated in tasks signifies the importance of team performance in healthcare settings.

## **2. The Effects Of Team Composition On The Performance Of Public Healthcare Workers**

Team composition refers to the combination of team members' attributes that formed the team. It is a direct result of the socialization process that shapes team behavior. Team composition indicates the variability of individual characteristics in a team, which is often claimed to influence team performance. This variability will affect team performance by way of maximizing the team members' set of skills (Somech & Drach-Zahavy, 2013). A right mixture of members' composition is needed as work becomes more complex and highly interdependent. This mix should comprise teamwork and technical components, and not merely individual skills (Patrício & Franco, 2022; Rico et.al, 2010; Hollenbeck et al., 2004).

Somech and Drach-Zahavy (2013) noted two aspects of team composition: surface-level attributes and deep-level attributes. Demographic aspects such as team diversity and skills are nominated as surface-level attributes and have the most significant influence on team functioning (Barrick et al., 1998). Wageman, Hackman, and Lehman (2005) pointed out that team composition should reflect a combination of team diversity and team skills, in which each dimension influences the pursuit towards achieving greater team performance. They further affirmed that team members should be equipped with good interpersonal skills and that the team should comprise an optimal level of members' similarities to reduce disagreement and negative frictions in handling tasks (Wageman et al., 2005). Bearing in mind that the performance of healthcare teams is a function of the team's composition (Dreachslin et al., 2000; Gates and Mark, 2012; Mallik et al. (2009); and Lipponen et al., 2013), this paper will focus on the two characteristics of team composition pointed by Wageman et al. (2005), which are team diversity and team skills.

### **2.1 Team Diversity**

Team diversity refers to the degree of difference between the characteristics of members in a team (Stock, 2004). These characteristics are attributed to the salient and nonsalient features of a team, such as gender, age, values, beliefs, and attitudes (Russo, 2012). Either way, in order for a team to perform successfully, both ends of team diversity must be achieved at an optimal level, in the sense that there must be a balance between members' homogeneity and heterogeneity in a team. Team members should not be too similar as it hinders creativity and at the same time it cannot be too dissimilar because too many differences may cause ineffective performance (Kozlowski & Bell, 2001). In their study, Rico et al. (2010) claimed that a positive

relationship between team diversity and team performance is important because teams must be highly diverse to allow different perspectives. Meanwhile, a lack of diversity can cause narrow perspectives which will hamper team performance. In addition, Guillaume, Dawson, Otaye-Ebede, Woods, and West (2015) suggested that there must be positive attitudes and mindsets towards team diversities in organizations so that members are aware of each other's differences and are able to use these diversities to achieve desired goals.

Wageman et al. (2005) claimed that teams with a good distribution of diversity will consist of members who are neither too similar nor too different from one another. A sense of balance is important because too many similarities will only create duplication of ideas and resources, whereas too many differences will cause friction in communication. In terms of tasks, diversity was found to be positively related to performance for complex tasks and negatively related to straightforward tasks (Higgs, Plewnia, & Ploch, 2005). This means that team diversity is also influenced by the nature of tasks. This may be explained by the need to have diverse ideas in accomplishing difficult tasks and vice-versa. In addition, Jehn, Northcraft, and Neale (1999) established that for teams to achieve their mission, members should have a good mixture of information and value diversity. Information diversity refers to the different educational backgrounds of team members, while value diversity refers to the work ethics and team goals (Jehn et al., 1999).

Workers in healthcare typically provide continuous services by caring for patients and fulfilling patients' demands, and in return achieve the hospital's goals and objectives. In teams, members must be able to work with each other by making the best use of each others' experiences and characteristics (Krijgsheld, Tummers, & Scheepers, 2022). In this instance, team diversity is important to ensure that team member has the best mixture of individual attributes that may lead their teams to higher performance (Wageman et al., 2005). In healthcare teams, team diversity is always encouraged because it can reduce stereotypes and biases (American Organization of Nurse Executives [AONE], 2007; Dreachslin, Hunt, & Sprainer, 2000). Team diversity induces creativity and stimulates brainstorming, as diversity will prevent 'groupthink' that hinders performance (Gates & Mark, 2012; Schilpzand, Herold & Shalley, 2011; Dreachslin et al., 2000). As asserted by Higgs et al. (2005), when team members have different thoughts or perspectives, these differences when combined, are able to generate ideas and new solutions to solve conflicts and challenges. Hence, through this way, stereotypes and biases can be reduced.

Nevertheless, Dreachslin et al. (2000) professed that diversity needs to be properly designed and trained for teams to reach optimal performance. A strategic design for team diversity needs to be done so that team members and leaders can value differences in terms of background and perspectives. Diversity can be a great source for team spirit which can increase performance (AONE, 2007). The differences in experience and personal characteristics help team members execute tasks effectively, as, through team diversity, members are able to bring unique perspectives to the team and the hospital which they serve. However, in the healthcare context, team diversity has been understudied and has received mixed findings in terms of its relationship with team performance (Gates & Mark, 2012). This might be due to the fact that the healthcare workers' population has not been a specific target of diversity studies, which necessitates further study on team diversity's characteristics (Gates & Mark, 2012). As such, there is a need to further explore team diversity as a predictor of performance for healthcare teams.

## **2.2 Team skills**

For healthcare teams, each member must be able to coordinate, direct and supervise care. These are among the relevant team skills that are needed for team performance. In addition, team members must be able to initiate and maintain teamwork, especially in complex situations (RNAO, 2006). Mallik, Hall, and Howard (2009) professed that team skills are important as the majority of decisions are made collectively. These skills include interaction skills, functional skills, and patient education skills (Lipponen, Kyngäs, & Kanste, 2013). Patient education skills consist of skills to advise patients on self-care and home-care (Lipponen et al., 2013).

Team skills are the blend of knowledge, talent, and experience possessed by team members (Wageman et al., 2005). Team skills include interpersonal skills (Wageman et al., 2005), social skills (Morgeson, Reider, & Campion, 2005), and cognitive skills (Kozlowski & Bell, 2001). This set of skills will allow team members to effectively communicate and coordinate in order to accomplish team assignments. Hollenbeck et al. (2004) asserted that the correct mixture of skills in teams will assist team functioning, especially when tasks become more complex and interdependent. Team members' composition of skills affects the achievement of team performance (Somech & Drach-Zahavy, 2013). Meanwhile, the contribution of members' skills will determine the progression towards team success (Wageman et al., 2005). A good composition should contain a mixture of technical skills possessed by team members and not simply focus on individual-level skills. Baker and Salas (1992) in their model of teamwork skills asserted that team skills are not stagnant because they will develop and evolve, thus it is crucial for team members and their leaders to be aware of their skills development. In teams, technical skills, social skills, cognitive skills, and interpersonal skills must be managed strategically to ensure greater performance (Wageman et al., 2005; Morgeson et al., 2005; Kozlowski & Bell, 2001).

A study by King, Long, and Lisy (2014) concluded that; a good skill mix in healthcare teams can lead the team to higher satisfaction, lower stress, and lower burnout level among its members. They also added that increased team skills will lead to improved team outcomes through lower patient mortality, lower wound infections, and lesser medication errors (King et al., 2014). It is certain that in healthcare settings, better management of team skills will bring out the best ability of each team member and lead the team to deliver better team performance. This, in turn, will result in better quality care.

In a nutshell, team composition refers to the formation of several team characteristics which include team diversity and team skills (Wageman et al., 2005). Team composition determines the mixture of characteristics that builds a team and is often associated with team performance (Barrick et al., 1998). An extensive literature has shown linkages between team composition and team performance (Bell, 2007; Kozlowski & Bell, 2001; Pearson et al., 2006; Somech & Drach-Zahavy, 2013), although not all links are found to be positive (Russo, 2012; Schippers et al., 2003).

Hence, based on the abovementioned discussion, this paper postulate that:

1. There will be a positive relationship between team diversity and team task performance.
2. There will be a positive relationship between team skills and team task performance.
3. There will be a positive relationship between team diversity and team contextual performance.
4. There will be a positive relationship between team skills and team contextual performance.

### **3. Methodology And Results**

The objective of this research is to investigate the effects of team composition characteristics, on team performance. Team performance was conceptualized as team task performance and team contextual performance. Data were collected at the team level, and aggregation of scores was done. The survey was distributed to team leaders and team members in a non-fixed setting, with minimal contact between respondents and the researcher.

The final sample of this study came from seven state hospitals out of twelve state hospitals in Malaysia. As this study involved healthcare workers of public hospitals, approval from The Ministry of Health Malaysia were obtained. The application for approval took five months and after approval has been granted, all twelve state hospitals were contacted for questionnaire distribution. From twelve state hospitals, seven state hospitals agreed to participate, three withdrew participation due to busy schedules and internal issues, and another two did not respond to the research invitation although ample time was given for them to respond. From seven participating hospitals, 320 teams were gathered as the respondents. Each team consisted of a maximum of four members and one team leader.

In total, 1600 individual questionnaires were distributed to team members. Of the 320 sets of questionnaires distributed, a total of 305 sets of questionnaires were returned. By the count of individual team members, 1501 from 1600 questionnaires were returned. This yielded a response rate of 93%. By the count of teams, the percentage of response rate was 95%. However, from 1501 returned questionnaires (in 305 teams), only 1439 questionnaires were found usable for analysis. With the decrease in individual responses, the number of teams also decreased to 300 teams (from 305 returned sets). The remaining 62 questionnaires were found incomplete and needed to be counted off from the total count. In total, 1439 individual sets of questionnaires were found usable and valid to proceed with the analysis, which amounted to 300 teams as the final sample.

#### **3.1 Preliminary Analysis**

A total of 1436 staffs participated, 300 of them were team leaders and the remaining 1136 were team members. Their profiles are detailed out according to two categories; team leaders and team members. Team leaders were mostly female, amounting up to 296 female leaders, representing 98.7% of the whole leaders' category. The remaining 4 leaders were males, taking up 1.3% of the leaders' category. Majority of the leaders were Malays (89.3%), 5.3% were Indians, 5% were Chinese and 0.3% of the leaders stated their ethnicity as others such as Iban, Kadazan, Dusun and the like. On average, their age were around 40 years old, with the minimum age being 22 years old, and the maximum age being 60 years old. With regards to their academic qualification, majority of the team leaders were diploma holders (80.3%), while 10.3% have a bachelor's degree, 9% have certificates and the remaining 0.3% indicated that they have other qualifications such as a post graduate degree. Team leaders were also asked to indicate their job tenures. The average organizational tenure was 10.6 years with minimum tenure at 6 months, and maximum tenure at 36 years. In terms of tenure, majority of the leaders have an average tenure of 8.8 years, with minimum tenure of 6 months and a maximum tenure of 37 years. As for the team tenure, on average, the leaders have been in the team for 7.7 years, with a minimum of 6 months, and a maximum of 32 years.

Apart from 300 team leaders, there were 1136 team members who participated in this study. 97.6% were females and the remaining 2.4% were males. Their ages were 32.5 years old in average with 20 years old minimum and 59 years old maximum. 91% of team members were

Malays while the remaining 5.4% and 2.5% were Indian and Chinese respectively. There were also 1.1% of others' ethnicity such as Iban, Kadazan, Dusun and the like. Most of them hold a diploma (87.2%), followed by certificate (8.1%) and a bachelor's degree (3.7%). A remaining 1% holds other academic qualification such as a postgraduate degree.

Team members were also asked about their tenures with the organization, their current position and the team. On average, team members have tenure of 5.9 years, with minimum organizational tenure of 6 months and a maximum of 35 years. With regards to their position tenure, the mean for position tenure is 8 years with a minimum of 6 months and a maximum of 38 years. In addition, the mean for members' team tenure is 5.2 years with a minimum of 6 months and a maximum of 30 years.

Table 1.  
Mean Score and Standard Deviation

	Mean	SD
Team diversity	4.27	0.60
Team skills	4.24	0.61

### 3.2 Assessment of The Measurement Model

To assess the measurement model, the convergent validity was first examined. The examination included indicator loadings, average variance extracted (AVE), and composite reliability (CR). Based on the results presented in Table 1, most outer loadings of each construct were accepted at above 0.50, as suggested by Fornell and Larcker (1981). The AVE of each construct exceeds the 0.50 cut-off value as recommended by Fornell and Larcker (1981) and supported by Hair, Hult, Ringle, and Sarstedt (2016).

Following the examination of convergent validity, the discriminant validity of the measurement model was tested. Discriminant validity was examined to ensure that each construct was unique and different from the others. Hence, the variables could measure what was intended. The discriminant validity was established by examining the correlation among the constructs. It was found that each construct was smaller than its AVE square rooted. Table 3 presents these values. The square root values of AVE are presented in the diagonal. Besides, cross-loading of each indicator was examined to ensure that the loading of each indicator was the highest for the constructs.

Aggregation of data was conducted prior to structural analysis. All 300 teams in the data sets of this study had a strong level of agreement ranging from 0.8325 to 0.9940. In order to proceed with data aggregation, the  $r_{(WG(J))}$  value of each data set must exceed the value of 0.70 as suggested by James, Demaree and Wolf (1984). The 0.70 cutoff value has also been validated by numerous studies that administered similar method of multilevel analysis (Biemann et al., 2012; LeBreton & Senter, 2008). Conclusively, based on the value of  $r_{(WG(J))}$  scores calculated from all 300 teams involved in this study, all data sets were found eligible for aggregation and further analysis.



Table 2.  
Outer Loading Values, Composite Reliability (CR) and Average Variance Extracted (AVE)

Construct	Scale	Item	Loading	CR	AVE
Team diversity	Reflective	Comp_1	0.8428	0.875	0.700
		Comp_2	0.8686		
		Comp_3	0.7962		
Team skills		Comp_4	0.7237	0.888	0.665
		Comp_5	0.843		
		Comp_6	0.8622		
		Comp_7	0.8267		

Table 3.  
Correlations Among Constructs

	TDIV	TSK	TTR	TTP	TCP
TDIV	<b>0.837</b>				
TSK	0.716	<b>0.815</b>			
TTR	0.433	0.444	<b>0.772</b>		
TTP	0.491	0.500	0.570	<b>0.887</b>	
TCP	0.475	0.493	0.625	0.831	<b>0.879</b>

Notes: The value in the diagonal is the square root of AVE (of each construct)

### 3.3 Assessment of The Structural Model

Following data aggregation, the structural model of the study was assessed and developed. This involved hypothesis testing of direct effect, assessment of variance explained (R square values), predictive relevance (Q square values), and goodness of fit (GoF). To test the path coefficients for significance, a nonparametric bootstrapping method was done. t-values were obtained with 300 cases and 1000 resamples.

Table 4.  
Path Coefficient for Team Composition Characteristics and Team Performance

Hypothesis	Relationship	Beta	SE	t-values
1	Team diversity -> Team task performance	0.081	0.058	1.398
2	Team diversity -> Team contextual performance	0.026	0.056	0.459
3	Team skills -> Team task performance	0.1446**	0.058	2.495
4	Team skills -> Team contextual performance	0.1149*	0.058	1.991

Note: Beta and t values are computed through bootstrapping procedure with 300 cases and 1000 samples; \*\* $p < .01$  (2.333), \* $p < .05$  (1.645).

The relationships between team composition characteristics and team performance are described in Table 4. Two out of four hypotheses were supported. In specific, team skills were found to have positive and significant relationships with team task performance ( $\beta = 0.1446$ ,  $p < 0.01$ ) and team contextual performance ( $\beta = 0.1149$ ,  $p < 0.05$ ), thus providing support for hypothesis 3 and 4. However, the remaining two hypotheses; hypotheses 1 ( $\beta = 0.081$ ,  $p > 0.05$ ) and hypotheses 2 ( $\beta = 0.026$ ,  $p > 0.05$ ) were not supported.

Table 5.  
Predictive relevancy

Endogenous variable	Q <sup>2</sup>	R <sup>2</sup>
Team Task Performance	0.591	0.732
Team Contextual Performance	0.611	0.763

Q<sup>2</sup> values were calculated using the blindfolding procedure, where data sets underwent a repetitive process of cross validation up to a point where each data point has been excluded and reestimated (Hair et al., 2013; Chin, 1998). This procedure is only applied to the endogenous constructs of a model and it reveals the quality of a structural equation model (Tenenhaus, Vinzi, Chatelin, & Lauro, 2004). Based on that, with Q<sup>2</sup> values 0.591 and to 0.611, it can be concluded that the structural model of this study has a substantially significant predictive relevance ranging from medium to large (Hair et al., 2013). The R<sup>2</sup> values of the structural model in this study range from 0.499 to 0.763 indicated that the model is fit for this study. Based on the GoF baseline values proposed by Wetzels, Odekerken-Schröder, and Van Oppen, (2009), the GoF value obtained for this study is large (0.720). Thus, it can be concluded that the structural model is valid and relevant for this study.

## **5. Discussion And Conclusion**

In contrast to earlier findings (for example Higgs et al., 2005; Rico et al., 2010), no significant relationship was found between team diversity and team performance (team task performance  $\beta = 0.081$ ,  $p > 0.05$ ; team contextual performance  $\beta = 0.026$ ,  $p > 0.05$ ). Team diversity in this study refers to the variation of members' characteristics such as experiences and attitudes. Although team diversity is relatively high ( $M = 4.2714$ ), it does not affect team performance. This implies that the context of team diversity applied in this study, although extensive, is not central to the team members' drive for performance. The insignificant relationship between team diversity and team task performance can be attributed to the sample of this study. The teams involved are diverse in terms of demographic characteristics and experience, and they are capable to perform tasks and carry out duties as assigned. The average team tenure for the team members and team leaders are more than five years (team leaders 7.7 years and team members 5.2 years). The teams were found capable of delivering task performance despite their diversities. This might be due to the fact that, with team tenure of more than five years (on average), team members are accustomed to working with each other, and are familiar with the tasks at hand, which made them achieve performance regardless of their diversities. Likewise, team diversity does not relate significantly to team contextual performance. Because the average team tenure of the team leaders and team members are relatively long, the team members are expected to be familiar and sensitive to their team behaviors. Such behaviors of team contextual performance as cooperation, helping behaviors, and teamwork are expected to be assimilated into the teams' routines and customs. As team members are already familiar with each others' way of working, team diversity were found to have no significant role in the teams' contextual performance. In the context of healthcare teams, team diversity must be engaged properly because it can be a benefit and a challenge to the team's functioning (DeSivilya & Raz, 2015). In making collective decisions, team members will generate different ideas which need to be managed efficiently to ensure smooth task execution. Undoubtedly team diversity provides variation in the working environment but the element needs to be encouraged and nurtured into the minds of team members so that they are aware of its benefits.

As for team skills, the direct path analysis in this study revealed that team skills is significantly related to team task performance ( $\beta = 0.1446$ ,  $p < 0.01$ ) and team contextual performance ( $\beta = 0.1149$ ,  $p < 0.05$ ). This confirmed the earlier findings of King et al. (2014), Somech & Drach-Zahavy (2013), Wageman et al. (2005), and Morgeson et al. (2005). In the context of team task performance, team members must possess skills that go beyond technical specialties, such as teamwork skills, supervision skills, communication skills, and patient education skills (Lipponen et al., 2013; King et al., 2014). When accumulated at team level, team members' skills provide strong pursuit towards team performance. Competent member skills ensure successful task accomplishments that lead to greater team performance. In this study, the team members have a relatively high perception towards their teams' skills ( $M = 4.2399$ ), implying that the team members have had confidence that they possess the required skills to perform their duties. This in turn would drive them towards achieving greater team task performance. This finding supports the central tenet of social identity theory (Tajfel et al., 1971; Tajfel, 1982), which posits that team members will display teamwork behaviors when they perceive that they are collectively competent in task accomplishments. In other words, the right skills will qualify team members to perform particular tasks and allow them to pursue greater performance. In the context of team contextual performance, well-developed skills will enhance the contextual performance of the teams. Soft skills of team members, such as interpersonal skills and communication skills, will intensify the team's drive for contextual performance through systematic collaborations, tolerance, and understanding of each other's role (Bleakley, 2013). Also, when team members

have the necessary skills to exercise team work, they will encourage healthy work surroundings through good and supportive work relationships (Kramer et al., 2011; Lipponen et al., 2013; King et al., 2014). In turn, this will lead to greater team contextual performance.

The study is not without limitations. First, this study focused on the predictors of the team performance public healthcare workers. Even so, not all teams are included, due to hospitals' restrictions and privacy issues. Therefore it would be interesting if future studies can duplicate this research and apply it in expanded settings such as in private hospitals or in another context of public hospitals, such as major and minor specialist hospitals, specialist hospitals, and non-specialist hospitals. Data produced from these settings can be cross-validated and generalized in a bigger context. Also, during the data collection period, there has been limited contact between the researcher and the respondents due to the high restrictions imposed by the management of public hospitals on outsiders. Future studies would be advantageous if researchers can establish closer contact with respondents to enhance data accuracy and to avoid selection bias.

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