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**AN EVALUATION OF THE PROFESSIONAL AND PERSONAL
DEVELOPMENT OF INFORMATION TECHNOLOGY WORKERS
IN IRELAND AND THE UNITED STATES**

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An Evaluation Of The Professional And Personal Development Of Information Technology Workers In Ireland And The United States

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0. Abstract

The information technology sector is hailed as a lucrative industry where highly skilled workers may carve a rewarding and successful career. It is also an industry that has mainly developed in the United States and has subsequently spread to the rest of the world, bringing with it certain 'Americanised' values and work practices. This paper explores the quality of work life of IT workers, namely their level of professional and personal development. It investigates workers' attitudes to organisational culture in IT firms, their commitment to life-long learning and training and the importance they place on leisure pursuits, family and community. It also investigates the reasons why many IT workers do not participate in trade union activities.

Keywords: quality of work life, information technology, organisational culture, personal development, professional development, workers' attitudes to trade unions.

1. STATEMENT OF PURPOSE OF RESEARCH

1.1 Objectives

The objectives of this thesis are to establish the degree and the quality of professional and personal development of IT workers in Ireland and in the United States. The degree and quality of workers' professional lives will be assessed by investigating opportunities and commitment to training, lifelong learning, membership of professional bodies, and career planning. The degree and quality of workers' personal development will explore worker's attitudes to organisational culture in their places of work, their interest and commitment to family, community and leisure pursuits, and their opportunity for satisfactory representation in times of difficulty at work. It is envisaged that the findings of this thesis will add knowledge to existing research in the areas quality of work life, lifelong learning, organisational culture, personal development, professional development and trade unionism.

1.2 Research Questions

The questions to be addressed in the thesis are:

1. What is the relationship between professional development and quality of work life in the IT sector?
2. What is the relationship between personal development and quality of work life in the IT sector?
3. What is the relationship between professional development and personal development in the IT sector?

1.3 Research Contribution

It is envisaged that the findings of this research will be of particular interest to IT employers and employees, education and training organisations, professional computer organisations, and trade unions.

2. OUTLINE OF LITERATURE REVIEW

2.1 Introduction

The general approach of the thesis will be to generate a literature review capturing literature and findings around the following variables: Trade unionism, organisational culture, workers attitudes to trade unions, IT sector, personal development, professional development, quality of work life, job satisfaction, representation at work.

2.2 Definitions

The definition of IT refers to companies that are involved in the research, design, manufacture or sales of computer hardware or software, including telecommunications and microelectronics.

Personal development is a process undertaken by an individual to reflect upon goals, to pursue activities and relationships that bring satisfaction and fulfillment, and to plan for leisure time.

Professional development is a process undertaken by an individual to reflect upon their own learning, performance and achievement, and to plan for their educational and career development.

The definition of quality of work life in this thesis is the degree to which an employee finds satisfaction in his or her work, the extent to which the organisational culture supports personal and professional development, the extent to which external representation is facilitated, and the degree to which employees are helped to manage on-going change and transition in both personal and work life.

2.3 Literature Outline

The general approach of the thesis will be to generate a literature review capturing literature and findings around the following variables: trade unionism, employee performance, organisational culture, worker's attitudes to trade unions, IT sector, personal development, professional development, quality of work life, job satisfaction, representation at work. A brief literature review is outlined below.

Trade Unionism

In global economic terms there are three major centres of trade and industry: the USA, Japan and the European Union (EU). **Lecher (1994)** has investigated trade unionism in the EU. The membership size, potential power and legal position of trade unions largely depends on political, economic and social factors in each nation. Conservative governments are generally less favourable to unions than are socialist governments. In times of heavy unemployment and harsh economic climates workers are more fearful of losing their jobs and less inclined to support union demands for better working conditions or increased remuneration. Unions have become part of the fabric of some nations and industries, while they are still relatively novel in other geographic regions and industrial settings. Unions are usually organised along either craft or industry lines.

According to Lecher (1994) the significance of structures of employee representation, both of workers and their organisations, depends on the strength and effectiveness of trade unions. Unless trade unions are representative of workers, have financial strength, willingness and scope to support workplace bodies and make full use of their available rights, systems of workplace representation cannot function effectively in the service of workers' interests. When looking at trade unions nationally, it is important to explore what level of rights of representation are granted and to whom at plant, company or individual level. It is also vital to see how these rights are secured, either by local agreements, legally binding collective agreements for an industry, or by laws or national constitutional provisions. There is also the question of whether representative institutions are established only when trade unions demand it, as in Germany, or whether there is a mandatory obligation for them to be set up, as in France, Belgium, the Netherlands and Luxemburg.

Individualism and Collectivism

Much research has been conducted into the level of individualism that exists in the workplace in western nations. **Mosca (1939)** considers the decline of collectivism in western civilisation to be due to the growth of new industrial cities, which are inhabited by floating populations. The bonds between families, neighbourhoods and workers have become eroded and fragile as people move to new areas to set up home and to obtain work. Mosca contrasts this new individualism, this "each man for himself" attitude, with eastern cultures. In India,

China, Japan, and in Muslim nations members of the same family and tribe assist each other in times of hardship and disaster. Membership of families, villages and institutions impose certain obligations on members, but it also insures that members have certain rights. The main advantage of membership is that any person who is smitten by misfortune, through job loss or illness, is supported by the rest of the group.

Putnam (2000) discusses the phenomenon of individualism and the lack of community in American society. He argues that disengagement from social connections and civic responsibility influences every aspect of public and private life, including the workplace. Labour unions once provided one of the most common organisational affiliations among American workers. However, union membership has been falling for nearly four decades, with the steepest decline occurring between 1975 and 1985. Since the mid-1950s, when union membership peaked, the unionised portion of the non-agricultural work force in America has dropped by more than half, falling from 32.5 percent in 1953 to 15.8 percent in 1992. Many people consider collective bargaining primarily suited to the male, blue-collar, production workers involved in goods producing industries. They see no place for unions in the lives of female, white-collar, knowledge workers in the service and IT sectors.

Some may argue that this decline in union membership is due to workers cynicism of union corruption and abuse of power. Putnam argues that the pattern of union membership decline mirrors that of community-based and religious organisations. There was modest growth in each of these sectors in the first third of the century, rapid growth coming out of the Depression and World War II, a high plateau from the 1950s and into the 1960s, and a sharp sustained decline during the last third of the century. This reflects a new scepticism in the States about the concept of 'membership'.

The findings of **Bellah et al (1991)** are closely aligned with those of Putnam. American society has come to be dominated by an individualism that compulsively applauds competitiveness, independence and success, while ignoring the need for cooperation and solidarity. They argue that it is indeed ironic that labour union membership had much to do with the attaining of a relative affluence for middle-class Americans. Yet for many workers today the labour union has become one more alien institution from which they would like to be free. Middle-class Americans are not only suspicious of government but of organisations of any kind. The decline of the labour movement is due to legislative changes in the past 20 years that have deprived unions of much of their power and influence, and congressional refusal since 1991 to raise the minimum wage from \$4.25 an hour. Where unions exist in America, union meetings attract 5 percent of the members at most. Lacking the social capital that union membership would provide, Americans are vulnerable in new ways to the arbitrary domination they thought they had escaped. One may not even own one's

home and one's recreational vehicle for long if one's job is downsized and the only alternative employment is at the minimum wage.

According to **Fantasia (1988)**, Marx's great discontent with 'capitalist' factory owners exploiting and undermining workers at every turn is still highly relevant to union opposition in the US today. He argues that the lack of collective bargaining strength of US workers is based on a tradition of tight control by management and owners, both politically and organisationally, to weaken or break worker solidarity. His case studies show how the management structure in the US can defeat any union activity.

According to **Browne (1995)**, Ireland has been transformed since the 1960s socially, economically, industrially and to some degree politically. The trade union movement has played its part in this transformation. The union's commitment to solidarity between workers significantly inspired the two programmes, which sought balanced social and economic development. The programme for National Recovery (PNR) and the Programme for Economic and Social Progress (PESP) lead to an increase in incomes of both salaried and non-salaried citizens and advanced trade union priorities. Businesses benefited in turn by vast improvements in productivity, union labour costs and competitiveness.

Employee Performance

With respect to the variable, employee performance the following theories have been noted. **Wiley and Brooks** (cited in Ashkanasy, Wilderon and Peterson: 2000) review the large volume of research that has been conducted into the relationship between employee satisfaction and performance. Research findings suggest that a certain type of organisational climate is more likely to create an energised and productive workforce. Communication at all levels of the organisation is vital, so that employees are aware of the direction the organisation is heading and how individual roles can fit into organisational success. Cooperation and teamwork is emphasised, where employees feel a common sense of purpose and interdependence.

Gunnigle et al (1997) discuss performance related pay (PRP) and the implications of this system for collectivism and individualism in the workplace. Collectivism exists when management acknowledges the right of employees to collective representation when negotiating pay and working conditions. Individualism is associated with internal labour market emphasis, individual performance-related pay, a focus on management-individual employee as opposed to management-trade union interactions, employee involvement and autonomy at work.

McGovern (1998) states that white-collar salaries are no longer based on a fixed salary, but can only be earned through a high level of performance. This 'performance' must not only meet required work standards but also socially constructed criteria as defined by the organisation.

Organisational Culture

An initial investigation into existing research on organisational culture has highlighted the following theories. **Ott (1989)** summarises the characteristics of organisational culture. This is the culture that exists in an organization, something akin to a societal culture. It is made up of such things as values, beliefs, assumptions, perceptions, behavioural norms, artefacts, and patterns of behaviour.

Brown (1965) states that in order to promote good human relations within the workplace, organisations must avoid inducing rivalry between individual workers at the expense of group cooperation. While competition within the framework of a group, such as in a football team, may at times be beneficial to developing team spirit, the ruthless all-out struggle for purely selfish ends will only lead to deep resentment and hostility between workers.

Hofstede (1984) describes the differences in organisational culture that exist between members of forty different nations. Hofstede conducted a survey of 117,000 workers, from 1967 to 1973, in a US multinational that had subsidiaries globally. Questions were constructed and then administered to individuals to elicit the predominant values that each felt was indicative of their workplace. The findings showed that different values predominate among the people and organisations in different countries. Hofstede identified four main dimensions that emerged in the value systems of these countries: power distance, uncertainty avoidance, individualism-collectivism, and masculinity-femininity.

Workers' Attitudes to Trade Unions

Existing research on workers' attitudes has revealed the following theories. **Goldthorpe et al (1968)** surveyed a sample of "affluent workers" at Vauxhall Cars, Skefco Engineering and La Porte Chemicals, in Luton, UK. They studied the attitudes and behaviour of high wage earners in three mass companies. The main conclusions were that "affluent workers" viewed their jobs as a means to an end. Findings revealed that workplace satisfaction for affluent workers depended upon continued stability and prosperity with expectations of continuing growth.

An in-depth study of American workers' attitudes was conducted by **Freeman and Rogers (1999)** between 1994 and 1995. The major findings of the Survey indicated that American workers wanted more involvement and greater say in their jobs. They showed a preference for the establishment of joint cooperative committees with management where workers could elect representatives rather than having their managers select them. This would give workers more influences over decisions. The vast majority of workers believed that the key to a successful workplace organization was management cooperation with the organization. Also a high degree of dissatisfaction was reported when workers had recourse to the courts or to administration agencies to deal with alleged violations of the law. Workers desired the establishment of a dispute resolution system with an input

from both the department of labour and management, expert assistance in preparing their cases and a government review of arbitral decisions.

A large number of workers (71%) who were union members reported their experience with the organization as good or very good. 90% reported that they would vote to keep the union in a new representation election. A sizable minority of non-union members stated that they and their fellow workers wanted to be represented by unions or union-like organizations. It was found that managers in unionised workplaces had ambivalent attitudes toward unions. By a two to one margin (32 % versus 16 %), managers in unionised workplaces reported that in recent years unions had become more cooperative rather than more confrontational, and 69% reported that the company accepts the union as a partner.

IT Sector

This section gives definitions for information technology. It also examines existing theory and research in the areas of US domination in the IT sector, the prominence of Silicon Valley, the emergence of Ireland as a major IT, non-union policy, work ethic and working conditions in the IT industry. Turner (2000) divides the IT sector into two sub-sections: hardware and software. The hardware sector includes mainframe, client-server and personal computers, storage devices, networking equipment, peripherals, business equipment (such as terminals and photocopiers), and computer accessories. The software sector includes the design, development, testing and marketing of software, and the maintenance and integration of systems.

According to Preston (1987) the term information technology (IT) emerged in Britain in the early '80s during public debates about changes in the nature of industry and employment. Some sources suggest that the term had been used since the '60s within a small specialised sector. A British government publication (UK: 1982a, 1982b, cited in Preston: 1984) stated that IT involved computers that can store huge quantities of information and process it instantly, telecommunications that can transmit data instantaneously, and microelectronics that make the whole process manageable and inexpensive. In this thesis IT refers to companies that are involved in the research, design, manufacture or sales of computer hardware or software, including telecommunications and microelectronics.

US Domination

According to **Turner (2000)** the US dominates the IT sector globally. In 1998, the IT sector represented 8.2% of the US gross domestic product (GDP). A Financial Times table of the top twenty IT companies in the world in mid 1999 shows US companies occupying the top seven positions, and sixteen US companies are listed in the top twenty positions. Thus the US is undoubtedly the world leader in the IT sector.

Silicon Valley

Thomas (1985) states that Silicon Valley occupies the area that is officially called Santa Clara Valley, in California. According to **Bernstein (1977)**, Santa Clara was chosen as the centre of the technological revolution not only because of its pleasant climate, but because it offered a combination of land, labour, technical resources, financing and access to markets. Bernstein (1977) acknowledges that growth and development has created prosperity for many, but he also states that it has brought its share of urban problems and accelerated environmental decay. The expansion of the IT sector has also introduced new hazards for those working in the valley. There is a serious housing shortage since so many workers are converging on the area, and this is causing house pricing to increase at an unprecedented level. Also having so many workers commuting to and from work leads to peak-hour traffic jams along congested routes, particularly on the Central Expressway and the Bayshore Freeway. Bernstein also discusses the environmental effects of air pollution that can be very severe from San Jose to Sunnyvale, which is at the heart of the commute route. This layer of smog that covers the valley is a significant health hazard, with pollutants from automobile exhausts causing respiratory and nervous systems problems (Bernstein: 1977: 49).

Ireland as a Major IT Centre

According to Duffy (2000) one of the key factors for Ireland's economic growth was the introduction of social partnership under the Haughey administration. This brought together employers, trade unions, farmers, the voluntary sector and others to negotiate a fixed programme of pay rises and welfare provisions. This guaranteed industrial harmony for the stated period of the agreement that set the foundation for stability. This stability, coupled with major infrastructural development in the 1980s, and the ready availability of a well-educated, computer-literate and English-speaking workforce, brought multinational IT and pharmaceutical industries to relocate in Ireland.

Non-union Policy

Jackson (1997) discusses Intel's non-union policy, and the way in which it succeeded in keeping out the unions in their Livermore plant, in Silicon Valley, California, in the mid 1970s. **McLoughlin and Gourley (1994)** conducted a study into the extent of non-unionism in the high-technology sector in the South East of England. Their findings showed that 80% of organisations that replied to the postal survey did not recognise trade unions. Less than 50% of employees worked for firms where unions were recognised. Only one in ten employees were found to be union members. **Dunlop (1988)** views the advent of highly sophisticated technology in the U.S as creating a new work environment. This has resulted in new labour markets, skill levels, workforce expectations and management ideology. Employer opposition to union organisation has been historically intense in the U.S and this has only increased in the information technology area.

Work Ethic

According to **Rogers and Larson (1984)**, Silicon Valley is synonymous with working long hours because the competition between companies is so intense. Rogers and Larson interviewed many of the top engineers and high-tech gurus in the Valley. He concluded that although some workers are highly ambitious and receive very lucrative remuneration in the form of salary, stock options, bonuses and promotion, other become the real casualties of Silicon Valley. **Cringely (1992)** states that the cost of working for one of the most powerful companies in the world – IBM is compliance with the rules and values of IBM. The class of executives produced by IBM rely on the company to tell them what to think, what to do, and how to do it. The company will not tolerate non-IBM behaviour.

Working Conditions

Hayes (1989) deflates the fantasy of Silicon Valley as a utopian work culture by describing the brutal realities of life for many workers. Hayes describes the cruel irony of 'clean rooms' where fume-filled chip processing facilities are protected, while workers are exposed to dangerous chemicals. **Bernstein (1977)** catalogues a number of physical problems that workers in the semiconductor industry may suffer from due to chemical reactions, such as nausea, headaches, dizziness, skin rashes, respiratory problems, and liver and kidney problems. Workers – the majority of which are overwhelmingly female - also fear the links that some researchers have made between exposure to these chemicals and breast cancer. The utter disrespect with which workers who are no longer required by the company are treated, is also commented upon by Hayes (1989).

Good Work Practices

Levering (1988) researched the top twenty companies that had been identified in the '100 Best companies to work for in America' (Moskowitz and Katz: 1985). Good workplaces, according to Levering, provide a different vision from the dog-eat-dog, each man for himself philosophy that is widespread in the world of work. **Lukeman (1989)** advocates companies adopting 'the worth ethic' as a way of increasing performance and motivation.

Integration of Work and Life

According to **Hensen (2000)** dramatic changes occurring in the workplace and in work patterns have forced human resource professionals to work with a new conceptual framework called the Integrative Life Planning (ILP). The ILP concept consists of six critical themes. **Collard and Gelatt (2000)** state that most Americans long for a more meaningful and satisfying life. They yearn for a greater balance between work and life.

Worker Dissatisfaction

This section examines existing theory and research in the areas of worker dissatisfaction, workers' burnout, workaholics, and relationships and family life. **Cusumano and Selby (1996)** conducted an in depth case study into Microsoft.

Employee surveys, based on the Likert scale, were used to record workers' attitudes to their conditions working. Employees in the applications division were found to strongly agree (by 39%) with the statement that 'there are a lot of politics involved in getting promotions and recognition'. 43% of employees strongly agreed (by 43%) that there was "conflict...between quality of performance and quantity of work". 41% of employees strongly disagreed (by 41%) with the statement that "salary is equitable", while 44% strongly disagreed that "new employees receive adequate training".

Workers burnout is described by Cohen (2002), Rogers and Arson (1984), Kidder (1981: 104), and Shapero (1985). **Susan Mosier** (cited in Hampson: 1990) researched workaholics, defining a workaholic as anyone who works more than fifty hours a week. Hampson (1990) also challenges commonly held notions about success. Many workers who fall into the workaholic category, and who in fact may work average weeks of eighty hours, are driven by neurotic compulsion to succeed.

Relationships and Family Life

The long hours and the dedication to work required in Silicon Valley too often produces work-obsessed technocrats with a limited life experience and a stunted human understanding (**Rogers and Larson: 1984**). According to **Hollands (1985)** the major symptom of a relationship in Silicon Valley involving an engineer or scientist with a non-engineering partner is the crippling lack of communication and quality time spent together. According to **Hayes (1989: 133)** Silicon Valley workers become alienated from each other, and most especially from family and friends due to the abnormal working hours.

Professional Development

According to **Broadwell and Sizeman-House (1986)**, professional development refers to the long-range usage of potential. **Horibe (1999)** advocates companies to encourage information workers to strive for professional development. Workers who are employed in areas where knowledge and its application are vital to the success of the company must be directed towards continual learning. Horibe suggests that companies should conduct formal training and development programs, encourage informal learning and reward those workers who embark on continuous learning.

Training Technical Employees

According to **Broadwell and Sizeman-House (1986)**, Technical people are among the best educated and skilled in any organization. Some technical people need to receive training when it is to the benefit of the organization. Training is necessary an employee can not perform a task that the company wants him or her to perform, when the firm wants a task to be performed in a better or more efficient way, or when employees are doing something incorrectly and the firm needs them to learn how to do it correctly. Obsolescence occurs in technical areas more than in any other part of the organisation. Yet Broadwell and Sizeman-

House (1986) state that it is easier to train technical employees than non-technical workers because they usually have the ability to learn new concepts quickly, and they also have a curiosity about learning new techniques and how to apply them to their work.

Developing a Training Policy

Broadwell and Sizeman-House (1986) state that firms should develop a training policy when they believe that training will make a difference in the performance of newly trained employees. Training is often a large investment in the employee. The firm must therefore feel that the employee is an asset and that he or she will remain in their employment for a reasonable length of time. **Cross, Lynton, Nowlen and Stern (1981)** state that companies will only support the development and renewal of employee skills to the extent to which the company will benefit.

Personal Development

According to **Broadwell and Sizeman-House (1986)**, there are several factors that determine one's level of personal development. These are goal setting, reading, attending meetings, and personal effort. Broadwell and Sizeman-House (1986) suggest that a person should make a personal development plan as follows: by setting both short and long term goals, ascertaining one's appearance, level of exercise and health and working on any deficiencies, improving written skills and public speaking, attending night courses, reading the classics, working out any quirks that we discover are annoying to others, learning how to manage time more effectively, developing hobbies and enjoying our leisure time, finding time to unwind with our family and friends.

Life Long Learning

The concept of life-long learning is quite a modern one. According to **Monroe and Heim (1991)**, U.S Congress approved the first adult education legislation in 1966. Libraries in particular were seen as a way of providing continuing education for citizens. Various acts were passed between 1966 and 1991 (Adult Educations Acts: Washington D.C) to promote literacy at basic and functional levels, and to provide facilities for mature reading. According to **Chudwin and Durrant (1981)**, adult education has prospered in the U.S and today appeals to a wide variety of people. **Cross, Lynton, Nowlen and Stern (1981)** augment the view that continuing professional education is a large and growing activity in the US in terms of dollars and enrollments.

Avoiding Obsolescence

According to **Kotter (1995)**, almost everything is becoming obsolete at a shocking rate in this fast-moving world. A very important factor in career success, according to Kotter, is the willingness and adaptability to continue to learn and grow. **Dublin (1972)** states that it is serious for a professional to fail to keep abreast of changes in his or her field. Professional obsolescence or incompetence is the time after completion of training when, because of new developments,

practicing professional have become roughly half as competent to meet the demands of their profession as they were upon graduation.

Professional Organisations in IT Sector

This section examines existing theory and research in the areas of **ISO9000** standards, the Carnegie-Mellon software capability maturity model, and world-class manufacturing. ISO (the International Organisation for Standardisation) is a world-wide federation of national standards' bodies, from some 90 countries. It promotes the development of standardisation and related activities to facilitate the international exchange of goods and services, and develop intellectual, scientific, technological and economic co-operation.

The **Capability Maturity Model** for Software describes the principles and practices underlying software process maturity and is intended to help software organizations improve the maturity of their software processes in terms of an evolutionary path from ad hoc, chaotic processes to mature, disciplined software processes.

3. METHODOLOGY & ORIGINAL WORK BY RESEARCHER

3.1 Research Methodology

3.1.1 Introduction

The main framework of the methodology is the classical 'positivistic' design where data is gathered and statistics used to test hypotheses. For the pilot study, data was collected by survey instrument.

3.1.2 Pilot Survey

The pilot study consisted of two separate surveys. The first survey was administered in the form of two questionnaires and was sent to IT workers who worked in unionised firms. The survey was divided into two categories: unionised IT workers in Dublin, and unionised workers in Silicon Valley, California. The second survey was administered in the form of two questionnaires and was sent to IT workers who worked in non-unionised firms. The survey was divided into two categories: non-unionised IT workers in Dublin, and non-unionised workers in Silicon Valley, California.

3.1.3 Unionised Surveys

In the unionised survey, semi-state companies were contacted in Dublin as it was suggested by Mr. Seamus Gallen, Deputy Director of National Informatics Directorate (please refer to Interview with Seamus Gallen), that semi-state companies would be the most likely to employ IT workers who were unionised. In Silicon Valley, it could not be ascertained whether or not particular firms were unionised. Therefore the unionised survey was sent to a random sample of firms in Silicon Valley.

3.1.4 Non-union Surveys

In the non-union surveys, firms were selected as per regional phone books. In Dublin the Golden Pages 2001, Computer section, was used to ascertain the number or email of firms to survey. In Silicon Valley, the Valley Yellow Pages 2001, Computer section, was used to ascertain the number or email of firms to survey.

3.1.5 Questionnaire Format

Nineteen questions were posed on the union questionnaire, and eighteen were posed on the non-union questionnaire. Twelve identical questions were posed on both types of questionnaires. In the unionised questionnaire, questions were posed to ascertain data in six key areas:

1. general information, such as gender and level of education
2. union membership, advantages and disadvantages of membership
3. staff association membership
4. professional development
5. personal development
6. career development and training

In the non-union questionnaire, questions were posed to ascertain data in six key areas:

1. general information, such as gender and level of education
2. external representation
3. staff association membership
4. professional development
5. personal development
6. career development and training

Questionnaires were submitted by email to firms that agreed to participate and to forward the questionnaires to their IT staff. Four questionnaires were emailed (each containing an identifying email address) for each of the categories stated below:

1. IT workers in unionised firm in Silicon Valley
2. IT workers in unionised firm in Dublin
3. IT workers in non-unionised firm in Silicon Valley
4. IT workers in non-unionised firm in Dublin

The pilot survey began in June 2002 and ended in August 2002. Results were collected from the four email addresses that respondents were asked to use to submit responses.

3.1.6 Main Survey

This is the outline of the survey which will begin on January 24th 2003:

1. Accessed the National Informatics Directorate website (http://www.nsd.ie/htm/ssii/search_counties.php3?counties=Dublin) for the Dublin pilot study of approximately 50 firms. There are 634 firms within County Dublin listed, so I will email the survey to every 12th firm on the database until 50 firms have been selected and the end of the database has been reached. In this case 52 firms were selected and surveyed.

2. Accessed the Silicon Valley Web Directory of computer and semiconductor companies headquartered in Silicon Valley, website: http://mentorms.best.vwh.net/valley/s1_compi.htm), for the Silicon Valley pilot study of approximately 50 firms. There are 1063 Silicon Valley IT companies listed in the mentorms website, so I will email the survey to every 22nd firm on the database. 50 firms will be surveyed. If the end of the database is reached before 50 firms have been selected, the random selection will continue choosing every 22nd firm, counting from the last firm chosen and continuing at the top of the database. In this case 50 firms were chosen and surveyed.

3. Included in the questionnaire is a question asking what the person's current position is, such as manager, engineer, or development programmers. The answers here will for the basis of stratification.

4. 2 weeks was allowed for surveys to be returned.

5. rmarb5@msn.com is the email address to be used for all returns. Two questionnaires will be sent. 'Dublin' and 'Silicon Valley' will denote type of survey in the questionnaire header.

Where it is discovered that a company randomly selected is no longer trading or is no longer located in Silicon Valley, the next company in the database list will be chosen.

The next round of random surveys was conducted on the Irish IT databases, beginning February 11th 2003, and on the Silicon Valley database, beginning April 4th 2003. The same method as the initial survey was adopted. The 50 firms to be surveyed were selected as follows:

1. The National Informatics Directorate website (http://www.nsd.ie/htm/ssii/search_counties.php3?counties=Dublin) was used for the Dublin survey of a further approximately 50 firms. For the initial study every 12th firm on the database was surveyed until 50 firms have been selected and the end of the database has been reached. In this case 634 firms in the database, less 50 firms already surveyed, left 584 firms yet to be surveyed. In order to randomly survey approximately a further 50 firms, every 11th firm not previously surveyed was selected for survey. 56 firms were surveyed.

2. The Silicon Valley Web Directory of computer and semiconductor companies headquartered in Silicon Valley, website: http://mentorms.best.vwh.net/valley/sl_compi.htm) was used for the Silicon Valley further study of 50 firms. For the initial study every 22nd firm had been surveyed. In this case 1063 firms in the database, less 50 firms already surveyed, left 1013 firms yet to be surveyed. In order to randomly survey a further 50 firms, every 20th firm not previously surveyed was selected for survey.

3.2 Unit of Analysis

The unit of analysis is IT firms, in both unionised and non-unionised firms, in the public sector and in the private sector, in Ireland and in California, USA.

3.3 Data Collection

Data will be collected using all the safeguards exercised by researchers. Data will be collected by survey instrument and interview. The method of survey and scale measurement as devised by Hofstede (1984) will be used in this thesis to ascertain the organisational culture in union and in non-union firms in Ireland and in the United States.

The measurement of values of IT workers will follow the methodology of Schwartz and Bilsky (1990). The Likert (1934) scale will be used to present IT workers in unionised and non-unionised firms with a set of attitude statements. Subjects' level of agreement or disagreement will then be used to measure their attitudes to trade unions.

3.4 Utilisation of data and testing of hypotheses.

It is intended to profile collected data (IT firms and IT workers) and to empirically test the hypotheses with the data collected.

3.5 Declaration

This research is entirely of my own work and will not be presented to any other body for the award of 'Doctor of Philosophy by research'.

4. RESULTS OF PILOT STUDY

4.1 Pilot Survey Results

Seventeen questionnaires were returned by respondents in the Dublin, non-union category. Fourteen questionnaires were completed in the Dublin, union category. Eighteen questionnaires were returned by respondents in the Silicon Valley, non-union category.

The results of the pilot study are summarised in Appendix A. Data was received from IT workers for the following surveys:

1. California non-union
2. Dublin non-union
3. Dublin union.

No data was received for the California union survey.

5. ANALYSIS OF PILOT RESULTS

5.1 Non-union Survey Analysis

Analysis of results, comparing surveys undertaken in Silicon Valley, California, and Dublin Ireland, between unionised and non-unionised IT workers, were completed on the summarised results of the following surveys (See Appendix B):

1. California Non-union and Dublin Non-union
2. Dublin Union and Dublin Non-union

5.2 Union Survey Analysis

As data was not received from the California union survey, no analysis could be undertaken to compare the following surveys (See Appendix B):

1. California Union and Dublin Union
2. California Non-union and California Union

6. CONCLUSIONS

Conclusions will be drawn from the thesis' findings. Implications for policy and existing theory will be discussed. The project will conclude with recommendations and the limitations of the project will be identified. It will be demonstrated that the research has addressed the initial research questions. The entire project will be conducted in a manner that will maintain the highest safeguards towards validity and reliability.

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