

CASE STUDY

## Evaluation of 'guanxi' concept between Chinese supervisors and workers in hydropower projects: conflicts and safety perspectives

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### ABSTRACT

**BACKGROUND AND OBJECTIVES:** The duality of Chinese management style called guanxi might have a potential difference between Chinese and African ideologies, and may give rise to injustice in some overseas contracting projects leading to conflicts, fights and safety issues. Therefore, effective action is needed in improving Chinese contractors-local workers relationships on project sites. Hence, assessing the extent to which Chinese managers practice guanxi on African workers, and how guanxi is affecting conflict and safety standards shows the extent of hope in mitigating risks and improving management. Specifically, this case study attempted to sort out and rank all difficulties Chinese managers encounter while undertaking hydropower projects in Cameroon, to find out whether or not there is a supervisor-worker guanxi relationship on dam construction sites and whether or not guanxi is implicated in Sino-Cameroonian workers conflict and safety.

**METHODS:** SWARA method was used to analyze and rank difficulties, qualitative and quantitative assessments were undertaken for theories studies. After a workshop and semi-interview with Decision Makers a first survey was designed to gather scores of difficulties that ended to a ranking from most to least important using SWARA method. Then two questionnaires were structured and sent to local workers and Chinese project engineers, to gather all information about guanxi, conflicts and safety score. After a consistency study on 526 local workers and 40 Chinese manager's responses selected from three different hydropower projects, the overall Cronbach's alpha was 0.93 for supervisors and 0.88 for workers.

**FINDINGS:** The results of SWARA ranking showed that the problem areas giving rise challenges to Chinese contractors are mainly related to the language barrier (W=47.7%) and interpersonal issues (w=13.35%). The findings of hypotheses testing suggest that guanxi is not applied on local workers by Chinese managers with statistics  $X=4.36 < 26$  and  $X=2.35 < 14$  respectively, thus, hypotheses H21 and H22 were both supported; yet workers do have conflict relationship and do not feel safe working with Chinese managers stated with statistics 27.4 and 24.9 respectively. However, the application of guanxi may play an important role in positively affecting the conflicts and safety management in Chinese oversea megaprojects. Using these results, recommendations were thrown on project, conflict, and safety management.

**CONCLUSION:** As the number of Chinese investments in infrastructures in Africa keeps increasing, the findings in this research may provide all parties with crucial information for better understanding of local workers they might hire for their numerous projects. This study has shown that Chinese managers do not practice guanxi on the local workers, yet it may help in improving safety and conflict management. Therefore, there is need for practical language and safety training leading to improve behaviors, reduce risks, and increase effectiveness.

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## INTRODUCTION

The Belt and Road initiative launched by China will need huge efforts in matters of international exchange and management. Chinese Companies in charge of undertaking overseas infrastructures will have either to adapt to new environments or implement their own management style to locals. This will come with high risks in every domain, especially safety and conflicts management. It is commonly recognized that the practice of *guanxi* is prevalent and important in Chinese society (Chen et al., 2011) and management style. A good definition of *guanxi* would be “the very fundamental connections amongst human beings that Chinese cultivate daily in all their interactions, including those with family, friends, acquaintances and business partners” (Yen et al., 2017). Instead, many researchers see *guanxi* as a cliché of Chinese business behavior and management style. Critics see *guanxi* as fueling the country’s rampant corruption and as an obstacle to China’s becoming a modern society based on the rule of law. Those who see it in a more favorable light contend that *guanxi* adds an element of humanity to otherwise cold transactions, and comes to the rescue in the absence of consistent regulations or guidelines for social conduct (Gold et al., 2002). Coster and Heimer (2001) argued that *guanxi* practices may be beneficial to the individuals involved, in organizational settings; such particularistic rules may conflict with universal norms, which stress treating people similarly regardless of one’s relationship with them. The potential difference between these two ideologies gives rise to injustice in some Chinese overseas organizations that might lead to conflicts, fights and safety issues. In the other side, *guanxi* helps mitigate aggressive feelings and encourages the development of kindness in business relationships (Yen et al., 2017). Many researchers have studied the relationship of *guanxi* with conflicts and safety management in the construction industry. Tashi and Peansupap (2013) evaluated conflict issues between Chinese and locals in public construction projects in Bhutan and came out with a series of recommendations for their country, Sun et al. (2019) developed a scale which can directly assess Chinese project manager interpersonal competence avoiding conflicts and Yang et al. (2019) evaluated the role of *guanxi* in carrier adaptability of construction workers, but very few took cases on hydropower projects. Analysis of the focus construction group transcripts

for major themes often suggests a wide range of different skills, attitudes and behaviors required by management to positively influence site culture (Biggs et al., 2005). Using the criteria that depends upon: (a) having working experience of more than five years, (b) having at least one hands-on experience in high-rise building projects, and (c) possessing good knowledge of BIM and its related technologies, Manzoor et al. (2021) revealed an existing relationship between management, conflicts and safety. Osei-Asibey et al. (2021) worked on improving health and safety at construction sites, especially in developing countries like Ghana; in this research, the study was focused on Cameroon’s Chinese hydropower projects. After a relationship study between *guanxi*, conflicts and safety is done, the purpose of this study is to sort out and rank all difficulties Chinese managers encounter while undertaking hydropower projects in Cameroon, to find out whether or not there is a supervisor-worker *guanxi* relationship on dam construction sites and whether or not *guanxi* is implicated in Sino-Cameroonian workers conflict and safety. To achieve these objectives, some research questions were raised. 1. What are the main difficulties that Chinese project managers (supervisors) face when they manage Cameroon’s local labor on a hydropower construction site? 2. Do Chinese supervisors practice the actual *guanxi* while managing Cameroon’s local labor on a hydropower construction site? 3. Is *guanxi* implicated in sino-cameroonian conflicts and safety? Along with the questions and using the literature review, four NULL hypotheses were stated and tested based on contingency and the extent to which participants provided information. The current study has been carried out in Cameroon between July and October 2021. The survey was conducted in Bini-Warak hydropower project, Memvele hydropower project, and Mekin hydropower dam, all three conducted by Chinese companies.

### *Background and hypothesis*

*Use of SWARA method for ranking difficulties:* different methodologies are available for ranking of numerous subjects. While relative importance index methods needs higher number of decision makers, Delphi processes may need a double screened survey. As the current process represents a single criteria decision making and experts playing important role on evaluations and calculating weights, SWARA

method would do a better job. Many researchers singularly used the method or combined with other methods for ranking; The equations used in this study follow the methodologies used by [Bouba et al. \(2021\)](#) who combined SWARA and TOPSIS methods to rank project risks, or [Zolfani and Sapauskas \(2013\)](#) who used the method in prioritizing sustainability assessment indicators of an energy system and [Cao et al. \(2019\)](#) who used the method for contractors ranking of floating solar panel energy systems.

*Guanxi indicators:* Two important components of *guanxi* are *renqing* and *mianzi*. *Guanxi* requires a reciprocal relationship with the implication of an exchange of favors. Good *ganqing* improves the positive role of *guanxi* in social communication. Besides, *mianzi* is translated, literally, as “face” in English. It is an important cultural value in Chinese culture ([Padilla-Meléndez et al., 2017](#)). Some other researchers such as [Yen et al. \(2017\)](#) defined *guanxi* as a three diamond measures such as *ganqing*, *renqing* and *xinren* these were the indicators uses to asses *guanxi* in this research. *Ganqing* here reflects the sense of a social relationship between two people or two organizations. In this case a relationship tenor between the manager and local worker was evaluated. *Renqing* here is defined as the treatment level on the project site whereas *xinren* refers to the trust between people. In this research, *xinren* were evaluated between local workers and Chinese managers by testing the two following NULL hypothesis.

*H21: Cameroon local workers do not believe Chinese supervisors cultivate “guanxi” while managing them.*

*H22: Chinese supervisors do not believe they cultivate “guanxi” while dealing with local workers.*

*Guanxi and construction conflict:* Investigating the importance of conflicts has become one of the influencing factors in a given project ([Park et al., 2017](#)). The impact of *guanxi* on the reduction and management of conflict in business relationships is evident because Chinese people are reluctant to hurt ([Yen et al., 2017](#)). Considerable research has suggested that goal interdependence can affect perceived relational and task conflicts ([Chen, 2005](#)). Several theorists have proposed that trusting relationships are vital for managing inter-organizational collaboration ([Tjosvold et al., 2014](#)) and it could even be argued that factors influencing trust can be divided into personal,

propensity, ability, benevolence and integrity ([Wang et al., 2018](#)). This may lead one to argue that a high level of *guanxi* management can be in line with the cooperative approach to conflict management and reduce disputes. In this study, the points such as lack of requirements, non-compliance and failure on one side, disagreements, misunderstanding, frustrations and breakdown of relationships between parties as shown by [Tashi and Peansupap \(2013\)](#) were evaluated using the following hypothesis.

*H31: There isn't a conflict relationship between Chinese supervisors and local labor.*

*Construction conflicts and safety:* According to [Jin et al. \(2021\)](#), factors such as conflicts and wars can not only affect the success of projects but also pose a great threat to the personal safety of Chinese employees in Africa. [Chen et al. \(2017\)](#) argued that construction workers conflicts had a direct positive impact on job stress and unsafe events, respectively, and an indirect positive impact on physical injuries. In Cameroon, many newspapers reported deadly fights between Chinese managers and local workers on construction sites. In some few cases, these conflicts led to strikes and even terrorist attacks. All these reported conflicts may lead one the test the following NULL hypothesis.

*H32: Local workers are not safe to work on Chinese projects.*

*Guanxi and safety:* [Wu et al. \(2018\)](#) proved the existence of a close relationship between trust, social incentives and safety behaviors of workers on a construction project site. They provided an axial coding in related to “manager behaviors” (including support, attention, punishment, orders, and regulation), “construction worker safety behaviors” (including obey, participate, help), and social relationships (including communicate, trust, feelings, and goals) which are *guanxi* elements presented earlier. Also, [Xu et al. \(2020\)](#) proved that *guanxi* HRM practice was negatively related to employees’ occupational well-being and safety on project sites. According to [Liu et al. \(2020\)](#), both LMX (Leader–member exchange) and LMG (Leader–member *guanxi*) have a negative impact on the two dimensions on workers’ unsafe behavior whereas [Liao et al. \(2014\)](#) explained a positive safety climate could be associated with higher communication density and degree centrality. This suggests an implication of *guanxi* management in workers and managers safety on a construction

project site. In this study, these results will be verified using an analogy and comparison of the results of all the hypothesis testing.

**MATERIALS AND METHODS**

The overall research methodology used is presented on Fig. 1.

A review of literature was performed from open data, data from Chinese contractors. This review led to the identification of management issues that could come up while Chinese engineers deal with local labor. After a workshop and semi-interview with Decision Makers (DMs), a first survey was designed to gather scores of difficulties that ended to a ranking from most to least important using SWARA method. Then two surveys were structured and sent to local workers and Chinese project engineers, to gather all information about *guanxi*, conflicts and safety score. Fig. 2 shows a conceptualized model between parties evaluated in this research. The model was

adapted from previously developed by Gao *et al.* (2016), Arnol *et al.* (2018) and Sureda *et al.* (2018) models. The results were obtained using the software SPSS and after discussions with experts, some recommendations were thrown.

*Research strategies*

For the first research question: what are the main difficulties that Chinese project managers (supervisors) face when they manage Cameroons local labor on a hydropower construction site? To answer this research question, based on previous researches and a first interview with experts, a first questionnaire was designed. Nine difficulties were found and sent back to seven selected Chinese Decision Makers (the DMs were selected from three Chinese projects undertaken in Cameroon) for ranking, added to one opened question for suggestions. The ranking strategy used SWARA method to compute weights of each difficulty and provide a final ranking. The expert

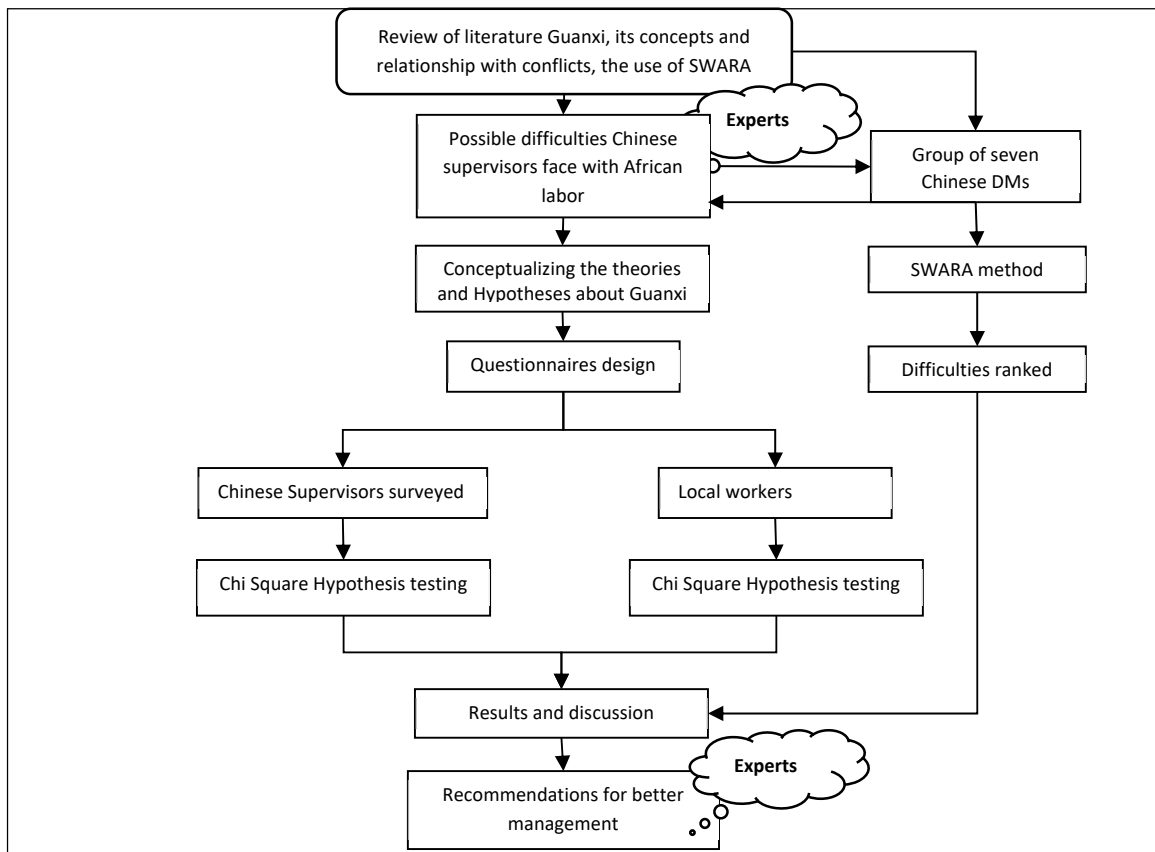


Fig.1: Adopted research framework

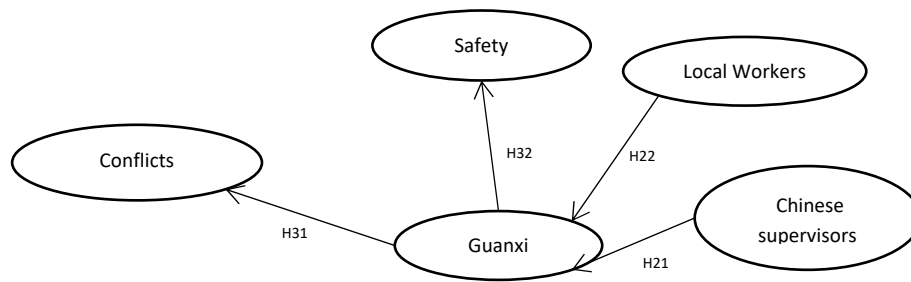


Fig. 2: Conceptual hypotheses stated on hydropower projects in Cameroon

Table 1: Questions statements mapping

Measures	Local workers questionnaire	Chinese Supervisors questionnaire
Treatment	S1,S2,S3,S4,S5	CQ1,CQ3,CQ6
Relationships	S6,S7,S10,S14,S15	CQ2,CQ4
Task giving/trust	S8,S9,S11,S12,S13,S16,S17	CQ7,CQ8
Conflicts	S18 to S23	
Safety practices	S24 to S27	

Table 2: Respondent’s demographics

	Sex	Chinese Managers( N=40)	Local Workers (N=526)
	Male	35(87.5%)	443(84%)
	Female	5(12.5%)	83(16%)
<b>Age</b>			
	Less than 20	0	32(6%)
	Between 20 and 30 years	2(5%)	385(73.2%)
	Between 30 and 40 years	23(57.5)	82(15.6%)
	More than 40 years	15(37.5)	27(5.2%)
<b>Level of education</b>			
	Zero level	0	140(26.7%)
	High School	0	365(69.4%)
	BSC	10(25%)	21(3.9%)
	MS	30(75%)	0
<b>Years of Experience on International Projects</b>			
	Less than 2 years	0	75(14.25%)
	Between 2 and 5 years	0	260(49.42)
	Between 5 and 10 years	32(80%)	110(21%)
	More than 10 years	8(20%)	81(15.4%)

managers were all working with African labor for at least 10 years and have a master degree or above. Among the seven experts, just two of them were women. For the second and third research questions, the two samples selected for the study were: 1- local workers in Chinese hydropower projects.2- Chinese hydropower engineers and managers working in Cameroon. Questionnaires were first sent to a sample of 526 local workers finding whether or not they are threatened based on the *guanxi* concept or not, then to a sample of 40 Chinese supervisors to identify if they naturally apply *guanxi* while managing

hydropower projects. From these two questionnaires, respondents were asked to rate each behavior they think is happening. Each group of behavior will represent one measure (personal relationship, treatment support, task giving) that was tested using a Chi-square goodness of fit and a t-test. For these surveys, the questions were mapped per factor such that the results would be analyzed per statement and per group. Table 1 shows a mapping chosen for the questions given to Chinese supervisors and local workers whereas Table 2 represents demographic representations of Chinese and local respondents

respectively.

For H22, the questionnaire items were developed as a result of an analysis of previous researches reports, and experts help. The questionnaire originally written in English was translated into Chinese, and then checked by being translated back into English to ensure conceptual consistency. The Chinese supervisors were first asked to give information about their age, level of education and international project experience. Secondly the participant had to answer questions about the behavioral and working routines dealing with local workers. For H21, H31 and H32 after getting basic information about the workers (age and experience with Chinese companies), they were asked to give their level of agreement on 1 to 5 scale level with all the proposed questions (17 statements for *guanxi* and 10 statements for conflicts and safety) that could define the *guanxi* practices in their respective working environment, and statistical information about conflicts and safety. To collect data for all surveys mentioned above, “wechat” questionnaires were used for Chinese supervisors and in person interviews were used for local workers. After a consistency study, the overall alpha was 0.88 for the workers and 0.93 for Chinese supervisors.

**RESULTS AND DISCUSSION**

*Research question 1*

The results in Table 2 show a very low participation of women in international projects, both from local workers (16%) and Chinese managers (12.5%). It can also be seen from Table 2 that most of the local

workers are young (79.2% less than 30) and relatively low education background (96.1% having just high school degree or less). Chinese managers are also young (57.5% between 30 and 40) but very well educated; They all have a university degree. As the sample selected was random and every respondent was asked freely to answer the questions, the answers can be assumed to be convergent.

As mentioned above, the nine difficulties that were returned from previous pilot survey were grouped by type and ranked using SWARA method. Table 3 shows the average values of the linker scale for each Decision Maker while rating the difficulties. The results on Chinese Experts opinion recorded in Table 4 suggest that the difficulty on establishing a friendly relationship with local workers on a project site is the most important difficulty encountered (W=47.7%), followed by the fact of asking for leave or quitting suddenly (W=25.7%) explained either by working conditions or malaria, that leads managers to recruit and waste time on training and finances. The language and cultural barriers difficulty is ranked third (W=13.35%); Even if there are translators, Chinese managers believe that, most of the time, the task asked is different from the one received. Instead according to the experts, the last three ranked difficulties are, the fact of striking about getting what is on their contract(which should be explained by the low level of education), then involving family matters (which should be explained by the location of the project sites in remote areas) and finally assiduity. The experts believe that assiduity is not a very important

Table 3: DMs Averaged Matrix

Difficulty	E1	E2	E3	E4	E5	E6	E7	Exp. Scoring
D1 it's very hard to establish a friendly relationship with them;	5	4	5	4	5	4	4	4.42
D2 Family matters, they always place family before work deadline;	4	3	2	2	3	3	2	2.71
D3 The language barrier, even though we understand each other, still sometimes the task I ask, is different from task I receive;	3	3	4	3	4	3	4	3.428571
D4 They are trying to make a good impression about themselves, expressing that as gift giving, compliment saying or pointing out their work progress;	3	4	3	1	5	4	3	3.285714
D5 They are trying to get every benefit out of their contract;	4	2	3	2	4	3	3	3
D6 They ask for leave or quit suddenly;	3	4	5	3	4	3	4	3.714286
D7 They are often late, for work or for meetings;	2	3	1	3	3	2	1	2.142857
D8 They speak “between flowers”, they don't say directly what's on one's mind;	4	3	3	3	4	3	3	3.242857
D9 They like to play with phone in work time, as Wechat etc. social media sites	3	2	4	3	3	3	4	3.142857

Table 4: SWARA weight calculation

Difficulty	Expected Significance ( $S_j$ )	Coefficient $K_j = S_j + 1$	Calculated weight $Q_j = Q_{j-1} / K_j$	Scale Weight	$W_j = Q_j / \sum Q_j$
D1	-	1	1	47.7%	
D6	0.84	1.84	0.54	25.7%	
D3	0.92	1.92	0.28	13.35%	
D4	0.96	1.96	0.14	6.7%	
D8	0.98	1.98	0.07	3.33%	
D9	0.97	1.97	0.035	1.7%	
D5	0.95	1.95	0.017	0.81%	
D2	0.9	1.9	0.009	0.4%	
D7	0.79	1.79	0.005	0.23%	

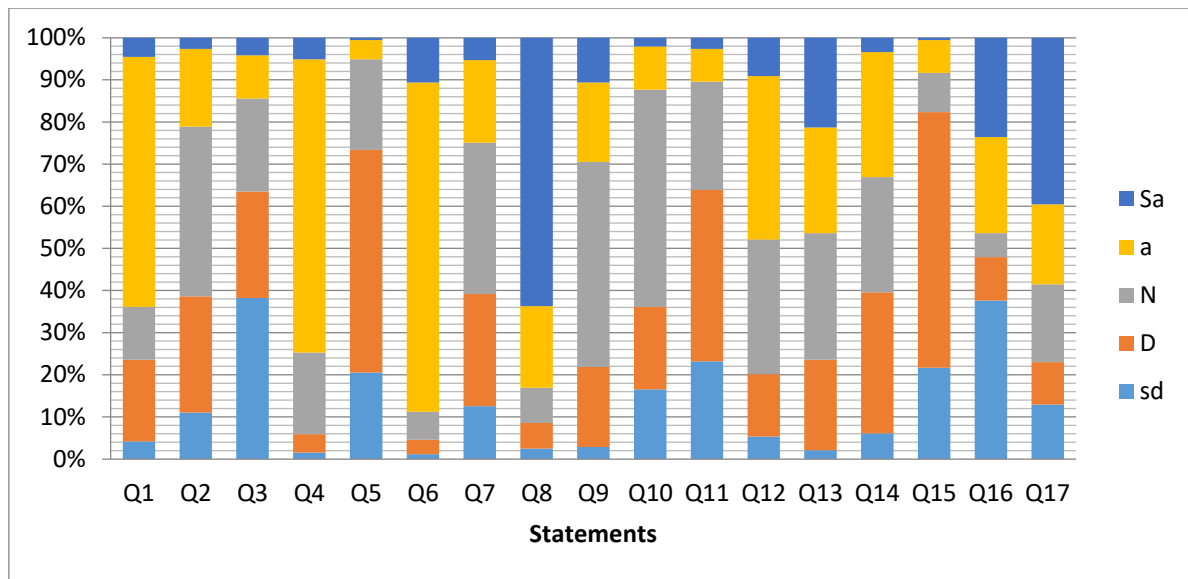


Fig. 3: Level of agreement of local workers on guanxi practices

issue as all local workers actually live on project site.

The rank of nine difficulties that are affecting the leader and employee relationship is revealing high involvement of all guanxi criteria (Interpersonal relationship difficulties, task giving and trust, working attitude) with D1, D6 and D3 topping the rank. It can be noted that, even the interpersonal issues are important in this cross cultural working environment, the language barrier, has its place and both parties should be involved, local workers should learn mandarin and Chinese managers as well should improve their English. D6, that deals with quitting and asking for leave frequently should be intrinsic to another issue such as conflicts or other external factors that will be undertaken by the workers survey.

*Research question 2: Local workers survey*

While performing the hypothesis testing on a Chinese foreign based working environment, the practices agreement for each factor measurement was generated. Before testing the hypothesis, it would be interesting to specify the quality or rates of agreements generated by the local labor working with Chinese contractors. From the graph on Fig. 3, it can be seen that not all the agreement factors on these management practices chosen through secondary data have been approved by participants. The most important management factors to take care of should be the Q8 and Q4 factor statements as they have the huger rate of agreement from the workers. The complexity of answers and possible inadequacies in the structuring

of agreement package may be a very good reason for the generation the final conclusion on *guanxi* practices. Therefore, a hypothesis testing on central tendencies of every agreement statement and factor is needed to make all the categories easy to handle and decide.

*Hypothesis testing*

To test H21: *Cameroon local workers do not believe Chinese supervisors cultivate “guanxi”*

*while managing them*, 17 statements taken from the three mentioned *guanxi* criteria were tested according to the Likert answers recorded from the local workers survey. Table 5 shows the Kolmogorov normality values for each of the statements, allowing performing the t-test as all the distributions could be assumed to be normal.

The closest P\_Value for Df=16 gives Xcrit =26 and a calculated statistic of X=4.35, so Xcrit>Thus, there

Table 5: hypothesis testing for local workers

Survey Statements	T value	X <sup>2</sup>	Mean	Kolmogorov Normality	Lower boundary	Upper boundary	Decision
S1 My manager treats me differently from other employees	1.956		105.2	0.129	-44.10	254.50	<b>Reject</b>
S2 My manager treats all the employees really bad	3.062		105.2	0.2	9.82	200.58	Retain
S3 My manager treats me very bad	3.360		105.2	0.2	18.26	192.14	Retain
S4 I often to invite my manager to lunch or dinner or give him a small gift to express my gratitude	1.565		105.2	0.2	-81.41	291.81	<b>Reject</b>
S5 Sometimes my manager invites me for lunch, dinner or gives me small gifts to express his gratitude	2.171		105.2	0.132	-29.35	239.75	<b>Reject</b>
S6 My relationship with my manager can be called friendship	1.368		105.2	0.097	-108.34	318.74	<b>Reject</b>
S7 My manager and I are just a professional relationship	3.751		105.2	0.134	27.32	183.08	Retain
S8 My manager knows which tasks I am good at, so he/she will arrange that kind of work for me	1.773		105.2	0.2	-59.55	269.95	<b>Reject</b>
S9 My manager gives me different tasks each time, depending on our project/goal	2.576	<b>4.3 R E T A I N</b>	105.2	0.2	-8.20	218.60	<b>Reject</b>
S10 My manager respects all points my contract	2.373		105.2	0.13	-17.91	228.31	<b>Reject</b>
S11 Sometimes I feel I can't fully trust my manager	2.949		105.2	0.065	6.16	204.24	<b>Reject</b>
S12 I am not satisfied with the relationship with my manager	3.058		105.2	0.163	9.67	200.73	Retain
S13 My manager will help me completely, if I have any professional or personal problems, I can seek his help	4.210		105.2	0.2	35.83	174.57	Retain
S14 My manager strongly demonstrated to employees that the relationship between supervisor and worker can only be a professional relationship	3.168		105.2	0.071	12.99	197.41	Retain
S15 My manager is very emotional, so we are not afraid to be emotional in the workplace and say everything as we want	1.867		105.2	0.187	-51.26	261.66	<b>Reject</b>
S16 Sometimes I feel I can't fully trust my manager	3.560		105.2	0.09	23.16	187.24	Retain
S17 We often have issues with the manager	3.871		105.2	0.12	29.75	180.65	Retain



is not enough evidence at 95% level of confidence to reject H21. This result means local workers actually believe Chinese Managers do not apply the traditional guanxi management on them. At 95% level of confidence, a t-test was also performed on all the seventeen statements presented to the workers about *guanxi*. The results on Table 5 reveal a rejection by the workers of statements such as: S1: “my managers treat me differently” with value =1.95 (which means Chinese managers actually treat every local worker equally). Statements S4, S5 and S6 with T\_Values 1.565, 2.171 and 1.368 respectively were rejected, suggesting a very little friendly environment between the Chinese manager and the worker. This result is actually supported by S7: “My manager and I are just a professional relationship”, strongly retained with a T\_Value =3.75. S13 “My manager will help me completely, if I have any professional or personal problems, I can seek his help” was strongly supported (T\_value=4.21) suggesting that even the relationship between Chinese managers and workers is purely professional, there are regulations in the project contracts that is facilitating the help of workers if they had any difficulty while working on the dam project. Instead, S10: “My manager respects all points my contract” is rejected, explaining the conflict issues between Chinese managers and local workers. Table 7 explains the statements tested about conflicts and safety on hydropower project sites.

*Chinese Supervisors survey*

To test H22: *Chinese supervisors do not believe*

*they cultivate “guanxi” while dealing with local workers. Eight statements taken from the three mentioned guanxi criteria were tested according to the Likert answers recorded from the Chinese Supervisors survey. As recorded in Table 6, the closest value for Df=7 and Xcal 2.35 < Xcrit =14 shows that there is not enough evidence to reject the general null Hypothesis, and conclude that Chinese managers do not actually believe they practice guanxi on hydropower project sites. Table 6 also shows the T\_Values for each statement; for example, some similarities such as equal treatment of workers is observed (CQ1 is supported with a T\_Value of 4.55); Instead, Chinese managers believe they adopt friendship relationship with local workers, whereas the workers did not believe so. Also, the managers believe they know their team very well (CQ4 strongly supported (T\_Value=9.85)) whereas Table 5 showed that the workers think oppositely. Following the difficulties ranking presented in Table 4, these results also support the fact that cultural barriers may create some issues with workers, though the managers think that leading Chinese workers is different from managing African workers. Finally, the results also reveal that all the “treatment” statements passed the approval and agreement from managers, whereas one statement about relationships and task giving were rejected.*

*Research question 3*

As mentioned in the above sections, ten statements were given to local workers to test

Table 6: Hypothesis testing for Chinese Supervisors

Statements	Mean	T_value	Standard deviation	Component	Decision	X <sup>2</sup>
CQ1 believe that as a leader of team I have to treat each team member equally	<b>3.92</b>	4.55	1.06	0.282133	Retain	
CQ2 I manage a team, where some of team members I see more loyal than others	<b>4.07</b>	10.6	0.53	0.381633	Retain	
CQ3 Me and my employees we have only professional relationship, we are not friends	<b>2.97</b>	-0.22	0.95	0.0003	Reject	
CQ4 When I receive new project or task, I know my team so well, that I know exactly which task give to whom	<b>4.07</b>	9.856	0.57	0.381633	Retain	<b>2.3509</b>
CQ5 I think that each of my team members have similar abilities, and I can trust with anything (professional or personal) each member equally	<b>2.07</b>	-4.7	1.06	0.2883	Reject	
CQ6 There are some team members I cannot get along with, because of cultural differences	<b>3.83</b>	5.173	0.84	0.229633	Retain	
CQ7 I think that I am adopting more to western culture in workplace than showing them mine	<b>3.77</b>	5.51	0.73	0.197633	Retain	
CQ8 To lead Chinese workers is the same as African workers	<b>1.67</b>	-0.800	8.87	0.589633	Reject	

Table 7: Hypothesis testing on conflicts and safety

Conflicts statements DF=16,P=.05	Strongly disagree 1	Disagree 2	Neither agree or disagree 3	Agree 4	Strongly Agree 5	$X^2$
S18 I often disagree with my manager	31(6%)	15(3%)	157(30%)	123(23%)	200(38%)	<b>27.4</b>
S19 The way the manager is handling human relationship is frustrating me	13(2.5%)	23(4.5%)	57(11%)	234(44.5%)	199(37.5%)	
S20 There are many disputes among local workers	312(59%)	189(36%)	5(1%)	17(3.5%)	3(0.5%)	
S21 There are many disputes between local workers and Chinese managers	4(0.76%)	11(2%)	145(27%)	167(32.7%)	199(37.5%)	
S22 I feel compatible working with European rather than Chinese contractors	222(42%)	112(21%)	132(25%)	35(7%)	25(5%)	
<b>Safety assessment DF=16,P=.05</b>						
S23 I feel safe while working on Chinese projects	135(25.7%)	202(38%)	184(35%)	1(0.3%)	4(1%)	24.9
S24 There is safety training before working on the project site	167(32%)	145(27%)	110(21%)	54(10.3%)	50(9.7%)	
S25 I work with EPI	0(0%)	1(0.3%)	170(32%)	199(37.5%)	156(30.2%)	
S26 The manager brings us to hospital for care after a reported injury	133(25%)	245(47%)	140(26%)	4(1%)	4(1%)	
S27 There are worker death cases because of managers negligence	88(17%)	198(38%)	154(29%)	63(12%)	23(4%)	

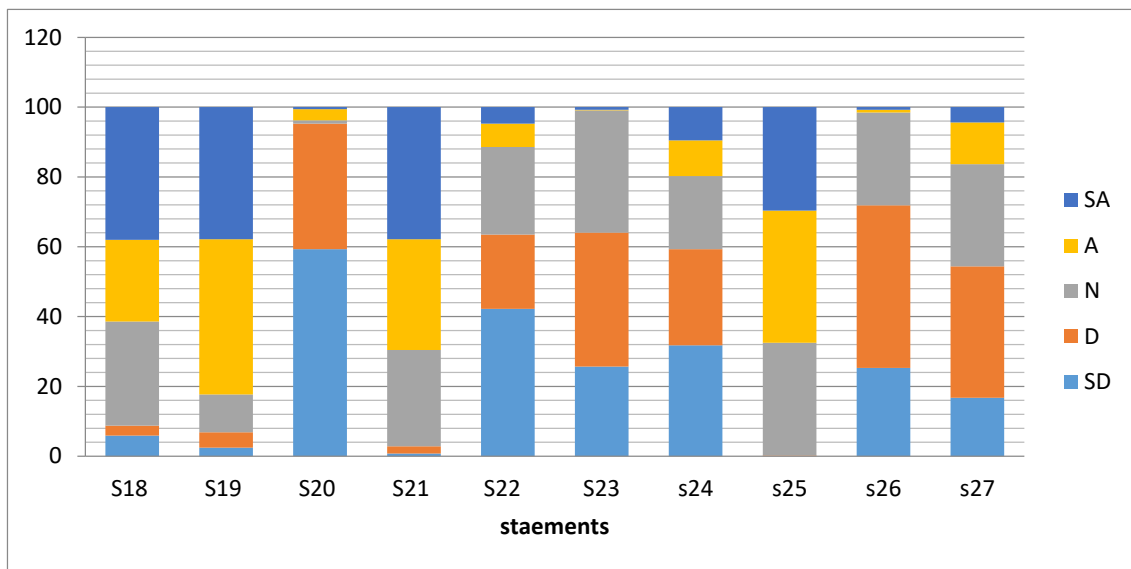


Fig. 4: local workers agreement level on conflicts and safety statements

the level of conflicts and safety standards. Fig. 4 shows the agreement level of workers on safety and conflicts statements. The result of hypothesis H31 recorded in Table 7 showed that  $X_{cal}=27.4$ ,  $X_{crit}=26.29$ ,  $Df=16$ ,  $P=0.05$ . Therefore the null hypothesis was rejected ( $X_{cal}>X_{crit}$ ). This result revealed that there is significant conflict relationship between Chinese contractors and local workers on

hydropower projects in Cameroon. Similarly, the result of hypothesis H32 showed that  $X_{cal}=24.90$ ,  $X_{crit}=26.29$ ,  $DF=16$ ,  $P=0.05$ . Therefore the null hypothesis was retained ( $X_{crit} > X_{calc}$ ). The result suggests that there is a lack of safety standards of local workers on Chinese hydropower projects in Cameroon. The results in Fig. 4 show a very high rate of disagreement between Chinese managers

and local workers while undertaking tasks on project sites (S18: 38% strongly agreed and 23% agreed that they often disagree with their managers). Also, more than 80% of workers agreed to S19, suggesting a high rate of frustration of local workers on Chinese international hydropower projects. More than 95% of workers disagreed having disputes among them (S20) whereas around 70% agree having disputes with Chinese contractors (S21); this should be the result of lack of trust reported in the previous parts. Fig. 4 also shows through S23 that at least 25% of local workers do not feel safe working on Chinese projects and not less than 60% disagreed with the fact that they have safety training before or while working on project sites. What is most crucial is the fact that more than 71% of the workers disagreed with the fact that the Chinese manager brings local workers to hospital after a reported injury (S26) and around 15% believe that there are worker death cases because of managers' negligence on project sites either related to tropical diseases or accidents on site. The analysis further reveals that the high scoring is mostly related to: (1) interpersonal relation; (2) communication; and (3) project management. Implementation of human-related aspects will help to improve the trust among all parties. As showed before, neither Chinese contractors, nor local workers believe that Chinese traditional business style of "guanxi" is applied on hydropower projects in Cameroon.

#### *Discussion*

As the results have shown, the hypothesis "H21: Cameroon local workers do not believe Chinese supervisors cultivate "guanxi" while managing them." And "H22: Chinese supervisors do not believe they cultivate "guanxi" while dealing with local workers." Were both supported, suggesting that Chinese engineers do not apply guanxi management concept on local workers on hydropower projects in Cameroon. This finding follows the results of Tchumtcha (2021) who found in practice that the Chinese only use guanxi management approach when certain stakeholders such as project owners and sponsors but never with African local workers, creating unhappiness, also (Wang and Huang (2006) showed in their research that Chinese engineers use "relation/guanxi" among the key stakeholders as the most important criterion of project success while neglecting local workers. Similarly, "H32: Local

workers are not safe to work on Chinese projects." was also support whereas

"H31: There isn't a conflict relationship between Chinese supervisors and local labor" was rejected, showing conflicts relationship between Chinese managers and local workers that has developed an unsafe feeling from the workers point of view, highly influenced by the lack of trust and decent communication explained earlier. As a consequence, there is a lack of safety climate standards on hydropower project sites undertaken by Chinese companies in Cameroon. This result follows the discussion made by Sun *et al.* (2019) who proved a positive relationship between competence related to handling interpersonal relationship conflicts and project success and Shepherd *et al.* (2021) who proved the influence of communication and trust in the safety of workers in a construction industry. Hence, Chinese foreign investors in Africa must use their "guanxi knowledge" to establish better institutional connections with locally owned partners, workers and government (Peter, 2006), thus, there is a need for involving "guanxi" in the network management, and improving safety practices on project sites. Thus, involving *guanxi* in the network management and improving safety practices is imperative. It will not only help stakeholders become able to make efficient policies and preparedness for response plans that will protect their safety and security (Bouba and HongXia, 2022), but also improve project management and workability.

#### *Recommendations*

Some recommendations would help Chinese contractors to handle the current scenario and improve both management and safety on construction sites, especially hydropower projects. The results proved that both local labor and Chinese contractors pay attention to work engagement and profit more than building a relationships and trust. Chinese contractors have to make deeper research about local customs, language, religion and traditions that might lead to basic compromise, or changes. Otherwise friendly and successful team membership might be at risk. Also, the 'guanxi' concept of human resource management is specific for the Chinese economy. When trying to implement this concept in international projects, the Chinese face certain difficulties. For example, in European countries,

some principles of this management concept border on criminal liability, especially in terms of conspiracy, up to financial fraud. In Africa, where projects usually deal with their own issues of corruption, Chinese companies will have to resale their overseas project management and tend to treat local workers as they treat more important stake holders. For that including every leg of “guanxi” in manager-worker relationship is imperative.

*Interpersonal relationship:* People who spend time together at work, at home, in towns, in public institutions, in sales outlets, can be considered a social network which boundaries are determined by its members. That’s why in work environment, it is important to be part of a guanxi network. In this case, Chinese managers working in Africa especially should think how guanxi can be useful and what service it can offer. *Guanxi* ways are flexible, efficient, and accessible and can provide security, avoid confrontation, reduce transaction costs, provide the necessary resources, increase the business network and get significant commitments. Local workers might change their conflict behavior leading to unsafe situations, they can change links and networks based on the opportunities offered, the complexity, the circumstances in the personal or professional area, and not subject to externally imposed terms. On the contrary, they want this mutual obligation to enjoy and make them more attractive to the work they perform.

*Gift giving:* From an ethical perspective, it is very difficult to predict when to give a gift and what kind of gift to choose. Based on the amount of demand and recipient’s social status, the gifts that are expected can range from a simple fruit basket or chicken roast to a common meal. There are some rituals that characterize the guanxi gift process. The most important thing is that a gift can be rejected from one to three times. A Chinese delegation traveling abroad often comes with a huge amount of gifts. Large parts of the Chinese accept gifts without even wanting to engage in relationships, and would rather not go through difficulties that come with an obligation for at least three reasons. First of all, any type of refusal has the risk of losing reputation or importance. Second, it shows that a person does not want to enter into relationships and help. Thirdly, most people are open to new offers, because it means that their guanxi network will be replenished,

with the same knowledge that they engage in debt by engaging in relationships, so others will be indebted to them. So this is why Chinese contractors can apply the same method with their African workers. Cheap but meaningful gifts such as soap, used clothes, medicine, or mosquito nets would be appreciated.

*Involving safety training:* before starting to work on a project site, local workers, whose education level is proven to be relatively low, would need training on ethics and safety. Safety tools videos and lessons can be taught, methods to fight against malaria and other tropical diseases can be spread. This will not only reduce unsafe behaviors leading to accidents but also improve the project atmosphere.

*Review employment Contracts:* Chinese contractors should review their employment agreements for fairness, thoroughness, and legal compliance towards local workers. Healthcare programs and death handling should be integrated.

## CONCLUSION

In a culturally diverse environment, improving project and safety management in Chinese infrastructure construction in Africa is imperative so that projects become less risky for contractors and help local governments to make efficient policies and response plans that will protect the local workers on project sites. As many conflict situations leading to dispute and safety issues were reported, as *guanxi* is rooted in Chinese society and management styles, this research attempts to sort out and rank all difficulties Chinese managers encounter or if they apply the actual guanxi while undertaking hydropower projects in Cameroon, and whether or not *guanxi* is implicated in Sino-Cameroonian workers conflict and safety. As the results of this study revealed, the language barrier and interpersonal issues happen to be the highest ranked difficulties, explained by the fact that *guanxi* management style is not applied on Chinese hydropower projects. To reduce the proven conflict relationship and the lack of safety on project sites, there is need for involving *guanxi* in the network management, and improving safety practices on project sites. The findings deepen understanding on both the positive and negative effects of *guanxi* in hydropower project management. Given the importance and the prevalence of guanxi practice in the Chinese context, this study has direct implications on how Chinese managers should interact with local

workers. One of the limitations of this study is the lack of direct relationship study between guanxi, safety and conflicts indicators.

#### AUTHOR CONTRIBUTIONS

A. Bouba Oumarou performed the literature review, questionnaire design, analyzed and interpreted the data, prepared the manuscript text, and manuscript edition. L. HongXia performed the corrections, results explanations and software tutoring. C.A. Mbom performed the review of the paper.

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#### CONFLICT OF INTEREST

The authors declare no potential conflict of interest regarding the publication of this work. In addition, the ethical issues including plagiarism, informed consent, misconduct, data fabrication and, or falsification, double publication and, or submission, and redundancy have been completely witnessed by the authors.

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#### ABBREVIATIONS

%	Percentage
<i>DF</i>	Degrees of freedom
<i>DMs</i>	Decision makers
<i>HRM</i>	Human resource management
<i>LMG</i>	Leader-member-guanxi
<i>LMX</i>	Leader member exchange
<i>N</i>	Population size
<i>n</i>	Sample size
<i>NGO</i>	Non-Governmental Organization
<i>p-value</i>	Probability value
<i>SWARA</i>	Stepwise Weight Assessment Ratio Analysis
<i>T_Value</i>	Value of the t test statistic
<i>TOPSIS</i>	Technique for Order Preference by Similarity to Ideal Solution
<i>X<sup>2</sup> calc</i>	Calculated value of statistic in chi-square goodness of fit test
<i>X<sup>2</sup> crit</i>	Critical value of statistic in chi-square goodness of fit test
<i>Z</i>	Value of the statistic

#### REFERENCES

- Arnol, M.Y.; Brahmasari, I.A.; Nugroho, R., (2018). The influence of organizational commitment and conflict resolution skills on safety climate and its impact on accidents with moderation of high-performance work system in steel manufacturing industries in East Java Province. Proceedings of the 7th International Conference on Entrepreneurship Business Management. 130-133 (4 pages).
- Biggs, H.C.; Sheahan, V.L.; Dingsdag, D.P., (2005). A study of construction site safety culture and implications for safe and responsive workplaces. Aust. J. Rehab. Couns., 11 : 1-7 (7 pages).
- Bouba, O.A.; HongXia, L., (2022). Youth awareness and commitment to global warming risks among university students. Int. J. Hum. Capital Urban Manage., 7(1): 113-124 (11 pages).
- bouba, o.a.; hongxia, l.; souleymanou, y.a., (2021). Hydropower projects risk assessment and raking using combined swara-topsis and fine-kinney methods. Proceedings 2021 10<sup>th</sup> International Conference on Power Science and Engineering, IEEE. ISBN: 978-1-6654-0597-3 (11 pages).
- Cao, Q.; Esangbedo, M.O.; Bai, S.; Esangbedo, C.O., (2019). Grey SWARA-FUCOM weighting method for contractor selection MCDM problem: A case study of floating solar panel energy system installation. Energies, 12(13): 2481 (30 pages).
- Chen, Y.; Friedman, R.; Yu, E.; Sun, F., (2011). Examining the positive

- and negative effects of guanxi practices: A multi-level analysis of guanxi practices and procedural justice perceptions. *Asia Pac. J. Manage.*, 28: 715-735 (21 pages).
- Chen, Y.; McCabe, B.; Hyatt, D., (2017). Relationship between individual resilience, interpersonal conflicts at work, and safety outcomes of construction workers. *J. Constr. Eng. Manage.*, 143 : 04017042 (11 pages).
- Chen, Y.F.; Nancy, (2005). Goal interdependence and leader-member relationship for cross-cultural leadership in foreign ventures in China (Doctor of Philosophy). Lingnan Univ., HK (131 pages).
- Gao, R.; Chan, A.; Utama, W.; Zahoor, H., (2016). Multilevel safety climate and safety performance in the construction industry: development and validation of a top-down mechanism. *IJERPH*, 13: 1100. (14 pages).
- Gold, T.; Guthrie, D.; Wank, D.L., (2002). Social connections in China: institutions, culture, and the changing nature of Guanxi, structural analysis in the social sciences. *Camb. Univ. Press*, (19 pages).
- Jin, C.; Li, B.; Ye, Z.; Xiang, P., (2021). Identifying the non-traditional safety risk paths of employees from Chinese international construction companies in Africa. *IJERPH*, 18(4): 1990 (19 pages).
- Coster, S.D.; Heimer, K., (2001). The relationship between law violation and depression: An interactions analysis. *Criminology*, 39(4): 799-836 (38 pages).
- Liao, P.-C.; Lei, G.; Fang, D.; Liu, W., (2014). The relationship between communication and construction safety climate in China. *KSCE J. Civil. Eng.*, 18(4) : 887-897 (11 pages).
- Liu, X.; Wang, X.; Zhao, Y.; Xia, N.; Guo, S., (2020). Solving workplace deviant behavior in construction by leader-member exchange and leader-member *guanxi*. *J. Constr. Eng. Manage.* 146(6) : 04020061 (12 pages).
- Manzoor, B.; Othman, I.; Pomares, J.C.; Chong, H.-Y., (2021). A research framework of mitigating construction accidents in high-rise building projects via integrating building information modeling with emerging digital technologies. *Appl. Sci.*, 11(18): 8359 (21 pages).
- Osei-Asibey, D.; Ayarkwa, J.; Acheampong, A.; Adinyira, E.; Amoah, P., (2021). Framework for improving construction health and safety on Ghanaian construction sites. *JBCPR 09* : 115-137 (13 pages).
- Padilla-Meléndez, A.; Li, Z., (2017). Knowledge transfer exchange and dynamic Guanxi in Chinese universities. University of Malaga, TMS 13: 55-63 (9 pages).
- Park, C.; Han, S.; Lee, K.-W.; Lee, Y., (2017). Analyzing drivers of conflict in energy infrastructure projects: empirical case study of natural gas pipeline sectors. *Sustainability*. 9(11): 2031 (16 pages).
- Shepherd, R.; Lorente, L.; Vignoli, M.; Nielsen, K.; Peiró, J.M., (2021). Challenges influencing the safety of migrant workers in the construction industry: A qualitative study in Italy, Spain, and the UK. *Safety Sci.*, 142: 105388 (15 pages).
- Sun, C.; Cheng, X.; Li, Y.; Wang, Y., (2019). Exploring Guanxi: using interpersonal competence of managers in construction projects. In *IOP Conference Series. Earth Environ. Sci.*, 242(6): 062049 (7 pages).
- Sureda, E.; Mancho, J.; Sesé, A., (2018). Psychosocial risk factors, organizational conflict and job satisfaction in health professionals: A SEM model. *AN PSICOL-SPAIN* 35: 106–115 (10 pages).
- Tashi, S.; Peansupap, V., (2013). Review of conflict issues of public construction projects in Bhutan. 18th National Convention on Civil engineering (8 pages).
- Tjosvold, D.; Wong, A.S.H.; Feng Chen, N.Y., (2014). Constructively managing conflicts in organizations. *Annu. Rev. Organ. Psychol. Organ. Behav.*, 1(1) : 545-568 (24 pages).
- Wang, D.; Li, K.; Fang, S., (2018). Analyzing the factors influencing trust in a construction project: evidence from a sino-german eco-park in china. *J. Civ. Eng. Manage.*, 24: 331-343 (13 pages).
- Wu, X.; Chong, H.-Y.; Wang, G.; Li, S., (2018). The influence of social capitalism on construction safety behaviors: an exploratory megaproject case study. *Sustainability* 10: 3098 (17 pages).
- Xu, J.; Xie, B.; Tang, B., (2020). Guanxi HRM practice and employees' occupational well-being in china: a multi-level psychological process. *Int. J. Environ. Res. Public Health* 17(7): 2403 (15 pages).
- Yang, X.; Feng, Y.; Meng, Y.; Qiu, Y., (2019). Career adaptability, work engagement, and employee well-being among Chinese employees: the role of guanxi. *Front. Psychol.* 10: 1029 (12 pages).
- Yen, D.A.; Abosag, I.; Huang, Y.-A.; Nguyen, B., (2017). Guanxi GRX (ganqing, renqing, xinren) and conflict management in sino-us business relationships. *Ind. Market. Manage.*, 66: 103-114 (12 pages).
- Zolfani, S.H.; Saparauskas, J., (2013). New application of SWARA method in prioritizing sustainability assessment indicators of energy system. *Engin. Econ.*, 24(5) : 408-414 (7 pages).

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