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Cross-Cultural Adjustment Experience in High Technology Management: Case of Władysław Turowicz in Pakistan Air Force

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With social structure and technology rapidly changing, cross-cultural management has been regarded as a worldwide trend. While there have been many cases and much literature on management of cross-cultural experiences from a Western perspective, few have discussed cross-cultural management in an Asian context. The goal of this research is to analyze the cross-cultural experience in high technology management and how it leads a boundary spanner toward project success. The researcher analyses the case of Polish engineer Władysław Turowicz, who played a vital role in the formation of Pakistan Air Force and Pakistan's Space Program (SUPARCO). The researcher has discussed the personal and professional life of Władysław Turowicz and highlights some important cultural perspectives regarding high technology management.

Keywords: cross-cultural adjustment experience, historiography, high technology management, Pakistan Air Force, Pakistan Space Program.

Dostosowanie międzykulturowe w zarządzaniu zaawansowanymi technologiami – przypadek Władysława Turowicza w Pakistańskich Siłach Powietrznych

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W obliczu szybkich zmian struktury społecznej i technologii zarządzanie międzykulturowe uznano za tendencję ogólnoświatową. O ile istnieje wiele przypadków i obszerna literatura na temat zarządzania doświadczeniami międzykulturowymi z perspektywy Zachodu, niewiele opracowań dotyczy zarządzania międzykulturowego w kontekście azjatyckim. Celem badań jest analiza doświadczeń międzykulturowych w zarządzaniu zaawansowanymi technologiami oraz ich wkładu w powodzenie projektu w sytuacji przekraczania granic. Autor analizuje przypadek polskiego inżyniera Władysława Turowicza, który odegrał istotną rolę w tworzeniu Pakistańskich Sił Powietrznych i Pakistańskiego Programu Kosmicznego (SUPARCO). Omawia życie osobiste i zawodowe Władysława Turowicza oraz zwraca uwagę na ważne kulturowe aspekty zarządzania zaawansowanymi technologiami.

Słowa kluczowe: doświadczenia w zakresie dostosowania międzykulturowego, historiografia, zarządzanie zaawansowanymi technologiami, Pakistańskie Siły Powietrzne, Pakistański Program Kosmiczny.

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1. Introduction

There is fast and constant growth of new technologies of communication nowadays and today's world is tightly connected at a global scale (Kim and Bhawuk, 2008). It is quite common to exchange the ideas and cultures across borders, promoting international integration of countries all over the world (Tomlinson, 1999). This globalization has increased the international connectivity between individuals, institutions, organizations, and countries (Kim and Bhawuk, 2008). These connections across borders continually create new challenges driven by various criteria. Cross-cultural interaction generates cultural diversity which is one of the dimensions of globalization (Kim and Bhawuk, 2008). Ellemers et al. (2001) discuss that the globalization trend is one of strong factors in the diversity intensification of the workforce in organizations. This ethnical migration supports the cultural diversity with the increase of free trade area agreements and allows more and more people to move within the concerned regions (Ellemers et al., 2001).

The world is becoming a global village and people are getting closer and closer due to this globalization. Due to increased globalization, international human resource management (HRM) has become essential for companies' success in the global marketplace (Harvey, 1997). International HRM plays a facilitating role in the success of expatriate assignments (Reegard, 2011). Expatriates are normally assigned in order to develop international skills, fill skill gap or set up new operations (Tungli and Peiperl, 2009). The matter of fact is that people from different countries having different cultural backgrounds are communicating and working together. To deal with diverse workforce that belongs to different cultures requires knowing cultural diversities. For example, how to deal with them, what we should say and what we should avoid saying and how to communicate with them because one thing that is accepted in one culture might not be accepted in another culture (Kawar, 2012). To handle this kind of situation, there should be good understanding of cultural diversities to fulfill the required goals the workplace (Kawar, 2012). In the current research, the author has discussed the case of Polish engineer, Władysław Turowicz, who has played a vital role in the formation of Pakistan Air Force, which is one of strong air forces of the world.

2. Cross-Cultural Adjustment

Cross-cultural adjustment is one of the important factors in the success of international assignment done by an expatriate. The results of the study depict the positive relationship between cross-cultural adjustment and expatriate performance (Morris and Robie, 2001). The study conducted by Hechanova, Beehr and Christiansen (2003) shows that cross-cultural adjustment has a positive impact on organizational commitment and job

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satisfaction and there is a negative relationship when the intention is to leave the assignment. This is quite clear from the literature that cross-cultural adjustment is necessary for expatriate success. In the current research, the author has discussed the case of Polish engineer, Władysław Turowicz, who is a good example of cross-cultural adjustment in high technology management of Pakistan Air Force (PAF) and Pakistan Space Program (SUPARCO).

Cross-cultural adjustment has been considered as a complicated construct in the literature since the 1980s. Several studies show that cross-cultural adjustment consists of three dimensions (Black and Gregersen, 1991; Black, 1988; Black and Stephens, 1989; Shaffer, Harrison and Gilley, 1999; Palthe, 2004; Waxin and Panaccio, 2005). The first dimension of cross-cultural adjustment is related with the comfort level of an individual with the general living conditions e.g. food, climate, transportation, etc. The second dimension is interactional adjustment which is related to the comfortability of an individual in interaction with host nationals, while the third dimension, work adjustment, is related to specific job responsibilities, supervisory responsibilities and performance standards in the new environment (Reegard, 2011). In this scenario, it might be possible that the expatriate may feel comfortable with one of the cultural dimensions and might feel less adjusted to another cultural adjustment dimension (Reegard, 2011). One model that was proposed by Black et al. (1991) has been used in the recent years. This model builds on both the domestic and international adjustment literature. Black et al. (1991) suggested that certain individual and organization factors create anticipatory adjustment for expatriate. The individual factors are previous international experience and training, while the organization factors are selection criteria and selection mechanisms. According to Tungli and Peiperl (2009), structured interviews, use of references, and self-nomination are the most commonly used selection methods. Nevertheless, Harris and Brewster (1999) discussed that most companies might not follow some specific systematic procedure for selecting the expatriate for international assignments.

Black et al.'s (1991) model has been acknowledged empirically regarding in-country adjustment. A study conducted by Harrison, Chadwick and Scales (1996) found a positive relationship between self-efficacy and three dimensions of cross-cultural adjustment. Shaffer et al. (1999) found a positive relationship between job-related factors and cross-cultural adjustment. Moreover, Palthe (2004) found a positive relationship between role discretion and work adjustment, and role clarity and work adjustment. Palthe (2004) also discussed a substantial relationship between family adjustment and interaction adjustment. Another study conducted by Black and Stephens (1989) also discussed the role of family adjustment as an important predictor of expatriate communication and general adjustment. On the other hand, Caligiuri et al. (1998) confirmed a relationship between family adjustment and work adjustment of an expatriate. Furthermore, a positive relationship

was found between cross-cultural training and self-efficacy and skill development, and previous experience also influenced cross-cultural adjustment.

3. Relationship Between Training and Cross-Cultural Adjustment

In cross-cultural adjustment, cross-cultural training is the most examined variable. Most of the researchers believe that cross-cultural training plays a significant role in the effective adjustment of expatriates (Eschbach et al., 2001; Deshpande and Viswesvaran, 1992; Black and Mendenhall, 1990; Waxin and Panaccio, 2005). However, some of the researchers have not found a clear relationship between cross-cultural training and cross-cultural adjustment (Puck et al., 2008). Cross-cultural training defined by Littrell et al. (2006) is "the educative processes used to improve intercultural learning via the development of the cognitive, affective, and behavioral competencies needed for successful interactions in diverse cultures". In view of Kealey and Protheroe (1996), cross-cultural training programs contain two extensive sets of activities: information-giving activities which contain practical information about living conditions in the host country and the second set of activities comprising experiential learning activities, frequently called experiential training.

Cross-cultural training also depends upon the duration of the training and when the training is provided, i.e. pre-departure, post-departure, and sequential (Reegard, 2011). In pre-departure training, the most common focus is cross-cultural adjustment literature and cross-cultural training. Most of the researchers have started comprehensive investigation on cross-cultural training effectiveness in the last two decades. For example, Harrison (1992) observed the individual and combined effects of experiential and cognitive approaches in creating positive reactions and developing behavioral skills. Likewise, Gannon and Poon (1997) examined differential effects of experiential approaches on trainee selection and cultural awareness. Most of the authors have explored cross-cultural training effectiveness with different perspectives like training method, duration of the training, and time of delivery. Eschbach et al. (2001) conducted research and used time of delivery, duration of training, and methodology of training to review differential effects of cross-cultural training. Puck et al. (2008) examined the effect of pre-departure cross-cultural training on the adjustment of expatriate, focusing on training length and comprehensiveness. In conclusion, most of the researchers have investigated cross-cultural effectiveness more comprehensively.

4. Comparison of Poland and Pakistan Culture

If we explore the Polish and Pakistani cultures through the lens of the Hofstede Model, we can get a good overview of deep drivers of respective cultures relative to other world cultures. Data about the Polish and

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Pakistani cultures have been compiled from the website (https://www.geert-hofstede.com).

4.1. Power Distance

This is the first dimension of Hofstede dimensions of culture. This dimension describes the fact that all persons in societies are not equal and it describes the attitude of the culture towards these disparities amongst individuals. Power distance "can be defined as the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally" (Hofstede et al., 2010).

Poland is a hierarchical society with a score of 68 for the power distance dimension. This means that people agree to follow a hierarchical order in which everyone has a place and which requires no further justification. In any organization, hierarchy is seen as reflecting inherent disparities, centralization is popular, subordinates expect to be told what to do and the ideal boss is a compassionate autocrat. Pakistan has an intermediate score of 55 for the power distance dimension, which does not show a specific preference for this dimension (Hofstede, 1980).

4.2. Individualism

The second dimension of Hofstede dimensions of culture is individualism versus collectivism. This dimension describes "the degree of interdependence a society maintains among its members" (Hofstede, 1984). In individualist societies, people are normally supposed to take care of themselves and their direct family only. In collectivist societies, people normally belong to 'in groups' that look after them in exchange for loyalty (Hofstede et al., 2010).

Poland with a score of 60 is an individualist society, which means there is a high preference for a social framework in which individuals are expected to look after themselves and their immediate families only. In individualist societies, fault causes guilt and a loss of self-respect, the relationship between employer and employee is a contract based on joint advantage, promotions and hiring decisions are normally based on merit only, and management is considered as the management of individuals (Hofstede, 1980).

Pakistan has a very low score for individualism, which means that Pakistan is considered a collectivistic society. In the Pakistani society, there is a long-term commitment to the member 'group', be that a family or extended family, or extended relationships. Loyalty in a collectivist culture is dominant, and normally overrides other societal procedures and regulations. The society cares for strong relationships where everybody takes responsibility for related members of their group. In collectivist societies, fault leads to disgrace and loss of face, relationships between employee and employer are perceived in ethical terms, promotions and hiring decisions

take account of the employee's in-group, management is considered as the management of groups (Hofstede, 1980).

4.3. Masculinity

Femininity versus masculinity specifies the extent to which the prevailing values of a society are masculine (e.g., assertive and competitive) (Hofstede et al., 2010). A high score (masculine) on this dimension indicates that the society will be driven by competition, achievement and success, with success being defined by the winner/best in the field, a value system that starts in school and continues throughout organizational life. A low score (feminine) on the dimension means that the dominant values in society are caring for others and quality of life. A feminine society is one where quality of life is the sign of success and standing out from the crowd is not admirable. The fundamental issue here is what motivates people wanting to be the best (masculine) or liking what they do (feminine). (Hofstede et al., 2010).

Poland has a score of 64 on this dimension and is thus a masculine society. In masculine countries, people "live in order to work", managers are expected to be assertive and decisive, the stress is on competition, equity and performance and conflicts are fixed by fighting them out. Pakistan has an intermediate score of 50 for the power distance dimension, which does not show a specific preference for masculinity or femininity (Hofstede, 1980).

4.4. Uncertainty Avoidance

Uncertainty avoidance can be defined as "the extent to which the members of a culture feel threatened by uncertain or unknown situations" (Hofstede et al., 2010) and try to avoid such situations. This uncertainty brings with it tenseness and different cultures have learnt to handle this tenseness in different ways. The degree to which the members of a culture feel threatened by unknown situations and have created beliefs and institutions that try to avoid these is reflected in the Uncertainty Avoidance Index (UAI) score (Hofstede, 1983).

Poland has a score of 93 on this dimension, which means that Poland has a very high preference for avoiding uncertainty. Countries exhibiting high uncertainty avoidance maintain rigid codes of belief and behavior and are intolerant of unorthodox behavior and ideas. In these cultures, there is an emotional need for rules (even if the rules never seem to work), time is money, people have an inner urge to be busy and work hard, precision and punctuality are the norm, innovation may be resisted, security is an important element in individual motivation (Hofstede, 1980). Pakistan scores 70 on this dimension and thus has a high preference for avoiding uncertainty.

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4.5. Long-Term Orientation Versus Short-Term Orientation

Later, in 1985, Hofstede added a fifth cultural dimension "long-term orientation versus short-term orientation", which resulted from his collaboration with the Chinese University of Hong Kong (Eringa et al., 2015). This dimension describes how every society has to maintain some links with its own past while dealing with the challenges of the present and future, and societies prioritize these two existential goals differently. Normative societies, which score low on this dimension, prefer to maintain time-honored traditions and norms while viewing societal change with suspicion. Those with a culture which scores high, on the other hand, take a more practical approach: they encourage thrift and efforts in modern education as a way to prepare for the future (Hofstede et al., 2010).

Poland's low score of 38 in this dimension means that it is more normative than pragmatic. People in such societies have a strong concern for establishing the absolute Truth; they are normative in their thinking. They exhibit great respect for traditions, a relatively small propensity to save for the future, and a focus on achieving quick results. With an intermediate score of 50, the culture of Pakistan cannot be said to indicate a preference (Hofstede, 1980).

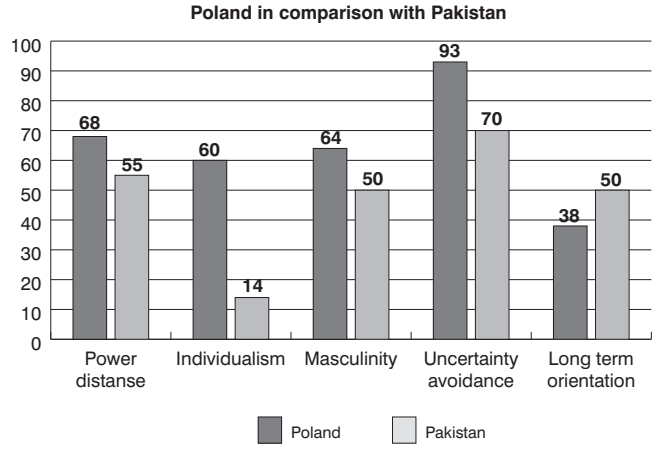

Fig. 1. Comparison of Polish and Pakistani cultures. Source: Data compiled from https://www.geert-hofstede.com.

Keeping in view the above discussion, it is quite clear that a significant cultural difference exists between Pakistani and Polish cultures. Now, the author will discuss the case of Polish pilot and engineer, Władysław Turowicz, who played an important role in the formation of Pakistan Air Force and Pakistan Space Program.

5. Research Methodology

In this research article, the author used a historiographic approach to analyze cross-cultural experience in high technology management.

Historiography is a research paradigm using qualitative or interpretative approaches which emphasize chronology over a considerable period of time with the aim of obtaining a fuller and richer understanding of a set of circumstances or a situation (O'Brien et al., 2004). To understand the situation and the context in which it occurs, historiography can be helpful for business and management researchers to acquire a rich understanding (O'Brien et al., 2004). Background knowledge of any situation or issue improves our comprehension and enhances our ability to understand what is important and what is not. "Historical knowledge gives solidity to the understanding of the present" (Elton, 1989). Business and management studies deal with a wide range of issues, which requires attention to different research paradigms.

Polish historians of historiography and some experts in management believe that historiography should be used to understand the changeability of human reality (Grabski, 1990; Magala, 2005). According to Ochinowski (2016), the aim is to search history for: "(1) threads relating to organizational theory and theoretical proposals, which may enrich contemporary business practice, (2) cultural patterns and good practices extracted from the past, as intellectual tools to optimize business activity today and in future, (3) a set of unused or forgotten opportunities in the area of widely understood organizational activity and identification of roots of these opportunities, as well as determinants of their limitations, (4) bad experiences, which may serve as warnings (history is both heritage and burden (Bugajewski, 2010), (5) opportunities for the development of contextual intelligence in employees and the management personnel".

Historiography is helpful to researchers in business and management studies, particularly to those doing research in the field of study with an interpretive or critical realist perspective (Sayer, 2000). The matter of fact is that historiography offers an attractive meaning with these philosophical approaches. In the literature, there are a lot of examples available. Sayer (2000) suggests that social systems are essentially open and that they developed over time rather than equilibrated, because people have the capability of learning and altering their behavior. Context is crucial to clarify the behavior by reference to the situations within which decisions were taken and to understand how actors identify their context and situation. These themes of understanding and assessing change within a context were also available in the work of Payson and Tilley (1997) in which an evaluation method based on critical realism was used to recognize the influence of changes on a system within the context of the environment. A key point shared by Sayer (2000) and Payson and Tilley

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(1997) is to search for extensive connections among phenomena as help in understanding. Similarly, Bannister (2001) used historical methods to judge the changing viewpoint of value from IT inside the Irish public sector. Keeping in view the above discussion, the researcher proposed that historiographic techniques should be given additional attention as research.

In the present research, historiographical methods are used in the case study of Władysław Turowicz (1908–1980), a Polish aeronautical engineer who was deeply involved in developing high space technology in Pakistan from the 1940s to the late 1980s.

6. The Case of Władysław Turowicz

6.1. Personal Life

Turowicz was born in 1908, in Zubir, Siberia, and finished his high school there. From his childhood, Turowicz was interested in aviation technology and had a collection of various models of aircraft. To achieve his goal, in 1920, he went to Warsaw and joined the most prominent engineering institute, the Warsaw University of Technology (WTU), with the major in aeronautical engineering. Turowicz graduated from the Warsaw University of Technology and was rewarded his honorary PhD degree in 1926. Later, Turowicz joined the Aeroklub Polski (Polish Aero Club) as a pioneer member, where he had a chance to work and study in the field of aerospace engineering with his friends, teachers and other renowned Polish engineers. As a distinguished member of the Club, he had a chance to work and study with Jerzy Drzewiecki, Henry Millicer, and Ryszard Bartel. During his stay at the Aero Club, Turowicz met Zofia, his future wife, Zofia Turowicz, with whom he would have four children. He also received an M.Sc. in the field of astrodynamics in 1927 from the same institution. He started his career as a fighter pilot and aeronautical engineer in the Polish Air Force, but he moved to the United Kingdom and joined the Royal Air Force as a reservist Polish pilot in 1930 (Zibago, 2015).

6.2. World War II and Royal Air Force Career

Initially, Turowicz joined the Polish Air Force; then he was recruited as a reservist in the Royal Air Force during World War II and went to Great Britain immediately. During World War II, Turowicz flew the British-built Handley Page Halifax. After the war, Turowicz was moved to the Aeronautics Division of the Royal Air Force where he worked as a technical inspector, and was placed in charge of the aircraft electrical and information system. After World War II, Turowicz did not go back to Poland because of the official negative attitude towards those who had served with the Allied Forces during the war (Zibago, 2015).

6.3. Career with the Pakistan Air Force

Because of an unstable political condition of Poland, numerous Polish Air Force officers started to move to different countries like Australia, the United States, Canada and Norway. Pakistan was fortunate that Władyslaw Turowicz, along with many other Polish pilots, engineers and scientists, migrated to Pakistan for a three-year contract in 1948 (Knopek, 2006). In Pakistan, Turowicz joined the Pakistan Air Force (PAF) and was deployed at Karachi airbase where he trained fighter pilots and took part in setting up technical institutes. During the first three years of his tenure, he served the Academy of PAF as a chief scientist too. After building capacity of members of PAF, he was transferred to Peshawar airbase where his job responsibilities were even more critical (Zibago, 2015). Turowicz was promoted as a wing commander in 1952. He was further promoted to the rank of group captain in 1959. He became an assistant chief of air staff and an air commodore, in charge of PAF's Maintenance Branch in 1960 (Myth, 2008). Moreover, Turowicz also played an important role in establishing a military and economic link between Pakistan and Poland.

6.4. Pakistan's Space Program

Turowicz was deeply involved in space engineering and then the government of Pakistan moved him to SUPARCO in 1966 where he worked as an aeronautical engineer and a chief scientist. Turowicz worked with Pakistani theoretical physicist, Dr. Abdus Salam. After the Soviet Union's launch of Sputnik, he met with President Khan, who later won the Nobel Prize in Physics in 1979. Turowicz, along with Dr. Abdus Salam, met with President Khan and explained the significance of a space program for a developing country like Pakistan and magnificently convinced him. Dr. Abdus Salam and he moved, under a space-co-operation agreement, to the United States where they positively convinced the United States government to contribute and train Pakistan's scientists in the field of space program and rocket technology. Turowicz believed that the day when Pakistan would have its own nuclear and space program which would help the country to maintain peace and sovereignty was not far away. His dream came true, but he was not able to see its realization. Pakistan launched its first digital communication satellite in 1990, exactly 10 years after the demise of the prodigious scientist and engineer. He was also involved in the launch of Rehbar-1, Pakistan's first rocket. Rather, he is believed to be the chief designer and developer of the program (Zibago, 2015).

Towards the end of his career, the government of Pakistan appointed Turowicz as Head of the Space and Upper Atmosphere Research Commission (SUPARCO) of Pakistan in 1967. As a good administrator, he energized and started the space program as speedily as possible. Turowicz improved the Sonmiani Satellite Launch Centre, where he was working for a launch

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pad control system, installing flight-test control command, and the System Engineering Division. Turowicz started a plan for the launch and fabrication of a Pakistani satellite. In 1970, Pakistan mastered the field of rocket technology (Zibago, 2015).

6.5. Family

In 1949, Turowicz's wife, Zofia, and his two daughters joined him in Karachi. Turowicz's third daughter was born in Karachi. Zofia taught the Shaheen Air Cadets to glide between 1950 and 1954, in Rawalpindi and Karachi. One of his daughters married a Bangladeshi and the other two married Pakistanis. His widow, Zofia Turowicz, died in 2012. She taught particle physics and applied mathematics at the Karachi University. She was awarded Sitara-i-Imtiaz and Pride of Performance. Turowicz's son presently works as a chief scientist and an aerospace engineer at the SUPARCO (Zibago, 2015).

6.6. Documentary

In 2008, a documentary film on the scientific work and life of Air Cdre Władysław Turowicz was completed. This film was directed by Anna T. Pietraszek, a Polish film-maker and journalist holding honorary Pakistani citizenship. The film shows the contribution of Turowicz and other Polish officers to the building of the PAF and SUPARCO (Myth, 2008).

On January 8, 1980, Turowicz died in a car accident along with the driver. He was buried with complete military honors in the Christian Cemetery in Karachi. The Consular General of Poland, Kazimierz Maurer, and Pakistani civilian and military personnel joined his funeral in Karachi. The government of Pakistan sent a condolence letter to his family, declaring that Turowicz was not just only a fabulous Air Force officer, but also a good scientist (Myth, 2008).

6.7. Honors and Awards

A memorial plaque was placed in the PAF Museum, Karachi, in the honor of Władysław Turowicz in 2005, the event that both Polish and Pakistani military and civilian personnel attended. At that event, the Consul General of the Republic of Poland in Karachi, Ireneusz Makles, profoundly acknowledged the PAF and particularly Air Chief Marshal Rao Qamar Suleman along with other officers for their struggles to create such honoring reality. The memorial placed in Karachi was "Władysław Turowicz Monument (PAF Museum, Karachi)" and the memorial placed in Lahore was "Władysław Turowicz Space Complex (SUPARCO), Lahore Center".

The government of Pakistan awarded multiple awards to Władysław Turowicz. These awards are Sitara-e-Pakistan (1965), Tamgha-i-Pakistan (1967), Sitara-i-Khidmat (1967), Sitara-e-Quaid-e-Azam (1971), Sitara-i-Imtiaz (Mil) (1972), Abdus Salam Award in Aeronautical Engineering (1978) and ICPT Award in Space Physics (1979) (Zibago, 2015).

7. Conclusion

The study clearly describes the cross-cultural experience in high technology management. The study highlights how a Polish pilot, Władysław Turowicz, played a significant role in the formation of Pakistan Air Force and Pakistan Space Program. Although the cultures of Pakistan and Poland are quite different in nature, the Polish pilot launched the project of Pakistan Air Force and Pakistan Space Program in a very successful way. As Pakistan was a British colony before 1947, it might have been helpful for Turowicz to adjust to Pakistani culture.

8. Future Research

The author has discussed cross-cultural experience in high technology management by discussing the case of Władysław Turowicz. This current topic has not received proper attention in previous research, so the nature of the current research was basically descriptive and exploratory. In future research, what can be explored is the common values that supported this successful cross-cultural venture and what kind of cross-cultural difficulties this may face and how these difficulties can be solved. Moreover, how was the training of Pakistan Air Force engineers developed in a cross-cultural perspective?

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