The Influence of Guanxi Gradient on Crew Resource Management and Values in the Cockpit

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Abstract. The goal of this research is to reveal the influence of a newly developed concept of guanxi gradient on crew resource management and the corresponding values in a Chinese cockpit. Guanxi gradient is a cultural variable describing the decay of attitude considering different degree of interpersonal intimacy. A questionnaire measuring the attitude change is designed in the study. The questionnaire includes three parts which are basic perception, situational response and open questions. The objective of these questions is to find out how the operations of CRM were affected by the different degree of intimacy. Also, the questionnaire was designed to expose the corresponding underlying Chinese value system. It is found that harmony is the top value in cases without safety concerns.

Keywords: crew resources management, guanxi gradient, value system.

1 Introduction

Crew Resource Management (CRM) is already very popular throughout the world's commercial aviation community. No matter how it is perceived in different cultures, the core of CRM is synergy, the interaction of discrete agents to produce a total effect greater than the sum of the individual effects. There are only two crewmembers in the cockpit, the Captain and the First Officer. The Captain is supposed to give orders and the First Officer expected to follow. Consequently, in discussing the interaction between the crewmembers, a power gradient is always assumed. There is an imbalance of status in the cockpit. The core concern of interaction on the flight deck turns naturally to the power distance issues. One focus of CRM worldwide is thus often to lower the power gradient in the cockpit.

It is well known that Western culture is centred around individualism while Chinese culture centres on situationalism (Hsu, 1970). In the West, people accept that all humans are created equal and should be seen as individuals. For the Chinese, everyone is a member of a group in different situations, not just an individual. The stability of groups is based on unequal relationships between members within it, as in a family, the prototype of all social organizations. Hence, there are differences between Westerners and Chinese concerning relationships between people. One of the goals of CRM is to enhance the cooperation between the crewmembers. However, it is deeply individualistic in its basic philosophy. Therefore, for Westerners and people

with the same individualistic point of view, it is natural to find that power distance is important, as was found in the work of Helmreich and Merritt (1998), and it is possibly very difficult for them to see something other than the power distance in the cockpit.

From a Chinese point of view, something might be missing. The core of Confucius teaching is 'ren' and it is at the heart of Chinese culture (Liang, 1963). 'Ren' also explains why Chinese culture is ethical. It is generally agreed scientifically that there exist two cognitive dimensions to describe and categorize Chinese human relations (Chuan and Yang, 1997). One of them is superior-subordinate, a concept much greater in scope than leader-follower. There are also sub-categories within this, and each is attached with a certain morality. In the dimension of superior-subordinate, Chinese authoritarianism is described by the concept of dragonality, a concept also much larger than power distance. Dragonality was proposed by Jing et al. (2002) that to a certain extent this is useful to comprehend the Chinese counterpart of authoritarianism. However, there is the other dimension used by the Chinese to categorize interpersonal relations. It is the intimacy-estrangement. People use this to categorize people without an obvious superior-subordinate relation, and there are certain moralities associated with it. Differentiated order (Fei, 1947) is the well-recognized concept established to delineate the Chinese perception about intimacy-estrangement.

Based on these previous studies, Jing (2004), using empirical evidence, proposed a four-level differentiated order to describe the basic structure of Chinese human relations along the dimension of intimacy-estrangement: kin/acquaintance/fellow/alien. With self at the centre, 'kin' refers to the people located closest to self and related by blood or marriage. 'Acquaintance' represents those people quite familiar to us, up to a status that we can have sentimental and beneficial exchange with them, like old friends, neighbours and close colleagues. People not very familiar or even not known to each other, but who still have certain things in common, for example working in the same company, graduating from the same university or joining the same party, belong to the category of 'fellow'. As for 'alien', this represents the people we do not want to work with or even to understand – those who are psychologically remote. Although each level represents a specific category of intimacy or trust between people, it is not a fixed structure and the boundaries between these levels are movable and permeable. As a result, the four-level differentiated order does provide a preliminary frame of understanding of the complicated Chinese concept of guanxi.

2   Guanxi Gradient

Guanxi gradient is believed by the authors to be a cultural variable quite useful for understanding interpersonal relations worldwide. Based on the previous study about the four-level differentiated order, it can be seen that people differentiate their relations with others and a gradient type of attitude does exist according to the different degree of intimacy. It is conceived to be a basic part of human nature having a type of gradient in attitude when dealing with people located at different

psychological distances. In addition, this gradient must be negative, i.e., there is a positive attitude to closer people, such as family members, and a less positive, even negative attitude, to less close people, such as strangers. The gradient here represents the rate of change of attitude with different degrees of intimacy (Jing, 2007).

Guanxi gradient is defined as the slope of the declining attitude towards different levels of intimacy concerning interpersonal relations. It is found that for Western people, the gradient is always flatter compared to their Eastern counterpart, especially the Chinese. This can be considered as a strong indication of individualism. When compared with Hofstede's individualism index (1980), it is found to be in fairly good agreement, with the results showing that North America and Australia possessing the highest scores amongst the other nations for individualism have the lowest gradient.

Guanxi gradient is a concept larger than individualism and collectivism together. Individualism, as generally accepted, represents a concept stressing human independence and the importance of individual self-reliance and liberty. Compared to guanxi gradient, individualism represents one end of the spectrum and in this case differentiation only takes place between 'self' and 'others'. The Chinese, on the other side of the spectrum, further differentiate the 'others' and use different attitudes to deal with different 'others'.

In Hofstede's work, and also as generally perceived, collectivism is a concept opposite to individualism. Therefore, for the countries with a low individualism score such as China, one would naturally assume that they must have a high degree of collectivism. However, this point of view is already denied by many Chinese scholars (Yu, 1984, Fei, 1947, Hsu, 1970, Yang, 1993). It can only be said that China is a non-individualistic society instead of collectivistic.

However, since individualism-collectivism is a very rough dichotomy, non-individualism is often easily confused with collectivism. For a country like China, interpersonal relations are surely non-individualistic but are also definitely not collectivistic. As for a society like China, people further differentiate 'others' into several categories (Jing, 2004), and some 'others' are treated enormously different from other 'others'. Hence, the concept of collectivism is certainly not enough and sometimes even misleading. The concept of guanxi gradient is hence much more suitable to describe different types of non-individualism, including that of the Chinese, and even collectivism. Furthermore, the concept of guanxi gradient has nothing to do with dichotomy. This gives guanxi gradient plenty of scope to delineate different types of interpersonal relations of the whole spectrum globally, including individualism. In this aspect, the guanxi gradient is thus believed to be more useful than the concept of individualism-collectivism.

Crew resource management is designed to promote interpersonal cooperation in the cockpit. However, as designed by Westerners, CRM conveys subconsciously the individualistic mentality, i.e., without consideration of the influence of the degree of intimacy between the crew. In Chinese language, it can be said there is no guanxi in CRM. Distortion is therefore almost certain to take place in a crew with a steep guanxi gradient. For closely intimate relation within the crew, communication and cooperation will be enhanced. On the other hand, the monitoring function is likely to deteriorate. Work sharing is found to be another function easily confused, because

each crewmember is more than happy to help the other when they have a very intimate relationship. In a cockpit with estranged relationships, the bright side is that monitoring functions will be preserved almost as designed, and the procedures will be followed automatically because each crewmember does not want to cause any trouble. The down side of this, however, includes deterioration in communication and cooperation. Also, the degree of teamwork is highly likely to be lowered. Generally speaking, from this study it is found that in a cockpit with a steep guanxi gradient the designed activities will be more easily influenced by personal feelings or emotions. In this case, self-discipline is needed to avoid any negative influences. However, this is not always easy for a less mature person to face. Hence, there is a simple way to deal with this to avoid a steep guanxi gradient in the cockpit, i.e., not to put two pilots with too intimate or too estranged relations in a narrow and coercive space like a cockpit.

3   Questionnaire

In order to understand the latent meaning of guanxi gradient and its hidden Chinese value together with its influence on CRM, a questionnaire was designed. Also, the same questions used in the 2000 test(Lu et al. 2000) were casted in this version to measure the change of guanxi gradient with time. There are three parts in this questionnaire which are basic perception, situational response and open questions. There are 34 questions in the first part. The interpersonal relations are categorized into three different kinds of guanxi: acquaintance, fellow and alien. The questions in this part ask how the work in the cockpit is to be done when facing partner having different guanxi. There are 9 questions asking about the attitude facing acquaintance, while 6 and 13 questions about fellow and alien. There are 6 general questions inquiring the attitude about safety and harmony.

   In these 34 questions, 7 were designed to check attitude about monitoring function, 12 about communication, 7 about team work while 8 about workload. In addition, these questions were also arranged to reflect the underlying values, which were harmony with 11 questions, morality 9 questions and professionalism 14 questions. Here, harmony means the basic believe is to maintain the crew as a whole to work properly, morality means that pilots accept the position determines their behavior. For professionalism, it represents the capability is the main concern to make judgment.

   The second part is composed of 12 questions. Each question is given a situation occurred in the cockpit requiring the operation defined in the crew resource management. There are only two answers to be chosen between the consideration of safety and harmony. One of the choices asks pilots to answer according to the regulations to keep safety first, while the other one requires pilots to consider the feeling of the partner before taking actions which do not demand strictly adherence to the regulations. The objective is to find whether the subject is to be inclined to safety or harmony when facing partner with different degree of intimacy.

   The reason to study the attitude about harmony is as follow. In flight operation, safety is corroded once in a while by something like authoritarianism or guanxi. The main value underlying the behavior of authoritarianism and guanxi is harmony. It is

agreed generally that one of the most important basic values of Chinese culture is harmony (Lu, et al. 2001). Possessing ideographic mode of thinking, the Chinese have a holistic, or systematic, view about almost everything including operations in the cockpit. One key characteristic of the systematic view is the emphasis on dynamic interaction between the composing parts within it. To keep the system work positively, the Chinese believe that equilibrium should be maintained as the healthy interaction needed for the system. If equilibrium is destroyed, the whole system will enter into a harmful cycling loop and finally break down, in which case everybody in the system will get hurt. Hence, the Chinese always try instinctively to avoid damaging the equilibrium in most of the situations. Conceptually, avoid damaging the equilibrium is almost identical to maintaining harmony.

In the last part of the questionnaire, there are only three open questions for the subjects to answer. The goal of these questions is to find out how important the interpersonal relation is in the cockpit, and what kind of partner the pilots wanted to work with.

Two pretests were run. There were 29 subjects for the first test and 42 for the second test together with interviews. Collecting the opinions, there are totally 75 pilots were tested and interviewed finally. Among them, 56% were Captains, 15% Chief pilots, 16% Instructor pilots while 13% First officer. There were 48% pilots with military background. All the pilots have the same nationality: R. O. China. The reliability of all these questions were tested with Cronbach and split-half reliability and found to be acceptable. The results were again confirmed by the follow-up interviews.

4   Results and Discussion

A similar test was run in the year 2000. The guanxi gradient was again calculated in the present study in which the survey was executed in 2008. In 2000, the guanxi gradient was found to be -0.1835 while -0.1648 in 2008. The gradient was flattening obviously, which means the attitude of Taiwaness pilots treating partners with different degree of intimacy was gradually similized. The rate of flattening was calculated to be 0.00234 per year. In the year 2000, it was estimated to be 0.00278, the agreement is quite acceptable although the actual change of guanxi gradient was found to be lower than the linear extrapolation. Influenced by the western individualism, the interpersonal relation in Taiwan is becoming closer and closer to that of the west. However, the process takes quite a long time. According to the results, the evolution speed of guanxi gradient is slower then was expected, which represents the change of cultural traits in general is more difficult then we thought.

As for the four main operations of CRM: monitor, communication, teamwork and workload, the guanxi gradient for each item was found to be different. The highest one is -0.3078 possessed by workload. It means that for a Chinese pilot, he is more willing to share the workload, i.e., helping each other, with a more familiar partner, while more inclined to stick to the rule when facing an alien partner. The monitor and communication have rather similar but lower guanxi gradient as workload. The lowest

guanxi gradient was from teamwork with -0.1183. For a Chinese pilot, the degree of intimacy does not have strong influence when doing a job required by regulations in the cockpit. No matter which one, however, the above results indicate that the activities in CRM were performed differently with different partners in a cockpit with steep guanxi gradient.

The results also reveal the underlying believes of the pilots. No matter which one, the consideration of harmony, morality and professionalism all declined as the degree of intimacy decayed. It means that the local pilots gradually ignore the existence of the partners as the psychological distance increased. However, the decay rate was the highest for the value of morality. It is thought to be reasonable. For Chinese, aliens represent the people from somewhere totally different from us. They were so different that they have different moral. Even with different moral, we still have to maintain harmony with them and respect their profession. From the results, it can be seen that the average score of harmony is the highest, which represents harmony is the top value in the minds of Chinese pilots. Harmony should be preserved even when they work with partners they do not really care.

From the results of the second part, it is found that when most of the pilots face conflicting but relatively normal and not so dangerous situations, in average about 68% of them chose harmony over safety. That means unless the situation is somewhat dangerous, the local pilots are always prone to harmony in order to maintain smooth operation in the cockpit since safety is not really an issue.

If the given situation is about monitor, 39% of the pilots chose safety. In this case, the question asks about how the pilots behave when the partner accidently violates the regulations but without obviously deteriorating safety. Only 39% of the pilots chose to record faithfully and report to the superior. Most of the pilots chose harmony unless there is seemingly safety concern. When the situation is about communication, most of the local pilots still are incline to harmony. If the partner is very familiar, about 88% of the pilots will like to maintain a relaxed atmosphere in the cockpit. However, if the pilots fly with someone quite foreign, 68% of the pilots will choose sticking to the regulations to avoid any possible misunderstanding. As for teamwork, when flying with a good friend, 97% of the subjects will ask for help directly. If the partner is someone not quite familiar, 88% of the pilots will choose to respect the actions of the other if agreed by each other to avoid conflict. As for flying with someone never know, when something unexpected induced by the unknown behavior of the partner, 77% of the pilots will help unconditionally without asking anything.

From the third part, the first question asks the subjects about the factors influencing the performance of CRM. Among all the factors mentioned, 57% were related to harmony, 54% related to moral and 43% related to professionalism. It is again confirmed that the top value underlying the behavior in the cockpit is harmony. The third question is about the most wanted partner the local pilots like to work with. Among them, 71% of the pilots chose partners possessing quality and ability to maintain harmony, 51% of the pilots chose partners with good professionalism. Only 29% of the pilots chose to work with partners with good moral. It is natural for a Chinese to take harmony seriously even in a small group of two as in the cockpit. Harmony is also found to be the most wanted atmosphere for a Chinese pilot in the cockpit.

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