



## International Journal OF Engineering Sciences & Management Research

### PREDICTIVE ANALYTICS FOR THE EFFECTIVENESS OF CROSS CULTURAL TRAINING IN IT INDUSTRY

Prof. Raghavendra A.N.\*, Dr. Nijaguna G.

\*Assistant Professor – MBA, Krupanidhi School of Management, Bangalore – 560035, India

Professor, Department of MBA, Acharya Institute of Technology, Bangalore – 560107, India

\*Correspondence Author: [raghuan77@gmail.com](mailto:raghuan77@gmail.com)

**Keywords:** expatriate, predictive analytics, cross cultural training, learning curve, optimisation

#### ABSTRACT

The internationalisation of business has undergone tremendous change in the recent past. To compete in the global marketplace, multinational companies have recognised the importance of international human resource management that facilitates the success of expatriate assignments. But most of the companies functioning in multiple locations report that finding qualified and motivated candidates with a high potential for success is the greatest challenge. In the context of global assignments, managing expatriate talent is a hard-hitting task, because expatriates bring with them varying degrees of self efficacy, personality attributes, perceptions and relationship skills. Many organisations started using customised training programs for reducing the expatriate failure. But very few succeeded in correcting the expatriate failure due to the costs associated with the preliminary HR functions such as recruitment, selection and training. Hence a problem identified in the context of expatriate training can be tackled to a remarkable extent using predictive analytics. In fact predictive analytics can generate a state of affairs based on how a set of variables interact and make them superior to static business rules evaluating single variables serially in certain applications. Nevertheless predictive analytics plays a pivotal role in equipping the firms to analyze past and present data and utilise the information to predict future conditions.

#### I. INTRODUCTION

Internationalization of business in the modern times has given a new impetus to the multinational companies and in particular Information Technology and Information Technology enabled service sectors thus posing a challenge to the managers for increased attention towards expatriation process. Managing expatriate talent is more of a challenge rather than routine because expatriates bring with them varying degrees of self efficacy, personality attributes, perceptions and relationship skills. The extent of clarity with respect to the novel work characteristics differs from that of the parent country. In addition to these, the cultural differences impede the socialization process in many multinational corporations.

Expatriate is an individual who relocate from one country (Home Country) to the other (Host country) for a time bound assignment (Littrell et al., 2006). Expatriates are primarily deployed in order to transfer technical knowledge and inculcate corporate culture in the newly established firms in the host country. In view of this fact, the expatriate adjustment phenomenon is confronted by the multinational organizations. Adjustment of expatriates to the host country culture revolves round the host culture, individual factors, work related factors and organizational related factors (Aryee and Stone, 1996). In order to impart adjustment, the information technology (IT) companies use expatriates who possess a set of competencies to encounter changing situations in the host country (Adler and Bartholomew, 1992; Ronen, 1989).

The information technology (IT) industry emerged as one of the most dynamic industries in the world in twentieth century and has increased output particularly in the developed countries. It is a key driver of global economic growth due to its user-friendliness and wide range of IT products and services. A multitude of services covered by IT industry include networking, database design and development, testing, documentation, operational support, application development and security services. Unlike other sectors, the IT industry is mainly knowledge- based. Hence the IT industry is mainly dependent on human intellect for its sustained growth potential.

In the multinational context, the need for human talent in the form of expatriates assumes greater importance.

Expatriation has been considered as a special case of work role transition in the IT industry in which the individual attempts to re-establish the behavioural norms in a new environment. As such the work role expectations are often unfamiliar, ambiguous and tend to be uncertain of the consequences of familiar past behaviour when applied in the new context.

Majority of the expatriates face considerable difficulties in communication, cultural ambiguity and integrating cross-functional skills in the host country thus any organisation's productivity will be less. In addition to these organisation-related problems expatriates suffer from family-oriented problems like employment of spouse, the non-adjustment of spouse to the host country

culture etc., which add to the complexity of their adjustment to the new culture and hence cause disruption in their social life while at host-country. In order to minimise the effect of these factors on the performance of expatriates many companies design cross-cultural training programmes according to the needs of the expatriates. In this study an attempt is made to uncover the benefits derived out of predictive analytics as a tool to improve the effectiveness of cross cultural training in IT industry.

HR analytics is an evidence-based approach that uses predictive analytics for improving individual and organizational performance by making better decisions on the people side of the business. Although it is not its purpose to prove the worth of HR, analytics can certainly enhance the credibility of the function and the profession by improving the effectiveness of HR policies and practices and contributing to the competitive advantage of organizations that develop it as a core competency. An added side-benefit is that HR analytics can help expose where effort, resource and budgets are not predicting their intended impacts, and in so doing reduce the workload while improving the effectiveness of HR.

Without a doubt, mastering the art and science of predictive analytics takes effort. But it can result in an elevation of the status of the profession and its practitioners by helping them to guide their organizations in finding the sweet spot—the intersection between more profitable and more enlightened management and development of people. Mastering this effort would represent a win-win for employers and employees, and ultimately the society in which we live and work.

## II. LITERATURE SURVEY

According to Clegg & Gray, 2002, more and more countries engage in global competition, the imperatives of globally competent human capital indicate that the market for expatriates is changing and becoming more demanding. As such the need for understanding the dynamics of expatriate related issues are ever increasing. While the research focus of those investigating the IHRM field has expanded significantly in recent years, expatriate management issues remain a critical concern (Lazarova, 2006).

Expatriates play central roles as controllers, coordinators and those who transfer knowledge within multinational and global firms. However, there is a shortage of competent expatriates within companies (Suutari & Burch, 2001). Expatriate failures are more common in IT industry since the dimensions comprising the performance construct for expatriate positions differ from performance in domestic positions; expatriate employees in a foreign environment need a somewhat different set of skills and abilities to accomplish the same job they performed successfully in a domestic environment (Liu & Lee, 2008; Tung, 1981). Besides selection techniques, cross – cultural adaptation is the biggest challenge that derails expatriate success (Jassawala, Truglia, & Garvey, 2004).

Cross-cultural training can facilitate adjustment by involving the gradual development of familiarity, comfort, and proficiency regarding expected behaviour and the values and assumptions inherent in the new culture (Black and Mendenhall, 1990). There have been several efforts to develop a theoretical framework of cross-cultural training. According to Kealey and Protheroe's (1996) analysis, there are four methods of cross-cultural training programs for sojourners:

1. To provide the practical information on living conditions in the host country;
2. To study political, economic and cultural facts about the host country;
3. To obtain cultural awareness information on the host culture;
4. Experiential learning activities that combine cognitive and behavioural techniques.

They concluded that cross-cultural training is effective for the expatriates. People who have cross-cultural training and language training prior to arriving in the host country have more agreement with their learning in the host country. In other words, those experiences will be more helpful to expatriates in learning host culture.

Most of existing research on CCT is based on anecdotal or limited information and has a number of research design deficiencies. Large proportions of the studies to date are somewhat narrow in scope, which limits the generalizability of conclusions about the effectiveness of CCT (Kealey and Protheroe, 1996; Selmer *et al.*, 1998). Moreover, most of the past research on CCT, as well as research in the broader area of cross-cultural experience, has been conducted not with expatriate employees but with other populations of international sojourners, such as students or peace corps volunteers (Black and Mendenhall, 1990, 1991).

As many authors point out (e.g. Black and Mendenhall, 1990; Church, 1982; Hammer *et al.*, 1998), there are certain dissimilarities in the foreign experiences of different types of sojourners. For example, Hammer *et al.* (1998) identify several differences between the student experience and the corporate assignment (e.g. different intercultural situations and responsibilities, different motivations and expectations in respect of the international experience). Such differences make generalizability of conclusions about the impact of CCT on the corporate context questionable. Finally, the most commonly stated criticism of the existing research on CCT is that it lacks clear theoretical grounding and is inconclusive about its effectiveness (Black and Mendenhall,



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1990; Blake and Heslin, 1983; Chen, 1994; Kealey and Protheroe, 1996; Selmer *et al.*, 1998). To address this problem and become more strategic, HR professionals must get their arms around the data, identify key performance indicators (KPIs), settle on a technology approach, and infuse the data into their organization."

With HR professionals increasingly turning to Predictive Analytics ("PA"), all that is set to change. Predictive Analysis uses different techniques that will analyze historical and current data to make predictions about the future behaviour. PA answers what will happen, when. PA classifies the person in a group or in terms of a trait and then makes predictions in a context. Whether it is in decisions around hiring effectiveness, predicting success of employees or even using it for employee training, Predictive Analytics is helping corporations make data-driven, fact-based decisions (Accessed online 6/4/14).

### III. HYPOTHESIS STATED FOR THE STUDY

**Null Hypothesis ( $H_0$ ):** There is no significant difference between the cross cultural training and the expatriate characteristics in improving productivity in the IT Companies.

**Alternative Hypothesis ( $H_1$ ):** There is significant difference between the cross cultural training and the expatriate characteristics in improving productivity in the IT Companies.

### IV. RESEARCH METHODOLOGY

To test our hypotheses, we collected survey responses and subsequent turnover data one year later from a sample of 44 expatriates. Purposive or Judgement Sampling – a Non-probability sampling method is used for the study.

Judgement sample is that sample in which the selection criteria are based upon researcher's personal judgment that the members of the sample are representative of the population under study. Judgment sampling is basically used along with process and subject matter familiarity to choose useful samples for learning about process performance and the impact of changes over time (Perla, 2012).

In the present study, the researcher selects the expatriate employees of IT companies based on his judgement who meet the necessary research criteria. To be eligible for our study, expatriates had to meet two conditions. First, they had to have completed an employer- sponsored international assignment that required them to move to a foreign country. Second, the expatriates should have undergone cross cultural training in the beginning of their international assignment to mitigate the risks of their failure. Predictive analytics is applied only for this sample of 44 respondents from the various countries working in 10 different IT companies operating in Bangalore.

A structured questionnaire with different variables/factors was used to collect the details regarding the impact of cross cultural training on the productivity of 44 expatriates. A 5-point (5 = Strongly Agree, 1 = Strongly Disagree) Likert's Scale format designed is used to indicate subject's responses to the questionnaire. Secondary data collection was from previous research reports, magazines, articles, websites, journals and related books. The collected data is analysed using the statistical software MSEXCEL and SPSS. The null hypothesis is tested using ANOVA Test.

### V. RESULTS

The complexities and challenges associated with cross culture training in Multinational companies specifically IT companies are highly acknowledged. Using the empirical findings from questionnaire survey this study explored a number of potential antecedents of expatriate training. The choice of variables reflected their importance to the expatriates as well as the significance attributed to these variables within existing research on this subject.

The demographic data of 44 respondents of this study are shown in Table 1. Ten country expatriates working in IT Companies based in Bangalore included more males (68.2%) than females (31.8%). Majority of the expatriates were found in the age group of 20-30 years and 30-40 years. The expatriates were mainly deputed for software jobs that had experience of more than 5 years in the IT industry.

*Table 1: Demographic details of the respondents*

Variable	Description	Frequency	Percent
<b>Gender</b>	Female	14	31.8
	Male	30	68.2
<b>Age (Years)</b>	20 - 30	21	47.7
	30 - 40	14	31.8
	40 - 50	6	13.6
	Above 50	3	6.8
<b>Work Experience</b>	Less than 5 Years	5	11.4
	5 - 10 Years	19	43.2
	10 - 15 Years	12	27.3
	15 - 20 Years	6	13.6
	Above 20 Years	2	4.5
<b>Area of Work</b>	H/W	17	38.6
	S/W	20	45.5
	Other	7	15.9

Source: Primary data

**5.1. Testing of Hypothesis: Cross cultural adjustment and expatriate characteristics**

*Table 2: ANOVA Table (Between-Subjects Factors)*

Variable	Opinion	N
Expatriate Readiness to learn	1.00	2
	2.00	7
	3.00	9
	4.00	16
	5.00	10
Aesthetic Learning environment	1.00	2
	2.00	5
	3.00	11
	4.00	16
	5.00	10
Openness to new experiences	1.00	2
	2.00	5
	3.00	14
	4.00	14
	5.00	9
Intellectual capacity	2.00	9
	3.00	7
	4.00	12

	5.00	16
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Source: SPSS Output

**Table 3: Tests of Between-Subjects Factors**

Dependent Variable:	Cross-cultural Trainer Characteristics				
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	57.879 <sup>a</sup>	38	1.523	4.569	0.048
Intercept	362.045	1	362.045	1086.136	0.000
Expatriate Readiness to learn	.767	3	.256	.767	0.046
Aesthetic Learning environment	3.487	3	1.162	3.487	0.106
Openness to new experiences	4.322	4	1.081	3.242	0.015
Intellectual capacity	2.408	3	.803	2.408	0.083
a. R Squared = .972 (Adjusted R Squared = .759)					

Source: SPSS Output

**Inference:** The p-value of Expatriate readiness to learn (0.046) < α (0.05), hence H<sub>0</sub> is rejected. Therefore there is significant difference between cross-cultural training and expatriate readiness to learn.

The p-value of Aesthetic learning environment (0.106) > α (0.05), hence H<sub>0</sub> is accepted. Therefore there is no significant difference between cross-cultural training and Aesthetic learning environment.

The p-value of openness to new experiences (0.015) < α (0.05), hence H<sub>0</sub> is rejected. Therefore there is significant difference between cross-cultural training and openness to new experiences.

The p-value of intellectual capacity (0.083) > α (0.05), hence H<sub>0</sub> is accepted. Therefore there is no significant difference between cross-cultural training and intellectual capacity.

Global assignments differ to the extent that the cultures, values and other characteristics of the host country differ from those of the expatriate’s home country. On dimensions for which the host country is similar to the expatriate’s home country, training is less likely to influence the degree to which the expatriate’s expectations about the assignment are realistic and likely to be met when on the assignment. Pre-departure training on dimensions that are highly relevant to the expatriate’s transition is important (Harris and Brewster, 1999) and is more likely to lead to realistic expectations about the assignment. From the above analysis, it is found that expatriate readiness to learn and their openness to new experiences are found to impact the cross-cultural adjustment predominantly when compared to other variables. Hence the predictive analytics tool to improve cross-cultural training should be able to measure the expatriate readiness to take up international assignments and their openness to novel experiences.

**VI. CONCLUSION**

Predictive analytics is the practice of using patterns in historical data to anticipate future outcomes. Because predictive analytics is based on a set of unknown attributes, it is as much art as science and requires much more effort than simply running a data set through a tool to get an answer. Predictive analytics requires massaging the data and looking at the information inputs and outputs to find the optimal solution from a body of potential solutions. Even though it is an art in the end, there are industry accepted methods for guiding teams through the process so it progresses smoothly and the results meet anticipated business objectives.

In the present study we looked at many behaviours associated with determining expatriates cross cultural adjustment as a result of training. When dealing with expatriates and their individual thought processes, we found that what is cogent and logical to one group in managing their productivity may not be so to another group. Even within a specific group, there is often much different behaviour manifested among managers. It is even possible to see divergent behaviours from the same work manager when dealing with various specific expatriates in the IT industry.

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	<p><b>PROF. RAGHAVENDRA A.N.</b>  <b>Prof. Raghavendra A.N.</b>, a management faculty with 15 years of teaching experience is working as Assistant Professor of MBA at Krupanidhi School of Management. He received his Master's degree in 1999 from Bangalore University with Human Resource Management Specialization. He qualified the eligibility test for lecturers (UGC-NET) in the year 2011. Prof. Raghavendra is pursuing his Doctorate Studies from Visvesvaraya Technological University, Belgaum on the Topic "Reengineering Expatriate Deployment Model in Indian IT Industry".  Email: <a href="mailto:raghuan77@gmail.com">raghuan77@gmail.com</a></p>
	<p><b>DR. NIJAGUNA G.</b>  Dr. Nijaguna, a management faculty with 16 Years of experience is working as Professor in MBA Department of Acharya Institute of Technology, Bangalore. He was awarded PH.D degree in the year by Visvesvaraya Technological University, Belgaum in the area of Marketing. He has many publications in both national and international journals in the areas of supply chain management, marketing etc.,  Email: <a href="mailto:guna1912@gmail.com">guna1912@gmail.com</a></p>