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OF MANAGEMENT AND BUSINESS RESEARCH: G

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Highlights

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Discovering Thoughts, Inventing Future

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## CONTENTS OF THE ISSUE

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- i. Copyright Notice
  - ii. Editorial Board Members
  - iii. Chief Author and Dean
  - iv. Contents of the Issue
- 
- 1. Students' Integration in to Labour Market: Formation of the Motivation, Salary Needs and Expectations. **1-6**
  - 2. Optimum Executive Body Has 5 Members Simple Mathematical Proof. **7-8**
  - 3. Effects of Lowest Bidding Bid Awarding System in Public Sector Construction Projects in Pakistan. **9-21**
  - 4. Measurement Models of Intellectual Capital for the Decision Making and Performance Variables. **23-30**
  - 5. Mining and First Nations in Canada. **31-43**
- 
- v. Fellows and Auxiliary Memberships
  - vi. Process of Submission of Research Paper
  - vii. Preferred Author Guidelines
  - viii. Index



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# Students' Integration in to Labour Market: Formation of the Motivation, Salary Needs and Expectations

By Dr. Laura Pilukienė

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**Summary-** The controversial issues of employee motivation and wage expectation formation are often analysed in scientific and practical planes by addressing to the fact that a prospective employee (especially with no work experience) may be employed with preformed wrong wage expectations. The paper aims to assess the problematic aspects of the integration of young age (18-23 years old) persons, studying in the university, into the labour market associated with the expectations of desired wage.

**Keywords:** *net and gross wages, employee needs and expectations, wage expectations, motivation, student.*

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GJMBR-G JEL, Code:J30;J31.

## I. INTRODUCTION

Companies operating in the modern business environment are constantly improving their systems of motivation and remuneration in order to increase the loyalty of employees, as well as the quality and productivity of their work. Although one of the main motivators for employees is the material wage corresponding to their needs and expectations, however such motivation elements as career possibilities, variable salary for the results achieved, etc. are also emphasised. *The problem* is that the dissatisfaction with the receivable material wage and non-material motivational measures exists in a substantial number of business enterprises operating in various economic fields. The reasons may be various: failure to familiarize the employees with the system of remuneration and motivation in the business enterprise, too low interest of the employees themselves to learn about various aspects of remuneration for work (what is the cost of the employee to the company, including all material and non-material payment tools granted), as well as the wrongly formed expectations of the employee himself. The problem of wrong treatment of the wage paid, which is addressed in this paper, that conditions the perverted approach to the wage existing in the labour market of Lithuania is associated with the formation of the wage expectations of young employable-age people. Whether the young persons are employed with over-sized wage expectations?

Based on the above considerations, the *aim* of the paper has been set: to assess the problematic

aspects of the wage expectations and formation thereof of the students (the persons of 18-23 years old).

### a) Objectives

- 1) To assess the theoretical aspects of the employees' needs and expectations of wage and other motivation measures in a business enterprise;
- 2) To analyse the expectations of desirable material wage of the students;
- 3) To distinguish the problematic aspects of the formation of the students' wage expectations and the possibilities for improvement.

*The subject of research* is the student's expectations of desirable wage.

### b) Methods of the research

Systematic analysis of scientific literature based on a comparative method and the method of synthesis, a questionnaire survey of the students of the university and the statistical processing, systematization and analysis of the results thereof. The statistical processing of the results of the empirical research has been carried out by means of the statistical analysis software and the data processing packages *Microsoft Office Excel*, *IBM SPSS Statistics 21* (calculations of averages, standard deviations; correlation analysis).

## II. THE NEEDS AND EXPECTATIONS OF EMPLOYEE FORMATION: THEORETICAL ASPECTS

When examining the use of manpower in business enterprises in order to achieve maximum productivity, quality, customer satisfaction and, therefore, the successful existence of the enterprise in a competitive market, an emphasis is laid on the importance of the implementation of equitable remuneration and motivation and the strategy of human resources in order to promote and mobilize the employees and satisfy their needs.

The theoretical analysis of the employees' needs and expectations in pursuance of the increase of motivation has highlighted the importance of the employees' expectations associated with the satisfaction of primary needs (the guarantee of subsistence and security). It is the material wage determined for the employee in the business enterprise

that is the basis of satisfaction of the aforementioned needs. The problem analysed in the paper is the wage expectations of young employees leading to the discontent with the wages existing in the labour market. In general, the formation of the wage expectations of a young person is influenced by the situation in the labour market of the country, as well as the surrounding social environment (academic institutions, various groups of like-minded fellows, etc.). This is confirmed by Beržinskienė and Rudytė (2008), who argue that the position of young people in the labour market is dependent on the total demand, and the young persons searching for the job for the first time are facing with a number of problems. Firstly, due to the lack or abundance of particular professions in the labour market, and secondly, due to unreasoned wage expectations. According to Beržinskienė and Rudytė (2008), the relatively low accumulated levels of the available human capital prejudice the opportunities of the young people to get a job. The young people (students or new graduates) with no practical experience are often willing to get higher remuneration (material and non-material) from a company than the later is ready to pay.

Another important aspect concerning the situation of the young people in the labour market is the favourable opportunities of international mobility of the times. The mobility of young people and the increase thereof can be treated as a factor influencing upon the formation of wage expectations. It should be emphasized that two types of the young people mobility need to be distinguished: short trips (for one semester – with the purpose of studies, for a certain season – with the purpose of work) and long-term emigration. Konevas, Duoba (2007) having researched the mobility of students and its influence upon the increase of the country's human capital argue that the studies in a foreign country provide much cultural, personal and academic knowledge, promote such general competences of the young people as persistence, determination, stamina, and familiarize with the labour market conditions of that country. This is supported by Kumpikaitė et al. (2013), who state that the mobility of students allows developing both academic skills and cultural awareness, and civic skills. Having acquired theoretical and practical knowledge in a foreign country, a student is rating his/her work higher, as well as his/her expectations of material and non-material motivation measures desirable to be paid for the work increase.

The main factors of the young people migration are generally referred to as the differences between the supply and the demand of labour force, as well as the differences of wages in different countries (Čiasnienė, Kumpikaitė, 2011). When analysing the notions of the neo-classical economic theory, the authors confirmed the role of "pushing" and "pulling" forces influencing

upon the migration decisions. The existing ample opportunities (especially for the young people) to get employed by the companies not only in their own country, but also in foreign countries on purpose to be paid higher wages are closely associated with the wage expectations being formed.

The wage and its size are inseparable from the quality (level) of the living conditions of an individual and his/her satisfaction with the living conditions, which can be assessed very subjectively. As it has been already mentioned, namely the standard of living of the country, region is one of the most important external economic factors, also closely related to a legal - political facet, determining the movement of young people in the international labour market. The employee is treating the wage as a basic part of his own and his family income, and the means to improve his living and material situation.

With the constant increase of the prices of personal consumption goods and services, the trade unions of developed countries are seeking to include a clause regarding the increase of wages depending on the change of price index into the collective agreements (Bakanauskienė et al., 2003; Baršauskienė et al., 2010). The direct dependence between the standard of living and the size of wage is reasoned by the applicable wage indexation depending on the level of prices and the quantity of goods and services per capita (de Walque et al., 2010). J. Mietule (2012) has analysed the theoretical aspects of life quality and its separate elements, as well as assessed the quality of student life that is defined under such aspects as educational services, disposable income, health care, cultural and entertainment events and the feeling of belonging to a family, a circle of friends and acquaintances. It follows that the need to seek after a certain standard of living of the students is closely related to the desired wage after entry into employment.

The importance of the influence of social environment, and more specifically education institutions upon the young people is confirmed by Organisjana, Koke (2012), who have researched the relationship between the elements of entrepreneurship, as well as the opportunities of higher education to develop the entrepreneurship of students. Through the prisms of cognition of a student's needs and feelings, the institutions of higher education are forming the motivation and behaviour of the later, i.e. his entrepreneurial spirit, and thus the ability to enter the labour market and succeed in it. The importance of the development of entrepreneurial spirit and the formation of entrepreneurial competences in the process of studies should be emphasised due to the possibility to improve the attraction and integration of young people into the labour market (Burgete, et al., 2011). Žvirelienė et al. (2012) having analysed the role of higher education institutions in the process of students'

integration into the labour market conclude that the practical training serves as a possibility to acquire more knowledge about the labour market. The lack of practical preparation is one of the most important problematic aspects of the integration into the labour market. It should be emphasized that during the practice, the students can familiarize with the employees' motivation and remuneration system applicable in a business enterprise. This may influence upon the attitude towards the determination of the employee's work price.

Attention should be drawn to the changes in higher education policy. The higher education is increasingly focused on promotion of internationality and development of lifelong learning mainly due to the demographic changes in the country (Grebliauskas et al., 2012). According to the authors, the migration from developing countries (both for the purposes of studies and work) can mitigate the consequences of demographic changes, but there should be added the fact that they may also have a significant impact on the country's labour market and changes in it. It is possible that these immigrants will not only occupy certain job positions, but will agree to work for lower wages, what is very useful for a business enterprise.

In summary of the theoretical analysis results, it should be concluded that the motivation of young people to work and the formation of their wage expectations are influenced by many external factors, such as the situation in labour market and the standard of living of the country, the possibilities of international mobility that determine the number of young people

both leaving from and arriving to the country for longer or shorter periods, as well as the education policy of the country and individual academic institutions. Such aspects as the internal attitudes, features of character, lifestyle of young people, which are influenced by their close environment (the family and peers), should be undoubtedly emphasized as well. Under the influence of these circumstances, an empirical research has been carried out to highlight the desired wage of students upon the completion of their studies.

### III. METHODOLOGY OF EMPIRICAL RESEARCH

The empirical research is based on the doctoral thesis "Systematic evaluation of factors influencing remuneration in Lithuanian business organizations" (Žiogelytė, 2013) and results of other researches, those is in need of additional review and search of reasons.

#### a) *Analysing problem, according research results of dissertation*

Business companies must address the issue of wrong interpretation of wage by employees, or, to put it more precisely, their failure to understand that the variable component of wage and elements of indirect wage are the elements of the final wage received from the organisation for the performed work ( ), through a more effective organisation of a process of familiarisation of employees with the system of remuneration for work and its changes in the course of time.

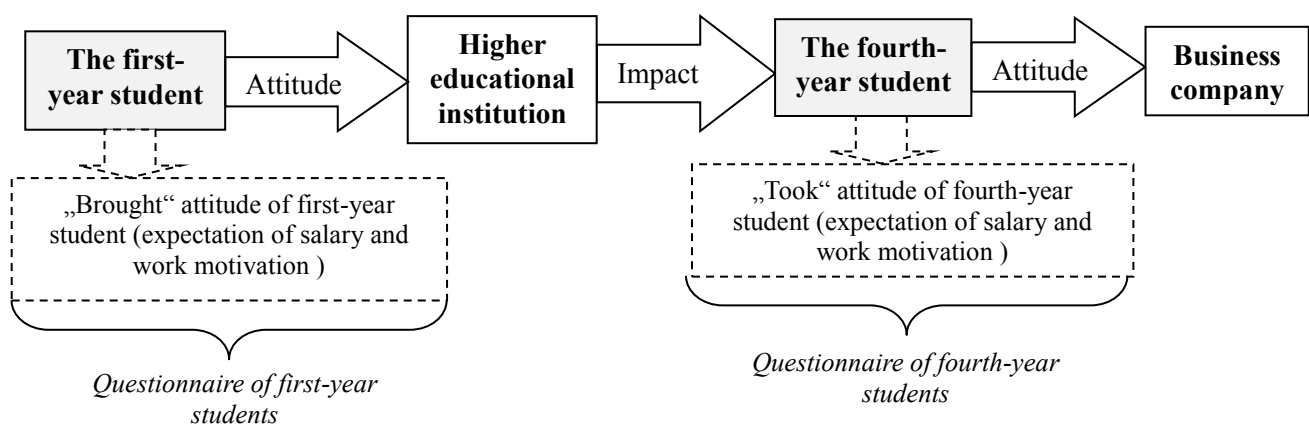


Figure 1 : Relation of student, higher educational institution and business company

#### b) *Assumptions which are analysing in this article*

Doesn't first-year student bring attitude towards work motivation, hasn't he formed expectation of salary? Does higher educational institution set student for integration to labour market? Does student employs with wrongly formed The first-year student Higher

educational institution Business company Attitudes Impact „Brought“ attitude of first-year student (expectation of salary and work motivation ) „Took“ attitude of fourth-year student (expectation of salary and work motivation ) The fourth-year student Attitudeis



Questionnaire of first-year students Questionnaire of fourth-year students attitude and expectation of salary?

Method of empirical research is sociologic student survey, witch instrument is the questionnaire. Questionnaire is formulated according theoretical formulation references. In order to assess attitudes of different year students, the first-year and the fourth-year students were interviewed by means of a questionnaire survey.

Statistical processing of results of empirical research is performed using statistical analysis software, data examination packages *Microsoft Office Excel*, *IBM SPSS Statistics 21* (calculation of averages, analysis of correlation). Quantitative data processing allows to determine if there is a connection between the analysed subjects in quantitative indicators and dependence between these subjects.

#### IV. ANALYSIS OF RESEARCH RESULTS

The especially insignificant level of this issue research in Lithuania, the small number of studies carried out in both scientific and practical planes has stimulated to research the mentioned issue in order to assess the situation of the students' attitude towards the wage in Lithuania. In September 2014, 152 respondents, i.e. the first- year (77 respondents) and the fourth-year (75 respondents) students were interviewed by means of a questionnaire survey (a short questionnaire of closed type questions).

Three main questions given in the questionnaire of the survey are targeted at highlighting of the students' opinion towards the desired wage and the minimal wage acceptable for work upon the completion of studies. The aim is also to examine the situation of the students' attitudes towards the working time for an average remuneration in the Lithuanian labour market. First of all, it is appropriate to give the general summary of the responses of all respondents, and then to examine the answers of the respondents of these two groups (the first- and the fourth-year students) separately.

*Table 1 :* The desired wage and the minimal wage for which the respondents would agree to work after the completion of studies: general and by gender aspect

<b>Respondents Mean (Euro)</b>	<b>The first-year students</b>	<b>The fourth-year students</b>
<b><i>The desired wage</i></b>		
<i>General</i>	723,7	634,8
<i>Women</i>	679,2	576,0
<i>Men</i>	811,0	851,4
<b><i>The minimal wage</i></b>		
<i>General</i>	576,9	454,0
<i>Women</i>	544,2	423,7
<i>Men</i>	641,0	566,1

Source: created by the author.

The table is based on the data provided by questionnaire research

The desired net wage of all respondents for work under their speciality (the type of work related to their studies) upon completion of the studies amounts to an average of around 680 euros. The highest rate of the respondents (29,6 percent) stated willing to get the wage of approximately 797 euros. Just 13,2 percent of the respondents referred to the amount in a range from 942 to 1450 euros as the wage to be paid upon the completion of their studies.

The minimal wage for which the respondents would agree to work after the completion of their studies (a job according to their speciality, nature of work related to their studies) amounts to an average of 516 euros (the standard deviation - 735,4 euros). A majority of the respondents (33,6 percent) confirmed that they would agree to work for the minimum wage of 507 euros. Just 4 percent of the respondents answered that the minimum wage they would agree to work for after completion of studies is in the range between 942 and 1450 euros.

The analysis of the desired wage and the minimal wage for which the respondents would agree to work after the completion of studies from the perspective of gender shows that the desired wage of the men is 24,5 percent higher than of the women. The average minimum wage of the women (for which they would agree to work after the completion of studies) is also 21,7 percent lower than of the men.

The comparative analysis of the students' responses in regard to the year of studies has revealed that the desired wage of the first-year students (after the completion of studies) amounts to an average of around 724 euros, while of the fourth-year students – 635 euros (see Table 1). The difference (89 euros or 12,2 %) between the different groups of respondents shows that the final-year students are assessing their abilities and opportunities in the labour market more critically and realistically.



The highest rate of the first-year students (36,4 percent) have stated that they would like to work for the remuneration of 797 euros. Even 52 percent of the interviewed first-year students referred the amount ranging between 363 and 507 euros as the minimal wage acceptable for them upon the completion of studies. The highest rate of the fourth-year students (48 percent) would be willing to work for the remuneration ranging between 652 and 797 euros. The interesting fact that even 26,7 percent of the fourth-year students believe that their wage should be around 362 euros. Even 40 percent of the fourth-year students have specified the lowest wage of 507 euros that would satisfy them upon the completion of studies.

The fourth-year students would agree to work for lower remuneration than the first-year students, i.e. the average minimal wage of the final-year students is even by 122,9 euros (21,3 percent) lower than of the first-year students.

A similar situation has become apparent upon the comparison of the students' attitude towards the indices under research from the perspective of a gender. The analysis of the first-year students' responses by the gender has revealed that the average of the desired wage of men is 811 euros, while of the women - 679,2 euros (cf. the average wage of the fourth-year male students is 851,4 euros, while of the female – 576 euros).

In order to assess the relationship between the first-year and the fourth-year students' desired wage and the minimum wage, for which they would agree to work, a correlation analysis has been carried out. The following statistical assumptions have been hypothesized:

*H<sub>0</sub>: there is no dependence between the desirable wage and the age of a student.*

*H<sub>1</sub>: there is dependence between the desirable wage and the age of a student.*

The obtained correlative matrix has revealed that these two variables are related by a very weak reciprocal correlative (the Pearson correlation coefficient  $r = -0,196$ ) and statistically significant ( $p < 0,05$ ) relationship. The following correlation has become apparent: the elder students' desired wage upon the completion of studies is lower.

The following statistical assumptions have been hypothesized:

*H<sub>0</sub>: there is no dependence between the minimum wage (acceptable after the completion of studies) and the age of a student.*

*H<sub>1</sub>: there is dependence between the minimum wage (acceptable after the completion of studies) and the age of a student.*

The obtained correlative matrix has revealed that these two variables are related by a very weak

reciprocal correlative (the Pearson correlation coefficient  $r = -0,270$ ) and statistically significant ( $p < 0,01$ ) relationship. The following correlation has become apparent: the elder students would agree to work for a lower wage upon the completion of their studies.

Upon the examination of the students' opinion about the desired wage, it is also purposeful to analyse a reverse question - about the duration of working time for an average remuneration in Lithuania. The analysis of the working hours for an average remuneration in Lithuania has revealed that the interviewed students preferably support the view that the working-week of 40 hours is the best one (even 40,1 percent of the respondents have chosen the working-week of 40 hours, while only 21,7 percent of the respondents indicated the working-week of 32 hours to be the best one).

The statistical distribution analysis of the questionnaire survey data has shown that it can reasonably be assumed that the opinion of the first-year and the fourth-year students regarding the duration of the working time for an average remuneration coincide (approximately 40 percent of both the first-year and the fourth-year students referred the working-week of 40 hours as a suitable one).

## V. CONCLUSIONS

Based on the analysis of scientific literature and the research results of the questionnaire survey, the following summary conclusions and recommendations have been drawn:

1. The attitude and implemented wage policy of the Government, as well as the remuneration systems of business enterprises are complicated processes conditioned by a number of static and dynamic factors that affect not only the employees' welfare, productivity level, change and desire to work efficiently and qualitatively, but also the opportunities of young persons to integrate into the labour market. The unfair competition of business enterprises related to recruitment procedures, the irregularities of motivation and remuneration systems (unreasoned differentiation of wages) have a significant impact on the attitude of young people towards the labour market and formation of their wage expectations.
2. The main factors influencing upon the motivation of young people to work and formation of their wage expectation are the situation of the labour market and the standard of living of the country, the opportunities of international mobility, the overall education policy of the country and individual academic institutions, as well as the internal attitudes, features of character, lifestyle of an individual conditioned by his/her close environment (the family and peers).

3. The results of the empirical research have highlighted the differences of wages desirable by the first-year and the fourth-year students upon completion of their studies, i.e. the wage acceptable to the fourth-year students upon completion of their studies is lower (more in line with the actual situation), therefore it should be concluded that the educational institution is properly forming the attitude of the students towards wages and preparing them for integration into the labour market.
4. The comparative analysis of the desired and minimum (acceptable upon the completion of studies) wage of the students by the criterion of age has revealed more critical attitude of the elder students towards the wage desirable to be paid upon the completion of studies and abilities to assess their opportunities in the labour market more realistically.
5. For further research it is appropriate to choose the peculiarities of attitude towards wages and motivation measures and the challenges of integration into the labour market of the students already working while studying.

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# Optimum Executive Body Has 5 Members Simple Mathematical Proof

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*Introduction* - Intuitively we know that any executive body in any organization in order to be effective must have limited number of its members.. By means of simple mathematical procedures and ideas of the theory of information we prove that:

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# Optimum Executive Body Has 5 Members

## Simple Mathematical Proof

Vladimír Vrecion

### I. INTRODUCTION

Intuitively we know that any executive body in any organization in order to be effective must have limited number of its members.. By means of simple mathematical procedures and ideas of the theory of information we prove that:

### II. OPTIMUM NUMBER OF MEMBERS OF EXECUTIVE BODY IS 5

This theorem is valid for all types of human organizations - political, economical, social etc., for any executive body with division of competences among its members and that needs be operative at its complex coordinated decision-making.

#### a) Procedure of proof

Here we understand by communication channel a surrounding serving for transmission of signals and the mode of mutual transmission of information among members of executive body that are necessary for its functioning.

The channel is then in substance verbal or written communication among 2 till n member subgroups of a executive body of n members.

Now we want to find quantum of all possible such communications. The effective use of such communication is limited by limited capacity of human being, of his brain.

Such quantum for the body, where among its members is division of work- duties and is to be maximum coordination we can ascertain combinatorically according to size of the body.

This combinatorial task we must solve according to sort of channels. The communication connections in the executive body, necessary for proportional management of individual areas of managed activities exist:

1. In two-way information channel between two men- i.e. in two - member communication connection,
2. in consultations where are taking part 3-till n – 1 members, i.e. in group communication connections in communications among 2 member till n – 1 member subgroups, in this case it is for

3. coordination of results of the consultations different subgroups therefore it can be 2 member communication otherwise group communication on common consultation of the whole body therefore in maximum group communication connection..

Because two – member communication we consider as one channel and at the communication in n-member group does not metter on sequence of elements we can use formulas for calculation of combination 2 th class of n-different elements without repetition. Than the number of the all possible communications of two members of body we ascertain by the formula:<sup>1</sup> :

$$C_2(n) = \frac{n!}{(n-2)!2}$$

and the number of group communications we determine by the equation:

$$C_k(n) = \frac{n!}{(n-k)!k!}$$

where k is number of members of the subgroup, in the case n = k , i.e. at the common communication of the all members of body, naturally C (n) = 1.

I. The sum of the all combination numbers ( for k≠ 0, k ≠ 1 ) i.e.:

$$C_2(n) + C_{2+1}(n) + ..... + C_n(n) = \sum_{k=2}^{k=n} C_k(n)$$

( that it is kown by adding of rows of Pascal' s triangle without value, where k = 0 and k = 1)

is for ( n = 3 ) = 4, ( n = 4 ) = 11, ( n = 5 ) = 26, ( n = 6 ) = 120, ( n = 8 ) = 247.

II. The relations of different subgroups ( sub 3 above) in dependance on n is at ( n = 3 ) = 3, at ( n = 4 ) = 1013, at ( n = 5 ) are the relations of subgroups ,where their number is 25

$$\sum_{k=2}^{k=25} C_k(25) = \sum_{k=2}^{k=25} \frac{25!}{(25-k)!k!}$$

<sup>1</sup> n ! we read n factorial where n ! = n . (n-1). (n-2) ... . 1.

The number of such relations reaches with rising  $n$  quickly very great values and despite the fact that they are not practically utilized the all such combination at elaboration of management instructions in executive bodies ( esp. not the combinations with greater  $k$  – but cosequence is that at common and/or group consultations some members are getting superfluous information) it is demonstration of certain limit of really effective executive body.

From the quaterns ( I ) and ( II) it is possible to deduce and/or prove intuitively based, organizational experience that ( optimum) number of member of executive body, where it is among them division of work, it is not to surpass 5 .

*Theorem:* In order to have effective executive body with maximum intellectual capacity and at the same time with optimum inside information processing it is to have 5 members.

*Proof:* From the relation (I) follows, that though 6 th member enhances intellectual capacity of a body about 1/6 but enhances amount of basic information channels more than 1x and at the same time number of communications determined by the relation (II) reach already very high values.

These ideas have also broader cosequences for structuring and functioning of complex and big organizational structures. It could be often useful to structure complex managed areas into maximum 5 important areas, and to emphasize substantial and quick reporting to executive managerial bodies.

It is obvious that practice can have its specifications, e.g. in organization of the states, their governments include normally more members than 5 because their decision- making normally need not be so urgent and therefore they need not be very operative, also the resorts managed by individual members of government have different scope and importance etc. But in the case of emergency each governments deals in framework of smaller group (only vice premiers, important ministers ) in accordance with to proved limit.

We could mention and elaborate yet a row of practical examples of implementation of presented theorem .

Lit. e. g.: Cambridge Studies in Advanced Mathematics , Vol.62, Enumerative Combinatorics, by R. Stanley, S. Fomin, ISBN 0521560691



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## Effects of Lowest Bidding Bid Awarding System in Public Sector Construction Projects in Pakistan

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**Abstract-** Construction industry participants have started recognizing that accepting the least price bid does not guarantee maximum value. Achieving a value-based procurement approach is a challenge, particularly for the Pakistani public sector clients, who are limited in their ability to evaluate the competitive bids based solely on the lowest-bid award system. Persisting problems of inferior quality of constructed facilities, high incidence of claims and litigation, and frequent cost and schedule overruns have become the main features of Pakistan's public construction works contracts.

**Keywords:** *bidding system, construction projects, public sector construction, public sector procurement.*

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EFFECTS OF LOWEST BIDDING BID AWARDING SYSTEM IN PUBLIC SECTOR CONSTRUCTION PROJECTS IN PAKISTAN

*Strictly as per the compliance and regulations of:*





# Effects of Lowest Bidding Bid Awarding System in Public Sector Construction Projects in Pakistan

Tariq Hussain Khan <sup>α</sup> & Abdul Qadir Khan <sup>σ</sup>

**Abstract-** Construction industry participants have started recognizing that accepting the least price bid does not guarantee maximum value. Achieving a value-based procurement approach is a challenge, particularly for the Pakistani public sector clients, who are limited in their ability to evaluate the competitive bids based solely on the lowest-bid award system. Persisting problems of inferior quality of constructed facilities, high incidence of claims and litigation, and frequent cost and schedule overruns have become the main features of Pakistan's public construction works contracts. This research was undertaken to assess the performance of public owned construction projects awarded on a lowest bidder bid awarding system. Also, the objective was to seek construction professionals' opinions about the traditional bidding procedure and other alternative systems for evaluation of bids and awarding contracts. An extensive literature search was carried out to identify different practices and a questionnaire survey was conducted among the different groups that make up the construction industry in Pakistan. Five alternate bid evaluation and contract award methods are discussed and presented in this research. The questionnaire was distributed online as well as through visits to contractors, clients and consultants. Additionally, 12 interviews were conducted with clients, consultants and contractors. In total 200 questionnaires were distributed. The data were collected and 112 valid questionnaires were analyzed by using MS Excel, PH stat, SPSS-20 and Sigma XL. The study concludes that 70% of the respondents consider the multi-parameter bidding method is to be more effective than lowest bidding method and ranked this method as best amongst all six selected methods. Insights and discussions are given in the analysis. Finally, this work will provide valuable information to clients, consultants and contractors and other stakeholders who desire to improve bidding methods in construction in Pakistan.

**Keywords:** *bidding system, construction projects, public sector construction, public sector procurement.*

## I. INTRODUCTION

The construction industry is one of the major sectors which involve substantial financial and human resources. Design and construction play a vital role in the national economy, including the development of residential housing, office,

commercial and retail buildings, as well as industrial plants, and the replacement, maintenance, and restoration of the nation's infrastructure and other public facilities. Bid and Procurement issues are widely related to the construction industry and its participants so that striving to improve the procurement of construction by the public sector in particular is in the best interest of both the community and the construction industry.

Currently, the public sector procurement of construction is largely based on the lowest bid award system. The customary practice of awarding contracts to a lowest bidder was established to ensure the least cost for completing a project. In public construction works, this practice is almost universally accepted since it not only ensures a low price but also provides a way to avoid fraud and corruption (Irtishad, 1993). While the low-bid procurement system has a long-standing legal precedence and has promoted open competition and a fair playing field, a long-standing concern expressed by owners and some of their industry partners is that a system based strictly on the lowest price provides contractors with an incentive to concentrate on cutting bid prices to the maximum extent possible (instead of concentrating on quality enhancing measures), even when a higher cost product would be in the owner's best interest, which makes it less likely that contracts will be awarded to the best performing contractors who will deliver the highest quality projects. As a result, the low-bid system may not result in the best value for money expended or the best performance during and after construction. Moreover, the traditional low-bid approach tends to promote more adversarial relationships rather than cooperation or coordination among the contractor, the designer and the owner, and the owner generally faces increased exposure to contractor claims over design and constructability issues (Rizwan, 2008).

The study aims at analyzing the current status of Bid and Procurement Strategies in the construction industry of Pakistan. In Pakistan, the most common method of awarding the contract is the Least Responsive Bidder or Price Based method, which has inherent flaws of high competition and minimum performance. These incompetent practices pose a serious risk and problems. It is therefore, imperative to

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to assess the impact of competitive low-bid awarding system on performance of major public work projects (in terms of schedule, cost, quality and safety) in Pakistan construction industry. The study will forward recommendations and suggestions for developing a proposal for implementing alternative bid-evaluation and contract award procedures for the construction industry of Pakistan.

#### a) *Research Scope*

Mainly, the scope of the study is to analyze the performance of public owned construction projects which are awarded by the lowest bidder bid awarding system in Pakistan. A limited study of alternate bidding procedures followed in different parts of the world is also covered in this study. However, this research mainly covers public construction projects under the government of Pakistan. Private sector and other practices are given very little attention in this research and they may have slightly different results.

#### b) *Research Objectives*

- (a) To highlight the weaknesses, performance, opportunities and implications of the public owned construction projects that are awarded on the basis of lowest bidder bid system in Pakistan.
- (b) To analyze the existing bid selection and awarding system and to provide a comparative study of different alternative bidding systems.
- (c) To present conclusions and recommendations on lowest bidding system performance based on analysis and results of this study.

## II. LITERATURE REVIEW

The latest developments and desires in different aspects of human life, has directed the professionals in construction industry to use alternative methods of project delivery systems. However, the bidding and project awarding systems are still largely in their basic form. If a client wishes to muddle through these new trends and invite acceptable bidders, it is necessary to clarify and develop pre-determined selection criteria and the objective of the prequalification and bid evaluation processes (Hatush et al., 1997). In Pakistan, major client of construction industry is Government of Pakistan (GOP). And the most common procurement method is the lowest-bidder system in which contracts are awarded to a responsive contractor who offers the least price. In last twenty to thirty years, the prequalification criteria and bidding processes have not seen much advancement and are still in their old form. The client is provided by prequalification, with a list of contractors that are invited to tender on a regular basis. There are unambiguous benefits and distinct pitfalls to the lowest-bidder bid awarding system. It compels the contractors to lower their costs, usually through

innovation and modernization, to ensure they win bids and maintain their profit margins. In addition, the process is beneficial specifically to the public sector because of the transparency and simplicity, an important criterion of public policy (Photios, 1993). However, allowing projects to be awarded based on the least price has inherent flaws. Delays in meeting the contract duration, increment of the final project cost due to high variations, tendency to compromise quality, and adversarial relationship among contracting parties are the major pitfalls associated with responsive low bid award procedure (Thomas., 2009). Moreover, the low-bid award system encourages unqualified bidders in the competition and in contrary it discourages qualified contractors to participate. In a survey conducted in the Oromiya regional state, non-existence of real competition during contractors selection; excessive time overruns; compromising quality; and escalation of the final project cost from the estimated cost were the major problems associated with the existing approach of delivering projects (Lemma., 2006). Among many causes of disagreements in the construction project, the project delivery system selected is one of the significant elements (Abera, 2005).

#### a) *Legal Framework (Bidding Procedures and Laws)*

Government of Pakistan has statutes requiring submission of competitive bids for construction projects. As per Pakistan Engineering Council (PEC) and Public Procurement Regulatory Authority (PPRA), it requires public organizations to award such contracts to the "lowest responsive bidder." Public works procurement as defined by PPRA is "Save as otherwise provided hereinafter, the procuring agencies shall use open competitive bidding as the principal method of procurement for the procurement of goods, services and works" (Rule 20, S.R.O. 432(I)/2004). Few definitions and outline of bidding procedure followed in public sector of Pakistan is discussed in this section.

##### i. *Procedures for Competitive Bidding*

#### (a) *Single Stage – One Envelope Procedure*

Each bid shall comprise one single envelope containing, separately, financial proposal and technical proposal (if any). All bids received shall be opened and evaluated in the manner prescribed in the bidding document.

#### (b) *Single Stage – Two Envelope Procedure*

The bid shall comprise a single package containing two separate envelopes. Each envelope shall contain separately the financial proposal and the technical proposal. Initially, only the envelope marked "TECHNICAL PROPOSAL" shall be opened. After the evaluation and approval of the technical proposal the procuring agency, shall at a time within the bid

validity period, publicly open the financial proposals of the technically accepted bids only. The financial proposal of bids found technically nonresponsive shall be returned un-opened to the respective bidders. The bid found to be the lowest evaluated bid shall be accepted.

*(c) Two Stage Bidding Procedure*

*i. First Stage*

The bidders shall first submit, according to the required specifications, a technical proposal without price. The technical proposal shall be evaluated in accordance with the specified evaluation criteria and may be discussed with the bidders regarding any deficiencies and unsatisfactory technical features. After such discussions, all the bidders shall be permitted to revise their respective technical proposals to meet the requirements of the procuring agency.

*ii. Second Stage*

The bidders, whose technical proposals or bids have not been rejected and who are willing to conform their bids to the revised technical requirements of the procuring agency, shall be invited to submit a revised technical proposal along with the financial proposal. The revised technical proposal and the financial proposal shall be opened at a time, date and venue announced and communicated to the bidders in advance; and the revised technical proposal and the financial proposal shall be evaluated in the manner prescribed above.

*(d) Two Stage - Two Envelope Bidding Procedure*

*iii. First Stage*

The bid shall comprise a single package containing two separate envelopes. Each envelope shall contain separately the financial proposal and the technical proposal. Initially, only the envelope marked "TECHNICAL PROPOSAL" shall be opened. The envelope marked as "FINANCIAL PROPOSAL" shall be retained in the custody of the procuring agency without being opened. The technical proposal shall be discussed with the bidders with reference to the procuring agency's technical requirements. Those bidders willing to meet the requirements of the procuring agency shall be allowed to revise their technical proposals following these discussions.

*Second Stage*

After agreement between the procuring agency and the bidders on the technical requirements, bidders who are willing to conform to the revised technical specifications and whose bids have not already been rejected shall submit a revised technical proposal and supplementary financial proposal, according to the technical requirement. The revised technical proposal along with the original financial proposal and supplementary financial

proposal shall be opened at a date, time and venue announced in advance by the procuring agency.

*a. Award of the Contract*

Subject to Clauses IB.30 and IB.34, the Employer will award the Contract to the bidder whose bid has been determined to be substantially responsive to the Bidding Documents and who has offered the least evaluated Bid Price, provided that such bidder has been determined to be eligible in accordance with the provisions of Clause IB.3 and qualify pursuant to Sub-Clause IB 29.2.

*b) Alternative Methods of Procurement*

PPRA also allows the owners and clients to use other methods of procurement in special circumstances. These special circumstances are well defined and spelled out in PPRA rules. A procuring agency may utilize the following alternative methods of procurement of goods, services and works, namely:-

*i. Petty Purchases*

Procuring agencies may provide for petty purchases where the object of the procurement is below the financial limit of \*twenty five thousand rupees. Such procurement shall be exempt from the requirements of bidding or quotation of prices. Provided that the procuring agencies shall ensure that procurement of petty purchases is in conformity with the principles of procurement prescribed in rule

*ii. Request for Quotations*

A procuring agency shall engage in this method of procurement only if the following conditions exist:-

- (a) The cost of object of procurement is below the prescribed limit of one hundred thousand rupees.
- (b) The object of the procurement has standard specifications.
- (c) . Minimum of three quotations has been obtained.
- (d) The object of the procurement is purchased from the supplier offering the least price.

*iii. Direct Contracting*

A procuring agency shall only engage in direct contracting if the following conditions exist, namely:-

- (a) The procurement concerns the acquisition of spare parts or supplementary services from original manufacturer or supplier.
- (b) Only one manufacturer or supplier exists for the required Procurement.
- (c) Where a change of supplier would oblige the procuring agency to acquire material having different technical specifications or characteristics and would result in incompatibility or disproportionate technical difficulties in operation and maintenance.
- (d) In case of an emergency.

#### iv. *Negotiated Tendering*

A procuring agency may engage in negotiated tendering with one or more suppliers or contractors with or without prior publication of a procurement notification.

#### c) *Contract-Award Procedures in Construction*

Bidding procedures are mainly negotiated and competitive. Mostly, the other methods are either variant of, or somewhat between these two significant types. In competitive method, the work is awarded to the least-bidder, if he/she is proved to be a responsive one. In negotiated method of procurement the cost is discussed and negotiated with selected constructor. Some modifications have been proposed for minimizing the concerns and implications of these two extreme types, and tried in many countries. In this research, following contract-award methods are studied and considered:

- (a) Competitive Lowest Bidding Method (Price-basis).
- (b) Competitive Average Bidding Method (Price-basis).
- (c) Multi Parameter Bid Method (Basing on quality, time, price and "other" factors) .
- (d) Negotiated Bid Method (Competitive).
- (e) Negotiated Bid method (Non-Competitive).
- (f) A+B Method.

#### i. *Lowest Bidding Method (on Price basis)*

This is the most commonly used procedure to obtain and select contractors/construction firms for execution of construction projects. In broad-spectrum, the aim of competitive bidding (price-based) is to obtain the least possible price for a particular project, service or facility. Competitive bidding method tries to ensure that everyone gets an equal chance to bid, minimizes collusion, and saves the public money. It focuses on honest competition to obtain the finest work and supplies at the lowest possible cost. It also necessitates protecting against nepotism, favoritism, extravagance, corruption and fraud (Sweet., 1989). For the procedure to be fair and workable, it is required to have a clearly defined criterion to help the bid evaluating officials determine whether bids are responsive and the bidders seem to be responsible. In the competitive lowest-bidding method, the prequalified and responsive bidder who submits the least bid, meeting the specifications must be winner of the contract.

#### a. *Implications and Concerns*

It is generally accepted that competitive lowest bidding method saves public money and protects public interest; this conventional method has been criticized in last two decades or so mainly because of low/inferior quality, incorporation of many changes/change orders, establishment of negative relationships, schedule overruns, and increasing cost of the overall project. The tendering process for award of construction projects in

Pakistan is normally based on the lowest-bidding method. In this method, the firm which is responsive and submits the lowest bid, gets the right for the construction project. The main advantage is that contractors continuously try to reduce costs by adopting technological and managerial innovations which can save costs (Photois, 1993). This saving is then transferred to the owner through this competitive bidding process.

If a bid submitted by a contractor is drastically lower than the engineer estimate or client's expectation and the other bidders, it is hard to comprehend that how the contractor would complete the project profitably. Such bids are defined as 'Abnormally Low Tenders' by (Thomas, 2009). An Abnormally low tender is a bid whose price seems significantly low than all of or the average of total bids in the same tendering procedure. The European Union made a legislation to permit government sector clients with the choices of awarding a project either by adopting traditional lowest bidding or the Economically Most Advantageous Tender (EMAT). The legislation permitted public clients to minimize the risks of some of the unpleasant results of abnormally low tenders (ALT). It includes:-

- (a) Undesired quality because of the need of construction costs reduction (Winch).
- (b) Predatory pricing and unjust competition which distorts the construction industry, affecting other bidders negatively (Alexanderson et al, 2006).

A report on "Prevention, Detection and Elimination of ALT in the European CI" by European Commission's Europe states that a bid is considered abnormally low if by comparing it with the client's Engineer estimate and all the bids submitted, it seems to be abnormally low by not keeping a margin for normal level of profits. Also the ALT cannot be justified by economy of the selected method, the chosen technical solution, extremely favorable conditions on hand to the tender, or the originality of the proposed work (Thomas, 2009).

#### b. *Assumptions Vs Implications*

The assumptions upon which competitive lowest bid method is based and their implications are discussed as following:-

- (a) Competitive lowest bid assumes that the projects or services can be independently evaluated or compared before the award decision. This is not a simple task. To avoid these inherent problems, it is usually stated in ITB that for consideration, bids should be responsive and the bidders must be responsible.
- (b) It assumes that the submitted bids are free and there is a true competition, whereas, often there is collusion among the bidders for the purpose of



taking turns and fictitious bids are submitted. By collusion, objective of obtaining the lowest price cannot be accomplished.

- (c) The success of competitive lowest bid method depends on the integrity and capability of the bidder, which is normally difficult to gauge since the tendency is to take into account the price only.
- (d) Another concern of competitive tendering is the complexity of involving the contractor during the design phase. Inflexible specifications also make competitive bidding method less effective because it doesn't provide the contractors a chance to come up with multiple options. If specifications do not allow for alternative products and a feasible method for substitutes, competitive cost may be restricted.
- (e) Another problem associated with this competitive method is that when the bidders are as large in number as is the case in a slow economy, a client accepts a significant risk of choosing a contractor that might have accidentally or deliberately submitted an unrealistic lower price (Photois, 1993). A contractor may not stick to such a low price where, at the same time, it is expected to complete the project as per schedule and specifications, and also make a rational profit. The usual result is excessive claims and disputes that lead to time over runs, compromises in product quality, and ultimately shooting costs.
- (f) Although lowest bidding method is supposed to promote innovations by forcing contractors for continuous effort to reduce costs by adopting managerial and technological innovations which are cost-saving yet it is criticized for discouraged innovation (Irtishad, 1993). Nicolson asserts, lower bids provide lesser margin for a builder to implement latest techniques or improve the quality of his new product.
- (g) It has also been criticized for not offering any incentive for the high quality construction of a completed project at a reasonable cost.
- (h) Another concerning practice of a contractor is that they intentionally submit an artificially low bid in expectation of making the profit through changes and construction claims (Thomas., 2009). Some bidders carefully review the bid documents to search for mistakes and doubts in

those areas that may provide chances of change orders and claims at some stage in the project (Dowle et al., 1990). These contractors can use this knowledge to submit a low bid with the anticipation of retrieval of the money later. In such cases the ALT is not true reflection of the final contract cost or the unanticipated costs incurred by the client when dealing with number of change orders and claims.

#### d) *Competitive Average Bidding (Price-based)*

One of the variations of the competitive lowest bidding method of awarding construction works is based on the principle that the bid closest to average of all the bids is considered to be the best bid, and not the one which is minimum or maximum. Tenders which are bid far lower than the average are considered unrealistically underbid. The bids which are greatly higher than the mean are considered unrealistically overbid. On the basis of this principal some methods are evolved and these are generally known as European Methods (Irtishad, 1993). Generally, the best contractor based on the average-bidding method is the bidder whose bid satisfies a particular correlation with mean of all the bids. For average-bidding method, different measures are used for calculation of the average, or use different criterion for evaluating the best bid. But point to remember is that this method takes into account the price only.

For example, some countries use typical arithmetic average while few use weighted average. This method is mostly used in Taiwan. Another approach of obtaining the average includes the elimination of all the bids which differ largely (more than a specified percentage) or the outliers and then the mean of the remaining bids is calculated. The winner could be the one whose price is nearest to the mean, or the other whose bid price is closest but less than the average. This method is widely used for construction projects in Italy (Photios, 1993).

In Europe, a formula to calculate a realistic offer from a number of competitive bidders was developed which is known as "Danish" system. This system right away rejects the highest and the lowest offers and rest of the bids are considered only (Irtishad, 1993). The formula is similar to the PERT and stands as following:-

Where,

$$NA = (NH + 4A + NL) / 6 \quad \{NA = \text{New average; } NH = \text{New high; } A = \text{Average of all offers \&NL = New low}\}$$

The first bid which is above this NA is then treated as rational, reasonable and acceptable. The method is not effective unless the minimum number of bidders is eight and this is the key limitation of Danish system.

The fundamental idea of the average bidding method is that the best bid is the one closest to a defined average, neither the minimum nor the maximum. These competitive cost-based average bidding methods are mainly used to make sure that the selected

contractor is responsible, to minimize project failure, and to avoid disputes and construction claims.

The basic principle is that the bidders should get a reasonable and practical cost of their work. It is assumed that with a fair price, the contractor would ensure quality needs of the project, would finish on schedule, and will not have any adverse relationship with the client, consultant and engineer.

#### i. *Implications and Concerns*

In average bidding methods, as described above, all the features of open bidding system are retained. The only variation is that the selected contractor is the one whose bid is close to the average of all the submitted bids. The major risk of the lowest-bidding method is the likelihood of awarding a contract to a person or firm that submits, accidentally or deliberately, an unrealistic low bid. Such an occurrence may lead to the owner's disadvantage by promoting disputes, increase in costs, and delays in schedule. To tackle this problem, some countries have adopted the average-bidding method and the contract is awarded to the contractor whose price is near the average-bid price. Average bidding method finds its relative merits over lowest-bid method (Photois, 1993).

The major advantage of this method is that it safeguards a client from signing a contract at an unrealistic low bid price that will certainly lead to adversarial relationships during construction (Ioannou et al., 1993). This method also provides shelter to contractors for not honoring a bid containing an oversight or a gross mistake.

The basic disadvantage of the average-bidding method is that it doesn't promote competition that leads to lesser costs for the client. A breakthrough (technological or managerial) resulting in major money savings will not necessarily be passed on to the client in the form of lower costs, unless all participating bidders are known to have this breakthrough. It has been criticized that average bid method results in considerably higher profits in construction projects (Irtishad, 1993). When such high profits are earned throughout the industry, bid prices are expected to fall gradually and the savings will eventually be passed to the client. It has been claimed that the average bid method would increase contractor profitability and it has the potential to improve relationships between the owner and the contractor.

From the above discussion, it is obvious that most of the apparent benefits of the average method may only be applicable in the long run. Some of these benefits are intangible in nature. The success of this method is also dependent on the need that subcontractors of prime contractor are also selected on the same average-bidding method. It would be very

difficult to ensure in the way bidding is practiced when sub-bids are accepted till last minute. Additionally, current laws don't restrict main contractors to retain a preselected group of subcontractors.

Some pitfalls of the competitive lowest bidding method can also prevail with the average bid system. As in case of the lowest bid method, collusion among the bidders and the absence of prequalification may negate its intent and undesirable results will be produced (Ioannou et al., 1993). Higher profitability of contractor and better relationships between the client and the contractor cannot be ascertained in the countries which are practicing average bid method. Evidence is not enough to conclude that incidence of construction claims is less in European countries (that practice average bid method) as compared to those countries that are not following this method (Irtishad, 1993).

#### e) *Multi-Parameter Bidding Method (Based on price and "other" factors)*

This is a model based competitive bidding which not only caters for cost but also considers other parameters as proposed by Herbsman and Ellis; they named it the multi-parameter bidding procedure (Herbsman et al., 1992). They suggest that the major parameters should be cost, time and quality with minor parameters on the discretion of the client. The amount of time proposed in the bid to complete the project can have an impact on cost. For example, a construction company which can complete a building project three months earlier than its closest bidder may save the owner some additional rent cost. By factoring this cost saving in the bidding process, a better reflection of the total costs can be estimated. Similarly, the impact of better quality may also be included in the contract award decision. The costs of repair and maintenance are directly associated with the quality of the built facility being constructed. In Multi-Parameter Bidding Method, estimation of quality may be calculated by the kind of materials and type of equipment proposed to be used, the past performance of the main contractor and the subcontractors which are proposed in the bid. In Multi-Parameter Bidding Method, time and quality parameters are assigned a maximum number of attainable points. The bids are then evaluated and ranking is made basing upon these points, as well as the bid cost.

Some other parameters may also be included in the model as desired by the owner. Other factors may include safety records, past working experience with client, history of disputes and claims, defect rectification history etc. In this method a "total combined cost" will come up after applying all these factors (Tarricon, 1993). The total combined costs of all the bids are then compared to pick the best bidder.



### i. *Implications and Concerns*

In this method factors other than cost are considered before contract award decision is made. This is done in a more meticulous fashion than the traditional practice of prequalification procedure. Technical merit, time and quality factors are given more emphasis in a bid evaluation. Some people stress that the innovation is needed for the sake of time and high quality, to get better value for the public money, to minimize life-cycle costs of a product for the public department, while maintaining a reasonable profit for the contractor.

For many years, the element of time was not the most important factor of construction projects in many countries. The element of cost was the most important one. In the last two to three decades, the CI of Pakistan has involved in both building of new roads and construction of new facilities. These construction projects are mainly in urban areas and cause substantial problems to the public. Also, high volumes of traffic cause delays in completion of the projects. For instance, in U.S.A, a few innovative procurement systems for "buying time" were introduced in order to minimize such delays (Zohar et al.). The common denominator of all those procurement system is the ability of the contractor to procure the time for completion of the project.

### ii. *Competitive Negotiated Bidding*

At times it becomes necessary to obtain bids from a selected group of builders who possess known technical, managerial and financial capacity to complete a multi dimensional complex project. Some classified projects may also require only those contractors who can perform work at some specific place. In such circumstances, competitive price-based open bidding may not be suitable. On the other hand, single-source negotiation method is very hard to put into practice in public sector as this may lead to allegations of corruption and favoritism. To stay away from these problems with single-source negotiated bidding many organizations and clients are using variations that include features of both competitive and negotiated methods.

To modify pure negotiated method, increase in the number of construction companies/contractors to negotiate with, provides multiple options for selecting amongst the contractors. In few cases, based on previous experience or reference, some companies which are well known to be professional and competent to complete a construction project, are contacted by the owner or client (Irtishad, 1993). The owner may negotiate a tender with the most qualified company for professional services at compensation which the organization determines are fair, competitive, and reasonable. In making such decision, the public body must conduct an analysis of the price of the

professional services needed in addition to their complexity and scope.

#### a. *Implications and Concerns*

Request for proposals and/or request for qualification for a particular project are typical examples of competitive negotiated method. Proposals from more than one contractor are scrutinized for factors such as technical capability, project schedule as well as cost. These methods are usually engaged when the project is planned to be built under a design/build contract. Promoters of competitive negotiated bidding method claim that this method saves time, improves quality and reduces number of claims. The main pitfalls of this method are:-

- (a) The cost and time spent by the contractor for preparing a proposal is higher.
- (b) The system lends itself to a situation where the contractor is reserved to propose any new or innovative ideas because preconceived ideas of the evaluators may not fit in the particular situation; contractors are required to disclose confidential commercial and financial information that should not be released outside the company.
- (c) The owner may try to get cost-saving ideas from the competing contractors during the interviews and yet may choose not to award the project to the contractor whose ideas would later be utilized; and the processes of evaluation turn out to be subjective rather than objective (Kelley, 1991).

#### b. *Non-Competitive Negotiated Bidding*

The non-competitive negotiated procedure is essentially the process of negotiating a bid with a single source, usually a preselected contractor. For this reason it is also known as sole-source negotiation. The cost to be paid, and the product or goods to be procured by the owner are normally the items of negotiation. The firm, that is known to be prequalified and having expertise, can be chosen without any notification or tendering advertisement. This saves additional effort, time and money but chances of favoritism and corruption are increased.

Different countries have different rules and regulations regarding direct procurement, but mostly these rules are similar in nature. In most of the cases, when there are no competitors available for technical reasons or if the required product can only be provided or constructed by one contractor/organization, non-competitive negotiated bidding method is adopted. Also, when there is a need of similar service or repetition of works from a firm, this method may be adopted. In Pakistan, for some classified projects or for projects which have security concerns due to geographical location of the project site, this method is adopted.

Direct procurement is usually common in the form of variations or change orders in the

construction industry. This method is very common in new construction projects in the private sector like housing, commercial buildings, private schools, hospitals and industries etc. However, in government construction projects, it is almost nonexistent.

#### *c. A+B bidding Method*

In this method contractors bid on the cost (part A) and on the time (part B), and the lowest combined bidder (A+B) is awarded the project. In the last decade or so, many departments of transportation around the United States have experimented with using the A+B bidding method. A survey of 101 projects was conducted and it was analyzed by comparing the projects which were awarded using A+B bidding method with similar projects that were bid using conventional methods (cost only). The conclusion from the research shows that substantial savings in construction time have been achieved when using the A+B method with almost no addition in cost. This was achieved by better planning and management skills of the contractors that were using the time factor as part of their bid strategy.

### III. RESEARCH METHODOLOGY

The research was started with extensive literature review in the form of previous studies, research papers, books on the subject and few case studies. The methods for collecting and generating research data are the questionnaire survey and interviews. A total of 35 parameters were identified for study of performance of lowest bidding bid system and then these were shortlisted to 26 keeping in view the Pakistani environment and culture. Basing on these parameters the questionnaire was prepared with 26 parametric questions and 5 opinion of the respondent based questions.

A pilot study was carried out from 12 construction experts with their interviews to finalize the questionnaire. For exploratory study 5 methods other than the lowest bidding bid system were selected and part II of the questionnaire was designed. 10 parameters were selected for comparison of these methods. The questionnaires were further reviewed and finalized after making necessary adjustments. The questionnaires were then distributed in different segments of construction industry as well were floated on line through Google Drive.

The collected data was analyzed using MS excel and Statistical Package for the Social Sciences (SPSS-20). Tests for normality and consistency of data were applied. All the selected parameters were analyzed individually and a comprehensive rating of performance was measured. Similarly, for comparison of other tendering methods all the parameters were assigned a numbers on likert scale and their comparison is

made. The results obtained are concluded and some recommendations are made basing on these results.

#### *a) The Questionnaire*

The questionnaire form consisted of two parts. Part I was designed to study the performance of lowest bidder bid system in public sector of Pakistan Part II of the questionnaire was designed to make comparison with some other methods of tendering used in different parts of the world. A five-point likert scale, with 1 being very low and 5 being very high, was utilized to judge the performance parameters. The questionnaire was distributed in hard form as well as it was uploaded through "Google Drive" for online filling and submission. A total of 120 questionnaires were invited online and 80 were sent to different firms and organizations. Out of these 200 questionnaires sent out, 117 were received. Five incomplete questionnaires are excluded, so final analysis is carried out basing on 112 questionnaires. Respondents to this survey include 32 clients, 21 consultants and 59 contractors/subcontractors.

#### *b) Sample Size*

There were 112 valid replies out of 200 showing an overall response rate of 56%. In the construction enterprises, a good response rate is around 30% (Black et al., 2000). Therefore, the response rate in this research is acceptable.

#### *c) Pilot Study*

Before distribution of a questionnaire among respondents or a detailed study, a pilot study was carried out to check the workability, practicality and realism of proposed questionnaire form and also to find out the resources required for the research study. It was also aimed at to check the effectiveness of sampling frame and the level of success which was desired to be achieved through proposed techniques. Five detailed interviews were carried out from renowned professionals in the country belonging to public and academic sectors. The government officials from Ministry of Finance and NHA were interviewed to discuss the proposed research procedures and data analysis techniques. In private sector, FWO, NLC, MES and NESCOM were consulted to check the validity and reliability of the questionnaire form including its arrangement, language and time required to answer the questions. In academic sectors, renowned professors from UET Lahore and NUST were interviewed to find out any weaknesses in research plan or in data analysis techniques.

#### *d) Data Collection*

The main part of the research study was collection of required data, which was obtained through filling of questionnaire forms and carrying out of personnel interviews from targeted population. Out of 200 identified respondents, 117 were received back. On

scrutiny, five were rejected due to different reasons and 112 were kept for analysis.

#### e) Comparison study of alternative methods

For comparison study, of lowest bidder bid system with different methods used in some countries of the world, Part II of the questionnaire was developed. 5 Alternate methods were selected after extensive literature review on the subject. To assess these methods, 10 parameters were selected pertaining to the performance of contractors for execution of a project. Instead of using "Yes/No" answers, a five point likert scale was used, to explore the complete range of possible replies between "Yes" and "No" (Fellow and Liu, 2003). In this study, questionnaire survey was administered as it is the most appropriate method for this kind of study (Naoum, 2007). For questionnaire survey same methodology was adopted as explained above in this chapter. The main consideration for using likert scale is to establish the extent to which respondents agree or deviate with a particular parameter (Cormack, 2000). The responses to each statement/question are then used to calculate RII ranging from 0 to 1. RII method has the limitation that it may capitalize on skewed data thus inflating the relative

weight for a certain factor. In this research, the RII is renamed as parameter index (PI) and is used to rank each parameter in CI of Pakistan.

$$\text{Parameter Index} = \sum p / (A * N)$$

$$PI = [0 n_1 + 1 n_2 + 2 n_3 + 3 n_4 + 4 n_5] / [A * N]$$

where;

$p$  : weighting given to each parameter by the respondents ranging from 0 to 4.

$n_1$  : number of respondents for impossible.

$n_2$  : number of respondents for less likely.

$n_3$  : number of respondents for likely.

$n_4$  : number of respondents for very likely.

$n_5$  : number of respondents for almost always.

A: highest weight i.e. 4.

N: sample size or number of samples.

All 10 parameters were assigned a weight and then their weighted average was calculated to establish the best ranking of these five methods. After calculating the parameter index of all parameters, weighted value for each method was calculated to rank the five methods as under:-

$$\text{Ranking Index} = (2PI_1 + 3PI_2 + PI_3 + PI_4 + PI_5 + 2PI_6 + 2PI_7 + PI_8 + PI_9 + PI_{10})/15$$

Where,  $PI_1, PI_2, PI_3, \dots, PI_{10}$ , are parameter Indices of parameters 1 to 10 respectively.

## IV. RESULT ANALYSIS AND DISCUSSIONS

To check the quality, normality, reliability and authenticity of questionnaire surveyed data which was received from various categories of respondents across the country pertaining to performance of lowest bidder, the following basic data analysis tests were performed on the received data.

#### a) Measurement of Normality of Data

The type of data used for the research study was on ordinal scale and more precisely it was based on the Likert scale measurement involving various categories of respondents across the country therefore. The Shapiro-Wilk test for normality of the surveyed data showed no normal distribution like parametric data behavior so it was treated as 'non parametric' for its further analysis and statistics study.

#### b) Measurement of Reliability of Data (Non-Parametric)

To estimate the internal consistency of scale data given by respondents as per Likert scale, Cronbach's Alpha ( $\alpha$ ) was used to measure its reliability or viability or correlation before its interpretation. The value of " $\alpha$ " ranges from negative infinity to one, where a score closer to one would indicate a higher degree of reliability (Cronbach, 1951). By using SPSS, the value of Cronbach Alpha was calculated as 0.968, it can be interpreted that there was high level of uniformity or

strong internal consistent reliability between the scores submitted by respondents in ranking of various bidding methods.

#### c) Kruskal-Wallis Test for Reliability

It is a non parametric test, used to determine whether three or more independent groups e.g. client, consultant, and contractor are identical or diverse on some variable of interest. If asymptotic significance < 0.05, it means there is significant difference between ratings or perceptions. If asymptotic significance > 0.05, it means no significant difference between ratings or perceptions. The test was conducted for two sets of group. Firstly, it was done to check between client, consultant, and contractor. The results showed less than .05 for only one parameter i.e. lowest bidder is selected among the qualified bidders. It shows that perception of three groups was not same. To identify the group whose perception is different from others, Mann-Whitney test was conducted. The same test is applied for experience of the respondents. Five groups of experience are made i.e. 0-5 years, 6-10 years, 11-15 years, 16-20 years and 20+ years. The difference in perception of the respondents was observed in two parameters. The result shows that the parameter "response to changes by the lowest bidder" was perceived differently by the different experience level respondents. Further to check this difference, Mann-Whitney test is conducted.

d) *Mann-Whitney Test for Rejected Null Hypotheses*

This test is conducted to check for a certain parameter for which the Null hypothesis is rejected by

Kruskal-Wallis test. The results show that which groups differ in perception from other groups. The results are tabulated below:

Null Hypothesis	Kruskal-Wallis Test Sig value	Mann-Whitney Asymptotic Significance Value Sig level .05									
		Consultant-client				Client-contractor			Consultant-contractor		
Lowest bidder is selected amongst the selected contractors	.005	.858				.005			.001		
Null Hypothesis	Kruskal-Wallis Test Sig value	Mann-Whitney Asymptotic Significance Value Sig level .05									
		-5 & 6-10	0-5 & 11-15	-5 & 16-20	-5& 20 +	-10 & 11-15	-10 & 16-20	6-10 & 20+	1-15 & 16-20	1-15 & 20+	6-20 & 20+
Response to changes	.029	.138	.497	.001	.00 6	.892	.062	.049	.382	.675	.434

The result shows that the perception of contractors is different from clients and consultants as regards to the parameter of selection of lowest bidder. Similarly, the perception of low experience professionals is different from those having more experience in the CI as regarding response to changes.

e) *Analysis of Lowest Bidder Bid System*

In public sector, the lowest bidder bid system is widely used in construction projects of Pakistan. The detailed survey was carried out to ascertain different conditions associated with this system followed in different parts of the country. The questionnaire survey (part I) consisted of three main sections followed by few opinion based questions. Analysis of the different parameters and conditions selected after thorough literature review is given in this section. It includes analysis of performance parameters for the projects executed by the lowest bidder. Data obtained through questionnaires was not normally distributed but it was reliable. The analysis shows the medium level of performance by lowest bidder regarding cost, time, quality and other parameters. The perception of contractors is found to be different from clients and consultants regarding award of contract to the lowest bidder. Similarly less experience professionals have a different perception than experienced professionals. Five alternative methods of bidding were selected for comparison with traditional lowest bidding method. Around 70% of the respondents appreciated and supported the idea of multi parameter bidding.

## V. CONCLUSIONS AND RECOMMENDATIONS

The first objective of the research was to study and analyze the performance of the lowest bidder in public sector of Pakistani CI. This was achieved through identifying 26 performance parameters and transforming them into a questionnaire along with some opinion

based questions. To improve the project performance, 5 new methods were identified which are already in use in different parts of the world. 10 performance parameters were identified and performance index (PI) for each parameter of the five methods was calculated. After doing this through survey questionnaire, RI of all the methods was calculated on the basis of weighted parameters. This concluded to the best possible option against the lowest bidder. This study of comparison of different methods has provided the basis to undertake more elaborate studies for actual comparison between different alternatives. The obtained results, conclusions or recommendations may be sent to PEC or PPRA for further evaluation and consideration.

a) *Conclusions*

In this research, the performance of public owned construction projects awarded on the least bidder bid evaluation and contract award system were assessed. Additionally, it has been tried to investigate opinions of construction professionals from public organizations about the current method of bid award procedure and other alternatives. The following conclusions are drawn based on the assessment made on information gathered through questionnaires from construction professionals.

- It can be concluded from the research that least responsive bid evaluation and contract award procedure is the main method of awarding public constructions works contract. Almost 83% of all the public projects are awarded to responsible and responsive bidders with the least price offers in CI of Pakistan.
- Collusion/Bid shopping is a malpractice in almost all the construction industries of the world. The phenomenon is also prevailing in Pakistani CI. The result shows that this practice prevails in 62 % of the cases. This not only affects the spirit of the



competitive bidding process but also escalates the bid price because of the unrealistic Bid quoted by the Bidders for the project.

- (c) Quality of the completed projects by the lowest bidders was found to be just satisfactory (index rating of 59%) and not the optimum. During interviews on few project sites, lower rates were the main reason given by the contractors for not finishing the job with optimum quality.
- (d) Almost half of the public owned projects overrun the time stipulated for their completion. Lowest bidder cannot put in extra resources to boost the project as it costs more and profit margin is reduced. Ultimately the project is delayed as a whole and WBS is also not followed in letter and spirit.
- (e) Cost is the major factor around which the whole process of bidding and construction revolves internationally in general and in Pakistani CI in particular. Except for few exceptions in the world, mostly the lowest bidder bid system is followed mainly because of saving the cost. But, at the same time, it is concluded that more than 50% of the construction projects overrun the budget and end up with a higher cost.
- (f) No design can be perfect. Changes during or after the execution phase of the project are almost inevitable. More than half of the lowest bidders are normally reluctant to accept change orders, unless it is more profitable.
- (g) Defects are generally observed in the more than 60% of the built facilities within the warranty period. Contractors are often called upon to rectify the defect and their response is generally good.
- (h) More than 90% of the construction professionals opine that Construction projects should not be always given to the lowest bidder and the quality of the finished project will be improved if performed by the non lowest bidder and project can be completed before stipulated time.
- (i) Study of alternate methods for bidding is supported by the construction professionals. It was appreciated that new methods in the field must be tried to get ultimate results.
- (j) Multi parameter bidding method was appreciated by most of the construction professionals as it appears to be more comprehensive and more useful in selection of the best bid. It can contain as many parameters as desired by the client. It may have edge on the traditional lowest bidding method.
- (k) Competitive negotiated bidding is also a method which can bring upon positive changes as compared to the lowest bidding.
- (l) A+B method includes only cost and time. The project, in this case, may have only two major

advantages i.e. early finish and least cost. If the quality and other aspects of the project can be controlled by the supervision consultant, this method can obtain rich dividends. Substantial savings in construction time can be achieved.

- (m) The initial cost of the project in all five methods discussed in the study appears to be more than the conventional lowest bidding method. But, in long term comparison these methods have lesser life cycle cost with better quality and standards.
- (n) It is discovered in the research that the progress as per the schedule of most projects awarded on the responsive least bidder bid award procedure was not satisfactory.
- (o) Traditional bidding procedure has been criticized that it might guarantees the lowest cost project, but not the best.
- (p) The perception of lesser experienced professionals was different from the experienced ones regarding response to changes by the lowest bidder.

#### *b) Recommendations*

Findings of this research show the moderate level of performance of public construction projects executed by the lowest bidders in most of the cases. The researchers of this thesis strongly recommend the Federal Government of Pakistan to look for other alternative bidding methods for evaluation and award.

- (a) Keeping in view the inherent weaknesses of the lowest bid system it should be improved by taking following measures:-
  - i. Quality assurance team of the lowest bidder should be a pre requisite during the execution on public construction projects.
  - ii. System of incentives and penalties should be strictly imposed and implemented for scheduled completion of the projects.
  - iii. Projects should be planned in a way that changes are minimized. However, changes made during the execution of the construction project should be well worked out and it should be incorporated in a way that contractor accepts it voluntarily and a reasonable profit to the contractor be kept in mind.
  - iv. Safety infrastructure of the firm should be given adequate importance at the time of bid evaluation.
- (b) Flexibility in method of awarding the project should lie with client in the best interest of the project keeping in view the life cycle analysis and nature of the project.
- (c) Multi parameter bidding method was appreciated by most of the respondents. It can be adopted on trial basis and subsequently adopted if the results are better than the lowest bidding method.

- (d) Bidding procedure should be made more fair and transparent.
  - (e) Percentage of Performance and insurance bonds should be revised for the lowest bidder to cope up the weaknesses.
  - (f) The cost of any project should not be kept in mind as a single factor but life cycle cost should also be evaluated.
  - (g) Government organizations should be authorized to reject the lowest tender even if the bidder is responsive and responsible if the authority considers non lowest bidder to be more beneficial for the execution of the project.
- c) *Direction for Future Research*
- (a) A study may be carried out with large sample size to validate the conclusions of this study.
  - (b) Case studies may be conducted on construction projects executed on lowest-bid and lump-sum basis and conclusions be compared for cost and schedule overruns.
  - (c) Alternative methods, other than conventional lowest bidding, discussed in this study may be analyzed by professionals in the industry.

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# Measurement Models of Intellectual Capital for the Decision Making and Performance Variables

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**Abstract-** This article aims in making a model review for measurement of intellectual capital for decision making. The construction of the present article was made through the bibliographic survey covering the Intellectual Capital theme addressing its objectives, peculiarities and definitions. It has been presented a classification of the methods from Sveiby's (2011) perspective, as well as 30 models for evaluation of the Intellectual Capital. It can be concluded that the models differ by its application context, considered assets and set of indicators of measurement, for better decision making.

**Keywords:** *intellectual capital, intangible assets, measurement methods.*

**GJMBR - G Classification :** *JEL Code: D70*



MEASUREMENTMODELSOFINTELLECTUALCAPITALFORTHEDECISIONMAKINGANDPERFORMANCEVARIABLES

*Strictly as per the compliance and regulations of:*



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## I. INTRODUCTION

It was on the 90's that was verified a big impulse on investigation about intangible assets and its potential on the increment of publications about Intellectual Capital. Notwithstanding, Rodrigues et al. (2009) mention having distinct strategic and operational barriers in management of intellectual capital, essentially, in the hard task of identifying and measuring these intangible assets and establishing objectives and plans to them.

Many times the intellectual capital is recognised by authors as an intangible asset. Silva, Bilich and Gomes (2002) adopt an analysis of intellectual capital as a significant intangible asset. In their studies, the intellectual capital is a term used to describe organisations of Knowledge that use their intangible assets as resources to get competitive advantages. They also utilise other intangible assets like, techniques, specific products, patented processes, know how inherent to production and to market knowledge. As detaches, the authors mention Brooking (1996) in understanding of intellectual capital as a combination of intangible assets, each time more valorised by changes brought with knowledge management.

Thus, the identification, valour generation and other classifications related to intellectual capital, dispenses of approaches that can verify them and measure them in organisational context.

In this scope, is denoted the importance of intangible assets, that must be sought for measurement of intellectual capital, because, as regards non-

corporeal property and highly subjective, it's possible to apply tools that make them quantifiable. (HOSS et al., 2009).

In this way, this article has as objective making a review of models for measurement of intellectual capital to assist the decision making. It is organised by the following way: (i) introduction with scope and study objective; (ii) intangible assets, intellectual capital, with differences and similarities; (iii) methodology; and (iv) results and discussions with the classification of the intellectual capital and evaluation models; at last, the bibliography that gave support to the study.

## II. THEORETICAL REFERENTIAL

### a) *Intangible Assets*

The importance of knowledge in the social-economical context became frequent in the end of the 20th century, due to pioneer works, like Alvin Toffler's (1990) work, and Petter Drucker's (1981) work, regarding the ascension of intellectual work and the importance of knowledge are stressed.

Yet, Graciolli (2005) says that between many chains of studies that there are about knowledge in organisations, there is one that focuses on intellectual capital. The main argument in this chain can be summarised through observation that there are assets generically called intangible, as shown by Sveiby (1998) and Edvinsson (1998), that provide the development and valorising o the organisation, and not those necessarily present in physical property of the company. These elements suggest a new way of visualising how organisations generate value, for the necessary assets to the creation of wealth wouldn't be exclusively the land, physical work, mechanical tools and factories, but would be assets based in knowledge, that is, intangible assets (STEWART, 1998).

Guthie (2001) highlights that, the intellectual assets of the information era are the most important elements for competition between organisations. Since, it's possible to say that these intellectual assets, like knowledge, ideas, experiences and innovations of individuals, that, when identified, add value to the business.

In Sullivan's (2000) the conception of the evolution and importance of intangibles to the organisations was a result of the improvement of techniques and methods for the management of

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intellectual capital, that was presented as discipline, following a pattern that is detected in retrospective, though for people involved in the beginning there was no distinguishable pattern in that moment.

However, Bukh et al. (2003), emphasizes that the component intangible assets of intellectual capital of a company frequently interacts with the tangible assets or financial assets to create corporative value of economic growth. This can be observed, for example, in the case of a brand (intangible asset) that valorises a product of the company (tangible asset).

However Dzinkowski (1998), explains that in the way how it's released the word intellectual capital it still has many complex connotations, being frequently used as synonyms of "intellectual property", "intellectual assets" or "knowledge assets", for this way of capital can be thought as total inventory of resources of knowledge or liquid value based in the formalised knowledge that the company has and, as such, it can be final result of a process of application of knowledge or of own knowledge used under a way of information by the organisations and their methods of production.

#### b) *Intellectual Capital*

The companies of this century are not only connected to their predecessors of the industrial era, they are as well as more dependent of their employees, says Lev (2001), as they add knowledge to the productive processes and to the management in general.

The table 1, provides a general view of the categories of existent resources amidst an organisation, and, at the same time, analyses them in topics, what constitutes the material resources (tangible) and immaterial (intangible) likely to be capitalised.

**Table 1 :** Categories and Resources of a company

MATERIAL (TANGIBLE)	IMMATERIAL (INTANGIBLE)	
<ul style="list-style-type: none"> <li>• Fixed asset</li> <li>• On-going work</li> <li>• Natural resources</li> <li>• Raw material</li> <li>• Inventory</li> <li>• Financial capital</li> <li>• Debentures</li> <li>• Actions</li> </ul>	<ul style="list-style-type: none"> <li>• Intellectual property rights (DPI)</li> <li>• Copyrights</li> <li>• Patents</li> <li>• Data banks</li> <li>• Know-how</li> <li>• Licenses</li> <li>• Fabrication secrets</li> <li>• Registered brands</li> <li>• Softwares</li> <li>• Concessions</li> </ul>	<ul style="list-style-type: none"> <li>• Goodwill</li> <li>• Internal and external relationships</li> <li>• Work force</li> <li>• Costumers</li> <li>• Suppliers</li> <li>• Technology</li> <li>• Investors</li> <li>• Human discipline</li> <li>• Abilities</li> </ul>

Source: Granstrand (1999, p. 7).

In general, these immaterial categories (intangible) depend on, directly or indirectly, in the existence of qualified human resources and, therefore, as long as there is preoccupation with intellectual capital, there will be also a bigger valorisation of the human factor in companies.

Stewart (1998, p. 13) says that the intellectual capital "constitutes the intellectual-knowledge matter, information, intellectual property, experience that can be used to generate wealth. It is the collective mental capacity". Hence, the Intellectual Capital is admitted, as a whole of occult values that add value to organisations, allowing their continuity. Taking into account such concepts, it can be said that the Intellectual Capital is a set of values, be it capital, an asset or a resource, both find themselves occult and all tend to add real values to the organisation.

Lynn (2000), from a variety of sources, it is developed a model of three components for intellectual capital that had been identified in Dzinkowski's (1998) research:

**Table 2 :** Elements of the Intellectual Capital

HUMAN CAPITAL	RELATIONAL CAPITAL (OR FROM CUSTOMERS)
<ul style="list-style-type: none"> <li>• Know-how</li> <li>• Education</li> <li>• Vocational qualification</li> <li>• Knowledge related to work</li> <li>• Occupational evaluations</li> <li>• Psychometric evaluations</li> <li>• Competencies related to work</li> <li>• Entrepreneurial impetus, innovativeness, proactive and reactive capabilities, mutability</li> </ul>	<ul style="list-style-type: none"> <li>• FRANCHISES DEALS</li> <li>• Customers</li> <li>• Costumer fidelity</li> <li>• Company names</li> <li>• Backlog</li> <li>• Distribution logs</li> <li>• Commercial collaborations</li> <li>• Licensing deals</li> <li>• Favourable contracts</li> </ul>
ORGANISATIONAL CAPITAL (OR STRUCTURAL)	
INTELLECTUAL PROPERTY	INFRA-STRUCTURE ASSETS
<ul style="list-style-type: none"> <li>• Patents</li> <li>• Copyrights</li> <li>• Project rights</li> <li>• Industrial secrets</li> <li>• Registered brands</li> </ul>	<ul style="list-style-type: none"> <li>• Management philosophy</li> <li>• Corporative culture</li> <li>• Management projects</li> <li>• Information systems</li> <li>• Network systems</li> </ul>

Source: Dzinkowski (1998).

#### i. *Human Capital*

According to Lyn (2000, p.2), the human capital is presented as know-how, capabilities, abilities and specialisations of human resources of an organisation, it is one of the critical assets in the group of intellectual capital, since the management of human capital frequently creates and sustains the wealth of an organisation, in another words, the human capital can be seen as a set of abilities and knowledge of individuals in an organisation, and this can be measured and published.

#### ii. *Organisational or structural capital*

Covers the remaining elements of intellectual capital, including systems of information and values, along with elements of intellectual property, like patents, copyright, brands, etc. The organisational capital (structural) is the back bone of the own company, that



involves its organisational capability, including its management planning and control systems, processes, functional networks, policies and even its culture, in another words, all that helps a company to generate value. Understanding that internal systems, networks and culture are valuable assets that concentrate the attention of the organisation in ensuring that these assets appreciate themselves and add value, instead of allowing them to decline or get stagnated in face of the inappropriate policies and unhealthy strategic efforts (PACHECO, 2005).

### iii. Relational capital (customers and suppliers)

It is identified as an entity apart and, according to Lyn (2000, p.2), encompasses "any of the connections that people out the organisation have with it", along with loyalty of the customer, slice of market, level of orders, etc. It regards to the connections of an organisation with its customers and suppliers, what also creates value through fidelity, better markets, speed and quality. In this way, it can be translated in measures of habitual customers that their fidelity generate sells and reduce the costs of seeking new costumers. In the same way, the cultivation of good and dedicated suppliers can increase the efforts of just-in-time, raising the quality (settling already in the first time, principles of lean production) and reinforcing the necessary speed to reach the goals of commercialisation. This kind of capital can also be measured and capitalised as organisation resources.

According to Dzinkowski (1998), there is a model of creation of value of intellectual capital that is composed by three instances that inter-relate to form the value of human capital, customer capital (relational) and organisational (structural). The creation of value, complement, and is the main goal of all commercial activities, while the fundamental function of traditional accountability is to provide trustable information to the external investors, and for this it depends of the sub adjacent economy of all the commercial activities, as shown in picture.

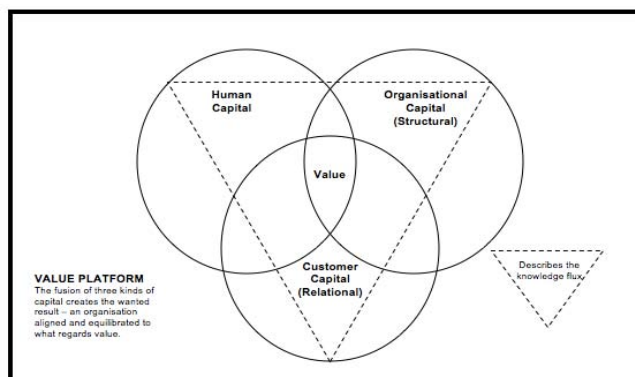


Figure 1 : Creation of value of Intellectual Capital

Source: Edvinsson and Malone (1998)

While these characteristics imply that the management of intellectual capital will be singular in each organisation, it is presumed that the human capital act as a construction block of the organisational capital of a company, and the human capital and the organisational capital (structural) interact to create the costumer capital (relational) (DZINKOWSKI, 1998, p.4). In fact, the more circles are overlaid, the more value is produced. The structure of management of intellectual capital described here offers new ways of seeing the organisation and its core-competencies. However, many management concepts and methodologies that it proposes are parallel and well established management practical accountabilities (EDVINSSON & MALONE, 1998, p.133).

Lynn (2000), says that to comprehend better the intellectual capital and how to create organisational value, it must first be translated in more practical terms, seen that part of problem in this way of asset is that many organisations don't understand its sub adjacent power, and that, despite being intangible, this capital can be measured and capitalised.

The distinction between human capital and structural captain shows many similarities with the distinction between individual knowledge and shared knowledge. In general, the human capital of a company is based, above all, in individual knowledge, whilst its organisational capital (structural) is composed mainly of shared knowledge. (DZINKOWSKI, 1998).

## III. METHODOLOGY

This research had qualitative nature regarding the handled subjects, it was made research in scientific literatures and technical rules published in the last years. From the point of view of the objectives, this study classifies itself as exploratory and regarding to its technical procedures as bibliographic; as data base were used dissertations, technical books, articles and journals that address the subject. (GIL, 1999; LAKATOS e MARCONI, 2000).

The construction of the present article was developed through bibliographic survey covering the subject Intellectual Capital addressing its objectives, peculiarities and definitions, being presented next the various models to measuring the subject and the conclusive analysis of the work.

## IV. RESULTS AND DISCUSSION

### a) Classification of the Evaluation Methods

The methods of evaluation include the intangible assets and the intellectual capital complementarily, once the meaning of each can be considered unique for its comprehension.

The process of measuring the intangible assets takes into account its capability of generating wealth, regarding the past, present and future (HOSS et al., 2009). Complementarily, Sveiby (1998) reaffirms that the fluxes of knowledge and the intangible assets are not financial elements and demand financial actions as well as non-financial actions. Tiepolo and Rebelato (2004) emphasize that the main indicators of performance in companies are not limited only to financial data.

Under this perspective, in Tiepolo and Rebelato (2004), it is said that the indicators of performance are the basic components of a Performance System Measurement (SMD). To reaffirm the general objective of a SMD, that is to conduct the company to improve its activities, by the providing of aligned actions with the environment and the strategic objectives. These actions can be seen as essence of the improving of performance.

To Harvard Business Review (2000), the methods for development of new indicators of performance need to evolve with the raising of the level of knowledge of the company, and that the subject regarded is a new philosophy of evaluation of performance that addresses the task as a process in constant evolution.

Frost (2000) defines three steps for the methods of measurement of performance: performance topics, critical factors of success and indicators of performance. Also determines that the metrics must provide better performance, measuring the capability and allowing comparability.

Consequently, Sveiby (1998) describes the indicators of growth and renovation, indicators of efficiency and indicators of stability, for three intangible assets, competency, internal structure and external structure.

In addition to this description, classifies the methods of evaluation of intangible assets and intellectual capital in four categories:

a) *Direct Methods Intellectual Capital (DIC)*

Estimates the value of intangible assets by the identification of its many components. Since these components are identified, they can be directly evaluated, individually or as an aggregated coefficient.

b) *Market Capitalization Methods (MCM)*

Calculates the difference between the market capitalisation of the company and its liquid patrimony as the value of its intellectual capital or intangible asset.

c) *Return on Assets Methods (ROA)*

The average of profit before the taxes of a company in a moment is divided by the average of tangible assets of the company. The result is a ROA of the company that is then compared with the average of the industry. The difference is multiplied by the average

of tangible assets to calculate an annual average income of the Intangible. Division of the remuneration earned above the average cost of the company capital or interest rate, can derivate an estimated value of its intangible assets or intellectual capital.

d) *Scorecard Methods (SC)*

The different components of the intangible assets or intellectual capital are identified and the indicators and indexes are generated and related in the scorecards or as graphics. SC methods are similar to DIC methods, an index composed can or cannot be produced.

Sveiby (2012) explains that the methods provide different advantages and disadvantages. The methods that offer valuations, like the methods of ROA and MCM are useful in situations of fusion and acquisition and evaluations of the stock market, they can also be used for comparisons between companies of the same sector and are useful to illustrate the financial value of intangible assets, a characteristic, which tends to draw attention of the CEOs.

Finally, because it build rules of established accountabilities and are easily communicated in the account work. Its disadvantages are that, translating all in financial terms can be superficial.

The ROA methods are very sensible to the interest rate and to the discount rate. The presupposed and the methods that measure only in the standard of the organisation are of limited use for management purpose, many of them are of no use to organisations without lucrative meanings, whole departments and organisations of the public sector, this is particularly true for the MCM methods.

The advantages of DIC and SC methods are that they can create an broader image of organisational health and financial metrics that can be easily applied at any standard of an organisation. They measure closer an event and reports and can, therefore, be faster and more precise than the pure financial measures. Once that they don't need to measure in financial terms, they are very useful for organisations without lucrative meaning, internal departments and organisations of the public sector and for environmental and social purposes. Their disadvantages are that the indicators are contextual and need to be customised for each organisation and each aim, what makes comparisons too difficult.

The methods are also new and not easily accepted by societies and managers that are used to see everything from a purely financial perspective. The extensive approaches can generate oceans of data, which are too difficult to analyse and to communicate.

e) *Methods of evaluation of the intellectual capital*

With the understanding of the mentioned classification, follows the exhibition of 30 methods of evaluation cited and compiled by Sveiby (2012).

Table 4 : Methods of measuring the intellectual capital

ANO	METHOD	AUTOR	DESCRIPTION
2009	ICU Report (Intellectual Capital University)	Sánchez, Elena e Castrillo	ICU is a result of an EU-funded project to design an IC report specifically for universities. Contains three parts: (1) Vision of the institution, (2) Summary of intangible resources and activities, (3) System of indicators.
2009	IabM (Intellectual Assets-based Management)	Johanson, Koga & Skoog	Intellectual asset-based management (IAbM) is a guideline for IC reporting introduced by the Japanese Ministry of Economy, Trade and Industry. An IAbM report should contain: (1) Management philosophy. (2) Past to present report. (3) Present to future. (4) Intellectual-asset indicators. The design of indicators largely follows the MERITUM guidelines. Described in Johanson & al. (2009)
2008	EVVICA* (Estimated Value Via Intellectual Capital Analysis)	McCutcheon	Developed by the Intellectual Assets Centre in Scotland as a web-based EVVICA toolkit based on the work of Patrick H. Sullivan (1995/2000).
2007	DYNAMIC MONETARY MODEL	Milost	The evaluation of employees is done with analogy from to the evaluation of tangible fixed assets. The value of an employee is the sum of the employee's purchase value and the value of investments in an employee, less the value adjustment of an employee.
2004	NICI (National Intellectual Capital Index)	Bontis	A modified version of the Skandia Navigator for nations: National Wealth is comprised by Financial Wealth and Intellectual Capital (Human Capital + Structural Capital)
2003	DANISH GUIDELINES	Intellectual Capital Statements – The New Guideline	A recommendation by government-sponsored research project for how Danish firms should report their intangibles publicly. Intellectual capital statements consist of 1) a knowledge narrative, 2) a set of management challenges, 3) a number of initiatives and 4) relevant indicators. <a href="http://en.vtu.dk/publications/2003/intellectual-capital-statements-the-new-guideline">http://en.vtu.dk/publications/2003/intellectual-capital-statements-the-new-guideline</a>
2003	IC-dVAL* (Dynamic Valuation of Intellectual Capital)	Bounfour	"Dynamic Valuation of Intellectual Capital". Indicators from four dimensions of competitiveness are computed: Resources & Competencies, Processes, Outputs and Intangible Assets (Structural Capital and Human Capital indices).
2002	Intellectus Model	Intellectus Knowledge Forum of Central Investigation on the Society of Knowledge	Intellectus Knowledge Forum of Central Investigation on the Society of Knowledge. The model is structured into 7 components, each with elements and variables. Structural capital is divided in organizational capital and technological capital. Relational capital is divided in business capital and social capital.
2002	FiMIAM (Financial Method of Intangible Assets Measurement)	Rodov & Leliaert	Assesses monetary values of IC components. a combination both tangible and Intangible assets measurement. The method seeks to link the IC value to market valuation over and above book value.
2002	Meritum Guidelines	Meritum Guidelines – União Europeia	An EU-sponsored research project, which yielded a framework for management and disclosure of Intangible Assets in 3 steps: 1) define strategic objectives, 2) identify the intangible resources, 3) actions to develop intangible resources. Three classes of intangibles: Human Capital, Structural Capital and Relationship Capital. The original Meritum final report can be found here. Meritum is also further developed by members of E*KNOW-NET. A summary is found on P.N Bukh's home page.
2001	Knowledge Audit Cycle	Schiurma & Marr	A method for assessing six knowledge dimensions of an organisation's capabilities in four steps. 1) Define key knowledge assets. 2) Identify key knowledge processes. 3) Plan actions on knowledge processes. 4) Implement

			and monitor improvement, then return to 1). Described in book (2002). <i>Profit with People</i> by Deloitte & Touche. Hard to find. Try Giovanni Schiuma's homepage.
2000	VCI (ValueCreation Index)*	Baumet al.	Developed by Wharton Business School, together with Cap Gemini Ernst & Young Center for Business Innovation and Forbes. They estimate the importance of different nonfinancial metrics in explaining the market value of companies. Different factors for different industries. The VCI developers claim to focus on the factors that markets consider important rather than on what managers say is important.
2000	The Value Explorer™	Andriessen & Tiessen	Accounting methodology proposed by KMPG for calculating and allocating value to 5 types of intangibles: (1) Assets and endowments, (2) Skills & tacit knowledge, (3) Collective values and norms, (4) Technology and explicit knowledge, (5) Primary and management processes. Described in Journal of IC 2000.
2000	Intellectual Asset Valuation	Sullivan	Methodology for assessing the value of Intellectual Property.
1999	Knowledge Capital Earnings	Lev	Knowledge Capital Earnings are calculated as the portion of normalised earnings (3 years industry average and consensus analyst future estimates) over and above earnings attributable to book assets. Earnings then used to capitalise Knowledge Capital. Baruch Lev's home page
1998	Inclusive Valuation Methodology (IVM)	McPherson	Uses hierarchies of weighted indicators that are combined, and focuses on relative rather than absolute values. Combined Value Added = Monetary Value Added combined with Intangible Value Added.
1998	Accounting for the Future (AFTF)	Nash	A system of projected discounted cash-flows. The difference between AFTF value at the end and the beginning of the period is the value added during the period.
1997	Calculated Intangible Value	Stewart	The value of intellectual capital is considered to be the difference between the firm's stock market value and the company's book value. The method is based on the assumption that a company's premium earnings, i.e. the earnings greater than those of an average company within the industry, result from the company's IC. It is hence a forerunner of Lev's Knowledge Capital model. Kujansivu & Lönnqvist (2007) gives a good example of the calculation.
1997	Economic Value Added (EVA™)	Stern & Stewart	Calculated by adjusting the firm's disclosed profit with charges related to intangibles. Changes in EVA provide an indication of whether the firm's intellectual capital is productive or not. EVA is the property of the consulting firm Stern Stewart and one of the most common methods.
1997	Value Added Intellectual Coefficient (VAIC™)	Pullic	An equation that measures how much and how efficiently intellectual capital and capital employed create value based on the relationship to three major components: (1) capital employed; (2) human capital; and (3) structural capital. $VAIC_i = CEE_i + HCE_i + SCE_i$ <a href="http://www.vaic-on.net/start.htm">http://www.vaic-on.net/start.htm</a>
1997	IC – index	Roos, Roos, Dragonetti & Edvinsson	Consolidates all individual indicators representing intellectual properties and components into a single index. Changes in the index are then related to changes in the firm's market valuation.
1996	Technology Broker	Brooking	Value of intellectual capital of a firm is assessed based on diagnostic analysis of a firm's response to twenty

			questions covering four major components of intellectual capital: Human-centred Assets, Intellectual Property Assets, Market Assets, Infrastructure Assets.
1996	Citation- Weighted Patents	Dow Chemical	A technology factor is calculated based on the patents developed by a firm. Intellectual capital and its performance is measured based on the impact of research development efforts on a series of indices, such as number of patents and cost of patents to sales turnover, that describe the firm's patents. The approach was developed by Dow Chemical and is described by Bontis (2001).
1994	Skandia Navigator™	Edvinsson & Malone (1997)	Intellectual capital is measured through the analysis of up to 164 metric measures (91 intellectually based and 73 traditional metrics) that cover five components: (1) financial; (2) customer; (3) process; (4) renewal and development; and (5) human. Skandia insurance company brought it to fame, but Skandia no longer produces the report.
1994	IAM (Intangible Assets Monitor)	Sveiby (1998)	Management selects indicators, based on the strategic objectives of the firm, to measure four aspects of creating value from 3 classes of intangible assets labelled: People's competence, Internal Structure, External Structure. Value Creation modes are: (1) growth (2) renewal; (3) utilisation/efficiency; and (4) risk reduction/stability.
1992	Balanced Scorecard	Kaplan e Norton	A company's performance is measured by indicators covering four major focus perspectives: (1) financial perspective; (2) customer perspective; (3) internal process perspective; and (4) learning perspective. The indicators are based on the strategic objectives of the firm. <a href="http://www.balancedscorecard.org/">http://www.balancedscorecard.org/</a>
1989	The Invisible Balance Sheet	Sveiby	The difference between the stock market value of a firm and its net book value is explained by three interrelated "families" of capital; Human Capital, Organisational Capital and Customer Capital. The three categories first published in this book in Swedish have become a de facto standard.
	HRCA (Human Resources costing and accounting)	Flamholtz (1985) e Johansson (1996)	The pioneer in HR accounting, Eric Flamholtz, has developed a number of methods for calculating the value of human resources.
1950	Tobin's q	Tobin e Brainard (1968)	The "q" is the ratio of the stock market value of the firm divided by the replacement cost of its assets. Changes in "q" provide a proxy for measuring effective performance or not of a firm's intellectual capital. Developed by the Nobel Laureate economist James Tobin in the 1950's.

Source: Adapted from Sveiby (2012).

## V. FINAL CONSIDERATIONS

It is concluded that there are many ways to measure the Intellectual Capital, depends of what the researcher wants to prove. The analysis of the models allows to consider that these differ by the context of application, like organisation, country, public sector and private sector, assets and capital considered as relational capital, structural capital, human capital, knowledge assets; and, set of measurement indicators

as market value, contribution of human assets, risk, patents cost, amongst others.

As suggestion to future works, it is indicated:

- Electing an indicator of intellectual capital and compare the significance of this value relating to the total of intellectual capital of a considered method;
- Analyse longitudinally the indicators of a considered method in public and private contexts and compare



the evolution, similarities and differences; amongst others.

The classification of the models according to Sveiby (2012), allows conducting the implementation of the methods according to the considered context for the decision making. It is emphasised that the value of the intellectual capital has represented a significant amount of the total assets of an organisation, in this way it is made indispensable doing a review that allows to make clear the methods of measuring.

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## Mining and First Nations in Canada

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*Strictly as per the compliance and regulations of:*



# Mining and First Nations in Canada

Andre Xavier <sup>a</sup>, John Meech <sup>o</sup> & Marcello Veiga <sup>p</sup>

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*"How long have I known you, Oh Canada? A hundred years?...And today, when you celebrate your hundred years, Oh Canada, I am sad for all the Indian people...For I have known you when your forests were mine; when they gave me my meat and my clothing. I have known you in your streams and rivers where your fish flashed and danced...where the waters said '...come and eat of my abundance.' I have known you in the freedom of the winds. And my spirit, like the winds, once roamed your good lands...in the long hundred years since the white man came, I have seen my freedom disappear like the salmon going mysteriously out to sea. The white man's strange customs...pressed down upon me until I could no longer breathe. When I fought to protect my land..., I was called a savage. When I neither understood nor welcomed his way of life, I was called lazy. When I tried to rule my people, I was stripped of my authority. My nation was ignored in your history textbooks – they were ...(as)...important ... (as)...the buffalo that ranged the plains. I was ridiculed in your plays and motion pictures, and when I drank your fire-water, I got drunk... And I forgot."*

- from Lament for Confederation, Chief Dan George, July 1, 1967.

## I. BACKGROUND

Canadian Aboriginal people are the indigenous peoples in North America within the boundaries of Canada. They comprise the First Nations, the Inuit and the Métis. The 2011 census of Canada shows that 1,400,685 people identify as Aboriginal (4.3% of the national population), spread over 600 recognized First Nations governments (or bands) with distinct culture, language, art, and music. The Aboriginal population increased by 232,385 (20.1%) between 2006 and 2011, compared with 5.2% for the non-Aboriginal population. These figures give annual growth rates of 3.73% and

1.02% respectively, which means all things remaining equal, the Aboriginal make-up of Canada will grow to 7% of the total population over the next two decades.<sup>1</sup>

A total of 851,560 people identify as First Nations persons<sup>2</sup>, representing 61% of the Aboriginal population or 2.6% of the total population of Canada.<sup>1</sup> The Inuit are a group of culturally-similar indigenous people who inhabit the Arctic regions of Greenland (Denmark), Canada, and Alaska (U.S.).<sup>2</sup> Inuit is a plural noun; the singular is Inuk. The inukshuk (or inuksuk), erected frequently on the northern tundra by the Inuit, has become an important icon in Canada today. In 2011, 59,445 people identified as Inuit representing 4.2% of the Aboriginal population and 0.2% of the total national population. About three-quarters of Inuit in Canada live in the Northwest Territories and in Nunavut.<sup>1</sup>

The Métis are a recognized Aboriginal people in Canada of mixed First Nations and European heritage.<sup>2</sup> Historically, the name was a catch-all pejorative term describing the offspring of such unions, but within a few generations, the culture evolved into what is a distinct aboriginal group today with formal recognition in the Canadian Constitution. In 2011, 451,795 people identified as Métis which is 32% of the total Aboriginal population and 1.4% of the national population.<sup>1</sup>

Yukon, the Northwest Territories, and Nunavut, although territories rather than provinces, have their own territorial governments subservient to the Federal government. The 2011 population of the territories is small at 107,265 (0.3%), but the area is enormous at 3.867 million km<sup>2</sup> (38% of Canada). Aboriginal people make up the largest share of the population in Canada's territories: in Nunavut they account for 86% of the total population; in the Northwest Territories they account for 52% of the population; while in Yukon, 23% of the population have an Aboriginal identity.<sup>1</sup>

Historically, Canadian Aboriginal societies included permanent settlements with agriculture, civic, and ceremonial structures as well as complex societal and governing hierarchies with significant trading networks. The Métis culture of mixed blood began in the mid-1600s when First Nation and Inuit people married Europeans. The Inuit had less interaction with European settlers during this early period. Various laws, treaties, and legislation have been enacted between European immigrants and First Nations in Canada. The idea of Aboriginal Right to Self-Government provides opportunities for these people to manage historical,

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cultural, political, health care, and economic control within their communities.<sup>3</sup>

British Columbia is home to 203 First Nation bands and about 30 different tribal groups making-up 232,290 people (~5.4% of the total population) who have lived here since time immemorial. Nearly 78% of the B.C. Aboriginal people today live off-reserve.<sup>1</sup> Difficulties between the Crown and Aboriginal peoples in B.C. have resulted in significant impact on starting up over 4 mines in the past 7 years. Since the settlement (or occupation, depending on your viewpoint!) of B.C. by Europeans and others that began about 300 years ago, First Nations people have suffered considerably. First, smallpox brought to their land by the settlers is estimated to have wiped out tens of thousands in the first 150 years. Some First Nations claim there is evidence that smallpox was deliberately introduced within their communities by "Indian Agents" who knowingly and collectively distributed infected blankets. Second, alcohol and other drugs entered their culture leading to terrible effects. This issue has led to the myth that many First Nations have a genetic predisposition to alcohol intolerance (alcoholism). This in fact, is untrue, but it cannot be denied that alcohol has had a devastating effect that is at a rate twice that of the general population.<sup>51</sup>

Third, broken treaties and the Reserve System pushed them onto limited land compared to what they consider to be their traditional territory. Fourth, attempts at assimilation or "education" in mission schools caused irreparable harm with physical and mental abuse and disrespect for their culture and languages. Children were torn away from their families and sent to these schools. Those four issues alone clearly justify the lack of trust and faith they have today in the "white man" and his governments.<sup>4</sup>

Today, many First Nations communities exist in poverty conditions equal to, if not worse than, those in some parts of the Third World and this has occurred despite huge sums of money entering their communities through the department of Aboriginal Affairs and Northern Development Canada and its predecessors. For these reasons, it is incumbent upon all Canadians that when we enter their traditional territory for any commercial or recreational purpose to acknowledge their rights and title and traditions and culture. We must show respect for their culture and continue to look for ways to work with them to reduce the poverty under which so many of their people currently live.<sup>4</sup>

First Nations people have many spiritual ties to the environment (land, water, and air). Mining is not a major part of their culture, although there are examples of certain bands who practiced mining. Mining is generally viewed as an intrusive activity that spoils the land and waters where they hunt, trap, and collect traditional food. As a result of these past wrongs and the very nature of what mining does, significant suspicion

exists among Aboriginal people about the mining industry. Many projects are in jeopardy because of this situation.

## II. TREATIES

As stipulated by the Royal Proclamation of 1763 in the British Parliament, the new government of Canada was required to enter into a treaty-making process with First Nations in Western Canada.<sup>5</sup> Eleven numbered treaties were signed with First Nations groups between 1871 and 1921. Most of the settled lands in Ontario, Manitoba, Saskatchewan, and Alberta, were transferred from First Nations to the Crown through treaties; not so in much of British Columbia.

Mineral resources were the main incentive to negotiate Treaties 8 and 11 as the federal government laid claim to the west.<sup>6</sup> The effects of diseases brought by the Europeans also played a role in signing of treaties since Aboriginals hoped that medical care could be provided through a treaty. The smallpox epidemic swept over the Treaty 8 area from Fort Chipewyan to Fort Resolution as it did elsewhere. The Indians asked for medical care before signing the treaty. It was promised to them, but pitifully, little was provided in the years to follow.<sup>7</sup>

The treaty process was not a common approach for the British since in building their empire, they generally acquired land through purchase or armed conflict.<sup>8</sup> In this regard, the decision to pursue the treaty process with First Nations was due to the newly-formed Canadian government being unable to afford to enter into a war with the original inhabitants of the region.<sup>8</sup> This idea is confirmed by the following quote: "It was impossible to ignore them [the Aboriginals]. It was also impossible for the young nation to fight them. The Americans were spending 20 million dollars a year for their bloody Indian conquests; Ottawa had about that same amount of money available to run all the affairs of the entire country".<sup>8</sup> The Canadian approach is often considered to have been a more humane way to deal with the "Indian Problem" compared to the incredible violence of the U.S. Indian War. However, when one examines how the treaty process evolved over time with most agreements being broken time and again, perhaps the Canadian approach is more like "1,000 cuts over time" – a form of torture.

For the Aboriginals, the practice of treaty-making dates back to before the first European contact. First Nations commonly made use of oral treaties to resolve land disputes and end conflicts among themselves. Furthermore, trade and marriage arrangements were also commonly established between tribes.<sup>9</sup> Treaties today are understood as agreements made between the Crown and First Nations people. Within these treaties, the First Nations typically exchanged some of their interest in specific areas of



their lands in return for various kinds of payments and promises from the Crown.<sup>10</sup> From the Crown's perspective, treaties were intended to open land for settlement and Crown use by exchanging all rights over land for reserves, harvesting rights, and other benefits. Many Aboriginal people do not agree with this interpretation and see the Treaties as peace and friendship agreements between sovereign nations.

The concept and practice of written treaties was introduced by the Europeans, but they soon became seen as problematic by Aboriginals since the written treaties "did not include oral promises made to the Aboriginals in the written treaties".<sup>9</sup> The British Crown considered treaties as a surrender of Aboriginal rights and title to the land.<sup>5</sup> The First Nations believed they were entering into a trusting relationship with representatives of the British Crown who wished to coexist with them sharing the bounty of Mother Earth provided to them for their survival.<sup>5</sup> This clash of interpretation and expectation regarding the treaty process has led to disappointment, resentment, and issues of distrust between Aboriginals and the Crown. First Nations surrendered huge tracts of land in exchange for annual financial payments and recognized reserve lands, as well as supposed respect for traditional Aboriginal hunting and fishing rights by signing the treaties from 1871 to 1906. The financial compensation provided to Aboriginals was \$5 per year, a sum which is still paid today on "Treaty Day" to each and every registered Aboriginal person.<sup>11</sup>

According to Aboriginal Affairs, annual treaty payments continue "to fulfill an obligation", but also are "a symbolic reminder of the special relationship that exists between Canada and First Nations".<sup>12</sup> Treaty interpretation appears to be more of an art than a science.<sup>13</sup> Disagreements regarding interpretations of what was agreed upon in the treaties have led to numerous court disputes, resulting in the creation of the Specific Claim Process and an administrative tribunal to deal with unresolved claims. As of 2011, 588 specific claims remained unresolved.<sup>13</sup>

### III. INDIAN RESIDENTIAL SCHOOLS

A significant component of First Nations history since "contact" involves the Indian Residential School (IRS) system. The Department of Indian Affairs was created by the federal government in 1880 to deal with the "Indian Problem".<sup>14</sup> In partnership with several church denominations (Catholic, Anglican, Presbyterian, Methodist, and United), the Indian Residential School (IRS) system was established<sup>15</sup> that remained in place for over a century.<sup>16</sup>

The rationale behind the IRS included using it to deliver Christianity to Aboriginal people as well as a way for the federal government to satisfy its constitutional obligations to Aboriginal people by providing education.

To many critics, the IRS was set up so the federal government could control First Nations and attempt to integrate (assimilate) them into mainstream society.<sup>17</sup>

Indian Residential Schools were located far from Aboriginal reserves, and children, aged 5 to 16, were separated from their families by force to attend these schools. This remained compulsory until the 1950s, but the last one closed only recently – in 1996 in Regina, Saskatchewan.<sup>14</sup> About 150,000 children were taken to over 125 schools over this time.<sup>16</sup> Children were taken, often abducted, from their families. They were not allowed to speak their language. Brothers and sisters were separated from one another. They were taught they were inferior; that they were uncivilized; that they were savages. A typical day at residential school was divided into academic studies and trades-related activities such as carpentry or auto-mechanics for boys, and cooking and sewing for girls.<sup>16</sup> All aspects of life including a dress code, use of English only, and behavior were tightly regulated.<sup>14</sup> In 1945, the family allowance provided to Aboriginals by the federal government was made subject to school attendance.<sup>15</sup> In 1950, the government began to realize that the objectives of the IRS were not being achieved and rumors prevailed of abuse at the schools. A year later, Aboriginal children were permitted to attend provincial schools, but partnership with churches did not end until 1969.<sup>15</sup>

In 1998, a statement of reconciliation was issued to the Aboriginal people by the federal government, and a "healing fund" of \$350 million was established to provide counseling services for former students.<sup>14</sup> The influence of the forced residential school system left many negative effects on indigenous culture including heavy impact on intergenerational ties.<sup>6</sup> For many of the 80,000 survivors of these schools, the residual effects of the emotional, physical, and sexual abuse they experienced have resulted in many social problems including addiction and suicide.<sup>16</sup>

Chief Rick O'Brien of the Kwanlin Dun First Nation said "when I think of residential school, I think of everything we have lost, and how that has translated into poverty, high rates of incarceration, addiction. Many of us have lost confidence in who we are as First Nations. Residential school caused us to lose the sense of being from somewhere. And that's part of your identity." Almost all survivors talk about the greatest damage being destruction of the family.<sup>18</sup>

The Indian Residential School Settlement Agreement (IRSSA) was approved by the government of Canada in 2006, and its implementation began in September 2007. As a result of this agreement, IRS survivors can now access measures towards healing and support, as well as commemorative activities. Payments have been made to former students and independent assessment processes were undertaken regarding claims of sexual or physical abuse which occurred in the residential schools.<sup>19</sup> The IRS Truth and



Reconciliation Commission was created in 2008. Later that year, a formal apology was offered by Prime Minister Stephen Harper on behalf of the Government of Canada and all Canadians to former IRS students for the impact that the schools have had on their heritage, culture and language.<sup>19</sup>

#### IV. TOWARDS SUSTAINABLE MINING (TSM) – ABORIGINAL COMPONENT

In 2004, the Mining Association of Canada (MAC) established a set of principles with the aim to enhance the industry's reputation by improving its performance. These principles are mandatory across the industry and all members of MAC are expected to comply with them. There are many components to this new approach to mining which mandates that a balanced approach to techno-economic, environmental, and socio-political issues must be taken in future decision-making.

TSM attempts to help the industry sustain its position as a leading contributor to Canada's economy while at the same time protecting the environment and remaining responsive to Canadians. It helps the industry maintain its "social license to operate" and improve its performance by aligning mining activities with the priorities and values of local communities. The program aims to see that industry operates in a proactive and socially responsible way.<sup>20</sup>

TSM has established a set of Performance Measures (PM) and Protocols on Crisis Management, Energy and GHG Emissions Management, Tailings Management, Biodiversity Conservation Management and Health & Safety, Aboriginal Relations/Community Outreach, and Mine Closure. The Aboriginal Relations and Community Outreach protocol has 4 PMs:

1. Communities of Interest Identification;
2. Effective Communities of Interest Engagement and Dialogue;
3. Communities of Interest Response Mechanism;
4. Reporting.

Core values<sup>4</sup> in engaging and consulting with First Nations are as follows:

- Input from communities can help design, construct, operate, and close the project;
- Environmental and cultural awareness are key elements to create a sound project;
- Each First Nation group must be dealt with separately and uniquely;
- Funding is made available to support capacity-building to understand the Project.

Objectives<sup>4</sup> in working with First Nations are aimed at:

- Effective, proactive, and responsive communications;
- Continuous dialogue and exchange of information about the project;
- Timely and transparent consultations to meet the needs of local communities;
- Appropriate consultation programs and methods for each First Nation;
- Accurate documentation of all communications;
- Communications between the company and First Nations are publicly known;
- Appropriate commitments to First Nations during all phases of the Project.

#### V. INTERACTIONS WITH FIRST NATIONS COMMUNITIES

There are many aspects to the design and implementation of a successful program of interaction with First Nations. It must begin with the establishment of trust and respect. Without those concepts lying at the root foundation of the program, significant difficulties will result. Four central components make-up the plan: education, empowerment, engagement, and partnership.

##### a) *Education: Capacity Building*

In the context of a community, education goes far beyond each citizen mastering a profession or becoming a skilled worker.<sup>21,22</sup> From a broad perspective, education involves a process of becoming more knowledgeable about oneself and one's surroundings by gaining awareness of issues, challenges, and opportunities that present at the micro- and macro-levels in a community or region.<sup>23</sup> This provides new opportunities to make informed decisions to positively affect the development of individuals as well as the society in which they live.<sup>23</sup>

Many mining companies and other organizations understand the relevance and role of using education to improve a community's quality of life. However in many cases, the approach taken is short-sighted and remains in the realm of developing technical skills or learning a trade or art form. While technical learning and developing a profession are important, if these are the only learning forms, it may result in an indoctrination that leads to a dependency rather than freeing individuals to think for themselves. In support of this argument, while working with northern communities in British Columbia, Chouinard<sup>21</sup> found that:

1. The objectives of education must be valuable, useful, and meaningful to the learners;

2. The process of developing such programs must involve cycles of action and reflection with input from the intended learners;
3. Retention of information occurs through an experience of knowledge presented in a culturally-based framework informed by stories, experiences, teachers, places, values, histories, and materials.

Education must be viewed as means to assist a community by bringing matters to the people's attention and preparing them for knowledgeable and empowered action – the next step.<sup>24</sup>

#### b) Empowerment

Working with communities involves creating a friendly, honest space in which people can voice their ideas and opinions and develop their potential.<sup>24</sup> From an organizational viewpoint, companies must strive to assist local community members to develop a stronger belief in their own personal power and that of their group. Empowerment helps build confidence and makes the intended learners realize their input and participation are vital components of the process, and that such efforts contribute to a better future for themselves and their community.

Empowerment is the process whereby individuals and groups acquire power to influence issues that affect them and their communities. In other words, it provides people with a "greater sense of worth and personal control to recognize they can participate with others to influence conditions that affect them".<sup>24</sup> Mining companies must understand this aspect and work towards its fulfillment even if it means sharing some of their future decision-making authority.

#### c) Engagement

While education is the gateway to empowerment, empowerment in turn leads to active and meaningful community engagement. Note that engagement must occur after or at least at the same time as empowerment. Community engagement includes all processes that involve the public in problem-solving or decision-making to use public input to make more informed "smart" decisions.<sup>25</sup> Some people refer to this collective input as "Swarm Intelligence".<sup>26</sup>

For community engagement to be truly meaningful the following aspects are vital: building trust; informing; consulting with; collaborating with; and continuing to empower the community.<sup>25</sup> Table 1 presents a community engagement continuum outlining the company and community roles at different levels of engagement.

Public involvement in mining-related decision-making and management processes is an important factor to enhance the legitimacy of the industry; to develop public trust in the ability and desire of a mine to conduct its business in an environmentally-responsible manner; and to improve the quality of the decision-making.<sup>27</sup> Community engagement is not stakeholder consultation.<sup>28</sup> Community engagement, in the context of the mining industry, involves the process of building a collaborative relationship with local people and organizations that will be or are affected by the mine operation and which engages a wide range of community members, focusing on long-term outcomes.<sup>29</sup>

Table 1 : Community Engagement Continuum

COMMUNITY ENGAGEMENT CONTINUUM					
LEVEL OF COMMUNITY INFLUENCE ON DECISIONS					
Engagement Level	Inform	Consult	Participate	Collaborate	Empower
Company Role	Provide local citizens and organizations with clear information to assist them to understand and present the opportunity challenges.	Ask and listen to the community on specific issues; obtain feedback on alternatives and solutions.	Include the community in planning and implementation of projects; ask community for opinions on how they would approach the project.	Work with the community to find solutions; partner with the public to find alternatives, to implement projects and to identify preferred solutions.	Help develop the skill levels of community members so they play active roles in community decisions; Co-authorize all final decisions with the local community.
Community Role	Passive	Reactive	Participative	Co-ownership	Leadership

Source: adapted from Infrastructure Planning and Natural Resources (IPlan) ([www.iplan.nsw.gov.au](http://www.iplan.nsw.gov.au))

It involves creating a welcoming environment where community members feel comfortable in participating and sharing ideas and where they are convinced that their contribution matters. It does not simply involve being present at community meetings. It does not simply involve providing funds to the community to "conduct studies" independently. On the contrary, it must include real and direct involvement in community issues to gain an understanding of their complexity; and to be willing to play a role in enhancing the community's overall quality of life. And this must occur in a collaborative fashion without coercion or a patronizing attitude. Proper community engagement must be inclusive ensuring minorities in the community (the elderly and women) are engaged and active participants.

One group, whose voice is often not heard, especially in male-oriented societies, is that of women. At a 2003 conference on Women in Mining held in Papua New Guinea, a survey on the negative and positive impacts of mining on women was distributed amongst the delegates – over 67% of the respondents identified violence, alcoholism, prostitution, sexual abuse, and social/family disruption as the most harmful impacts<sup>30</sup>, and 40% chose cultural/tradition degradation, health deterioration, and failure to include women in decision-making. The social-economic consequences of a mine operating and closing are strongly felt by women and their families, and long-term strategies must ensure that women participate at every stage of the plan.

To reiterate, engaging with the community involves more than simply consulting or eliciting feedback on certain matters. In the engagement process, people must be seen as, and must feel that they are active participants – educated and knowledgeable enough to influence the direction and future of their community.

#### d) *Partnerships*

In addition to fostering community and stakeholder engagement, partnerships function as a mechanism to help fully-develop a local community. Participatory capacity-building activities help communities make informed choices and learn to take control of their own development needs. These activities are an effective way to reduce a developing dependency on the mining company.<sup>31,32</sup> Partnerships provide guidance to mine managers on how to maximize opportunities for communities impacted by a mine operation by successfully delivering social projects, distributing funds from the company in an appropriate manner, and establishing partnerships and alliances with outside agencies.<sup>31</sup> A partnership is an important mechanism to build constructive relationships with local communities since it fosters cooperative community development.<sup>31</sup> Partnering with members of

a local community enables a company to develop not-for-profit competencies such as legitimacy, awareness of social forces, distinct networks, and specialized technical expertise.<sup>31</sup>

#### e) *Planning*

Nowadays, creating a mine must include a plan for mine closure to be developed even prior to the mine beginning to operate. It is an on-going process that starts in the exploration phase and becomes increasingly more concrete and detailed as the project advances towards development.<sup>33</sup> A mine closure plan must also include a social component; it must go well-beyond adequate financing; concrete targets; sound evaluation; and monitoring to include impacts on the local economy after the mine has closed.<sup>28</sup> Over the lifetime of the mine, new technologies are developed, community expectations change, and legal and political frameworks evolve, so closure plans must incorporate elements of flexibility and dynamism into its process.

Within the context of community development, planning exists to assess the current situation and to define strategies and implement actions to improve the quality of life of all community members. One of the major challenges in community development and mining relates to community access since many mining communities are located in regions with rudimentary or non-existent roads. Some are only reachable by boat or airplane as with Aboriginal communities in the Northwest Territories. In addition, many communities lack basic infrastructure such as adequate housing, electricity, or potable water. Such challenges increase the difficulties for a mining company to be present in the community all the time. To improve this situation, some companies have hired a community liaison officer whose role involves sharing and disseminating information, and providing feedback on community-company affairs to both the mining company and the community. However, the existence of a community liaison representative does not eliminate the importance of having a senior company official with decision-making authority, present in the community.

## VI. IMPACT OF ABORIGINAL ISSUES ON MINING PROJECTS

During the 1970's Canadians began facing-up to Aboriginal issues through the strong opposition to the proposed Mackenzie Valley Pipeline. Many churches across the country created a joint coalition called Project North to advocate a meaningful place for First Nations in decision-making that affected their lives and livelihoods. Project North was founded on the "conviction that ethical and spiritual values have political implications".<sup>34</sup> During the 1990's, Project North was reborn as the "Aboriginal Rights Coalition" (ARC) and more recently, it morphed into the "Idle No More" movement by the Aboriginal

people themselves. A major change in focus was the emphasis on *Partnership with First Nations*. No longer were the Church groups willing to speak on Aboriginal issues without the presence of Aboriginals in the circle of decision-making. Aboriginal people became a central part of ARC. The emergence of a social activist faction in the Anglican Church of Canada in the mid-1960s played a key role in changing Aboriginal culture and communities. The Nisga'a land claim case, the first Aboriginal rights case presented to Canada's Supreme Court, gave these activists a cause to erase the stigma they felt about the theft of Native lands and freedoms. The church activists who joined the Nisga'a cause in the 1960s were motivated in part by a deep regret about the actions of their missionary ancestors.

#### *Kitsault Mine, B.C. (molybdenum) 1980/2014*

The Kitsault Molybdenum mine has been a hot topic since the late 1970s. First, the mine was approved to conduct marine tailings disposal in 1980 by an Order in Council just prior to a federal election call. There were no Environmental Assessments or public hearings. Secondly, the mine practiced a highly controversial method of tailings disposal by discharging tailings into a deep (400m) pothole at the bottom of Alice Arm. The Nisga'a Nation together with the Anglican Church fought long and hard to prevent this mine, but to no avail. It operated for about two years before closing due to low metal prices.<sup>34</sup>

In 1980, the Nisga'a Tribal Council learned about AMAX Canada's plan to dump tailings into Alice Arm, a major Nisga'a fishing area. Both the federal and provincial governments quietly issued permits allowing dumping without environmental or social review, and so Project North carried the campaign to the national level. Anglican activists purchased AMAX shares and turned them over to a Nisga'a delegation to attend the shareholders' AGM in New York in 1981<sup>34</sup> and present a motion against the dumping. The motion did not pass, but it may have influenced the decision to mothball the mine a few months later when the molybdenum price fell.

In 1996, the Nisga'a Tribal Council signed an agreement that came into effect in 1998 shortly after the provincial government agreed to join the federal government in negotiating land claims. The Nisga'a Treaty involved a cash payment of \$190 million dollars over a period of time; establishment of a form of self-government much akin to a municipality over 2,000 km<sup>2</sup> of land in the Nass Valley; as well as certain entitlements to migratory salmon and wild animal stocks (moose, caribou, etc). Over the years, the Nisga'a garnered significant added concessions – control of their own school district and their own health care system. They created a profitable investment and enterprise development organization; generated a Nisga'a college; and completed a major survey of land use and ownership in the claims areas. They have significant

input into decision-making through participation on several regional planning boards.<sup>35</sup>

In 2012, a junior mining company called Avanti Mining acquired the Kitsault Mine site and began mine-planning. The permits from 1980 were still in place, but despite being legally exempt from the BC Environmental Assessment process, Avanti voluntarily opted into the assessment process because of a strong track record of BCEAO in addressing aboriginal and treaty rights and the company's desire to gain support from the Nisga'a.<sup>36</sup>

The project places environmental assessment obligations on both B.C. and Canada under the Nisga'a Final Treaty Agreement since the operations could have negative environmental, social, economic, and cultural effects on Nisga'a people. It has been argued by some that B.C. did not complete all the terms required by the Nisga'a Treaty, and rushed the approval through to issue an Environmental Assessment Certificate for the project in March 2013. The Nisga'a Nation, although not opposed to the mine itself at this point, entered into court proceedings to require the province to perform the assessments required by the treaty. Looking at the BCEAO web site, considerable information is available on all matters of substance and opportunities were obviously available for the public and the Nisga'a to participate, but the lawsuit may yet result in significant delays in bringing this project on-stream in a timely manner.<sup>37</sup>

#### *Kemess North, B.C. (Cu/Au) 2007*

Kemess is an open-pit copper/gold deposit, located in northeast B.C. It was owned and operated by Royal Oak Mines from 1994 to 1999 when it was purchased by Northgate Minerals. Northgate operated the mine until 2011 when it was taken over by AuRico Gold.

As the mine continued depleting its southern orebody in the mid-2000s, Northgate realized that the North Kemess orebody needed to be developed to sustain the operation. Part of the plan involved changing the approach to tailings disposal. Instead of pumping tailings up a steep slope to an expanded tailings dam, the company examined a plan to dispose of the material into a nearby lake. The CEAA undertook an assessment of the project in 2006-2007. First Nations are well-removed from the site, but several bands claimed the lake had important spiritual value to their traditional and cultural rights. Accordingly, in 2007, the CEAA Panel ruled against the mine on the basis of this "spiritual value" and on the fact that the lake would be contaminated.<sup>37</sup> The mine closed soon after. AuRico is currently considering developing an underground block cave mine using the existing South Kemess Open Pit to store tailings which is already permitted. This expansion can be brought on-stream without the need for CEAA or BCEA environmental assessments or First Nations oversight, but underground mining is more costly than an open pit.



*Arctos Anthracite Mine, B.C. (coal) 2013*

Fortune Minerals Ltd. is a junior Canadian mining company focused on developing the Arctos Anthracite Project in northern B.C. – one of the world's premier metallurgical coal deposits. The proposed mine would produce premium-grade anthracite coal for steel manufacturing and metals processing. The project is a joint venture between Fortune (80%) and POSCO Canada Ltd. (20%), a subsidiary of POSCO in South Korea – one of the world's largest steel producers.

Despite saying all the right things about establishing positive working relationships with Aboriginal peoples and contributing to their social, cultural, and economic well-being, the company has been "banned" from the traditional land by the Tahltan Nation.<sup>39</sup> The company says they believe involvement of local First Nations is essential to ensure the project achieves the highest standards of environmental stewardship and cultural and heritage protection. "Every person that works for or represents the Arctos project will know that we truly value our relationships with Aboriginal peoples and that it is our responsibility to be respectful, to be good listeners, learners, colleagues, business partners and neighbours." Local First Nations will be given priority consideration to access employment, training, business, and contracting benefits and opportunities that the project will generate. However, First Nation leaders are angered by reports that company officials have directly approached reserve residents to promote the mine, thus by-passing band leaders. The Tahltan say they oppose development in an area known as the Sacred Headwaters – the source of three major salmon-bearing rivers: the Skeena, Stikine, and Nass. This place is considered by Aboriginals to have extreme cultural value.<sup>40</sup>

*Morrison Mine, B.C. (Cu/Au/Mo) 2011-2014*

Pacific Booker Minerals (PBM) owns the Morrison property (a porphyry copper/gold/molybdenum deposit) in central B.C. 35 km north of Granisle. The site is located very near two former producing copper mines, Bell Copper and Granisle Copper. The area has a long tradition of mining. PBM began working on the property in 1998 and purchased the entire resource from Noranda in 2004 and finalized payments in 2006.<sup>40</sup>

On October 14, 2008, the Lake Babine Nation (LBN) issued a media news release stating that "it is withdrawing from dialogue...due to serious concerns regarding Pacific Booker's conduct." LBN asserted that "PBM continues to offer us Capacity Funding but we haven't seen a dime" and they accused the company of improperly questioning "our members about our confidential traditional uses without asking permission." They claimed the company was trying to dictate who is allowed on the LBN negotiating team and called this action "disrespectful".

On Oct. 23, 2008, the Minister of State for Mining announced the Province has authorized revenue-sharing with First Nations on new mining projects to be set at 37% of royalties. PBM announced on November 6, 2008, they had entered into an agreement to provide the LBN with Capacity Funding to participate in the EA process, improve communications, share information, address specific concerns, and commit to work together to build a long lasting and mutually supportive relationship. "This is a good first step in our relationship of mutual respect", stated Chief Betty Patrick, "and we look forward to entering into many more agreements with PBM, including an Impact and Benefits Agreement." On January 5, 2009, PBM submitted a Statement of Claim in the BC Supreme Court for the "damaging and allegedly defamatory press release by the LBN on October 14, 2008". On October 22, 2009, the company discontinued its proceeding against the LBN following election of a new Chief and Band Council.

The company completed a \$6.0 million Environmental Assessment Statement and submitted an application for an Environmental Assessment Certificate to the CEAA and the BCEAO in July 2010. On August 20, 2012 (*day 763 of the 180-day review period*) the BCEAO completed the environmental assessment and submitted their report to the Ministers for a decision. On October 1, 2012, the application was jointly rejected by the BC Minister of Energy and Mines and the BC Minister of the Environment on the recommendation of the Executive Director of the BCEAO, despite the fact that the assessment report concluded that the project "does not have the potential for significant adverse effects on the environment" and that the First Nations consultation process was "carried out in good faith"; was "appropriate and reasonable in the circumstances"; and was sufficient to "maintain the honour of the Crown".<sup>40</sup>

In April 2013, PBM petitioned the BC Supreme Court to set aside this decision. The company believed the government had overlooked many of the report's conclusions; PBM claimed that Executive Director's recommendation was based in part on a "risk vs. benefit" test introduced after the report was completed and that PBM was not given an opportunity to address this new test. This analysis was not part of the assessment Terms of Reference; it was not applied previously to other projects; and it was inconsistently applied to other projects since the Morrison decision. The Company believed this situation failed to meet the tenets of "procedural fairness". A second part of the BCEAO recommendation was based on a statement that "the project was opposed by Gitksan and Gitanyow Nations and LBN".<sup>40</sup>

On December 9, 2013, the BC Supreme Court released its judgment regarding PBM's challenge. The judge quashed and set aside the Ministers' decision and ordered PBM's application to be reconsidered. He also



awarded costs. As of April 2014, an appeal of this decision has not been made by the Crown and a decision on the resubmitted application has yet to be announced.<sup>40</sup>

#### *New Prosperity Mine, B.C. (Cu/Au) 2010/2014*

In recent times, one of the most hotly-debated projects in B.C. is Taseko Mines' New Prosperity project near Fish Lake in the Cariboo-Chilcotin. Virtually all First Nation leaders in the region are vehemently opposed. The New Prosperity project is the tenth largest undeveloped gold-copper porphyry deposit in the world. It will result in the following economic benefits:

- Direct capital expenditures of \$1.5 billion over the project life;
- Production revenues over \$11.0 billion;
- Employment totaling 71,000 person-years directly and indirectly (over 3,000 new jobs);
- Additional consumer spending in B.C. of ~\$9.0 billion;
- Investments in construction, machinery, and equipment by others of ~\$3 billion;
- Increased total tax revenues of \$9.8 billion;
- Total monetary cash flow through the economy of over \$35 billion.

The BCEAO review concluded that the environmental issues were justified on balance when considering the incredible value of the project. However, the CEAA review of the project which took place in 2009-2011 concluded that significant adverse environmental effects will result from the plan to deposit waste rock into Fish Lake – a 1 km<sup>2</sup>, 12m deep lake with an over-stocked fish population and so the Canadian government rejected the project.<sup>41</sup> As it turned out, the lake was considered "sacred" by First Nations. The former Chief of the Alexis Creek Band and Tribal Chief of the Chilcotin Nation, Ervin Charleyboy, said "if Fish Lake is drained it will be over my dead body". Taseko proposed to mitigate the impact by creating an adjacent artificial lake stocked with healthy rainbow trout to create an aquaculture business for First Nations people, but the idea of destroying a lake created significant opposition from all parts of the province and around North America.

On the invitation of the government of Canada, Taseko resubmitted a new mine plan for review in October, 2011.<sup>42</sup> This plan added \$300 million to the capital costs to prevent contamination of Fish Lake, protect it, and preserve it in-perpetuity. Following the issuance of details of this new plan, Ervin Charleyboy changed his position saying he recognized that the new plan will save Fish Lake and his people needed jobs and training. Here are some relevant quotes from some of the First Nation leaders in the Cariboo-Chilcotin:

Ervin Charleyboy: "I was a chief for 20 years in my community and I don't see any employment for the people... (I) see my young people living from welfare cheque to welfare cheque every month. After logging, we will have nothing...now this new proposal came out, I see things differently...environmentally, I don't think it's going to hurt anything...I took some Elders to Gibraltar mine last fall...They're planting grass. They're planting trees. And you couldn't even tell if there's a mine there because of all the re-growth going on and there's reclamation...My Elders were quite impressed with that...I hear so much about our way of life, our culture, and I'm sorry to say that our way of life went out the back door the day we accepted welfare cheques on reserve. It just saddens me to see our young people...waiting from month-to-month on \$185 that they get from the welfare...We have nothing on the reserve...Why don't the Chiefs sit down with Taseko Mines and talk...about...impact, benefits, partnership...the Chiefs, they're talking about consultation. Who is going to consult with you when you don't want to talk?"

Bernie Mack: "As a leader, you sometimes have to tell people what they need to hear, not what they want to hear."

Percy Guichon: "In my time as chief I never – we've never sat down with Taseko to discuss any types of compensation because the chiefs, as a whole, TNG, have always opposed the mine. So we haven't even gone there yet. We're at the panel hearings again, to reject the proposal and there ha(ve) been no other discussions beyond that."

The second Panel hearings took place in July and August 2013, with the release of an assessment report on Oct. 31, 2013.<sup>42</sup> The report concluded that this mine plan would also create significant adverse environmental impacts: on water quality in Fish Lake; on fish and fish habitat in Fish Lake; on current use of lands and resources for traditional purposes by certain Aboriginal groups; and on their cultural heritage. In essence, the Panel did not believe that Taseko could protect the lake using the plan they derived with a number of BC-based engineering firms.

In December 2014, Taseko petitioned the Federal Court to commence a Judicial Review of the CEAA Panel decision.<sup>44</sup> The company claimed that in making its decision, the Panel relied on a report from Natural Resources Canada (NRCan) that predicted seepage from the Tailings Storage Facility (TSF) would be 11 times higher than the estimate of Taseko and its consultants. Taseko claimed that the basis for the NRCan prediction came from a model that bears little to no resemblance to the TSF design that was presented to the Panel.<sup>44</sup> Furthermore, Taseko claimed that meetings were held between government officials and

the opponents of the mine (mainly Aboriginal leaders) prior to the final decision by the Minister of the Environment in March 2014 and that Taseko had no knowledge of these meetings and were given no opportunity to respond to what was discussed. This may represent "procedural unfairness" in the assessment process.<sup>45</sup>

#### *Gahcho Kue Mine, NWT (diamonds) 2014*

Aboriginals in the Northwest Territories are urging the federal government not to approve a new diamond mine as it is currently proposed. The Gahcho Kue mine, a joint venture between De Beers and Mountain Province Diamond, is situated about 300 km east of Yellowknife and southeast of De Beers' Snap Lake diamond project. The project passed an environmental review in March 2014, but three Inuit communities say the company's plans to reduce impacts on the environment are insufficient. To mine the ore body, the southern part of Kennady Lake is to be drained. Following mining, the lake will be restored. The project's critics say the review does not address their concerns about water quality, caribou, or the future of Kennady Lake. They say there is no clear benefit to people in the area. They have asked the Minister of Aboriginal Affairs and Northern Development to order a further review of the project.<sup>46</sup>

#### *Nechalacho Mine, NWT (rare earth elements) - 2014*

Rare earth metals are a collection of 17 elements used in high-tech devices such as batteries, magnets, wind turbines, cell-phones, electric cars, flat-screen televisions, and missile guidance systems. There is a global rush to discover and process new rare earth deposits as most of the world supply comes from China where there are signs of limiting export. The chief of the Deninu K'ue First Nation in Fort Resolution, NWT, has questioned Avalon Rare Metals' plans to build a processing plant outside NWT. Avalon recently announced it is considering relocating its hydrometallurgy plant to treat concentrate extracted from the proposed Nechalacho mine. Chief Louis Balsillie claims Avalon waited until it had received regulatory approval before making this news public. He says Avalon did not inform the band and the territorial government about this option before approvals were granted.<sup>47</sup> In its feasibility study, Avalon said about 300 jobs would be created in the NWT - about 80 of which are in the hydrometallurgy plant. The prospect of these jobs helped Avalon gain co-operation of the Deninu K'ue. Avalon intends the Nechalacho mine to be operational by 2017, but this opposition places doubt on this start-up date.<sup>47</sup>

#### *Ring of Fire, Ontario (chromite/Cu/Ni/PGMs) - 2014*

The discovery of a very significant chromite-Cu-Ni-PGMs sulfide deposit 400 km north of Thunder Bay offers exciting potential for the future development of Northern Ontario. The deposit is enormous, perhaps

rivaling the Sudbury Basin Cu-Ni ores in size and grade. A total of 12 First Nation communities are located in close proximity to the site. The former Leader of the federal Liberal Party, Bob Rae, resigned his seat in the House of Commons and is now representing the First Nations in their negotiations with the Crown (Ontario and Canada).

A decision by Cliffs Natural Resources in August 2013 to suspend operations on its chromite deposit in the Ring of Fire because of delays with infrastructure approval has sent waves through the mining sector. Some say it sends a bad message about Ontario, but others believe it could provide the impetus to move forward. A junior mining company called Noront is in a position to bring one of the major parts of the deposit on-stream and they are actively developing their relations with First Nations in a very proactive, consultative, and cooperative manner. Their mine plan is extremely innovative. Automation is a major feature of the underground mining plan with virtually no material being stored on surface. Processing will take place underground and concentrate will be transported by pipeline to an existing railhead about 20 km away. All waste material will be stored within the mine to allow continued mining using a cut-and-fill technique. Tailings will be used as paste backfill.

Key issues are the settlement of land claims with the federal government and the sharing of ore values with First Nations communities to provide significant infrastructure and on-going benefits. There is a huge opportunity for nation-building in the north – the values in the ground are estimated at this point to be over \$60 billion. It will indeed be interesting to see how the project moves ahead and if new approaches to resource development by First Nations and new Canadian mining companies are undertaken.<sup>48</sup>

## VII. POSSIBLE WAY TO IMPROVE THE SITUATION

In a recent Fraser Institute report<sup>49</sup>, a comparison has been made between how mineral rights and claims are handled in Canada and in the United States. In Canada, minerals are reserved by the provinces, while in the US minerals are either associated with surface ownership (primarily in the east) or reserved by the federal government (primarily in the west). Furthermore, in Canada mineral rights are retained by the Crown (i.e., the provinces) who issue leases to interested parties to mine at a particular site; while mineral rights are privately-owned in the US. The report suggests that by changing to a private sector model, the door would be opened for First Nation groups in Canada to buy into ownership of the mineral rights on their traditional lands and, in this way, partnerships with mining companies could develop to speed up the

assessment process.<sup>50</sup> While this is an interesting idea, one must wonder where the First Nation will find the funds to make these purchases assuming they are even interested in making such investments.

## VIII. CONCLUSION

It is clear that the impact on the Mining Industry of the needs, concerns, and objections of Aboriginals in Canada cannot be taken for granted. Dealing with these issues requires skills that many companies are still grappling to develop and learn. Local First Nations communities want reassurances about environmental protection, about protection of their traditional rights and titles, about their engagement in the decision-making, and about becoming partners in new resource extraction enterprises. Companies must develop approaches to educate, to empower, to engage, and to partner with these groups. Education and engagement seem to be moving forward, but empowerment and partnership appear to be major stumbling blocks. The requirement to consult on such projects rests with the Crown – provincial (or territorial) and federal. In B.C., a revenue-sharing formula has emerged from the province, but reconciliation with the federal government over historical wrongs committed in the past remain outstanding. Furthermore, the First Nations want more than simply sharing in government revenue from these projects – they want to be part of the mining process beyond employment and hand-outs. Until these issues are resolved, each new project is likely to undergo serious delay and conflict that in many cases may lead to rejection of the project. Canadian mining companies need to develop an approach that promotes sustainable development of aboriginal and non-aboriginal communities specifically addressing the question of Sharing the Wealth among shareholders, operators, governments, and First Nations.

## IX. EPILOGUE

To end this paper, let's return to Chief Dan George. Although his speech was a heart-broken a passionate expression of sorrow about how Canada has treated his people over the past two centuries, he ended with an important message of hope (and a challenge for all of us):

*"I must forget what's past and gone. Oh God in heaven! Give me back the courage of the olden chiefs. Let me wrestle with my surroundings. Let me again, as in the days of old, dominate my environment. Let me humbly accept this new culture and through it rise up and go on. Oh God! Like the thunderbird of old I shall rise again out of the sea; I shall grab the instruments of the white man's success-his education, his skills- and with these new tools I shall build my race into the proudest segment of your society."*

- from Lament for Confederation, Chief Dan George, July 1, 1967.

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# GLOBAL JOURNALS INC. (US) GUIDELINES HANDBOOK 2015

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# INDEX

---

---

## **B**

Beržinskienė · 2, 8

---

## **C**

Combinatorics · 10

---

## **D**

Dzinkowski's · 28

---

## **E**

Emphasised · 1, 3, 34

Ephasize · 10

---

## **G**

Gitanyow · 42

Gitxsan · 42

---

## **I**

Influencing · 2, 4, 7

---

## **N**

Nechalacho · 44

Negotiated · 14, 18, 23

Notwithstanding · 27

---

## **R**

Repečkienė, · 8

---

## **T**

Thunderbird · 46

---

## **Z**

Žvirelienė · 3, 8





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