AN EMPERICAL STUDY ON THE IMPACT OF MULTIPLE INTELLIGENCES ON TEAM DEVELOPMENT IN THE IT INDUSTRY IN SRI LANKA

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ABSTRACT

This research was carried out with the intention of evaluating the relationship between Howard Gardner`s Theory of Multiple Intelligences (1987) and Team Development. The Sri Lankan IT industry was selected as the focus of this research because, there is an emerging interest about the intelligence/knowledge and many articles have stated that the IT industry consist of intellectuals who are highly qualified, strong English skills and high literacy skills. Current study aims to identify to what extent IT employees are multiply intelligent. The study commences with a general overview into the subject of focus, followed by an in depth review of the literature. Based on this, a conceptual framework was devised; a questionnaire was developed & distributed among 100 IT employees based on purposive sampling method to capture data for the study. Data that was gathered analysed comprehensively through both graphical as well as statistical methods. The conceptual framework consists of one Dependent Variable which is Team Development determined by five dimensions - Cohesiveness & Communication (Cole: 1996), Goal Setting (Coch & French: 1948), Team Relationships based on the research conducted by Lafasto & Larson (1998). The Independent variable will be Multiple Intelligences which consider the eight Intelligences of Howard Gardner`s theory. The analysis section of the study attempts to find the relationship between 'Multiple Intelligences' and 'Team Development' through the use of correlation, regression analysis & One sample T test was done to identify the level of intelligence of respondents. The general findings showed a high level of mathematical, spatial, interpersonal & naturalistic intelligence of respondents at a 5% significance level. There was indeed a relationship between Multiple Intelligences & Team Development, which proves that intelligence levels of IT employees do play a critical role in their day to day work. This study endeavours to provide valuable insights into the notions, intelligences & team performances which are highly involved among the software companies. It is hoped that these findings will make a contribution to the IT industry as well as Sri Lankan academia.

Key words: Multiple Intelligences, Mathematical Intelligence, Interpersonal Intelligence, Team Development, IT Industry

INTRODUCTION

Background Of The Study

Unlike the past, nowadays companies place more interest on their human capital as it has become a strategic asset which is scare and rare. At present, employers would expect more from individuals than their educational qualifications. This can be proved by the statement made by Senaviratne (2012) that employers look for workforce skills apart from educational qualifications such as professionalism/work ethics, teamwork/collaboration, critical thinking and problem solving. This basically means that an individual should be multiple skilled in order to perform well in the organisation.

Considering the IT industry, it is purely based on team concept, which requires a combination of individuals to work together to complete the task. Team concept has been introduced due to the need of quick adaptation and technological innovation (Partington and Harris, 1999). A team will consist of unique individuals with regards to differences in age, educational backgrounds, lifestyles and nationalities (Green, Hill, Friday & Friday: 2005), which will make the team work a bit complicated. With the increase of heterogeneity in the organisation, top management should be capable enough to adopt the best strategies to gain the maximum benefit from diverse teams.

As Landaeta (2008) have proved, intelligence is a key requirement which enable software companies to cope in a complex and unpredictable environment. Specifically, the IT sector demands intellectual people to lead the organization globally and team work to accomplish their tasks. The global integration requires leaders and employees to be intellectuals for the successful achievement of their goals. Therefore it is evident that intelligence play a crucial role in the IT sector. IT companies can reap many benefits by identifying the different intelligence levels of individuals. Therefore, this study attempts to view the level of team success in terms of intelligence owned by members of IT organizations in Sri Lanka.

Problem Statement And Justification

Since the current study focuses on the IT industry, we need to identify factors affecting the success of a software project (team) such as time, team relationships, individual intelligence and skills. It should be noted that employees in the IT industry should posses the domain knowledge as well as other general skills to be effective in the company. In this juncture, we could say

intelligences play an important role in the IT industry, this can be proved as Sangeeta Bhardwaj and Kul Saxena (2005) have identified software companies as knowledge intensive firms, where knowledge is embedded in employees of the organisation. Also, the central bank report (2010) explains that Sri Lanka owns a competitive advantage in the IT industry due to availability of qualified IT engineers. Even though literally it suggests that IT employees are intelligent; a question would arise as to what extent they are Multiply Intelligent?

Though many industries have embraced project or team concept, the IT sector will be the pioneers who moved from the traditional department or functional work to team concept. Numerous studies have proved that Japan, South Asian, Europe and the US have been able to demonstrate many improvements by adopting Lean management which includes TQM[1], quality circles and team based work (Kaluarachchi: 2011). According to the case study done by Kaluarachchi (2011) of a Sri Lankan public hospital, it has been found that TQM activities have not been sustained in the organization. This particular article and many other studies have indirectly proved that team concept has not been successful in Sri Lanka. As mentioned above, IT employees have intelligence to some extent, so in this scenario q question would arise as to why team concept has not been successful in Sri Lanka?

To identify if a problem really exist a preliminary study was done. Five software engineers from different companies were interviewed to see if they had any issues in their teams with regard to different levels of intelligence of team mates. Interviewees said several problems exists in their respective teams due to communication gaps, unhealthy competition among members, skill gaps, conflicting ideas and misunderstandings between the team members. This proves that employees of the IT sector require soft and social intelligences apart from the domain knowledge. It is evident that, problems with regards to intelligence and team development do exist in software companies in Sri Lanka. This provides a strong foundation for the researchers to carry out this study.

According to published literature, so far no one has done an empirical study on Multiple Intelligences and Team Development except a conceptual article written by Green, Hill, Friday and Friday (2005) on "The use of Multiple Intelligences to enhance Team Productivity". The current study would fill the gap as it identifies to the nature of the relationship between Multiple Intelligences and Team Development, as this query is unanswered so far in research. Because of the increasing popularity of Multiple Intelligences in Sri Lanka and the rapid growth in the IT industry would be a good reason, justification and incentive for the author to carry out this research.

Taking above information into consideration the research problem can be derived as:

To evaluate of relationship between Multiple Intelligences & Team Development in the Information Technology Industry in Sri Lanka

Objectives Of The Study

- To evaluate how well the employees in the IT industry in Sri Lanka are Multiply Intelligent.
- Analyse the relationship between Multiple Intelligences and Team Development in Sri Lankan IT sector.

Significance Of The Study

Academic Significance

This proposed research will contribute new and valuable knowledge both globally and locally since Multiple Intelligences has not been studied with regards to Team Development or any other construct (apart from learning styles) in the world. In the western world there is only one descriptive study which explains the relationship of Multiple Intelligences and Team Performance. However in Sri Lanka or the Asian region this has not been studied and this study will explore the impact of Multiple Intelligence on Team Development in the Sri Lankan IT industry which has been widely neglected so far. Since there is no knowledge existing in this area, the current study will fill the gap as it would highlight the untapped Multiple Intelligences with regards to Team Development.

Practical Significance

This study highlights an emerging area of interest for which research has not been conducted in Sri Lanka. In that sense, findings of the current study will be valuable to the IT sector in Sri Lanka as it will indicate how companies could reap benefits by managing diverse teams effectively.
By this research, employees as well as employers will be able to identify the most prominent determinants of Multiple Intelligences. Hence this research will share the factors that would affect Team Development. As a result, IT companies in Sri Lanka will be able to identify many aspects of team mates or skills that could be moulded or used to increase productivity and profits. The research will identify facets that would support or disrupt the influence of Multiple Intelligences on Team Development.

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[1]TQM is a management approach to improve Products and processes of the organization. Implementation of TQM requires more of team work and participation of employees.

Scope Of The Study

There are 129 companies registered under SLASSCOM[2], only companies which had monthly revenue of more than $100, 000 were selected for the study. All together 37 companies were found which satisfied the selection criteria. A list of the company names have been annexed in the appendix for reference. The research will be restricted to twelve software companies in Sri Lanka as some companies did not want to share information with a third party. Because of this, the sample was restricted to 12 companies. Only a few companies were comfortable with hard copies of the questionnaire, and most of the companies specifically requested for an online questionnaire. Also it should be noted that only quantitative data will be collected for the current study.

LITREATURE REVIEW

Intelligence

Human intelligence is an amazing concept that cannot simply be explained by one definition. For the past few years, intelligence has become one of the most controversial concepts (Eysenck & Kamin, 1981). Generally, intelligence is a term used to describe an individual`s learning style, traits, skills and competencies (Armstrong, 1994; Jones, 2002). According to available definitions, the psychometric view is the most traditional explanation of intelligence. This approach focuses a single aspect which is commonly known as general intelligence (Noruzi & Rahimi, 2010). Several researchers have tried to develop a proper definition and as a result of their effort different components of intelligence were identified (Kafanabo, 2006).

Howard Gardner's Theory Of Multiple Intelligences

In 1983 Howard Gardner proposed the Multiple Intelligences theory which integrated a new perspective of intelligence. It is a psychological theory about the nature of the human mind (Kafanabo, 2006). He disagreed with the narrow definitions given for intelligence because he believed that intelligence is multidimensional. Gardner stated that traditional IQ or intelligence tests [such as Stanford-Binet test] measure only logical skills and language, but there are other equally important types of intelligence that need to be taken into consideration (Richrads & Rodgers, 2001). As a result he developed Multiple Intelligence Model which categorizes individuals based on their talents, abilities and preference in various contexts (Armstrong, 1994; Jones, 2002).Gardner believed that intelligence is pluralistic and established seven intelligences which can be listed as follows: verbal linguistic, logic mathematical, musical, bodily-kinaesthetic, visual spatial, interpersonal, and intrapersonal. In (1999b) he added three more to the above mentioned list, which is naturalistic, moral intelligence and existential intelligence. Gilman (2001) stated that naturalistic intelligence would meet the criteria that he has set himself, where as the other two were not properly defined.The pluralistic definition provides a new and clear view of intelligence that differs from the traditional view which usually recognizes only two intelligences; verbal linguistic and logical mathematical intelligence (Kafanabo, 2006).

Table 1: The Eight Intelligences

Intelligence	Definition
Verbal Linguistic Intelligence	This involves sensitivity to spoken and written language, ability to learn language and use language to accomplish tasks (Gardner, 1997). Noruzi (2010) in his research article defined verbal linguistic as the capacity to use words effectively, orally [e.g., as a storyteller, orator, or politician] or in writing [e.g., as a poet, playwright, editor, or journalist].
Mathematical & Logical Intelligence	This defines the ability to analyse problems logically, solve mathematical equations and to use quantitative and mathematical reasoning to investigate issues scientifically (Kafanabo, 2006). Any individual who possess this type of knowledge has a great capacity to work well with numbers, quantities and operations. They portray extraordinary talent in solving mathematical issues fast and accurately.
Spatial Intelligence	As the name suggests this intelligence is all about spatial judgement and the ability to visualize with the mind's eye. Spatial intelligence is the ability to form mental images and pictures of experiences and concepts, and to transform these images into personal meaning and applications (Martin, 2001; Weller, 1999).
Bodily-Kinaesthetic Intelligence	Individuals with this intelligence learn best by doing something physically, rather than by reading or hearing about it. This intelligence includes specific physical skills such as coordination, balance, dexterity, strength, flexibility, and speed, as well as proprioceptive, tactile, and haptic capacities (Noruzi, 2010).
Musical Intelligence	The capacity to create, communicate and understand meanings embodied in sound, the ability to mentally process music, recognise pitch, rhythms, timbre (sound quality) and manipulate music to solve problems or to express understanding (Kafanabo, 2006). The capacity to perceive [as a music aficionado], discriminate [as a music critic], transform [as a composer], and express [as a performer] musical forms (Noruzi, 2010).
Interpersonal Intelligence	This is very much similar to the self-awareness concept of Emotional Intelligence developed by Goleman (2001). The ability to perceive and make distinctions in the intentions, motivations, and feelings of others characterizes interpersonal intelligence (Martin, 2001; Weller, 1999)
Intrapersonal Intelligence	Intrapersonal intelligence is self-knowledge of strengths, limitations, moods, motivations, and the ability to react to this knowledge (Armstrong, 1994& Nicholson-Nelson, 1998). The capacity to understand one's

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[2] Sri Lanka Association of Software and Service Companies acts as the apex body to promote, and enable the growth of the IT-BPO industry in Sri Lanka.

	self, to know who one is, what one`s strengths and limitations are, goals and aspirations.
Naturalistic Intelligence	This is known as expertise in the recognition and classification of the numerous species—the flora and fauna—of an individual's environment. Also o includes sensitivity to other natural phenomena. Natural intelligence refers to a capacity to recognize and make distinctions in the natural world, including flora and fauna (Nicholson-Nelson, 1998).

(Source: Developed by the researchers based on literature)

Team Development

As Gladstein (1984) has defined, a group can be explained as two or more interacting and interdependent individuals that work together to achieve some particular goal. On the other hand a team is a collection of individuals with complementary skills committed towards achieving one goal (Katzenback and Smith, 1993a).

In an organisation, teams are constantly being formed in all walks of life. This could include formal work units, committees, project teams to influence new developments and innovations and could also be informal groups based around new friendships and interests. Teams are not formed for eternity, members may leave and new members might join so then the group should follow stages of development whereby it re-establishes the structure in a slightly different form.

Models & Theories Of Team Development

Factors Influencing The Behaviour Of Groups

Cole (1996) identified a variety of factors which influence the success of teams. Companies recruit individuals, but in reality they should work together in achieving tasks. As he identified there are seven factors which would positively affect the team performance.

- Size – The size of the group will affect how the group works together and tasks are completed.
- Leadership/Management style – This can drastically affect the performance of the group. It involves the organisation and direction of the group to achieve its goals. A good leader would positively influence the group where as a bad leader would create very bad effects on the team.
- Cohesiveness – All the members should have a strong feeling of involvement towards the group. If the group is not cohesive, it will tend to be ineffective. This could be also known as the degree to which the group sticks together.
- Motivation of group members - The commitment of members to achieve goals and tasks of the group is a key determinant of successful performance. Due to various reasons individuals will be interested in achieving their goals.
- Norms – This covers belief systems, attitudes and values of the group which will directly influence the performance of the team.
- Environment – The work environment will have a direct influence on the group and its performance. This includes the physical and social environments of the group – how they interact with other, how closely the group works together. Social environmental factors include how group members adapt their behaviour in order to achieve the goals.
- Group task – This includes the tasks that groups are asked to complete, importance and how urgent they are; how these results would help the company to achieve its objectives. In order become effective teams the tasks should be clear or ambiguous, routine or unique.
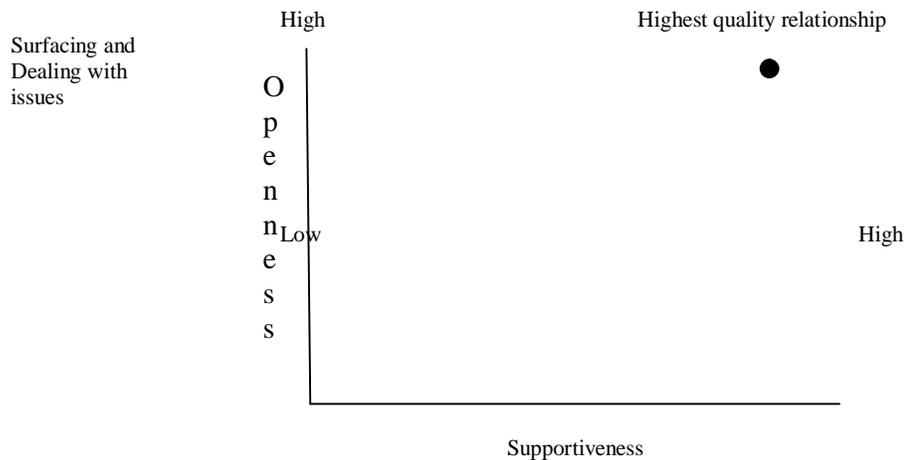
Five Dynamics Of Teamwork & Collaboration

Lafasto & Larson conducted a research in 1998, which involved about 6000 team members across a variety of businesses and industries to determine the factors that would generate an effective team. As a result of this research five dynamics were identified, which would reduce the gap between what is required and what can be accomplished. Finally, researchers developed some conditions which would bridge the gap between what we know as good team effort and how we actually go about achieving common goals.

Team member – Individuals can be either collaborative - easy to work with or dysfunctional and counterproductive, there by diminishing and even ruining the entire team effort. This study identified six factors that would distinguish effective team members: Experience, Problem solving ability, Openness, Supportiveness, Action orientation, Personal style

Team relationship–Researchers have stated that good teams are highly dependent on relationships, which can be either simple-easy or complicated and hard. Good relationships can be characterised as *trusting, caring, helpful, open, honest* and *respectful*. Worst relationships would probably include unreasonable, unfair, selfish and inflexible. Most evident overarching observations would be:

- Good relationships are constructive: Individuals are mutually respectful, honouring the feelings of others, embody trust and because non threatening, offer a sense of safety.
- Good relationships are productive: These relationships allow us to focus on real issues and to do in a way that makes a difference. Such relationships bring out the best of people.
- Mutual understanding: This emphasizes mutual clarity and minimise frustration of uncertainty. Focus on and understand the other person`s perspective, and offer the satisfaction of being understood.
- Self – corrective: Individuals are committed to make adjustments that will improve the relationship. Confidence on any agreed-upon changes will be honoured mutually, not in passing, but in concrete, observable terms.

High   Highest quality relationship

Surfacing and
Dealing with
issues

O
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Supportiveness

Team problem solving – According to the research what matters in the end is whether the right decisions are happening fast enough. Problem solving is an uncertain and complex process. By this research a new model has been developed which depicts that success is much more likely if the team`s goal is clear and compelling and if the team`s various energies are focused on the goal in a positive way as it solves problems.

Team leadership – Thought many people say that the right leader can add the 'spark' which drives a successful collective effort, defining the specific behaviours that characterise an effective leader is more elusive. An effective leader always focus on the goal, ensures a collaborative climate, builds confidence, demonstrates sufficient technical know-how, sets priorities and manages performance.

Organisational environment – The goal of any work environment would be to make sure that people consistently take action to achieve the organisation`s goals. The environment can either encourage or discourage working together easily in terms of management practises, structure and processes and systems and rewards.

Group Propertise

Work groups have specific characteristics that shape the behaviour of members and makes easy to explain and predict the individual behaviour within the group as well as the performance of the group. As Judge, Robbins & Sanghi (2010) have identified the properties of an effective team would be as follows:

Roles – As authors have defined in their book, it is a set of expected behaviour patterns attributed to someone occupying a given position in a social unit (Judge, Robbins & Sanghi: 2010). Simply this means a set of expected behaviour patterns attribute to someone occupying a given position in a social unit.

Norms – It is compulsory to have established norms in every group. It is acceptable standards of behaviour within a group that are shared by the group`s members (Judge, Robbins & Sanghi: 2010). Work groups typically provide clues as to how individuals should work, how to get the job done and what the output should be.

Status – This is a socially defined position or rank given to groups or group members by others. Even the smallest group will develop roles, rights and rituals to differentiate its members. This becomes an important factor in understanding human behaviour because status acts as a motivator in reducing the gap between the actual team strengths and what others perceive to be.

Size–The size of the group directly affects with regards to the task that it intend to complete. Past evidences prove that smaller groups are faster at completing tasks than larger groups and individuals perform better in smaller groups. Larger groups are more suitable for teams which are engaged in problem solving.

Cohesiveness - This could be also called as esprit de corps (spirit of cooperation or team spirit). According to theory it is the degree to which members are attracted to each other and are motivated to stay in the group. This can be characterised by the closeness the team experiences during its life time: the longer the team is together, the stronger the feeling of cohesiveness. Past studies have consistently proved that the relationship between cohesiveness and productivity depends on the performance related norms established by the group.

Research Studies

Hawthorne Studies

The key study of the importance of group behaviour and the influence of an individual worker on team performance was that of Elton Mayo at the Hawthorne Plant of the western Electric Company in Chicago between 1927 and 1932.

Results showed that psychological factors such as morale influenced output more than physical factors. Production also responded to changes in the social climate as follows:

- Bringing together of the workers as a group
- The growth of personal relationships between each other
- Freedom from supervision

Study proved that to improve the performance of the organisation, the norms of the informal relationships, behaviour and attitudes need to be taken into consideration. This requires careful handling to influence the staff and bring about the internalisation of new values and attitudes in instigating change. Also Attitudes of workers were largely influenced by the membership of individuals and the establishment of group norms, than payment schemes and bonus. Conflicting roles would badly affect the production as individuals attempted to satisfy the supervisors' objective while trying to keep the goodwill and Cupertino of the workforce
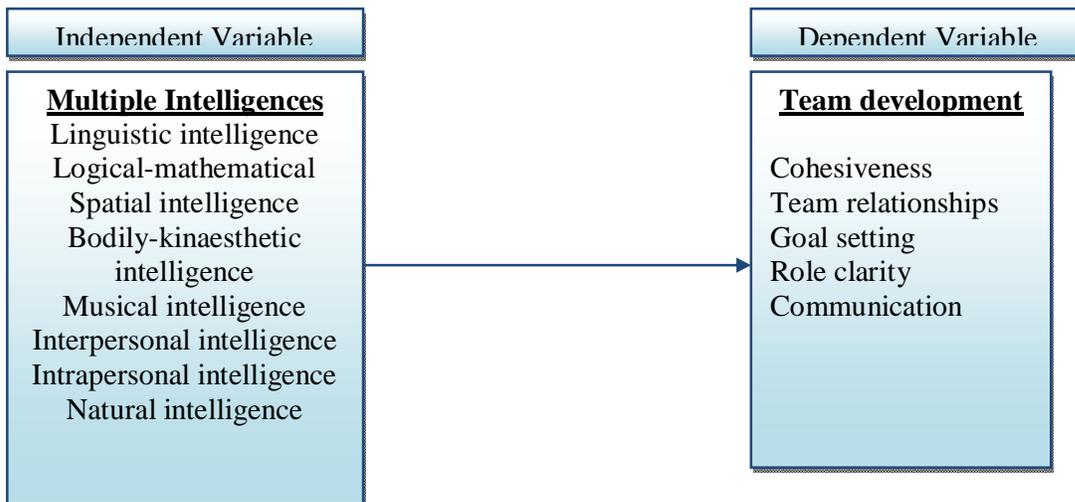
Coch & French

This particular research demonstrates the values of workgroups and teams in assisting the development of an organisation was a study carried out by Coch and French, two Michigan researchers in a garment factory.
The study proved clearly:

- The goals of group become an important factor in raising or lowering productivity.
- The beneficial effect of allowing the group to participate in problem solving when change is necessary.
- That change carefully introduced, can have beneficial effects on morale, instead of the opposite.

RESEARCH DESIGN

Conceptual Framework

Independent Variable		Dependent Variable
Multiple Intelligences Linguistic intelligence Logical-mathematical Spatial intelligence Bodily-kinaesthetic intelligence Musical intelligence Interpersonal intelligence Intrapersonal intelligence Natural intelligence	→	**Team development** Cohesiveness Team relationships Goal setting Role clarity Communication

(Source: Developed by the researchers based on literature)

Formulation And Rationalsiation Of Hypothesis

Level Of Multiple Intelligences

The central bank report (2010) explains that Sri Lanka owns a competitive advantage in the IT industry due to availability of qualified IT engineers, high literacy rates, strong English language skills, of IT employees and liberalization of the international telecommunications gateway. More over Bharadwaj and Saxena (2005) consider IT companies as knowledge intensive firms where knowledge is embedded in human beings. Also it should be noted that a person can employ two, three or more of the eight intelligences which were developed by Howard Garden (Green, Hill & Friday: 2005*).*

Above information provides the researcher a good basis to formulate the following Hypothesis:

H0$_1$ - There is no significant level of Multiple Intelligences of employees in the IT industry in Sri Lanka.
H1$_1$ - There is a significant level of Multiple Intelligences of employees in the IT industry in Sri Lanka.

Relationship Between Multiple Intelligences And Team Development

The review paper done by Green, Hill, Friday & Friday (2005), 'The use of Multiple Intelligences to enhance team productivity' conceptually proved that MI involved with organisational training would directly impact the performance or the development of teams. According to the article, management can be benefited by allowing employees to use their stronger intelligence preferences in ways that encourage collaboration, teamwork, critical thinking, problem solving, and meaningful relationships among peers (Green, Hill, Friday & Friday 2005). According to the findings of Katzenback & Smith (1993b) it stated that successful team performance requires a complementary set of the requisite skills, knowledge, and abilities amongst all the team members. Further considering the Sri Lankan context, employers look for workforce skills apart from educational qualifications such as professionalism/work ethics, teamwork/collaboration, critical thinking and problem solving (Senaviratne, 2012).
Based on these assertions the following hypotheses could be developed:

H0$_2$ – There is no relationship between Multiple Intelligences & Team Development in Sri Lankan IT sector.

H1$_2$ – There is a relationship between Multiple Intelligences & Team Development in Sri Lankan IT sector.

Operationalisation

Table 2: Operationalization

Variables	Dimensions	Indicators	Measurement
Multiple Intelligences	Linguistic Intelligence	Verbal and Written explanation Linguistic Awareness	5 point Likert scale
	Logical and Mathematical Intelligence	Mathematical Transfer Mathematical Relationship Logical Relationship	
	Spatial Intelligence	Visual Ability Spatial Ability	1= Strongly Disagree
	Bodily-kinaesthetic Intelligence	Bodily-Kinaesthetic Learning Bodily- Kinaesthetic Expression	
	Musical Intelligence	Musical Expression Musical Perception	2= Disagree
	Interpersonal Intelligence	Social Awareness Social Interaction Cooperative Attitude	3= Neutral
			4= Agree
	Intrapersonal Intelligence	Self- Self-confidence Leadership Perseverance	5= Strongly Agree
	Natural Intelligence	Interest in Natural Life Observation	
Team Development	Cohesiveness	How well the individual members are attracted or linked to develop the synergy of the team.	5 point Likert scale
	Team Relationships	How well the members collaborate and socialise with team mates.	1= Strongly Disagree
	Goal Setting	Understanding how well the goals and targets are defined for achievement.	2= Disagree
	Role Clarity	Identifying the intensity of clear team role definitions and expectations.	
			3= Neutral
	Communication	Identifying the involvement of members in goal setting, problem solving & decision making.	4= Agree
			5= Strongly Agree

(Source: Developed by the researchers)

Research Methodology

When considering the structure of the current study, it could be said that it follows a deductive research (top-down approach), because the study is mainly developed based on a theoretical foundation and based on this a set of hypothesis were developed. Data will be collected using a questionnaire to test the hypothesis and according to the results conclusions will be drawn to solve the research questions. This will be a quantitative study with the aim of quantifying the relationship between the 2 variables.

Out of 129 IT companies have been listed with SLASSCOM. 37 companies were selected as they had a monthly revenue more than $100 000. Researchers personally contacted all 37 companies to check if they are willing to participate in the survey. Sample was restricted to 12 software companies as 25 companies refused to take part as their company policy did not allow sharing internal information with outsiders even for academic purposes.

A structured questionnaire will be used in collecting data from the selected sample. A five point Likert scale will be utilized to capture the team members' perspective regarding the impact of Multiple Intelligences on Team Development. In order to make the data collection process more convenient for both the respondent as well as the researcher both online and paper based questionnaires were distributed.

DATA ANALYSIS

Results Of The Pilot Study

Results of the pilot study can be summarised as below:

Table 3: Results Reliability and Validity Tests

Dimensions	Validity Tests			Reliability Test
	Composite Reliability	AVE	KMO	Cronbach's Alpha
Linguistic Intelligence	0.875	0.7	.697	0.773
Mathematical Intelligence	0.84	0.68	.662	0.703
Spatial Intelligence	0.856	0.665	.769	0.827
Bodily-kinesthetic Intelligence	0.672	0.406	.631	0.493
Musical Intelligence	0.794	0.565	.607	0.74
Interpersonal Intelligence	0.88	0.789	.500	0.732
Intrapersonal Intelligence	0.749	0.5	.562	0.664
Natural Intelligence	0.859	0.674	.588	0.833
Cohesiveness	0.82	0.54	0.599	0.708
Team Relationships	0.935	0.783	0.788	0.904
Goal Setting	0.87	0.63	0.758	0.803
Role Clarity	0.88	0.71	0.609	0.797
Communication	0.899	0.68	0.809	0.829

(Source: Survey Data)

It should be noted that Bodily-kinaesthetic Intelligence was removed from the study as it could not satisfy any of the tests. Based on overall results of the statistical tests it has been proved that research techniques used for the study are reliable and valid.

Testing Hypothesis

Level Of Mutliple Intelligences Of Respondnets

One Sample t Test has been used in order to assess the level of Multiple Intelligences of respondents. Initially, the mean values of each dimension was calculated and compared with 3 being the test value. The main reason of considering 3 as the test value was because it is the midpoint of the survey scale, which is Neutral. To measure the level of each Intelligence; Neutral, Agree & Strongly Agree options were considered.

Results of the One Sample t Test can be summarised as below:

Table 4: Summary of One Sample t Test

Dimensions of the Independent Variable	T value	P value
Linguistic Intelligence	4.566	.000
Mathematical Intelligence	15.783	.000
Spatial Intelligence	16.042	.000
Musical Intelligence	8.324	.000
Interpersonal Intelligence	11.707	.000
Intrapersonal Intelligence	10.238	.000
Naturalistic Intelligence	17.970	.000

(Source: Survey Data)

As depicted in the table all the intelligences are significant because significance is low than 0.05. It can be concluded that few intelligences such as Mathematical & Logical, Spatial, Interpersonal, & Naturalistic Intelligences are significantly high as they have higher t values.

Since the results show a significant level of intelligences, we could reject the Null Hypothesis and Alternative Hypothesis can be selected. That is, there is a significant level of Multiple Intelligences of employees in the IT industry in Sri Lanka.

Relationship Between Multiple Intelligences & Team Development

Pearson's Correlation has been used in order to assess the nature of the relationship between Multiple Intelligences & Team Development considered.
Initially the correlation was identified concerning mean of all dimensions of both Independent & Dependant variable. Dimensions which had a significant correlation with Team Development were selected. That is Mathematical & Logical, Spatial, Intrapersonal, & Naturalistic Intelligence. Since other intelligences did not have any impact on Team Development, they were not considered assuming it might reduce the overall impact created by Multiple Intelligences on Team Development. The grand mean of selected intelligences were calculated and it was correlated with the grand mean of Team Development.

The results of the Pearson's Correlation will be as follows:

Table 5: Correlation between Multiple Intelligences & Team Development

Correlations

		MultipleIntelligences	TeamDevelopment
MultipleIntelligences	Pearson Correlation	1	.585**
	Sig. (2-tailed)		.000
	N	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

(Source: Survey Data)

As the significance value is 0.000 which is less than 0.05 we conclude that a significant association exist between the Independent & Dependant Variable. The Pearson's Correlation value being 0.585 indicates that there is a strong association between Multiple Intelligences & Team Development, statistically significant at 5% significance level. A positive correlation can be seen between the two variables. It refers to as "when Multiple Intelligences increases, the Team Development Increases". Based on the results presented above, there is a noticeably strong positive relationship between the Independent & Dependant variable. It can safely be said that H02 should be rejected while H12 should be accepted. Which is there is a relationship between Multiple Intelligences and Team Development in Sri Lankan IT sector.

Linear Regression Analysis was done in order to assess the nature of the relationship between Multiple Intelligences & Team Development. Results of the Regression analysis will be as follows:

Table 6: Results of Linear Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.585a	.343	.336	.37107

a. Predictors: (Constant), MultipleIntelligence

(Source: Survey Data)

The R value of 0.585 indicates the correlation between Multiple Intelligences & Team Development. Coefficient of determination, the R Square value of the model 0.343, which is 34.3% of the variance of Team Development, can be explained by Multiple Intelligences.
Based on the regression analysis it could be said that there is a moderate-positive relationship between Multiple Intelligences and Team Development. Although, it could also be observed that the strength of the relationship is moderately weak. Therefore the extent to which Multiple Intelligences could be used to predict Team Development is limited, yet a positive relationship does exist.

Even though the predicting power of the independent variable is not very high the researchers developed a model as there is a high statistical significance in the model.

Table 7: Parameter Estimates

Parameter Estimates

Dependent Variable: Team Development

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Intercept	1.183	.346	3.416	.001	.496	1.870
Multiple Intelligence	.635	.089	7.147	.000	.459	.812

(Source: Survey Data)

The model developed will be as follow:

$$Y^\wedge = 1.183 + 0.635(\text{Multiple Intelligences})$$

DISCUSSION

Level Of Multiple Intelligences Of It Employees

The initial finding of the study was that IT employees have Multiple Intelligences to some extent. According to the results of One Sample t Test it was identified that Mathematical & Logical, Spatial, Interpersonal & Naturalistic Intelligences were extremely significant. While Linguistic, Musical & Intrapersonal Intelligences were significant with low t values.
This finding is consistent with Gardner (1987) & Bharadwaj and Kul Saxena (2005) who stated that, intelligence is pluralistic and one could possess 2 – 3 or more of Multiple Intelligences Theory & IT companies are knowledge intensive firms where knowledge is embedded in human beings respectively.

But our attention is drawn by intelligences which had low significant levels & especially Bodily-kinaesthetic Intelligence which had to be removed from the study. Gardner (1983) stated that human capacities, abilities, and preferences, and the use of these capacities, abilities, will vary within any work environment. According to Sri Lankan context, if someone says he is good in Maths, Science or Accounting the common thought is that person is intelligent. But if another says he is good in sports, music or drama, he is considered as just another individual. This can be proved by the research done by Premarathne & Kulasekara (2012) students of the Bachelor of Arts degree programme of Colombo University being the sample. Students have stated that Arts degree has the lowest recognition in Sri Lanka. They believe that lack of professional training; extracurricular activities would lead to fewer opportunities. This is a common problem Sri Lanka; people don't see any value in learning aesthetic subjects, engaging in sports or other social subjects. This could have been the main reason for low significant levels of Linguistic, Musical, Intrapersonal & Bodily- Kinaesthetic (which wasn`t treated as an intelligence at all). But these are the mere areas that would lay a good foundation in producing a good citizen.

As many studies have highlighted Sri Lankan education system should be changed so the perceptions of the society will eventually change. For example the Korean Education system (Bae et al, 2012), focuses on developing an overall child, which involves activities such as child-centred educational philosophy, play-oriented activities, interactions with their environments, peers, and teachers are all highly valued. In many foreign countries, it is a must for undergraduates to follow aesthetic subject with other major subjects. Another good example is India, from very small days (4-5 years) parents send their kids for dancing, music & drama classes.

It is true that, these sorts of skills or abilities will not directly help individuals to climb the corporate ladder. But these will improve soft skills and other social skills which will develop an overall individual. But as a developing country we need to uplift our standard to the next level, the mode of education & attitudes of people need shift in gear (Jayalath, 2012).

Relationship Between Multiple Intelligences & Team Development

According to Pearson`s Correlation, it was evident that there is a positive relationship between Multiple Intelligences & Team Development as the correlation value was 0.585 which was statistically significant at 5% significance level.

This finding is consistent with review paper done by Green, Hill, Friday & Friday (2005), The use of Multiple Intelligences to enhance team productivity literally proved that MI involved with organisational training would directly impact the performance or the development of teams.
During the preliminary study it was said by the interviewees that they have communication gaps in their teams, which is statistically proven by the results of One Sample t Test, also this could be the main reason why Linguistic Intelligence did not correlate with Team Development. According to Weller (1999), individuals with Linguistic Intelligence would come up with creative solutions for real life issues and contributes to the acquisition of new knowledge and new skills. This is good evidence which highlights the importance of having communication skills apart from academic qualifications.

Even though musical intelligence is not used by the employers, this would indirectly affect the collaboration and creativity of the team mates (Green, Hill, Friday& Friday, 2005). Having Musical Intelligence alone will not lead an individual to get a highly paid job. But with no doubt, this intelligence will lead in improving relationships with peers. Although this intelligence may not

be commonly used in an organizational context, it can be utilised by employees as motivators for creating collaboration of thoughts and the emergence of new ideas (Green, Hill & Friday: 2005).

Likewise, Intrapersonal & Bodily-Kinaesthetic intelligence could be used in favour of Team Development. Martin (2001) stated individuals with intrapersonal intelligence are well aware of their own strengths and weaknesses, and how these strengths could be used to foster personal growth while implementing new ways to compensate for their weaknesses in Team work.
Moving into the Sri Lankan Context, study done by Gunawardana stated that employers will look for communication skills, personality, interpersonal skills and general transferable skills such as adaptability, decision-making and organizational skills (Gunawardana, et al, 1991). This highlights the importance of having extra intelligences such as Linguistic & Intrapersonal Intelligences.

Further Hettige, et al, 2002 and Samaraweera, 2007, noted that low proficiency in English, inadequate practical experience and negative attitudes of youth as problems identified by employers when recruiting individuals. Findings of the study & literature clearly prove, the importance of having Multiple Intelligences & its effects on Team Development.

CONCLUSION & RECOMMENDATIONS

According to the survey it was found that, IT employees show a significant level of Multiple Intelligences. Few intelligences were highlighted with extremely high significant levels, while some showed low significance. Indeed a positive relationship was shown between Multiple Intelligences & Team Development which indicates that intelligence levels of employees do play a vital role in improving the development of teams.

Individuals with Multiple Intelligences are an asset to the organisation. Since Multiple Intelligences is an emerging concept many are not aware of this. So IT companies need to take necessary steps in improving their recruitment process, training sessions & appraisals in order to recognise the different intelligences of individuals.

- To select the best out of the lot, organisations need to adopt an effective recruitment process. They need to take into consideration other soft & social skills apart from educational qualifications.
- In fact, employers will never be able to identify the all of the employees' capabilities or intelligences, so it is important to implement proper training sessions which will encourage employees to use their complementary skills in accomplishing the team tasks.
- More over recognition & appreciation of different skills, abilities & preferences will encourage team members to contribute to their maximum capacity. As a result individuals' will be aware of their own strengths - weaknesses & they will improve their strengths to achieve tasks. If organisations place value in these intelligences, surely employees will utilise them in order to achieve company goals.

There are some intelligences which are highly acceptable in Sri Lankan context (ex: mathematical knowledge, science, accounting & subject related knowledge). Music, sports, theatre & drama which were identified as intelligences by Howard Gardner are not given much prominence in Sri Lanka. These are treated as professions & not as intelligences. People are proud to talk about their academic related intelligences, but they do not talk about their social or soft skills as they do not see much value in having these intelligences. This needs a drastic change in attitudes of Sri Lankan people. People should realise that they need complementary skills & intelligences along with educational qualifications to achieve things in life
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Limitations

It should be understood that IT companies are one of the busiest industries and as a result many employees hesitated to participate in the survey. And due to time & resource restrictions, only 100 questionnaires could be collected.

The main focus of the study was IT industry & it was further narrowed down to software companies which are registered with SLASSCOM. Since Multiple Intelligences is an emerging concept this study can be done considering another industry.

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